

National Broadcasting and Telecommunications Commission (NBTC)



NBTC

ANNUAL REPORT

2023



Communication is one of the essential factors of nation growing creation and development, including stability, and security. During global dynamic situations, the prompt and up to date of the communications are immensely important. All parties including agencies related to national communications should therefore collaborate, operate, and share their achievements closely and harmoniously. Above of all, they should study and explore about academic and modern technology aspects in depth and wide range, and consider the good and effective parts to implement wisely and proactively, that suits nation's status and environment to ensure that the national communications are fully developed as facilitator of economic and social development, and truly support for nation stability.

Chitralada Villa Royal Residence
July 15, 1983

The Royal Speech was bestowed by
His Majesty King Bhumibol Adulyadej the Great on the Occasion of
the Centennial of the Post and Telegraph Department and
the National Communications Day, on August 4, 1983

CONTENTS



Preface	5
Message from the Chairman of the NBTC	7
Message from the Secretary-General of the NBTC	10
The National Broadcasting and Telecommunications Commission	12
Executive Summary	20

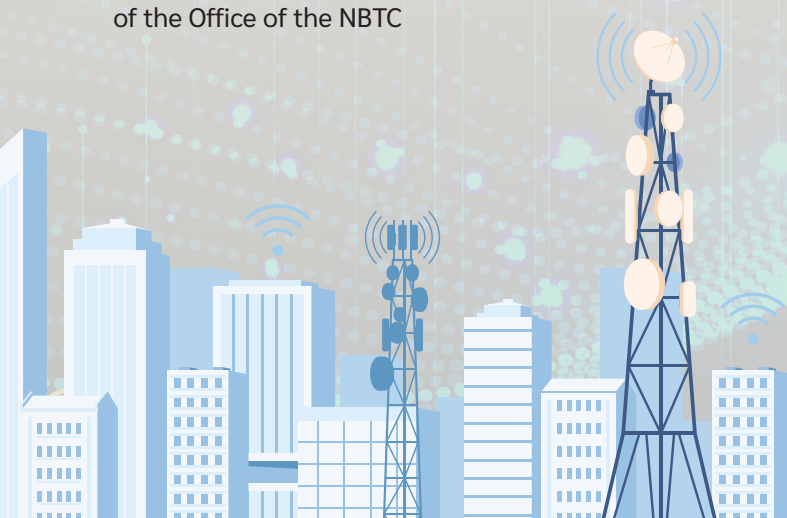
Part 1



General Information	26
Authorities and Duties of the NBTC	32
Authorities and Duties of the Office of the NBTC	34
Vision, Mission, and Core Value	38
Strategic Issues of the Office of the NBTC and the Causal Relationship with Government Policies, National Strategy, and National Plan	39
The High-Level Executives of the Office of the NBTC	40
Organization Structure and Workforce of the Office of the NBTC	42

Part 2

Key Performance of the NBTC in 2023	46
Spectrum Management	46
Regulation on Broadcasting, Television, Telecommunications, and Satellite Businesses	52
• Broadcasting and Television Businesses Regulation	52
• Telecommunications Business Regulation	70
• Satellite Business Regulation	102
Academic Affairs	108
International Affairs	113
Organization Management	122
• Management of the Office of the NBTC	122
• Follow-up and Monitoring the Spectrum Usage in Broadcasting, Television, and Telecommunications Businesses	129
• Efficiency and Effectiveness in Considering Consumer Complaints in Broadcasting, Television, and Telecommunications Businesses	137
• Management of the Broadcasting and Telecommunications Research and Development Fund for Public Interest	150
Resolutions of the National Broadcasting and Telecommunications Commission (NBTC) in the Significant Topics in 2023	180
• The Transfer of the License to Use the 700 MHz Frequency Band, for 2x5 MHz, between the National Telecom Public Company Limited and Advanced Wireless Network Company Limited	180
• The Merger between Advanced Wireless Network Company Limited and Triple T Broadband Public Company Limited	183



Part 3



Report on Market Situation and Competition in Broadcasting, Television, and Telecommunications Businesses in 2023 186

Market Situation and Competition in Broadcasting, Television, and Telecommunications Businesses 186

Trends in Broadcasting, Television, and Telecommunications Industries in 2024 213

The Observation on the Dominance Nature in Action of Broadcasting, Television, and Telecommunications Businesses Affecting the Benefits of the State and People 215

Telecommunications Service Quality and Service Rates, which are Significant to People 216

Part 4



Budget Management in 2023 244

Performance and Budget Expenditure of the Office of the NBTC in 2023 244

Overview of the NBTC's Performance of the Previous Year Compared to the Significant Workplan 246

Financial Statements of the Office of the NBTC for the Year 2023 281

Internal Audit Report of the Office of the NBTC in the Fiscal Year 2023 330

Part 5



Policy, Workplan and Expenditure Budget in 2024 332

Significant Policy and Workplan in 2024 332

Expenditure Budget Plan of the Office of the NBTC in 2024 335

Part 6



Problems & Obstacles of Broadcasting, Television, and Telecommunications Businesses, which are Significant to People and Recommendations/Solutions 340

Appendix



- The Management Team of the Office of the NBTC 342
- Locations of the NBTC Headoffice and Regional Offices 347
- The Working Group of the NBTC Annual Report 2023 348





Preface

In accordance with Section 76 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment, it stipulated that the National Broadcasting and Telecommunications Commission or NBTC has to prepare annual report about management of spectrum, broadcasting, television, and telecommunications businesses as the case may be. The annual report must show details of operational plans and performances, spectrum management, spectrum allocation, and operations in broadcasting and telecommunication businesses, as the case may be, as well as the workplans for the following phase, to submit to the Cabinet and the National Assembly within 120 days as from the ending date of each accounting year, and disclose to the public.

Accordingly, the NBTC has conducted the NBTC Annual Report 2023, covering main issues including key performances of the NBTC in 2023, the reports on market situation and competition in broadcasting, television, and telecommunications businesses, budget management in 2023, policies, workplans and expenditure budget plans of 2024, problems and obstacles in operating broadcasting, television, and telecommunications businesses, which are significant to people, as well as solutions and recommendations. Details are given below in this report.

The National Broadcasting and
Telecommunications Commission





Message from the Chairman of the NBTC

Clinical Professor

Sarana Boonbaichaiyapruk

Chairman of the NBTC



The year 2023 posed a challenging period for the National Broadcasting and Telecommunications Commission (NBTC), due to the rapid development of communication technologies, such as 5G technology, Artificial Intelligence or AI, and Big Data, which leads to significant benefits for end-users, while technological crime has become increasingly severe, posing a serious threat to the safety and security of people's lives and property. At present, service users have been increasingly adopting technology widely, which may replace traditional services shortly, and impact on local operators' competitiveness, whereas the current laws do not yet fully accommodate these advanced technologies. This leads to regulatory gap in broadcasting, television, and telecommunications businesses of the nation. The NBTC has realized the importance of this issue, and prescribed fundamental policies focusing on spectrum management for the public interest, national economy acceleration, and regulatory compliance with the communication technology dynamic, and consumer protection, as well as rights and freedom of communication of citizens. Over the past year, the significant performances of the NBTC are summarized as follows:

1. Spectrum Management.

The NBTC has imposed policies on spectrum management and revised the Notification of the NBTC on Spectrum Management Master Plan B.E. 2562 (2019) and its amendment, with the aim of spectrum management with efficiency and sufficiency for spectrum demands and in line with international practices for worthiness, as well as digital economy development support. The NBTC has also researched and analyzed guidelines on spectrum allocation for Thailand's International Mobile Telecommunications (IMT), such as 1) 3300 – 3400 MHz frequency bands, 2) 3500 MHz frequency band for promoting 5G technology deployment, 3) 28 GHz frequency band, and 4) four license-expiring spectrum bands in 2025 including 850 MHz, 1500 MHz, 2100 MHz, and 2300 MHz.

2. Regulation in Broadcasting, Television, Telecommunications, and Satellite Services, for example.

- The NBTC has revised the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025) to promote and enhance the standard of broadcasting and television businesses operation to create diversity that would benefit the society, and match with the dynamic social context. The NBTC has also developed the current criteria relating to broadcasting and television businesses to align and match with the industry's ecosystem, e.g., prescribing criteria to support the program productions of the broadcasting and television businesses that benefit the society, and reviewing the revocation of the Notification of the NBTC on Criteria for the Important Event which can be Broadcasted only on Free Television B.E. 2555 (2012). Moreover, the NBTC has leveraged Thailand's broadcasting and television services to international standards, and developed criteria relating to telecommunications, such as regulatory review of current mobile internet service rates, and price structure review of domestic mobile service, to align and suit the current situations.

- The NBTC has promoted mobile virtual network operators (MVNO) to enhance competitiveness of mobile phone service market, aiming to increase options for people, and support mobile phone service provision for public warning by urgently adopting Cell Broadcast, the targeted alert system, for the public interest.

- The NBTC has been responsible for preserving the satellite orbital slots, which are essential to the unity of the state and the benefits of the nation and people, by arranging the satellite orbital slot package auction, on January 15, 2023, with 3 orbital positions including the 78.5 degrees East, the 119.5 degrees and 120 degrees East, and the 126 degrees East, resulting in a total of 806.502 million baht raised to public revenue.

3. Consumer Protection in Broadcasting, Television and Telecommunications Businesses, and Promotion of People's Rights and Liberty.

The NBTC has carried out protection and resolution to the cybercrime in form of Call Center scams and SMS frauds, by prescribing measures to prevent and tackle cybercrime concretely, in collaboration with relating agencies across all sectors, including 1) defining regulatory guidelines on SMS sending service, and corrective measures against frauds including impersonation scams via phone calls and electronic media, 2) enhancing the mobile phone user registration scheme by developing the Notification of the NBTC on Identity Verification and Mobile Service Usage Data 3) accelerating monitoring and arresting offenders who commit illicit signal transmission, or provide telecommunications services to neighboring countries, 4) complying with the Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes B.E. 2566 (2023), and 5) creating public awareness continuously of cyber scam tactics. Furthermore, the NBTC developed the Notification of the NBTC on Measures to

Protect Telecommunications Service Users' Rights Regarding Personal Data, Privacy Rights, and Freedom of Communication in Telecommunications, and emphasized that all licensees must strictly comply with the Notification and the Personal Data Protection Act B.E. 2562 (2019), to prevent violation of privacy rights which may affect the personal information of users.

4. The Provision of Universal Services Obligation in Broadcasting, Television, and Telecommunications.

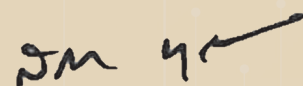
The NBTC has developed the Notification of the NBTC on the Universal Services Obligation Plan, No. 4 B.E. 2566 (2023), to drive the universal service obligation (USO) mission continuously forward. Currently, the Universal Services Obligation Plan, No. 3, has been implementing as a direction and target to foster all groups of people, including the people with disabilities and the underprivileged people, to equally access, acknowledge, and utilize information in a digital world through a variety of channels. Currently, it is in the process of proposing to the NBTC meeting for consideration.

5. International Communication Affairs.

The NBTC attended the meetings with the International Telecommunication Union (ITU) to present vision statement regarding the development of administration and ITU's operational strategies, and exchange knowledge for applying to Thailand's communication business, such as bridging the digital divide by developing telecommunications infrastructure. Also, the NBTC has joined meetings with international telecommunications regulators, including the Federal Communications Commission (FCC), and the Ministry of Internal Affairs and Communications (MIC), to further execution of Memorandum of Understanding (MOU), and to promote and support regulatory collaboration in broadcasting, television, and telecommunications services, as well as engaging good long-lasting international relations.

In 2024, the NBTC defined 22 policies and workplans, which I, therefore, assigned the Office of the NBTC to promptly implement as follows: 1) implementing the One Region, One MVNO policy, aiming to have at least 2 MVNOs to provide additional choices of service provider for people, 2) elevating the "USO Net" public internet centers to be the Government Digital Service Market and Streaming Center, to assist people in access to government services and other services with convenience, 3) encouraging people to access government digital services through free-of-charge personal mobile phone service, 4) promoting the provision of public warning system via mobile phone service that connects to the governmental command system, 5) enhancing the "Traffy Fondue" system and the Office of the NBTC's service notification, to facilitate people in notifying cyber emergency, and 6) promoting USO Net centers to be the e-Commerce centers of the communities and the disability service centers for digital service access.

Indeed, it can be said that the achievements throughout the year 2023 are the result of the decisive collaboration of all sectors. On behalf of the Chairman of the NBTC and the commissioners, I would like to thank all alliances, executives and employees of the Office of the NBTC for being the crucial parts and fully cooperating to improve and oversee the valuable broadcasting, television, and telecommunications businesses, to elevate the country's development to be competitive on the global stage, and drive sustainable economic growth. Last, I would like to ensure that the NBTC and the Office of the NBTC will collaboratively perform our duties with righteousness and integrity to preserve the benefits of the nation and people.



(Clinical Professor Sarana Boonbaichaiyapruk)
Chairman of the National Broadcasting
and Telecommunications Commission



Message from the Secretary-General of the NBTC

Mr. Trairat Viriyasirikul

Deputy Secretary-General,
Acting Secretary-General of the NBTC
(July 1, 2020 – Present)

The Office of the National Broadcasting and Telecommunications Commission (Office of the NBTC) has performed its work to support the missions of the National Broadcasting and Telecommunications Commission or NBTC in spectrum management for the utmost benefit, and regulating broadcasting, television, and telecommunications businesses efficiently, to facilitate people to utilize broadcasting, television, and telecommunications services with good quality and appropriate pricing, to support the nation to apply technology at full efficiency. This will boost performance and competitiveness, accelerate national economic growth, improve quality of life, and reduce the digital inequality in access to public services.

In 2023, the Office of the NBTC has driven various significant missions, including enhancing consumer protection and developing the complaint-resolving mechanism to be up-to-date and efficient, by upgrading work procedures to be fully digitalized. It has also supported digital platforms and technology deployment to elevate the rights and equality of people with disabilities, and imposed preventive guidelines and measures against severe technological crimes, which causing a broad impact on stability and security of people's lives and property, according to the Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes. This year, the Office of the NBTC has cooperated with the Royal Thai Police to break the cycle of call center frauds, by arresting a large number of offenders relating to illicit signal transmission through SIM cards, cables, and base stations along borders, and seizing the seized items for delivery to inquiry official for further legal proceedings. The broadcasting and television businesses of Thailand have been elevated to meet international standards. The telecommunications network expansion has been supported to allow people to access telecommunications services thoroughly and equally. Moreover, the Office of the NBTC has promoted 5G technology deployment for targeted industries in the Eastern Economic Corridor (EEC).

In addition, I strive to develop the Office of the NBTC into a high-performance regulatory agency with good governance, transparency, credibility, and reliability, by continuing the operations that result in achievement and awards given by other external agencies, such as the Chief Innovation Officer (CIO) Prestigious Award, and the Digital Government Award 2023, along with 3 certificates, including 1) Quality Organization on Government Data Governance Award, 2) Quality Organization for Information Disclosure through the Public Sector Information Center Award (data.go.th), and 3) Quality Organization for Digital Personnel Award, and the Asian-Oceanian Computing Industry Organization (ASOCIO) 2023 ICT Award in the field of Digital Government Award. Regarding the

governance aspect, the Office of the NBTC received the Integrity and Transparency Assessment (ITA) Award in 2023 with the score of 98.48, ranked the 1st place of the government agency category, which we were highly proud of, and would maintain this high standard further. The Office of the NBTC made the declaration of intention that all executives and employees of the Office of the NBTC shall not accept neither gifts nor profits from performing duties (No Gift Policy), neither before, during, nor after performing the duties, which would cause corruption and misconduct at the present and in the future, and shall adhere strictly to the Notification of the National Anti-Corruption Commission regarding the Provisions of the Acceptance of Property or Any Other Benefit on an Ethical Basis by State Officials B.E. 2563 (2020). Also, in 2023, the Office of the NBTC considered the recommendations and remarks of the Senate and the House of Representatives, from the meeting for considering the NBTC Annual Report of the year 2022, to improve the administration and operation of the Office of the NBTC.

On behalf of the Office of the NBTC, I would like to express my gratitude to the Chairman of the NBTC, the NBTC commissioners, executives and employees of the Office of the NBTC, as well as all sectors involved, that have been cooperatively accomplished the missions of the NBTC through the challenges, which might be the obstacle in our work performance. However, I firmly believe that we can overcome these obstacles and challenges, and I pledge that the Office of the NBTC shall support the NBTC missions for the benefits of people, as a trustworthy communication regulator of the nation.



(Mr. Trairat Viriyasirikul)
Deputy Secretary General
Acting Secretary-General
of the National Broadcasting and
Telecommunications Commission

The National Broadcasting and Telecommunications Commission



Clinical Professor
Sarana Boonbaichaiyapruk
Chairman of the NBTC

2

Air Marshal Thanapant Raicharoen
NBTC Commissioner

5

Associate Professor Suphat Suphachalasai
NBTC Commissioner

3

Emeritus Professor Pirongrong Ramasoota
NBTC Commissioner

6

Police General Nathathorn Prousoontorn
NBTC Commissioner

4

Mr. Torpong Selanon
NBTC Commissioner

7

Associate Professor Somphop Purivigraipong
NBTC Commissioner

Clinical Professor
Sarana Boonbaichaiyapruk
Chairman of the NBTC



● Education

- Assumption College
- Doctor of Medicine, Chulalongkorn University
- Diploma, Medical Specialty, University of Southern California, California, USA

● Royal Orders and Decorations Earned

- Knight Grand Cordon (Special Class) of the Most Exalted Order of the White Elephant
- Knight Grand Cordon (Special Class) of the Most Noble Order of the Crown of Thailand

● Work Experience

- Cardiologist, American Board accredited at Kaiser Permanente, California, USA
- Lecturer for Medical Students, Residency Training, and Cardiologist at the Faculty of Medicine, Ramathibodi Hospital, Mahidol University, until attained Vice Dean, Faculty of Medicine, and Clinical Professor
- Member of the National Legislative Assembly
- Public Health Standing Commissioner, the National Legislative Assembly
- Energy Commissioner, the National Legislative Assembly



Air Marshal Thanapant Raicharoen
NBTC Commissioner

● Education

- Bachelor – Master of Computer Engineering, Munich University of the Federal Armed Forces, Germany (Royal Thai Air Force Scholarship)
German Air Force Officer School, Class of 1983 (Royal Thai Air Force Scholarship)
Air Force Officer School, Class of 28 (1st Year)
- Doctor of Philosophy, Computer Science, Chulalongkorn University (The Royal Golden Jubilee Ph.D. Scholarship)

● Work Experience

- Programmer, SIEMENS, Munich, Germany
- Visiting Researcher, University of Maryland at College Park, USA
- Defence Information Division Director, Defence Information and Space Technology Department
- Planning and Engineering Division Director, Defence Information and Space Technology Department
- Staff Officer to Deputy Permanent Secretary for Defence (Senior Group Captain)
- Sub-committee on Space Law Development, the National Space Policy Committee
- Sub-committee on Air Transportation, the National Legislative Assembly
- Sub-committee and Honorary Advisor, Ad-hoc Committee for Considering the Draft Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. ...) B.E. ... B.E. 2560 (2017)
- Honorary Advisor, the Committee on Science, Information Technology and Mass Communication, the National Legislative Assembly
- Judge of Bangkok Military Court
- Professional Expert, Office of the Permanent Secretary for Defence
- Deputy Secretary-General of Spectrum Management and Regional Affairs Cluster, Office of the NBTC
- Deputy Secretary-General of Regional Affairs Cluster, Office of the NBTC



**Emeritus Professor
Pirongrong Ramasoota**
NBTC Commissioner



Education

- Bachelor of Arts in English (First-Class Honors), Chulalongkorn University
- Master of Art in Communication, Department of Communication, University of Hawaii at Manoa, USA
- Doctor of Philosophy in Communication, School of Communication, Simon Fraser University, Canada

Work Experience

- Sub-committee on Public Communications, the Committee on Science, Technology, Communication and Telecommunications, the Senate
- Sub-committee on Political Development and Public Participation, the Senate
- Ad-hoc Committee of the Draft Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications services B.E. ..., the House of Representatives
- Advisor to Joint Committee for considering the Draft Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. ..., the House of Representatives
- Advisory Board, Privacy International (PI)
- Board of Directors, Communication Policy Research South (CPR South)
- Board of Directors, Asian Media Information and Communication Centre (AMIC)
- Lecturer, Department of Journalism, Faculty of Communication Arts, Chulalongkorn University
- Head of Department of Journalism, Faculty of Communication Arts, Chulalongkorn University
- Head of Media Policy Research Unit, Faculty of Communication Arts, Chulalongkorn University
- Vice Dean, Division of Graduate Studies, Faculty of Communication Arts, Chulalongkorn University
- Vice President for Social Outreach and Global Engagement, Chulalongkorn University

Mr. Torpong Selanon
NBTC Commissioner



● Education

- Bachelor of Education in Special Education, Suan Dusit Rajabhat University
- Master of Arts in Social Development Administration, Analysis and Social Planning, the National Institute of Development Administration

● Work Experience

- Sub-committee on Regulation Reform of Media, Telecommunications and Information Businesses, Committee on Mass Communication and Information Technology Reform, the National Reform Council
- Chairman of the Sub-committee on Education Reform for Person with Disabilities, Committee on Education Reform for Person with Disabilities, the Elderly, and the Underprivileged, the National Reform Steering Assembly (NRSA)
- Committee and Assistant Secretary, Committee on National Social Reform Steering, the National Reform Steering Assembly (NRSA)
- Member of the National Reform Steering Assembly (NRSA)
- Chairman of the Sub-committee on Empowerment for Person with Visual Impairment, the National Committee on Empowerment for Person with Disabilities
- Chairman of the Sub-committee on Broadcasting Licensing Consideration, the National Broadcasting and Telecommunications Commission
- Advisory Director, the National Committee on Empowerment for Person with Disabilities, Ministry of Social Development and Human Security
- Chairman of the Sub-committee on Non-Frequency Business, the National Broadcasting and Telecommunications Commission
- Advisor to the National Broadcasting and Telecommunications Commission for Consumer Protection and Civil Liberties Promotion
- President of Thailand Association of the Blind



**Associate Professor
Suphat Suphachalasai**
NBTC Commissioner

● Education

- Bachelor of Economics (2nd Class Honors), Ramkhamhaeng University
- Master of Economics in Economic Development, the National Institute of Development Administration
- Master of Arts in Agricultural Development Economics, Australian National University, Canberra, Australia
- Doctor of Philosophy in Economics, Australian National University, Canberra, Australia

● Work Experience

- Advisory Director, Committee on Research Fund Monitoring and Evaluation, Thailand Research Fund
- National Research Council Committee, Economics
- Free Trade Agreement Strategy and Negotiation Commission
- Advisory Director in Trade Competition Commission
- International Economic Policy Committee (IEPC)
- Lecturer, Faculty of Economics, Thammasat University
- Director, APEC Studies and Regional Cooperation Studies Centre, Thammasat University
- Director, Australian Studies Centre, Thammasat University
- Director, Thammasat Institute for Study of International Cooperation
- Director, Thammasat Institute of Area Studies

Police General Nathathorn Prousoontorn NBTC Commissioner



● Education

- Bachelor of Political Science (RPCA 37), Royal Police Cadet Academy
- Bachelor of Laws, Ramkhamhaeng University
- Master of Science (Computer), Chulalongkorn University
- Master of Arts (Translation), Chulalongkorn University
- Master of Public Affairs, Kentucky State University, USA
- Doctor of Political Science, Chulalongkorn University

● Training

- Police Management Development Program (PMDP#127), AIPM, Australia
- FBI (NA#239), FBI, Quantico, Virginia, USA

● Work Experience

- Inquiry Official and Crime Protection and Suppression, Police Station Level
- Superintendent of Information Center (Computer), Royal Thai Police
- Director of International Law Enforcement Academy (ILEA)
- Commander, Immigration Division 2, (International Airport)
- Deputy Commissioner, Immigration Bureau
- Commissioner, Immigration Bureau
- Assistant Commissioner General
- Special Advisor, Royal Thai Police

**Associate Professor
Somphop Purivigraipong**
NBTC Commissioner



● Education

- Bodindecha (Sing Singhaseni) School, Class of 14
- Master of Science in Applied Physics, (2nd Class Honors), King Mongkut's Institute of Technology Ladkrabang
- Master of Engineering in Electrical Engineering, King Mongkut's Institute of Technology Ladkrabang
- Doctor of Philosophy in Satellite Engineering Surrey Space Centre, University of Surrey, UK

● Work Experience

- Chancellor of Space Science and Geo-Informatics Institute, Geo-Informatics and Space Technology Development Agency (Public Organization)
- Head of Observation Satellite System for Development (THEOS-2) Project Team
- Associate Professor, Aerospace Engineering
- Vice President, Mahanakorn University of Technology
- Director, Centre of Electronic Systems Design and Signal Processing, Mahanakorn University of Technology
- Director, Graduate School, Geographic Information System Technology Division, Mahanakorn University of Technology
- Sub-committee on Dual-Use Items Consideration, Department of Foreign Trade, Ministry of Commerce
- Academic Committee, the Thai Astronomical Society
- Thailand Representative, Space Advancement of Thailand Report, in the Plenary Session of the Committee on the Peaceful Uses of Outer Space (COPUOS), the United Nations Office for Outer Space Affairs (UNOOSA), at Vienna, Austria

Executive Summary

The National Broadcasting and Telecommunications Commission (NBTC) performs duties as stipulated in the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment, and other related laws. In 2023, the NBTC has performed significant missions regarding spectrum management, considered the communication resource of the nation for public interest, and regulated broadcasting, television, telecommunications, and satellite businesses efficiently for the benefit of all Thai citizens. The performance highlights are as follows:

1. Spectrum Management. The NBTC has carried out significant operations in the following:

1.1 Prescribing a policy regarding spectrum management by revising the Notification of the NBTC on Spectrum Management Master Plan B.E. 2562 (2019), with the aim of spectrum management with efficiency and sufficiency for spectrum demands, and in line with international practices for worthiness, as well as digital economy development support.

1.2 Researching and developing criteria, guidelines, and potentiality for spectrum management to fit the business environment, including preparing the Notification on Criteria of authorization to use frequency 5.925 – 6.425 GHz for general use, studying guidelines and appropriateness in setting license time frame for the 450 – 470 MHz frequency bands for the International Mobile Telecommunications (IMT), studying approaches and feasibility of the 3300 – 3400 MHz for the International Mobile Telecommunications (IMT), preparing guidelines for spectrum use and preparation for a draft Notification regarding the 28 GHz frequency band, and developing the draft Notification of the NBTC on FM Radio Broadcasting Frequency Plan.

1.3 Following up the implementation of the radio frequency plan, and improving the frequency use,

including preparing the spectrum usage termination of the L-Band (1427 – 1518 MHz) to support the International Mobile Telecommunications (IMT), revising the spectrum use of the 50 – 54 MHz frequency bands, and preparing the draft Notification of the NBTC regarding the Radio Quiet Zone for Radio Astronomy Service.

1.4 Frequency managing coordination across border areas, such as the 36th Joint Technical Committee on Coordination and Assignment of Frequencies Along Thailand-Malaysia Common Border Meeting, hosted by the Office of the NBTC. According to the meeting outcome, Thailand and Malaysia have reached mutual consent regarding the exemption of low-power FM stations to the Minimum Frequency Separation Practices, and ceased the issue. Furthermore, Thailand has settled the discussion on frequency use and parameter configuration for the 26/28 GHz frequency bands. In addition, in the 12th Joint Technical Committee on Coordination and Assignment of Frequencies Along Thailand-Lao PDR Common Border Meeting, hosted by Lao PDR, Thailand has reached the agreement on parameter configuration for frequency use in each band between the two countries.

1.5 Presenting and driving the NBTC approved proposals that reflect the benefits of the country to the World Radiocommunication Conference 2023 (WRC-23) to proceed with the negotiation process and seek consensus among the International Telecommunication Union member states. According to the outcome of the WRC-23, Thailand gained benefits in significant issues, e.g., allowing Thailand to utilize additional spectrum for the International Mobile Telecommunications (IMT) in the frequency range of 7.025 – 7.125 GHz, allowing the spectrum bands specified for IMT, including the 700 MHz, 900 MHz, 2100 MHz, and 2600 MHz frequency bands,

to support the High-Altitude Platform Stations as IMT Base Stations (HIBS), regarded as the technology to support mobile phone network infrastructure in the remote areas. Moreover, Thailand was granted the additional rights certification for the 3300 – 3400 MHz frequency usage for fixed and mobile services at the international level. Concerning safety, the spectrum bands for the emergency notification system and the Global Maritime Distress and Safety System (GMDSS) have been revised. The new spectrum bands were allocated for the earth stations in motion (ESIM) on vehicles that operate high data rates through satellite networks. Also, the frequency bands 117.975 – 137 MHz were assigned to facilitate air traffic control through the satellite networks.

In addition, the study topics for the WRC-27 have been defined during the conference to support the revision of the Radio Regulations in the future. The major topics include the new spectrum assignment for the IMT-2030 technology, the regulation amendment for supporting communication technology through satellite in the future, the mobile phone client connectivity through satellite network, and the spectrum usage to support scientific services. Accordingly, the Office of the NBTC published the WRC-23 conference report with the operation details on the Office of the NBTC's website. The Office of the NBTC shall exercise the WRC-23 outcomes by revising related domestic regulations such as the Spectrum Management Master Plan, and the National Table of Frequency Allocation.

2. Regulation in Broadcasting and Television Businesses. The NBTC has carried out significant operations as follows:

2.1 Revising the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025), published in the Royal Gazette on June 28, 2023, aiming to elevate the broadcasting and television industries towards the international standards, to promote sustainable society and economy, by driving the transition of the broadcasting and television industries, responding to the digital context, regulating on the empirical data basis, with respect to efficient,

equitable and extensive use of broadcasting and television resources. Also, the Action Plan of the revised version of the Master Plan has been conducted, serving as operational guidelines for further performance monitoring and evaluation.

2.2 Regulating radio broadcasting service such as pursuing operations regarding future FM radio broadcasting by revising 7 Notifications on criteria related to radio broadcasting, to suit the current situation, and easy to apply. The draft Notifications, approved by the NBTC meeting NO.21/2023 on October 25, 2023, were published for public hearing. The preparation for digital radio broadcasting has been conducted to provide alternatives for broadcast experimenters of existing FM broadcasting, which will expire by December 31, 2024, and individuals who are interested in operating services in the digital radio broadcasting industry. The behavioral and popularity survey data of radio broadcasting listeners in Thailand has been analyzed about directions and consumer behavioral trends in radio broadcasting service through each channel, that would lead to the guidelines on promoting and supporting the radio broadcasting operators to be competitive among dynamic changing of technological environment.

2.3 Regulating the television business such as revising rules and regulations with a focus on light-touch regulation, to modernize and to comply with today's television industry context, enhancing the television business, granting permission for the digital terrestrial television trial broadcasting with UHD (4K) technology, and cooperating with various sectors in the industry to study and strive for developing channels for terrestrial television on digital platform access, etc.

2.4 Protecting the rights of people with disabilities and underprivileged people, and facilitating them to access or acknowledge, and utilize information through all digital terrestrial television channels, totaling 25 channels, via the following services: (1) Sign Language, not less than 1,500 minutes/day, (2) Closed Captions, not less than 2,100 minutes/day, and (3) Audio Description, not less than 1,500 minutes/day.



2.5 Providing knowledge and understanding of the rights of people with disabilities to access and utilize information, by organizing training sessions in collaboration with the National Association of the Deaf in Thailand, Thailand Association of the Blind, Thailand Sign Language Interpreters Association, etc.

3. Regulation in Telecommunications Business.

The NBTC has carried out significant operations as follows:

3.1 Promoting 5G technology deployment and network extension continuously by the following operations:

1) Allocating spectrum for the International Mobile Telecommunications of Thailand to encourage 5G technology deployment, by studying spectrum use revision (clear band) before the spectrum auction by taking into account spectrum usage both supply and demand sides, and trend forecasting of technology and use cases in the future, as well as preparing for spectrum auction of the 3500 MHz and 28 GHz bands.

2) According to the Notification of the NBTC on Criteria for Permitting Frequency Use for Innovation Development and Testing in a Sandbox Area (Regulatory Sandbox), additional regulatory sandboxes have been allocated to 3 organizations in 2023 including (1) the National Science and Technology Development Agency (NSTDA), for developing automatic mobile robots and IoTs for industries, (2) Faculty of Medicine, Ramathibodi Hospital, for developing medical learning system with Virtual Reality (VR) technology and patient services, and (3) Mahanakorn University of Technology, for developing and testing the satellite communication innovation to support new digital services and innovation in the future.

3.2 Cooperating with mobile phone service providers to implement a targeted emergency notification system. In the first phase (urgent), it can be used to send short messages (SMS) using the location-based service of smartphones nationwide. Currently, it is in the second phase of development. The NBTC has collaborated with mobile phone service providers to study the cell broadcast technology, which is more efficient than sending SMS for immediate targeted alerts, as well as

providing emergency alerts with the cell broadcast technology to the public for public safety purposes urgently.

3.3 Engaging in promoting mobile virtual network operator (MVNO) services and amending relevant NBTC regulations, including reviewing the Notification on Formulating and Regulating the Structure of Domestic Mobile Phone Service Charges.

3.4 Developing the draft Notification on the Universal Services Obligation Plan, No. 4 B.E. 2566 (2023), to drive the universal service obligation (USO) mission continuously forward. Currently, the Universal Services Obligation Plan, No. 3 B.E. 2565 (2022) has been imposing as well as preparing the Universal Service Obligation Annual Action Plan to support the plan implementation.

3.5 Carrying out missions to prevent and suppress technological crimes. As a crucial mechanism, the NBTC has cooperated with telecommunications operators, the Royal Thai Police, the Department of Special Investigation (DSI), Bank of Thailand (BOT), the Thai Banker' Association, the Anti-Money Laundering Office (AMLO), the Ministry of Digital Economy and Society, the National Cyber Security Agency (NCSA), and the Telecommunications Association of Thailand under the Royal Patronage, to advocate for measures to enforce the Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes B.E. 2566 (2023), e.g., the process of exchanging information between service providers and law enforcement agencies, connecting systems that will lead to real-time data exchange, addressing the factors, i.e., **"SIM cards, base stations, and cables"**, that are crucial components exploited by criminals for technology-related crimes, eradicating illegal SIM cards and mule bank accounts, focusing on operations to prevent and suppress illegal telecommunications services, conducting continuous on-the-ground inspections and arrests of unlawful service providers, carrying out inspections, and enforcing the laws regarding setting up unauthorized radiocommunication stations along borders at Sa Kaeo, Chiang Rai, Tak, Trad, and Chanthaburi provinces. Furthermore, the NBTC has regulated

telecommunications operations of licensed operators, particularly in border areas, to ensure compliance with conditions, randomly inspected unregistered SIM cards, conducted search and arrest operations, and seized counterfeit radiocommunication equipment and other technology devices, such as SIM box, false base station, etc.

4. Regulation in Communication Satellite Business. The NBTC has carried out significant operations as follows:

4.1 Developing the draft Notification of NBTC on Satellite Orbital Rights Management Plan (No. 2) B.E. ..., aiming to amend the Notification of the NBTC on Satellite Orbital Rights Management Plan B.E. 2563 (2020), to update the details regarding Thailand's rights to access satellite orbital slots, and to explore opportunities for allocating rights guideline to access satellite orbital slots in alternative formats.

4.2 Organizing the satellite orbital slot package auction on January 15, 2023, with 3 positions available for bidding, including the 78.5 degrees East, the 119.5 and 120 degrees East, and the 126 degrees East, resulting in a total of 806.502 million baht raised to public revenue. Currently, it is in the process of issuing licensing rights to access satellite orbital slots at the positions of 50.5, 51, and 142 degrees East (Satellite Network Set 1 and 5), according to the Notification of the NBTC on Criteria and Procedures for Satellite Orbital License Package, dated October 31, 2022, with an effort to preserve essential orbital slots for national security and to safeguard the benefits of the country and its citizens.

4.3 Granting rights to access satellite orbital slots, such as 1) granting license to the Geo-Informatics and Space Technology Development Agency (Public Organization) to fully access the satellite orbital slots, for the Satellite Network THEOS2-SMALLSAT (NGSO), with a licensing period of 20 years, starting from the date the International Telecommunication Union records the Satellite Network Set in the primary international frequency registry, 2) granting license to Space Tech Innovation Company Limited to access the satellite orbital slots, for the Satellite Network Set 2 (at the 78.5 degrees East position) for 2 satellite networks, and the Satellite Network Set 3 (at the

119.5 and 120 degrees East positions) for 4 satellite networks, with a licensing period of 20 years, effective from the date of authorization according to the Notification of the NBTC on Criteria and Procedures for Satellite Orbital License Package, dated October 31, 2022, and approving the licensing conditions to access the satellite orbital slots, 3) granting license to the National Telecom Public Company Limited to access the satellite orbital slots, for the Satellite Network Set 4 (at the 126 degrees East position) for 1 satellite network, with a licensing period of 20 years, effective from the date of authorization according to the Notification of the NBTC on Criteria and Procedures for Satellite Orbital License Package, and approving the licensing conditions to access the satellite orbital slots.

4.4 Granting license for foreign satellites orbital slot, including 1) granting license to TC Broadcasting Company Limited to use foreign satellite orbital slots of AsiaSat 7 and AsiaSat 9, with an authorized period from the date of approval by the NBTC to March 31, 2026, or until the winner of the selection process for the licensing rights to access satellite orbital slot package, Satellite Network Set 2, is ready to provide service at the position 78.5 degrees East, 2) granting license to the Royal Thai Armed Forces Headquarters to use foreign satellite orbital slots of ABS-2A at the position 75 degrees East, INTERSPUTNIK-75E-Q Satellite Network of Russian Federation, Ku-Band to communicate through voice and video conference, to support the mission regarding military security temporarily, with an authorized period according to the Use of Satellite Signal Channels Management Plan B.E. 2566 – 2571 (2023 – 2028) of the Royal Thai Armed Forces Headquarters, from the date of approval by the NBTC to March 31, 2028, and 3) granting authorization to Mahanakorn University of Technology to be the regulatory sandbox coordinator for 7 areas, and granting licenses to use spectrum to facilitate the development and testing of innovations in the regulatory sandbox, by using the Galaxy-3A satellite constellation, Satellite Network Galaxy-3A (NGSO) of the People's Republic of China, for telecommunications purposes on research, experimentation, and testing temporarily.



5. Consumer Protection in Broadcasting, Television, and Telecommunications Services. The NBTC has carried out significant operations as follows:

5.1 Enforcing regulations to oversee actions that disadvantage consumers in the broadcasting, television, and telecommunications industries, both proactively through monitoring broadcasting, television, and telecommunications operations, and responsively by receiving and reviewing complaints according to the Notification of the NBTC the Actions which may Exploit Consumers in the Broadcasting and Television Businesses B.E. 2555 (2012) regarding broadcasting programs or advertisements, the Notification of the NBTC on Actions that Unfairly Disadvantage Consumers in the Telecommunications Business by Exploiting Networks or Advertisements that Involve Undue Profit-Making or Cause Annoyance or Distress B.E. 2558 (2015), and receiving and reviewing complaints according to the Notification of the NBTC on Complaint Handling Process and Consideration in the Telecommunications Business B.E. 2559 (2016).

5.2 Enhancing consumer empowerment and increasing public awareness of media literacy, as well as fostering knowledge and understanding to ensure consumers in the broadcasting, television, and telecommunications industries are well-informed and able to protect their own rights.

5.3 Emphasizing on action-taking to address call center scams and SMS frauds by implementing measures to counter deceitful SMS sending by scammers to deceive the public, and measures to tackle fraudulent activities by impersonating others through telephone and electronic media systems. The regulation of mobile phone service user registration has been elevated by developing the Notification of the NBTC on Identity Verification and Mobile Service Usage Data with a significant emphasis on requiring service providers to manage and ensure that registered users, holding plenty of mobile phone numbers, annually confirm their identity and take responsibility for their mobile phone numbers on a regular basis. When the Notification comes into effect, holders of a large number of phone numbers, starting from 101 numbers

or more, must verify their identity within 30 days, and holders of phone numbers from 6 – 100 numbers must verify their identity within 180 days. Failure to comply within the specified timeframe may result in temporary suspension or termination of services. The Office of the NBTC has currently submitted the Notification of the NBTC on Identity Verification and Data Related to the Use of Mobile Phone Services Provided by Mobile Phone Service Operators for publication in the Royal Gazette. In addition, the NBTC has also conducted investigations, in collaboration with relevant agencies, and apprehended perpetrators who engaged in illegal activities by clandestinely transmitting signals or providing telecommunications services to neighboring countries. Legal actions were taken against those who misuse telecommunications networks to commit technology-related crimes in neighboring countries, and in other cases as well.

5.4 Developing criteria and measures on consumer protection, such as establishing criteria for determining administrative fines and penalties in cases where telecommunications operators violate and fail to comply with the NBTC's orders, according to the Notification of the NBTC on Actions that Unfairly Disadvantage Consumers in the Telecommunications Business by Exploiting Networks or Advertisements that Involve Undue Profit-Making or Cause Annoyance or Distress B.E. 2558 (2015).

5.5 Driving media usage to promote acceptance of diversity and inclusion, and understanding of societal contexts through media projects to raise media awareness among people with disabilities, and to advocate media literacy among people with disabilities, the elderly, and the underprivileged, as well as to educate the public about the diversity of societal groups through media. The NBTC has put efforts to fostering acceptance of diversity and understanding of the social context in Thailand, a multicultural society with diverse physical, social, and cultural characteristics, including differences in religions, languages, beliefs, attires, and abilities, as well as promoting access and utilization of media that reflect and are of interest to the current population.

6. Academic Affairs. The NBTC has emphasized the importance of elevating the Office of the NBTC into a leading international regulatory entity overseeing broadcasting, television, telecommunications, and satellite operations. Staff members possess advanced academic capabilities and actively contribute to scholarly work both domestically and internationally. In 2023, scholarly proposals have been developed for regulatory policy formulation purposes for broadcasting, television, telecommunications, and satellite businesses, such as 1) studying the assessment of regulatory impacts, which serves as a tool for examining and evaluating the expected effects of policy formulation and systematic regulation, using empirical evidence as a guideline for the NBTC, 2) studying future outlook systematically, 3) studying and analyzing the economic impact, 4) studying the definition of markets and relevant market boundaries in broadcasting, television, and telecommunications businesses, and 5) studying and developing indices and metrics in telecommunications and television broadcasting businesses. In addition, the NBTC has established academic networks with international organizations and exchanged knowledge through academic conferences at the international level, as well as producing and presenting scholarly works for public dissemination, such as the academic journal on “NBTC Telecom and Broadcasting Barometer”.

7. Organization Development. The NBTC has carried out significant operations as follow:

7.1 The NBTC has compiled and submitted the ethical principles of the Office of the NBTC for publishing in the Royal Gazette on April 7, 2022, to serve as guidelines for the conduct of the executives and employees of the Office of the NBTC. Additionally, the NBTC has developed the Ethics Promotion of the Office of the NBTC (B.E. 2565 – 2570) (2022 – 2027), and the Anti-Corruption Action Plan of the Office of the NBTC for the fiscal year 2023, to serve as guidelines for promoting ethical standards, and driving efforts about anti-corruption and enhancing transparency

within the organization. Policies and key operational plans have been established for the executives and employees of the Office of the NBTC to adhere to, and ensure the maintenance of standards of ethical and transparency assessment, as well as fostering sustainable development, and upholding principles of integrity, transparency, and accountability.

7.2 The Office of the NBTC received a score of 98.48 for the Integrity and Transparency Assessment (ITA) for the year 2023, ranking the first among other government agencies in the evaluation category. Additionally, it was honored with a prestigious ITA Award 2023 for achieving the highest ITA evaluation score among other government agencies for the fiscal year 2023.

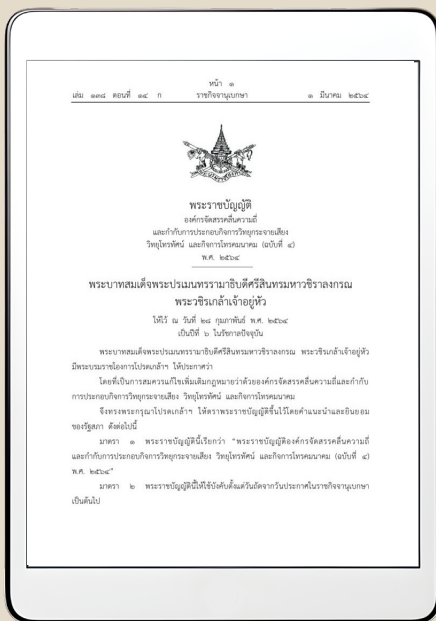
7.3 The management has prioritized elevating the organization to a digital organization and developing the readiness of employees for their roles. This has been carried out in accordance with the Digital Development Strategic Plan of the Office of the NBTC B.E. 2565 – 2570 (2022 – 2027), aiming to advance the organization into a leading digital entity in the country that utilizes data to drive organizational functions, in compliance with international standards, with the goal to become a fully-fledged digital organization. This also contributed to the Office of the NBTC to receive prestigious awards from other external agencies in the field of digital technology development, aimed at providing convenience to the public and service users in the year 2023, including 1) the ASOCIO 2023 ICT Award in the field of Digital Government Award, 2) the Digital Government Award 2023, ranking first among government agencies at the department level in providing primary services, 3) the Quality Organization on Government Data Governance Award, 4) the Quality Organization for Information Disclosure through the Public Sector Information Center Award, 5) the Quality Organization for Digital Personnel Award, and 6) the Chief Innovation Officer (CIO) Prestigious Award.

PART

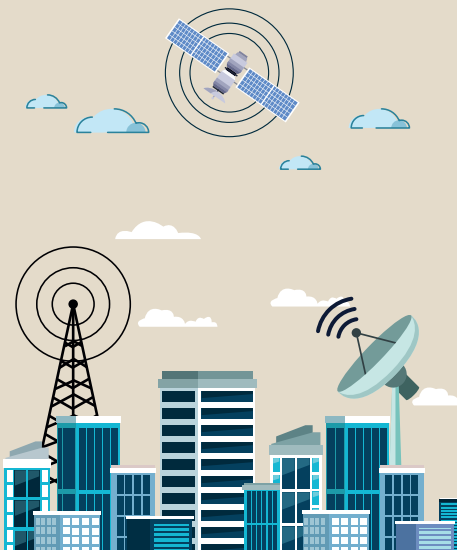
1

General Information

The NBTC and the Office of the NBTC



The Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment by the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 4) B.E. 2564 (2021), published in the Royal Gazette and effective as of March 2, 2021, has improved the recruitment and selection process for appointing the NBTC. The virtue of Section 6 of the Act on the organization (No.2) B.E. 2560 (2017) has been repealed. The newly appointed NBTC board shall consist of 7 commissioners with expertise and experience in the fields of broadcasting, television, telecommunications, consumer protection, and promotion of people's liberty and rights, one of each. The other two commissioners shall be selected from candidates with expertise in other fields that benefit the NBTC duties. The in-charge NBTC commissioners before the Act comes into force shall pursue their duties. In the case of any vacancy, regardless of the reason, the NBTC board shall comprise the remaining commissioners until the appointment of the new board of NBTC.





On December 20, 2021

The 12th Senate meeting (2nd annual ordinary session), passed a resolution approving the appointment of 5 NBTC commissioners from 5 fields of relevant expertise and experience, namely

- 1) Air Marshal Thanapant Raicharoen (broadcasting service aspect),
- 2) Professor Pirongrong Ramasoota (television broadcasting service aspect),
- 3) Clinical Professor Sarana Boonbaichaiyapruk (consumer protection aspect),
- 4) Mr. Torpong Selanon (people's liberty and rights promotion aspect),
- 5) Associate Professor Suphat Suphachalasai (other fields that benefit the NBTC duties (b) economic aspect).

On January 14, 2022

Subsequently, Clinical Professor Sarana Boonbaichaiyapruk was voted to be Chairman of the NBTC by the board members.

On April 14, 2022

The Royal Gazette declared the Office of the Prime Minister's announcement that the appointment of the Chairman of the NBTC and the NBTC commissioners has been royally endorsed, and has come into force from April 13, 2022, as follows:

1. Clinical Professor Sarana Boonbaichaiyapruk
Chairman of the NBTC
2. Air Marshal Thanapant Raicharoen
Commissioner
3. Professor Pirongrong Ramasoota
Commissioner
4. Mr. Torpong Selanon
Commissioner
5. Associate Professor Suphat Suphachalasai
Commissioner



On February 14, 2023

The 24th Senate meeting (2nd annual ordinary session) approved the appointment of Associate Professor Somphob Purivigraipong to the board of NBTC (in the field of telecommunications service aspect).

On October 28, 2022

The Royal Gazette declared the Office of the Prime Minister's announcement that the appointment of the NBTC commissioner (Police General Nathathorn Prousoontorn) has been royally endorsed and has come into force from October 22, 2022, to present.

On August 16, 2022

The 22nd Senate meeting (1st annual ordinary session) approved the appointment of Police General Nathathorn Prousoontorn to the board of NBTC (other fields that benefit the NBTC duties (a) law aspect)

On March 20, 2023

The Royal Gazette declared the Office of the Prime Minister's announcement that the appointment of the NBTC commissioner (Associate Professor Somphob Purivigraipong) has been royally endorsed and has come into force from March 18, 2023, to present.



(Unofficial Translation)

Notification of the Office of the Prime Minister

RE: Appointment of the Chairman and the National Broadcasting and
Telecommunications Commissioners

Pursuant to the Royal Proclamation to appoint the National Broadcasting and Telecommunications Commission, in a total of 11 commissioners, since October 7, 2011, according to the Notification of the Office of the Prime Minister, dated October 7, 2011;

Whereas the Chairman and the National Broadcasting and Telecommunications Commissioners, in a total of 6 commissioners, retired as being seventy years of age, resigned, and was under prohibited qualifications according to the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment by virtue of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 2) B.E. 2560 (2017), and the promulgation of the Act on the Organization to Assign Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 4) B.E. 2564 (2021), effective as of March 2, 2021, amending the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 2) B.E. 2560 (2017) in which relating to acquisition and selection of individuals to be appointed as the National Broadcasting and Telecommunications Commissioners. The on-duty commissioners, prior to this Act, shall maintain their positions, or continue performing duties. In case of the vacancy of office regardless of reasons, the commission shall consist of the remaining commissioners until the appointment of the new board of the National Broadcasting and Telecommunications Commission based on Section 10 of the Act.

By virtue of Section 6 and Section 16 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 4) B.E. 2564 (2021), the 12th Senate meeting (2nd annual ordinary session) on December 20, 2021, passed a resolution approving the list of 5 candidates for the National Broadcasting and Telecommunications Commission, namely 1) Air Marshal Thanapant Raicharoen (broadcasting service aspect), 2) Professor Pirongrong Ramasoota (television broadcasting service aspect), 3) Clinical Professor Sarana Boonbaichaiyapruk (consumer protection aspect), 4) Mr. Torpong Selanon (people's liberty

and rights promotion aspect), and 5) Associate Professor Suphat Suphachalasai (other fields that benefit the NBTC duties (b) economic aspect). The Secretariat of the Senate invited those 5 candidates, approved by the Senate, to the meeting on January 14, 2022, to nominate one of the candidates to be a Chairman of the National Broadcasting and Telecommunications Commission. Consequently, Clinical Professor Sarana Boonbaichaiyapruk was voted as the Chairman of the National Broadcasting and Telecommunications Commission. The President of the Senate requested the proposal of the list to the King for Royal Command for appointing the Chairman and the National Broadcasting and Telecommunications Commissioners, in a total of 5 persons, as follows:

- | | |
|--|--|
| 1. Clinical Professor Sarana Boonbaichaiyapruk | Chairman |
| 2. Air Marshal Thanapant Raicharoen | Commissioner
(Broadcasting service aspect) |
| 3. Professor Pirongrong Ramasoota | Commissioner
(Television broadcasting
service aspect) |
| 4. Mr. Torpong Selanon | Commissioner
(People's liberty and rights
promotion aspect) |
| 5. Associate Professor Suphat Suphachalasai | Commissioner
(Other fields that benefit the NBTC
duties (b) economic aspect) |

And the Secretariat of the Cabinet proposed the list to the King for Royal Command for the appointment.

In this regard, the King is graciously pleased to appoint the Chairman and the National Broadcasting and Telecommunications Commissioners as proposed.

This notification shall come into effect as from April 13, 2022 onwards.

Issued on April 13, 2022.

Countersigned by
General Prayut Chan-o-cha
Prime Minister

(Unofficial Translation)

Notification of the Office of the Prime Minister

RE: Appointment of the National Broadcasting and Telecommunications Commissioners

Whereas the Royal Proclamation to appoint the Chairman and the National Broadcasting and Telecommunications Commissioners, in a total of 5 persons, since April 13, 2022, according to the Notification of the Office of the Prime Minister dated April 13, 2022, two commissioner positions are still vacant. By virtue of Section 6 and Section 16 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 4) B.E. 2564 (2021), the 22nd Senate meeting (1st annual ordinary session) on August 16, 2022, passed a resolution approving the appointment of Police General Nathathorn Prousoontorn as the National Broadcasting and Telecommunications Commissioner (other fields that benefit the NBTC duties (a) law aspect). The President of the Senate requested the proposal to the King for Royal Command for the appointment, and the Secretariat of the Cabinet proposed to the King for Royal Command for the appointment.

In this regard, the King is graciously pleased to appoint the person to be the National Broadcasting and Telecommunications Commissioner as from October 22, 2022.

Issued on October 28, 2022.

Countersigned by
General Prayut Chan-o-cha
Prime Minister

(Unofficial Translation)

Notification of the Office of the Prime Minister

RE: Appointment of the National Broadcasting and Telecommunications Commissioners

Whereas the Royal Proclamation to appoint the Chairman and the National Broadcasting and Telecommunications Commissioners, in a total of 5 persons, since April 13, 2022, according to the Notification of the Office of the Prime Minister dated April 13, 2022, and the Royal Proclamation to appoint the National Broadcasting and Telecommunications Commissioner additionally 1 person, since October 22, 2022, according to the Notification of the Office of the Prime Minister dated October 28, 2022, one commissioner position is still vacant. By virtue of Section 6 and Section 16 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No. 4) B.E. 2564 (2021), the 24th Senate meeting (2nd annual ordinary session) on February 14, 2023, passed a resolution approving the appointment of Associate Professor Somphob Purivigraipong as the National Broadcasting and Telecommunications Commissioner (in the field of telecommunications service aspect). The President of the Senate requested the proposal to the King for Royal Command for the appointment, and the Secretariat of the Cabinet proposed to the King for Royal Command for the appointment.

In this regard, the King is graciously pleased to appoint the person to be the National Broadcasting and Telecommunications Commissioner as from March 18, 2023.

Issued on March 19, 2023.

Countersigned by
General Prayut Chan-o-cha
Prime Minister



Authorities and Duties of the NBTC

According to Section 27 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment, the NBTC shall have the authorities and duties as follows:

1. To formulate Spectrum Management Master Plan, Table of National Frequency Allocation, Broadcasting Master Plan, Telecommunications Master Plan, Radio Frequency Plan, Satellite Orbital Rights Management Plan, and Telecommunications Numbering Plan, and proceed according to the plans, which shall align with the National Digital Economy and Society Development Plan and Policy.

2. To assign radio frequencies for the undertaking of broadcasting, television, radiocommunications, and telecommunications services.

3. To define characteristics and categories of broadcasting, television, and telecommunications services.

4. To license and regulate the use of frequencies and radiocommunications equipment in the undertaking of broadcasting, television, and telecommunications services, or radiocommunications service, and prescribe licensing criteria and procedures, conditions, or licensing fees. In this regard, the NBTC may assign the Office of the NBTC to grant licenses on behalf of the NBTC only for the radiocommunications equipment licensing, according to the criteria and conditions specified by the NBTC.

5. To prescribe criteria on the radio frequency usage for efficiency, without causing interference to the same type of business and other types of business.

6. To license and regulate the operation of broadcasting, television, and telecommunications services to ensure the service provision with quality, efficiency, timeliness, reliability, and fairness to consumers, and prescribe related licensing criteria and procedures, conditions, or licensing fees.

7. To license and regulate the use of telecommunications numbers, and prescribe related licensing criteria and procedures, conditions, or licensing fees.

8. To prescribe criteria and procedures for network access and interconnection, and for determining network access or interconnection charges to be applied to undertaking broadcasting, television, and telecommunications services, for the same type of business and other types of business, to ensure fairness to consumers, service providers, and investors, or between the telecommunications service providers with due regard to public interest.

9. To set the tariff and service fee structures for broadcasting, television, and telecommunications services to ensure fairness to consumers and service providers, with due regard to public interest.

10. To set standards and technical specifications for broadcasting, television, telecommunications, and radiocommunications services.

11. To prescribe measures to prevent monopoly, anti-competitive conduct or unfair competition in broadcasting, television, and telecommunications services.

12. To prescribe measures for a comprehensive and equal telecommunications service provision, in accordance with Section 50.

(12/1) To refarm unused or unworthily used frequencies, or reuse efficiently, as specified in the plan, which shall be determined in accordance with (1) from the licensees to reallocate in accordance with the criteria, procedures and conditions prescribed by the NBTC. However, such conditions must define the method of compensation, restitution or remuneration for those whose frequencies have been refarmed by taking their rights into account in each case.

13. To protect rights and liberty of the people from being exploited by the operators, and protect individual rights of privacy and freedom to communicate by means of telecommunications,

as well as promoting rights, freedom, and equality of the public in accessing and utilizing frequencies in the broadcasting, television, and telecommunications services.

14. To act as a governmental administrative agency with the authority in international communication management with the International Telecommunication Union, or with other international organizations, governments and overseas organizations, under the NBTC duties and authorities or as assigned by the government, as well as supporting the public affairs, in order to obtain satellites or the rights to access satellite orbits, and to coordinate work regarding domestic and international spectrum management, in accordance with the plans aligned with (1) and the National Digital Economy and Society Development Plan and Policy.

(14/1) To obtain and maintain the rights to access the satellite orbit, which is a national treasure, and exercise the rights to maximize benefits for the nation and the people. In case where maintaining such rights creates excessive burden on the state beyond benefit gains, the NBTC may waive the rights as stipulated in the satellite orbital rights management plan, and report to the Cabinet as well as declaring detailed reasons to the public. In exercising the satellite orbital rights, the NBTC has the authority to prescribe criteria, procedures, licensing conditions, licensing application fees, and licensing application fee exemption, including related operating expenses that the license applicants or the licensees shall bear. The license fee after deducting the license cost shall be remitted as state revenue.

(14/2) To license and regulate the business operation under this Act by using foreign satellite transponders and prescribing licensing criteria, procedures, conditions and fees.

15. To determine and resolve frequency interference issues.

16. To monitor and provide consultation about undertaking of broadcasting, television, and telecommunications services.

17. To set forth regulation on merger and acquisition, cross-ownership holding, or broadcasting and frequency-used television market dominance

among mass media, or by any other person, resulting in impeding the liberty of the public in perceiving information, or obstructing public access to a diversity of information.

18. To promote the incorporation of licensees, broadcasters, and mass media professionals in broadcasting and television businesses in forms of organizations to set forth ethical standards and self-regulation under the ethical standards.

19. To issue regulations or notifications with respect to general administration, human resource management, budgeting, finance and property, and other related operations of the Office of the NBTC according to Section 58.

20. To approve the expenditure budget of the Office of the NBTC, including financial allocation to the Broadcasting and Telecommunications Research and Development Fund for the Public Interest according to Section 52.

21. To consider and approve financial allocation of the fund as proposed by the Fund Management Committee according to Section 55.

22. To provide information and participate in negotiations or making agreements between the Kingdom of Thailand and foreign governments, or international organizations, in matters related to spectrum management, broadcasting, television, telecommunications, or other related services.

(22/1) To provide information related to the operations of the NBTC and the authorized operators by the NBTC, in the digital-related aspects as requested by the Office of the National Digital Economy and Society Commission for utilizing and analyzing the National Digital Economy and Society Development Plan and Policy.

23. To offer recommendations to the Cabinet for legislation or amendment related to frequency allocation and other issues concerning frequency, broadcasting, television, and telecommunications services.

24. To prescribe regulations, notifications, or orders under the NBTC authorities and duties.

25. To perform any other operations as prescribed in this Act or other related laws.

Authorities and Duties of The Office of the NBTC



In accordance with Section 56 and Section 60 of the Act on the Organization B.E. 2553 (2010) and its amendment, the Office of the National Broadcasting and Telecommunications Commission, or abbreviated as “the Office of the NBTC”, is a juristic person having a status of state agency, under the responsibility of the Chairman of the NBTC, and shall not be subject to government agency under the public administration laws, or state enterprise under the budgetary procedure laws or other laws. The Office of the NBTC shall have a Secretary-General of the NBTC who is responsible for the operation and performance of the Office of the NBTC, and directly reports to the Chairman of the NBTC.

Also, the Secretary-General shall be a chief of officers and employees of the Office of the NBTC. According to Section 57, it prescribes the authorities and duties of the Office of the NBTC as follows:

1. To be responsible for the collection and disbursement of the Office of the NBTC's revenue.
2. To prepare the Office of the NBTC's annual expenditure budget and submit to the NBTC for approval. The annual expenditure budget shall include any expenditures with respect to the operations of the NBTC, the Monitoring and Evaluation Committee, and the Office of the NBTC. Such annual expenditure budget shall be prepared with consideration

of worthiness, cost effectiveness and efficiency. In case that any item or project that has been budget allocated but has not paid or created debt obligations within the fiscal year, the item or project shall be canceled, and the Office of the NBTC shall submit the budget as state revenue.

3. To monitor and follow-up the spectrum usage.

4. To receive and consider complaints regarding the spectrum usage, broadcasting, television, and telecommunications operations to examine and solve the problems, or proposing opinions to the NBTC for consideration in compliance with the relevant NBTC regulations.

5. To study, collect, and analyze data related to spectrum, spectrum use, broadcasting, television, and telecommunications businesses.

6. To be responsible for the administrative work of the NBTC and the Fund Management Committee.

7. To perform other duties as assigned by the NBTC.

Annual Expenditure Budget Preparation

According to Section 57 (2) of the Act on the Organization B.E. 2553 (2010) and its amendment, it prescribes the Office of the NBTC to prepare the annual expenditure budget and propose to the NBTC for approval. The annual expenditure budget includes any expenditures related to operations under the duties of the NBTC, the Monitoring and Evaluation Committee, and the Office of the NBTC. Such annual expenditure budget shall be prepared with consideration of worthiness, cost effectiveness and efficiency. In case any item or project that has been budget allocated but has not paid or created debt obligations within the fiscal year, the item or project shall be canceled, and the Office of the NBTC shall submit the budget as state revenue.

In addition, according to Section 57 (7) of the Act on the Organization B.E. 2553 (2010) and its amendment, it stipulates the annual expenditure budget preparation based on (2) that, prior to the NBTC approval, the Office of the NBTC shall submit the draft annual expenditure budget to the National Digital Economy and Society Commission for consideration. Subsequently, the Office of the NTBC shall consider the draft budget revision or amendment. Nonetheless, the expenditure budget for the Monitoring and Evaluation Committee shall be proposed to the Committee for further revision. In case where the Office of the NBTC or the Monitoring and Evaluation Committee disagree with the comments of the National Digital Economy and Society Commission, the Office of the NBTC shall propose the draft annual expenditure budget together with the comments to the NBTC for consideration. As the NBTC approves the Office of the NBTC's annual expenditure budget, the Office of the NBTC shall disclose the annual expenditure budget, along with the items or projects approved, to the public through information network systems or other means as it deemed convenient to access.

The Monitoring and Evaluation Committee shall propose the expenditure budget for the remuneration and other expenses, based on Section 71 paragraph seven, to the Office of the NBTC to address the committee's budget allocation in the draft annual expenditure budget. In this regard, the Office of the NBTC may provide opinions on the budget allocation in the annual expenditure budget proposal. Accordingly, the Office of the NBTC shall propose the draft annual expenditure budget to the National Digital Economy and Society Commission not less than ninety days prior to the beginning of the fiscal year, and the



National Digital Economy and Society Commission shall complete the consideration and opinion process not less than thirty days prior to the beginning of the fiscal year. After receiving the comment or upon the expiration of such a period, the Office of the NBTC shall propose the draft annual expenditure budget to the NBTC for further proceedings.

Revenues of the Office of the NBTC

According to Section 65 of the Act on the Organization B.E. 2553 (2010) and its amendment, it prescribes that the Office of the NBTC revenues shall include licensing application fees and licensing fees for spectrum use regarding to Section 44/2 paragraph one, licensing application fees and business licensing fees regarding to Section 45 paragraph one, and license transfer fees regarding to Section 44/3. In addition, the revenues shall include income or benefits accrued from the performance under duties of the NBTC and the Office of the NBTC, income derived from the Office of the NBTC's properties, money, and donated assets, in accordance with the regulation set forth by the NBTC for the operations of the Office of the NBTC, and subsidies from the government. After deducted by the operation costs of the Office of the NBTC, necessary burden costs, and financial allocation to the Fund under Section 52, the EdTech Fund under the national education law, and the Digital Economy and Society Development Fund under the law on the digital economy and society development, the remaining revenues shall be remitted as public revenue. In the case where the Office of the NBTC revenue is not sufficient for effective operations of the Office of the NBTC, and necessary burden costs, while no other revenue sources are available, the government shall allocate the national budget to the Office of the NBTC, as necessary.

The Broadcasting and Telecommunications Research and Development Fund for Public Interest

According to Section 52 of the Act on the Organization B.E. 2553 (2010) and its amendment, the Broadcasting and Telecommunications Research and Development Fund for Public Interest (BTFP) has been established to fulfill the objectives as follows:

1. To ensure the public comprehensive and universal access to broadcasting and telecommunications services, and empower the communities and community service providers as per Section 51.

2. To promote and support communication resources utilization, research and development regarding broadcasting, television, and telecommunications sectors, including digital literacy on spectrum use, information technology, facilities for people with disabilities, the elderly and the underprivileged, as well as telecommunications and related industries.

3. To empower workforce in broadcasting, television, telecommunications sectors, and information technology industries, as well as the organizational operations regarding setting up occupational ethical standards or legal profession standards according to broadcasting and television business-related laws.

4. To support, promote and ensure consumer protection in relation to broadcasting, television, and telecommunications services.

5. To support implementation under the law on Thai Media Fund through appropriate budget allocation.

6. To support spectrum utilization for maximum effectiveness, and spectrum refarming for reallocation, as well as supporting compensation, restitution, and

remuneration for spectrum refarming for optimum efficiency in spectrum utilization.

According to Section 54, the Fund Management Committee shall consist of the Chairman of the NBTC, as the Chairman of the Committee, Permanent Secretary of the Prime Minister's Office, Permanent Secretary for Defence, Secretary-General of the National Economics and Social Development Board, Director of Budget Bureau, Director General of the Comptroller General's Department, and

Director of the National Electronics and Computer Technology Center, including other two qualified experts to be the committees.

According to Section 55, the Fund Management Committee shall have the authorities and duties in managing the fund, providing recommendations on the allocation of fund usage according to Section 52 to the NBTC, in order to obtain approval. In case where the NBTC has opposing opinions, the rationale must be stated for further consideration.



Vision, Mission, and Core Values

Mission

The Office of the NBTC functions to support the NBTC in managing spectrum, satellite orbital rights, and regulating broadcasting, television, telecommunications, satellite, and radiocommunications business operations, with efficiency to maximize benefits for the nation and its citizens. These missions are based on legal mandates, including the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment, and other related laws.

Vision

To be a leading global regulatory body, fostering sustainable development in communication business for the utmost benefit of the people and the nation

Core Values



N

Navigating to International



B

Building Innovation



T

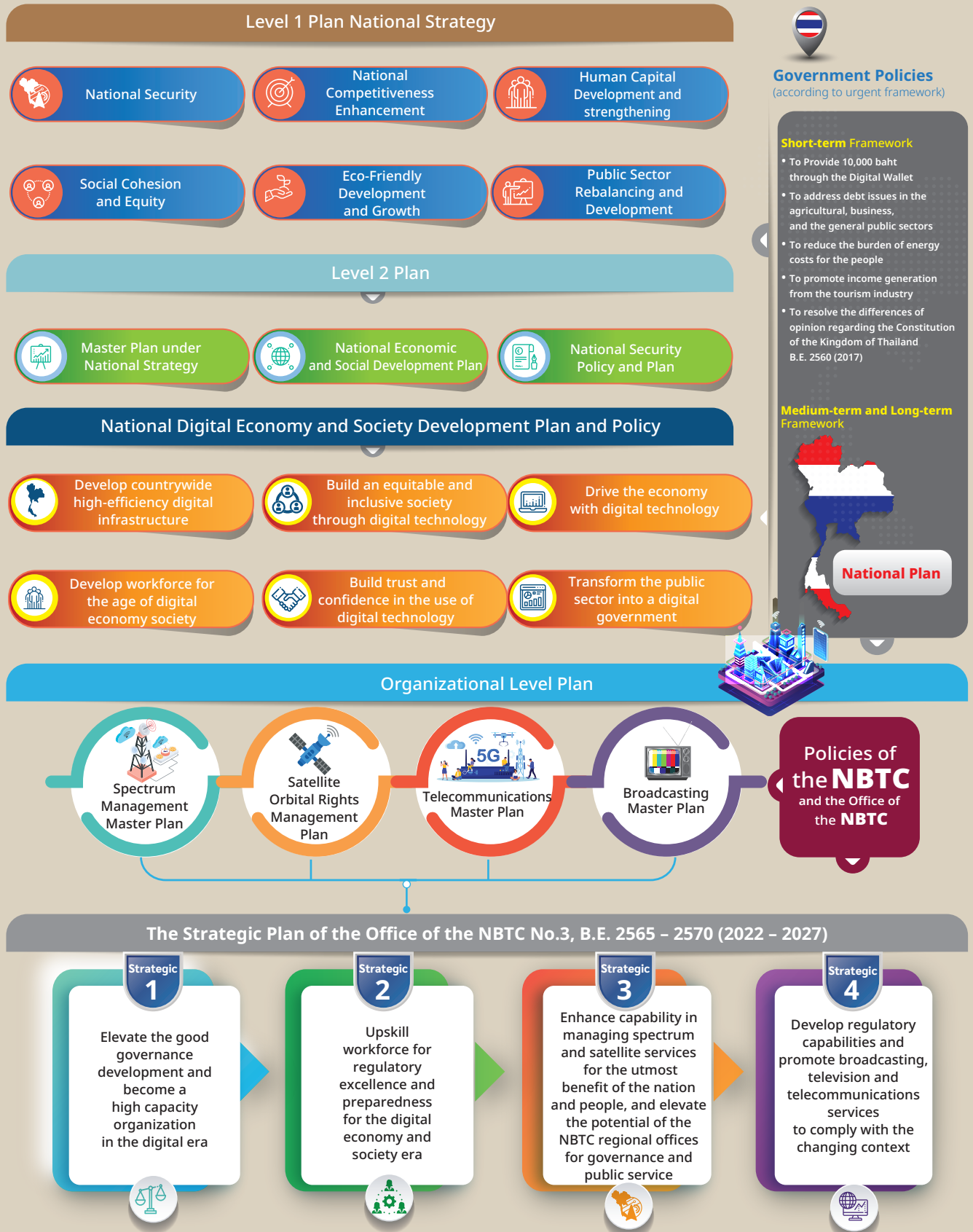
Teamwork and Transparency



G

Consistent Professionalism

Strategic Issues of the Office of the NBTC and the Causal Relationship with Government Policies, National Strategy, and National Plan





The High - Level Executives of the Office of the NBTC



Mr. Trairat Viriyasirikul

Deputy Secretary-General
Acting Secretary-General
(July 1, 2020 – present)



Mr. Trairat Viriyasirikul

Deputy Secretary-General
of Strategic and Internal Affairs Cluster



Asst. Prof. Phoomsisth Mahavessiri

Deputy Secretary-General
of Broadcasting Cluster



Mr. Sutisak Tantayotin

Deputy Secretary-General
of Telecommunications Cluster



Mr. Sombat Leelapata

Acting Deputy Secretary-General
of Regional Affairs Cluster



Mr. Keerati Apaphant

Acting Deputy Secretary-General
of Academic Affairs Cluster



Mr. Chanthaphat Khamkhokgruad
Principal Expert



Mr. Saneh Saiwong
Principal Expert



Mr. Sombat Leelapata
Principal Expert



Mr. Keerati Apaphant
Principal Expert



Mr. Chalermchai Kokkeadtikul
Assistant Secretary-General,
Administration Cluster



Ms. Maneerat Kamjornkitjakarn
Assistant Secretary-General,
Broadcasting Cluster



Mrs. Yupha Sapying
Acting Assistant Secretary-General,
Strategic and Internal Affairs
Cluster



Mr. Pichai Suwanakijboriharn
Assistant Secretary-General,
Regional Affairs Cluster



Ms. Pulsiri Ninkitsaranont
Acting Assistant Secretary-General,
Telecommunications Cluster



Ms. Orada Teppayayon
Acting Assistant Secretary-General,
Administration Cluster

Organization Structure and Workforce of the Office of the NBTC

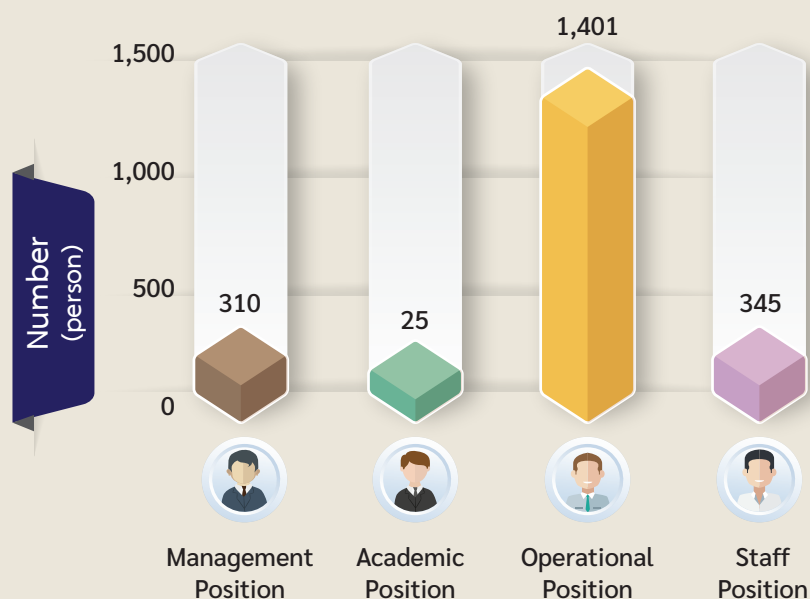
The NBTC is a constitutional independent state agency with obligations to allocate spectrum and regulate broadcasting, television, and telecommunications businesses, having the Office of the NBTC to support operations as assigned by the NBTC as required by laws. The NBTC is committed to good governance principles, transparency, and accountability. The laws and regulations related to spectrum allocation and regulation have been continually revised and updated to be appropriate for the changing industry landscape, and in compliance with the governmental agency practices to ensure efficient operations. However, for the purpose of discretion and transparency, the NBTC and the Office of the NBTC performance monitoring and evaluation processes have been set up to ensure accountability and transparency of the NBTC and the Office of the NBTC operations, both from external and internal agencies, including the Monitoring and Evaluation Committee, established by Section 70 of the Act on the Organization B.E. 2553 (2010) and its amendment, and by the Senate approval, accountable for monitoring and evaluation performance and management of the NBTC, the Office of the NBTC, and the Secretary-General of the NBTC, and shall inform the assessment results to the

NBTC within ninety days from the end of fiscal year. In addition, the Internal Audit Committee, established by Section 68 paragraph two of the Act on the Organization B.E. 2553 (2010) and its amendment, is independent in its operations without the intervention of the NBTC, the Office of the NBTC, and any other agencies. The Internal Audit Committee shall propose the audit report to the NBTC every one hundred and eighty days, to ensure the effective and efficient audit in finance, accounting, supply, and management of the Office of the NBTC, as well as improving work quality, and enhancing the effectiveness of the risk management process, and orderly controlling and regulation, which deemed as a significant mechanism in regulating, monitoring and balancing the operations under the authorities and duties with integrity and morality without prejudices, aiming to conform with the intendment of the Constitution of the Kingdom of Thailand.

In 2023, the organizational structure of the Office of the NBTC consists of 6 clusters, 47 bureaus, 4 regional offices of the NBTC, 1 institute, and 1 center. As of December 31, 2023, the total workforce of the Office of the NBTC comprises 2,081 employees. Details are as shown in Chart 1.



Chart 1 : Workforce of the Office of the NBTC for the year 2023



Management Position

- Deputy Secretary-General 1 Person
- Acting Secretary-General 2 Persons
- Deputy Secretary-General 3 Persons
- Assistant Secretary-General 40 Persons
- Executive Director 264 Persons
- Division Director

Operational Position

- Senior Officer 600 Persons
- Middle-level Officer 378 Persons
- Junior Officer 423 Persons

Academic Position

- Principal Expert 5 Persons
- Senior Expert 12 Persons
- Expert 8 Persons

Staff Position

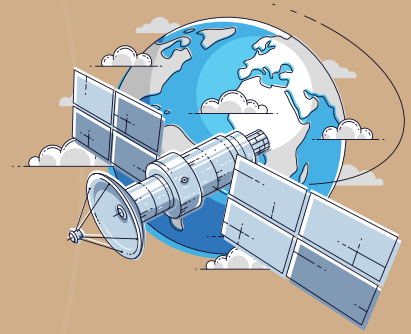
- Staff 118 Persons
- Contract Staff 227 Persons

Remark : Data as of December 31, 2023

Source : Human Resources Management Bureau, Office of the NBTC

Organization Structure

of the Office of the National Broadcasting and Telecommunications Commission



Organization Structure of the Office of the NBTC consists of 5 Deputy Secretary-Generals, 6 Assistant Secretary-Generals, 47 Bureaus, 4 Regional Offices of the NBTC, 1 Institute, and 1 Center (Data as of December 31, 2023)



PART

2

Key Performance of the NBTC in 2023

Spectrum Management

Spectrum is considered a national communication resource, mandated by law for the public benefit, utilized for education, culture, and state security. Hence, it is a crucial mission for the NBTC and the Office of the NBTC to manage the spectrum for the maximum benefit of the nation and people, by establishing policies, spectrum management master plan, and relevant Notifications, as well as studying practices and appropriateness in managing the spectrum to suit the context. In addition, monitoring the implementation of the radio frequency plan and improving spectrum usage, along with coordinating spectrum management both domestically and internationally to address interference issues have been carried out. The performance achievements in 2023 are as follows:

1. Prescribing Spectrum Management Policies.

1.1 Preparing the draft Notification of the NBTC on the Spectrum Management Master Plan B.E. 2562 (2019) (the Revised Edition B.E. ...)

The Office of the NBTC has prepared for the amendment of the Spectrum Management Master Plan B.E. 2562 (2019), and preliminarily presented the issues for the revision of the plan to the NBTC to seek feedback, suggestions, and policies for plan enhancement, as well as organizing a meeting with relevant agencies on October 10, 2023, and a focus group meeting with telecommunications operators, manufacturers, and vendors, on October 27, 2023. The Office of the NBTC presented the revision outcomes of the draft Spectrum Management Master Plan B.E. 2562 (2019) (the Revised Edition B.E. ...) to the 4th/2023 Meeting of the Subcommittee on Spectrum and Technical Standards, on November 6, 2023. The resolutions of the Subcommittee are as follows:

- Managing frequency resources adequately and promptly to meet current demands, and align with international standards, by introducing plans and timelines for utilizing spectrum for Private Network purposes, and reviewing the frequency usage demands for the digital television broadcasting businesses.

- Efficiently managing spectrum to ensure cost-effectiveness and widespread benefits, by supporting the digital economy development to facilitate high-speed mobile communication, with a total bandwidth of 1300 MHz from all spectrum ranges, to be able to access maximum speed of 100/50 Mbps through mobile networks, as well as reviewing regulations regarding spectrum usage to accommodate new specialized technologies (drone controlling via Satellite, ESIM, and NTN), etc.

- Enhancing capacity in spectrum management by reviewing the spectrum allocation process and related licenses for efficient improvements.

- Updating the outlines of Appendix A, involving details of the spectrum designated for broadcasting, television, telecommunication, and other businesses, and Appendix B, involving guidelines for refarming spectrum, returning spectrum for reallocation, and guidelines for improving spectrum usage (2024 – 2025), as well as reviewing Thailand footnotes in the National Table of Frequency Allocation.

For the next steps, the Office of the NBTC shall proceed to develop the operational plan of the Office of the NBTC, under the framework of the Spectrum Management Master Plan (the Revised Edition B.E. ...), and incorporate the outcomes of the World Radiocommunication Conference 2023 (WRC-23), to refine the National Table of Frequency Allocation, prior to proposing to the NBTC for approval. Additionally, the plan will be announced to the public to gather feedback, and will be published in the Royal Gazette afterwards in the third quarter of 2024.

1.2 Developing regulations and studying practices and appropriateness in managing the spectrum to suit the context as follows:

1.2.1 Developing the criteria of authorization to use frequency 5.925 – 6.425 GHz for general use.

According to the 8th/2023 NBTC meeting on April 5, 2023, the NBTC has approved the Notification of the NBTC on Criteria of authorization to use frequency 5.925 – 6.425 GHz, to support the new technology adoption in the 5.925 – 6.425 GHz in Thailand, to ensure cost-effectiveness, efficiency, and compliance with international regulation. As from the Notification published in the Royal Gazette, Volume 140, Special Part 100 Ngor, on April 28, 2023, the frequency ranges are open for public use including the business and industry sectors, without the requirements for the spectrum licensing process and related radio-communications permission, such as the utilization of Wi-Fi 6E or Wi-Fi 7, etc.

1.2.2 Studying guidelines and appropriateness in setting timeframe for allocating the 450 – 470 MHz spectrum for international mobile telecommunications (IMT).

According to the 18th/2023 NBTC meeting on September 12, 2023, the NBTC approved the spectrum use policies for the 450 – 470 MHz as follows:

- Retain the policy to allocate the 450 – 470 MHz spectrum for IMT in the Spectrum Management Master Plan, without specifying timeline for spectrum usage updates.
- Not allow new applicants to use the 450 – 470 MHz spectrum for purposes other than IMT.
- Suggest to the existing licensees of the 450 – 470 MHz, who currently use the spectrum for purposes other than IMT and seek to renew their licenses, to use other spectrum bands based on the NBTC radio frequency plan.
- Continue to grant temporary permission for the existing licensees of the 450 – 470 MHz spectrum who currently use the spectrum for purposes other than IMT.
- Study the appropriate timeline for reviewing the use of the 450 – 470 MHz spectrum for IMT over again for the next spectrum management master plan preparation.

1.2.3 Studying guidelines and feasibility for using the 3300 – 3400 MHz spectrum for international mobile telecommunications (IMT).

According to the 5th/2023 NBTC meeting on February 22, 2023, the NBTC approved the guidelines for revising the spectrum usage in the 3300 – 3400 MHz by prescribing the use in conjunction with IMT, as follows:

- Specify the spectrum usage in this range for IMT, by suggesting a mid-term policy (3 – 5 years) preparation for allocating this spectrum range alongside with the 3400 – 3700 MHz.
- Revise the Notification of the NBTC regarding the spectrum management master plan and the national table of frequency allocation in the relevant issues, and develop a radio frequency plan for IMT.
- Suggest a revision in the Radio Regulations by including Thailand in the International footnote regarding the spectrum usage in the 3300 – 3400 MHz for IMT in the WRC-23.
- Coordinate with neighboring countries to prepare for interference prevention along borders.

1.2.4 Developing guidelines for spectrum usage, and preparing the draft Notification regarding the 28 GHz spectrum.

The Office of the NBTC has developed the guidelines for spectrum usage, and prepared the draft notification regarding the 28 GHz spectrum, to propose to the 4th/2023 meeting of the Subcommittee on Spectrum and Technical Standards, on November 6, 2023. The meeting passed a resolution to acknowledge the progress on the 28 GHz spectrum usage, and approved the draft guidelines for fixed-satellite services in the 27 – 27.5 GHz, as follows: 1) Specify the IMT and fixed-satellite services (FSS) to be the co-primary services 2) Ground-based stations for fixed-satellite services must be the gateway stations for Geostationary Satellite Orbit (GSO) and Non-Geostationary Satellite Orbit (NGSO) 3) In cases where spectrum bands are not allocated for IMT, permitting the use of spectrum and establishing ground-based stations for fixed-satellite services requires coordination of spectrum usage with other adjacent band licensees 4) In cases where spectrum bands are allocated for IMT, the NBTC shall consider the setting of additional licensing conditions, and present to the NBTC meeting for further consideration.



1.3 Studying the guidelines for developing policies regarding 5G technology deployment for Private 5G Network.

The NBTC recognizes the importance of opportunities offering for organizations to have options for 5G technology using in specific businesses and industrial sectors, and spectrum infrastructure provision to facilitate innovation and use cases. Thus, the NBTC has initiated a study on guidelines for developing policies regarding 5G technology deployment for Private 5G Network, to prepare for developing the 5G technology for Private Network policies. The study results indicate that possible business models for using Private 5G Network can be divided into 2 types: 1) “Buy Model”: organizations use Private 5G Network services and spectrum provided by operators, and 2) “Build Model”: organizations build, own, and utilize their Private 5G Networks. Regarding developing policies or regulations on Private 5G Network, it can be possibly defined into many cases, such as nationwide auction, local area auction, and unlicensed spectrum permission. However, the appropriate policy framework still requires further study to align with actual usage. Nonetheless, the NBTC has surveyed domestic stakeholders’ insights, concluding that organizations have demand for Private 5G Network usage, but are uncertain about the specific formats and details of implementation. The NBTC, therefore, is currently evaluating the study results related to both domestic and international contexts, gathering feedback from domestic stakeholders. Subsequently, the NBTC shall formulate policies regarding the use of Private 5G Network to ensure smooth implementation for interested parties.

2. Monitoring Radio Frequency Plan Implementation and Reviewing the Spectrum Usage.

2.1 Preparing the termination of the L-band (1427 – 1518 MHz) spectrum usage to accommodate the International Mobile Telecommunications (IMT).

According to the Notification of the NBTC on Spectrum Management Master Plan B.E. 2562 (2019) and its amendment, it stipulates that the operations regarding the 1427 – 1518 MHz or the L-band to accommodate the IMT must be completed within 2023. Also, the T-P6 Thailand footnote set a timeframe to develop relevant criteria for using the spectrum for IMT to be completed by 2025. The NBTC, in the 5th/2023 meeting on February

22, 2023, resolved to approve the guidelines for terminating the use of spectrum in the 1427 – 1518 MHz, as follows: 1) Existing license holders of spectrum use in the 1427 – 1518 MHz must terminate their spectrum usage in such spectrum range upon the license expiration. No technology upgrades are permitted, and there is no entitlement to compensation for such spectrum usage termination. 2) No spectrum reallocation in the 1427 – 1518 MHz until the NBTC finalizes the licensing criteria and the radio frequency plan for IMT.

2.2 Revising spectrum usage in the 50 – 54 MHz band.

The Office of the NBTC has developed the licensing procedures for using spectrum in the 50 – 54 MHz band for amateur radio operations, and convened policy-level discussions between high-level executives from the Directorate of Joint Communications Royal Thai Armed Forces Headquarters, the Signal Department Royal Thai Army, and the Naval Communications and Information Technology Department, on December 1, 2022, and April 20, 2023. At the meetings, the Office of the NBTC was requested to seek feedback from the Radio Amateur Society of Thailand under the Royal Patronage of His Majesty the King, to enhance licensing guidelines, and invite them to participate in the next meeting for further discussions. Thus, the Office of the NBTC organized the meeting with the Radio Amateur Society of Thailand under the Royal Patronage of His Majesty the King on June 30, 2023 to discuss and to request feedback and recommendations on the licensing guidelines and the revision of the 50 – 54 MHz spectrum usage, as well as inviting the Radio Amateur Society of Thailand under the Royal Patronage of His Majesty the King to participate the policy-level meeting on August 4, 2023. Since consensus could not be reached at the meeting, the meeting approved to conduct the field trial of the 50 – 54 MHz collaboratively between the Office of the NBTC, the Directorate of Joint Communications Royal Thai Armed Forces Headquarters, the Signal Department Royal Thai Army, the Naval Communications and Information Technology Department, and the Radio Amateur Society of Thailand under the Royal Patronage of His Majesty the King. Subsequently, the Office of the NBTC drafted a Terms of Reference (TOR) for the spectrum usage trial in the 50 – 54 MHz, and organized the discussions with the Directorate of Joint Communications Royal Thai Armed Forces Headquarters, the Signal



Department Royal Thai Army, the Naval Communications and Information Technology Department, the Radio Amateur Society of Thailand under the Royal Patronage of His Majesty the King, on October 27, 2023, to seek feedback on the draft TOR. Initially, the draft TOR was presented to the Subcommittee on Spectrum and Technical Standards in the 4th/2023 subcommittee meeting, on November 6, 2023. The meeting acknowledged the progress of the spectrum usage revision in the 50 – 54 MHz band, and assigned the Office of the NBTC to incorporate the note of the observations made during the meeting into refining the draft TOR.

2.3 Developing the draft Notification of the NBTC regarding the Radio Quiet Zone for Radio Astronomy Service.

The Office of the NBTC has developed the draft Notification of the NBTC regarding the Radio Quiet Zone for radio astronomy service, and convened discussions with the National Astronomical Research Institute of Thailand (public organization) on April 19, 2023, to exchange information regarding preventive measures against interference, information regarding establishing radio communication stations near the facilities of the National Astronomical Research Institute of Thailand (public organization), and case studies on guidelines for Radio Quiet Zone in foreign countries, as well as inquiring for work status, technical information of radio communication stations in radio astronomy service. Currently, it is in the process of consideration of appropriateness for revising the draft Notification to include Earth exploration-satellite service (EESS).

2.4 Developing the draft Notification of the NBTC on FM Radio Broadcasting Frequency Plan.

As the licensing period of the Low Power FM broadcasting stations, according to the Notification of the NBTC on Low Power FM Broadcasting Frequency Plan, starts from the date of approval by the NBTC to December 31, 2024, and the experimental broadcast stations, according to the Notification of the NBTC on FM experimental broadcasting, are eligible to experimental broadcast until December 31, 2024, the Office of the NBTC has developed the draft Notification of the NBTC on FM Radio Broadcasting Frequency Plan, specifying the framework for FM radio broadcasting stations with the revised conditions of frequency usage, and the type of FM radio broadcasting stations. Newly licensed FM radio broadcasting stations must provide acceptable reception quality, and must not

cause interference, including interference with other authorized FM radio broadcasting stations. The utmost benefit of people and the public interest should be taken into consideration, aligning with the guidelines for developing the FM radio broadcasting frequency plan, according to the focus group meeting feedback on the guidelines for developing frequency plan and permission guidelines related to FM radio broadcasting services in 4 regions. This aims to support the transition to the licensing system as governed by the laws regarding spectrum licensing and broadcasting business operations after the termination of license or trial period of the Low Power FM broadcasting stations, to suit the spectrum usage practices of Thailand, and to maximize the benefit for the public.

3. Coordinating Frequency Management Both Domestically and Internationally.

3.1 Coordinating frequency management along border.

3.1.1 Notification of registration of frequency along the Thai border and neighboring countries. Thailand has informed the notification of registration of frequency to Malaysia for 557 items, to Cambodia for 852 items, and Lao People's Democratic Republic (Lao PDR) for 3,212 items. In addition, Thailand received the registration of frequency from Malaysia for 367 items.

3.1.2 Coordinating frequency management along borders as follows:

1) The 36th Meeting of the Joint Technical Committee on Coordination and Assignment of Frequencies along Thailand – Malaysia Common Border (JTC-36), during May 16 – 18, 2023, was hosted by the Office of the NBTC. According to the meeting outcome, Thailand and Malaysia reached mutual consent regarding the exemption of low power FM stations to the Minimum Frequency Separation Practices, and ceased the issue. Furthermore, Thailand has settled the discussion on frequency use and parameter configuration for the 26/28 GHz as Thailand and Malaysia have no plan to use the 26/28 GHz along the common border. However, if both countries have plans for future frequency usage, this issue may be raised for future discussion. Regarding the use of the 2600 MHz, both countries need to negotiate to reach additional agreements, aligning some aspects of the issue preliminarily. Furthermore, the meeting approved convening the Special Task Force (STF) meeting to seek further agreement.



2) The 12th Meeting of the Joint Technical Committee on Coordination and Assignment of Frequencies along Lao PDR – Thailand Common Border (JTC-12), during September 26 – 28, 2023, at Champasak province of Lao PDR, was hosted by Lao PDR. According to the meeting outcome, Thailand reached an agreement in parameter configuration for frequency use in various bands between the two countries, especially the experimental frequency usage of the 2600 MHz agreement. If the test results prove successful, it could lead to addressing interference issues and cross-border signals along Thailand – Lao PDR common border, and would also enable mobile phone service providers from both countries to efficiently utilize frequencies.



The 12th Meeting of the Joint Technical Committee on Coordination and Assignment of Frequencies along Lao PDR – Thailand Common Border

3) The 5th Meeting of the Joint Technical Committee on Coordination and Assignment of Frequencies along Myanmar – Thailand Common Border (JTC-5), during October 18 – 20, 2023 via teleconference, was hosted by the regulator of Myanmar. According to the meeting outcome, Thailand reached the agreement in initiating the Frequency Notification process, and ceased the interference issues in the 850 MHz band for the interference from non-cellular network origins. However, the interference issues, the 900 MHz in particular, are sensitive, requiring both parties to conduct joint on-site inspections to address the cross-border frequency. If both countries reach the interference resolving practices, it could lead to addressing interference issues and cross-border signals along Thailand – Myanmar, and would also enable mobile phone service providers from both countries to efficiently utilize frequencies.



The 5th Meeting of Joint Technical Committee on Coordination and Assignment of Frequencies along Myanmar – Thailand Common Border

3.2 Coordinating with the International Telecommunication Union (ITU) regarding Notifications of International Frequency Usage.

In 2023, as a governmental administrative agency with the authority in international communication management with the International Telecommunication Union (ITU), the Office of the NBTC has coordinated with the ITU regarding notifications of Thailand's frequency usage, as follows:

1) Notification of registration of frequency usage for high-frequency broadcasting of the International Broadcasting Bureau (IBB) for 66 stations, by submitting the High Frequency Broadcasting Schedule for A23 T1 through the ITU's system to the Radiocommunication Bureau, the International Telecommunication Union.

2) Notification of registration of frequency usage for high frequency broadcasting of the International Broadcasting Bureau (IBB) for 66 stations, by submitting the High Frequency Broadcasting Schedule for A23 S1 through the ITU's system to the Radiocommunication Bureau, the International Telecommunication Union.

3) Notification of confirmation of frequency usage for AM radio broadcasting stations, adhering to the conditions set by the International Telecommunication Union. The Master International Frequency Register (MIFR) details of such AM radio broadcasting stations were published in the BR International Frequency Information Circular (BR IFIC) PART B for the year 2023 of the ITU, for 11 stations. Details are as shown in Table 1.

**Table 1:** AM Radio Broadcasting Stations Adhering to the ITU's Conditions for the Year 2023

No.	Station	Frequency
1	KANCHANABURI-2	810 kHz
2	TRAT-1	1557 kHz
3	SAKON NAKHON-1	837 kHz
4	CHIANG RAI-4	1179 kHz
5	CHIANG RAI-7	1395 kHz
6	BANGKOK-29	1521 kHz
7	PAYUTTHAYA-1	1575 kHz
8	PATHUM THANI-5	981 kHz
9	BANGKOK-24	1332 kHz
10	BANGKOK-28	1494 kHz (The agency has notified the Office of the NBTC to reclaim the frequency)
11	BANGKOK-15	1035 kHz (The agency has notified the Office of the NBTC to reclaim the frequency)

Source : Spectrum Management Bureau, Office of the NBTC



Regulation on Broadcasting, Television, Telecommunications, and Satellite Businesses

Broadcasting and Television Businesses Regulation

The NBTC has policies to elevate broadcasting and television operations to international standards in many aspects including licensing process, service quality enhancement, content production for international markets, stakeholder involvement process, professional self-regulation, consumer protection, and promoting people's rights and liberty in access and utilization of digital information. Efficient resource utilization has been taken into consideration for overseeing business operations. The significant achievements in 2023 are as follows:

1. Revising the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025).

According to the 30th/2022 NBTC meeting on November 9, 2022, the NBTC agreed to elevate the broadcasting and television business operations to international standards to foster sustainable societal and economic development, through driving transformation in the broadcasting and television industry, emphasizing responsiveness to digital contexts,

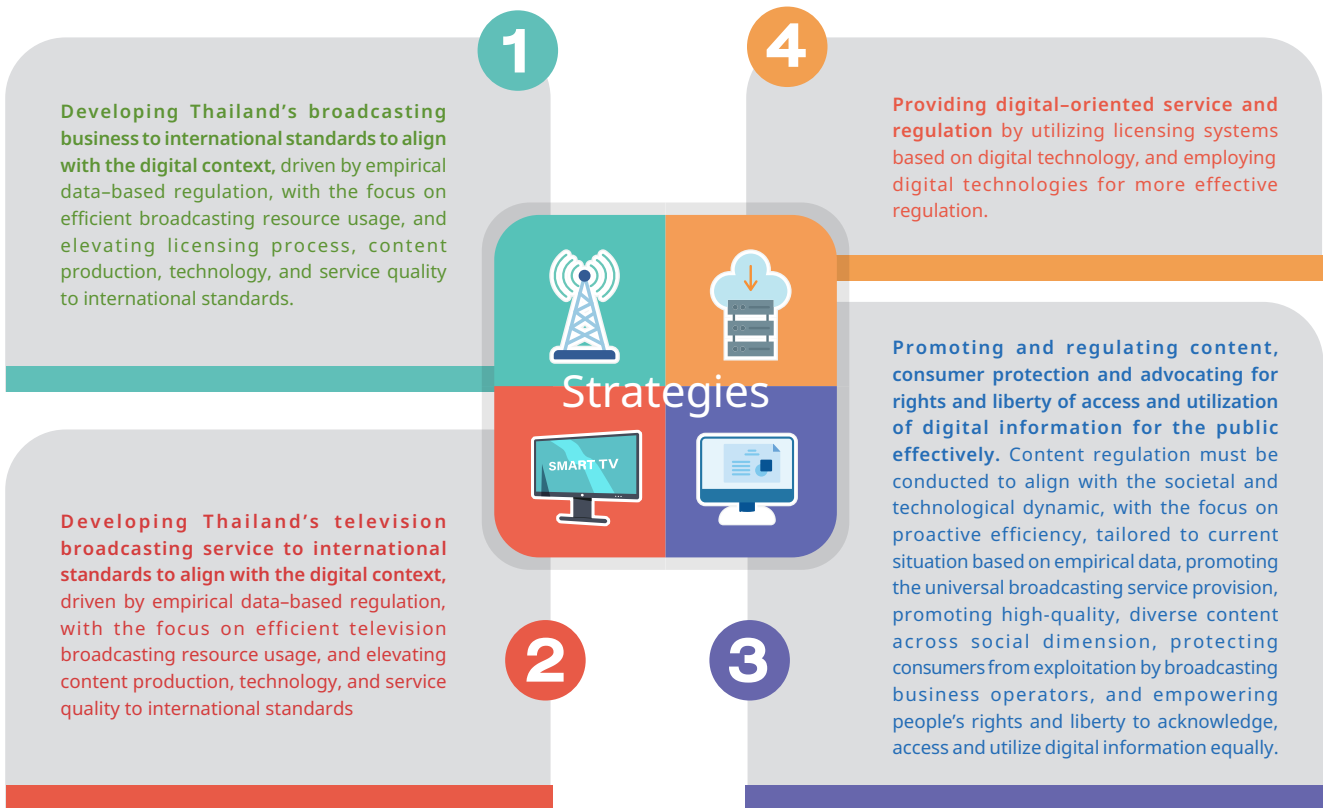
regulating operations based on empirical data, and prioritizing efficient and equitable resource usage. The licensing process and regulatory mechanism through stakeholder involvement should also be enhanced by adopting the social credit system, promoting professional self-regulation, enhancing content production for international markets, improving service quality to meet international standards, empowering consumer protection, and promoting people's rights and liberty in access and utilization of digital information. Thus, the Office of the NBTC has revised the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025), and announced the plan to seek feedback from stakeholders and the public, during April 11 – May 10, 2023, as well as organizing the public hearing on April 25, 2023. Subsequently, the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025) (Revised Version) was published in the Royal Gazette on June 28, 2023.



The Public Hearing on the Draft Notification of the NBTC on the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025) (Revised Version)

After the Notification of the NBTC on the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025) (Revised Version) has been enforced, the NBTC convened the operational workshop to prepare for the efficient implementation of the master plan,

and developed the Action Plan based on the master plan to serve as an operational guideline for monitoring the implementation of the master plan. The Master Plan focuses on 4 strategic objectives as follows:



2. Regulating Broadcasting Business.

2.1 FM Radio Broadcasting Business.

In 2023, the operations based on Strategy 1 of the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025) (Revised Version), developing Thailand's broadcasting business have been carried out as follows:

2.1.1 Operations regarding Future FM Radio Broadcasting Business.

The NBTC, in the 30th/2022 meeting on November 9, 2022, assigned the Office of the NBTC to amend 7 Notifications on criteria regarding broadcasting businesses, to suit the current situation and easy to apply, as follows:

- 1) The Notification of the NBTC on Licensing Criteria and Procedures on Frequency Usage for Broadcasting Service Provision
- 2) The Notification of the NBTC on Criteria for Experimental FM Radio Broadcasting
- 3) The Notification of the NBTC on FM Radio Broadcasting

- Frequency Plan 4) The Notification of the NBTC on Low – Power FM Radio Broadcasting Frequency Plan, dated November 4, 2021, published in the Royal Gazette on November 29, 2021, covering frequency band allocation and conditions of frequency usage for FM radio broadcasting in the range of 87 – 108 MHz, having the Maximum Effective Radiated Power limit at 100 watts. The Low – Power FM frequency usage license for broadcasting service, in the categories of public service and community service, is effective from the date of approval by the NBTC to December 31, 2024.
- 5) The Notification of the NBTC on Technical Standards of Lower – Power FM Radio Transmitters
- 6) The Notification of the NBTC on Technical Standards Testing of Lower – Power FM Radio Broadcasting Transmitters and
- 7) The Notification of the NBTC on Criteria for Preventing Interference with Aeronautical Radio Operations from Frequency Usage of Radio Broadcasting Stations.

2.1.2 The Office of the NBTC has gathered facts and details of operations regarding the NBTC resolution, and organized focus group meetings, in the following:

1) The focus group meetings on guidelines for developing a radio frequency plan and licensing practices regarding future FM radio broadcasting business, to facilitate the transition of experimental broadcasting, which will be terminated on December 31, 2024, into the licensing system, were held in 4 provinces covering 4 regions of Thailand, including meetings on March 10, 2023 at Ubon Ratchathani province, on March 23, 2023 at Chiang Mai province, on March 31, 2023 at Songkhla province, and on April 7, 2023 in Bangkok. In this regard, the Office of the NBTC has incorporated the note of the observations during the meeting into refining of the Notification, and presented it to the 21st/2023 NBTC meeting on October 25, 2023. The NBTC meeting approved the revised draft Notifications relating to radio broadcasting business, including the draft Notification of the NBTC on Licensing Criteria and Procedures on Frequency Usage for Broadcasting Service Provision

(No. 2) (B.E. ...), the draft Notification of the NBTC on FM Radio Broadcasting Frequency Plan, the draft Notification of the NBTC on Technical Standards of FM Radio Broadcasting Transmitters, and the draft Notification of the NBTC on Criteria for Preventing Interference with Aeronautical Radio Operations from Frequency Usage of Radio Broadcasting Stations. In addition, the NBTC assigned the Office of the NBTC to announce the 4 draft Notifications to the public to seek feedback at the public hearing conference, held on November 21, 2023, in Bangkok.

2) The focus group meetings with radio broadcasting operators to incorporate feedback into the defining of relevant licensing guidelines, were held in 5 provinces covering every region of Thailand, including the 1st meeting at Chonburi province, during September 28 – 29, 2023, the 2nd meeting at Songkhla province, during October 19 – 20, 2023, the 3rd meeting at Udon Thani province, during October 26 – 27, 2023, the 4th meeting at Chiang Mai province, during November 2 – 3, 2023, and the 5th meeting in Bangkok on November 9, 2023.



The Focus Group Meetings with Radio Broadcasting Operators

2.2 Digital Broadcasting Business.

The NBTC has prepared for promoting digital radio broadcasting business, as the option for the current FM radio broadcasting experimenters as their broadcasting period would be terminated on December 31, 2024, and individuals who are interested in digital radio broadcasting, involving the following operations.

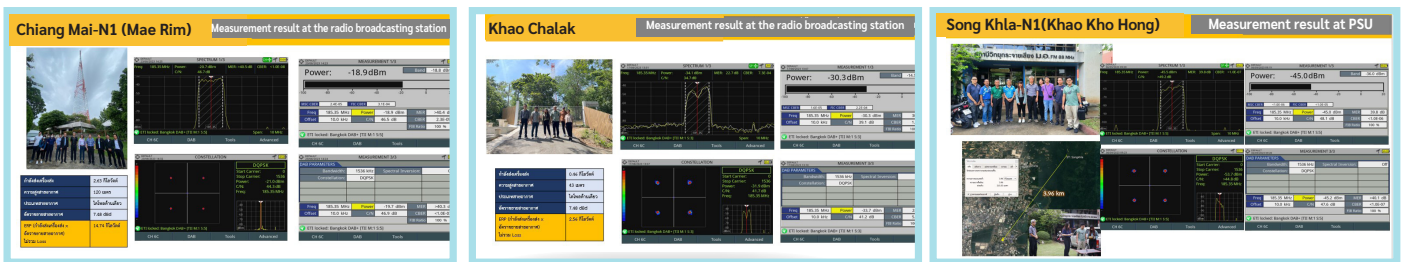
1) Developing a project to survey the demand on broadcasting service provision and cost assessment, and formulating an investment model for infrastructure and digital radio broadcasting service provision in Thailand, to incorporate with policies, plans and guidelines for initiating digital radio broadcasting service in Thailand. Currently, the Office of the NBTC has the analysis results on demand

and readiness of digital radio broadcasting service, guidelines for network design for providing digital radio broadcasting service in the local, regional, and international level, cost assessment for investment in the DAB+ radio broadcasting network, guidelines for providing digital radio broadcasting network, radio broadcasting station investment (program channel), socio-economic impact, cost-benefit analysis of signal transmission for digital radio broadcasting, recommendations on prescribing policy, plan and guidelines for digital radio broadcasting service provision in Thailand.

2) Organizing discussions with the Board of Investment of Thailand, associations and automobile-related industry group, the Electrical and Electronics Institute, the Electrical and Electronic Products Testing Center, and radio receiver manufacturers, importers, and vendors, regarding guidelines for facilitating industries relating

to digital radio broadcasting devices and receivers, on May 11, 2023, held at the Office of the NBTC, and via online meeting.

3) Operating on-site broadcast signal measurement of the DAB+ digital radio broadcasting stations in 5 areas, specified by the cooperation project under the agreement between Royal Thai Army and the Regional Offices of the NBTC, phase 1, to incorporate technical specification and test results of application program services, for developing a frequency plan for the DAB+ digital radio broadcasting in the future. The on-site measurement includes (1) at Royal Thai Army Radio and Television, the Signal Department Royal Thai Army, Saphan Daeng, on August 15, 2023, (2) at Chonburi province, during August 17 - 18, 2023, (3) at Chiang Mai province, during August 23 - 25, 2023, (4) at Songkhla province, during September 4 - 6, 2023, and (5) at Khon Kaen province, during September 13 - 15, 2023.



Signal Measurement of the DAB+ Digital Radio Broadcasting Stations

2.3 Surveying Behaviors and Analyzing Data on the Popularity of Radio Listeners in Thailand.

In 2023, the Office of the NBTC conducted a project to survey behaviors and analyze data on the popularity of radio listeners in Thailand, to study the direction and behavior trends of radio listeners through various channels, aiming to provide guidelines for promoting and supporting radio broadcasters to compete in the current technological landscape. Additionally, it serves as a popularity database of radio listeners to develop guidelines on efficient, cost-effective radio frequency management and broadcasting business regulation in Thailand for the maximum benefit.

In previous project implementations, there have been reports on demographics related to radio broadcasting services, such as type of population,

size, and sample groups of radio broadcasters and surveyed listeners. As of November 24, 2023, it is in the process of surveying behavioral data and popularity of radio broadcasting listeners, collected through interviews with sample groups from all regions nationwide, and the radio broadcaster sample group. The project aims to be completed within Quarter 1/2023.

3. Television Broadcasting Business Regulation.

3.1 Revising regulations with a focus on light-touch regulation to keep them contemporary and aligned with the current television industry landscape, as well as promoting television broadcasting business, as follows:

3.1.1 Developing the Notification of the NBTC on Criteria for Ranking Television Services (No. 2).



The NBTC, in the 35th/2022 meeting on December 21, 2022, approved the principles for developing the draft Notification of the NBTC on Criteria for Ranking Television Services (No. 2), to align with the current television industry landscape, where several general television service providers have been permitted to cease operation, and some program categories of certain channels are still unavailable. The NBTC instructed licensees of non-frequency television networks to include any non-frequency television services in the general television service category, in a sequence where services are not yet provided. In this regard, the Office of the NBTC announced the draft Notification to seek feedback from the public, during January 26 – February 24, 2023, and organized the public hearing conference on January 31, 2023, at the Office of NBTC Headoffice, and via teleconference system. The Office of the NBTC has concluded the public feedback, and revised the draft Notification to present to the NBTC in the 13th/2023 NBTC meeting on June 9, 2023. Subsequently, the NBTC approved the Notification and submitted it to publish in the Royal Gazette on July 24, 2023.

3.1.2 Developing the Draft Notification of the NBTC on Repealing the Notification of the NBTC on the Criteria for the Important Events which can be Broadcasted only on Free Television B.E. 2555 (2012) (the Must-Have Rule).

The Notification of the NBTC on the Criteria for the Important Events which can be Broadcasted only on Free Television B.E. 2555 (2012) mandates 7 types of sports to be prioritized as general television programs to be provided to the public via terrestrial or digital television as the first priority, including 1) South-East Asian Games (SEA Game), 2) ASEAN Para Games, 3) Asian Games, 4) Asian Para Games, 5) Olympic Games, 6) Paralympic Games, and 7) FIFA World Cup Final. As a result, all 7 programs are broadcasted via satellite, cable TV, and IPTV under the Must-Carry rule as well. However, due to changes in television industry context and viewer behaviors, the Must-Have rule is no longer aligned with the current situation. This discrepancy has led to market distortions. According to the 7th/2023 NBTC special meeting on March 23, 2023, the NBTC approved the principle to repeal the Notification of the NBTC

on Criteria for the Important Events which can be Broadcasted only on Free Television B.E. 2555 (2012). The Office of the NBTC announced the draft Notification to seek feedback from the public during March 25 – April 23, 2023, and organized the public hearing conference on April 20, 2023, at the Office of NBTC Headoffice, and via teleconference system. Based on the feedback summary from the public hearing, some members of the underprivileged group disagree with the Must-Have Notification repeal. The Office of the NBTC has proposed corrective measures, possibly considering support for the underprivileged groups in accessing the mentioned sports through alternative means, to the Subcommittee on Television Licensing Consideration, for reviewing prior to presenting to the NBTC meeting further.

3.1.3 Conducting a study on the impact on consumers of revising the Notification of the NBTC on the Criteria for Free Television Broadcasting (the Must-Carry Rule) in the Digital TV Industry.

The NBTC, in the 24th/2022 meeting on September 7, 2022, acknowledged the results of in-house study regarding situation and challenges in enforcing the Notification of the NBTC on the Criteria for Free Television Broadcasting (the Must-Carry Rule), and the Notification of the NBTC on the Criteria for the Important Events which can be Broadcasted only on Free Television B.E. 2555 (2012) (the Must-Have Rule), amidst technological advancement and changes in television broadcasting service delivery and property rights issues. In addition, the NBTC assigned the Office of the NBTC to conduct further research to ensure comprehensive coverage. Thus, the Office of the NBTC has conducted the study on the impact on consumers of revising the Notification of the NBTC on the Criteria for Free Television Broadcasting (the Must-Carry Rule) in the digital TV industry, conducting on-site surveys with nationwide sample group, in a total of 2,094 households. The results indicate television viewer behaviors, primary access channels to television programs, digital TV channel viewing, as well as issues and impacts on consumers regarding the Must-Carry rule amendment. This information will be integrated into considerations for further amendment to the Must-Carry Notification, taking into account the consumer perspective.

3.1.4 Developing the Draft Notification of the NBTC on Criteria for Promoting Communities that are Ready and Supporting Quality Community Service Providers.

The NBTC, in the 10th/2023 meeting on May 3, 2023, approved the principle of developing the draft Notification of the NBTC on Criteria for Promoting Communities that are Ready and Supporting Quality Community Service Providers, to revise the criteria based on Section 51 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010), to improve clarity and appropriateness. The Office of the NBTC announced the draft Notification through its website during May 8 to June 21, 2023, to seek feedback and recommendations from stakeholders and the public, and organized focus group meetings on May 24, 2023, and June 1, 2023. In addition, the public hearing conference was held on June 13, 2023 at the Office of the NBTC Headoffice and via teleconference system. The Office of the NBTC has completed the feedback summary and the draft Notification amendment. Currently, it is in the process of proposing the draft Notification to the NBTC for consideration and approval prior to publishing in the Royal Gazette.

3.1.5 Developing the Draft Notification of the NBTC on Criteria for Supporting the Production of Socially Beneficial Programs in the Broadcasting and Television Industries.

The NBTC, in the 10th/2023 meeting on May 3, 2023, approved the principle of developing the draft Notification of the NBTC on Criteria for Supporting the Production of Socially Beneficial Programs in the Broadcasting and Television Industries. Due to the rapid changes in technology and increased internet accessibility with broader network coverage in the digital age, or the digital disruption, competition in the television industry has intensified. Coupled with economic downturns, this has impacted on communication broadcasting and television businesses, manufacturers, or associated industry stakeholders. Consequently, adaptation is necessary for continued business operations, and support to the production of beneficial programs. Thus, the Office of the NBTC announced the draft Notification through its website, during May 8 to June 21, 2023, to seek feedback and recommendations

from stakeholders and the public, and organized focus group meetings on May 24, 2023, and June 1, 2023. In addition, the public hearing conference was held on June 13, 2023 at the Office of the NBTC Headoffice and via teleconference system. The Office of the NBTC has completed the feedback summary and the draft Notification amendment. Currently, it is in the process of proposing the draft Notification to the NBTC for consideration and approval prior to publishing in the Royal Gazette.



The Public Hearing to the Draft Notification of the NBTC on Criteria for Supporting the Production of Socially Beneficial Programs in the Broadcasting and Television Industries

3.1.6 Developing the draft Notification of the NBTC on Measures to Promote the Collaboration of the Licensees, Program Producers, and Mass Communication Professionals Involved in Broadcasting and Television Industries B.E. ...

The NBTC, in the 12th/2023 meeting on May 31, 2023, approved the principle of developing the draft Notification of the NBTC on Measures to Promote the Collaboration of the Licensees, Program Producers, and Mass Communication Professionals Involved in Broadcasting and Television Industries B.E. ..., aiming to promote collaboration among licensees, program producers, and mass communication professionals to establish professional organization groups in various forms. It also aims at developing ethical standards and professional conduct in accordance with the law, which is part of fostering self-regulation mechanisms within groups of professionals involved in broadcasting and television industries. Thus, the Office of the NBTC announced the draft Notification to the public, during June 29 – August 15, 2023, to seek feedback, and organized the public hearing conference in Bangkok on July 17, 2023. The participants included broadcasting and television-related professional

organizations in Bangkok and its perimeter, and regional areas, licensees, program producers, mass communication professionals involved in the broadcasting and television industries, experts, and stakeholder. Currently, it is in the process of gathering feedback on the draft Notification for presenting to the NBTC for consideration and approval prior to publishing in the Royal Gazette.

3.1.7 Defining the characteristics and types of digital platform services under the NBTC regulation.

The Office of the NBTC has compiled feedback and prepared a report on defining the characteristics and types of digital platform services under the NBTC regulation, to be presented to the Committee on Communication Services Provision via Digital Platforms, for screening and submitting to the NBTC in the 16th/2023 meeting on August 9, 2023. The meeting approved the designation of video on-demand service (VOD) providers and video sharing platform service (VSP) providers to have status as “service provider” under the NBTC regulation. The Office of the NBTC sent a letter informing the Electronic Transactions Development Agency (ETDA) about the characteristics and types of digital platform services under the NBTC regulation. The Office of the NBTC has completed the preparation for the draft Notification of the NBTC on Providing Audio and Visual Broadcasting Services over the Internet Network. Currently, it is in the process of submitting to the NBTC for approval, and taking it to receive feedback from the public.

3.1.8 Reviewing and understanding compliance with relevant laws and regulations, and revising the Notification of the NBTC on Exemption of License for Radiocommunication Equipment and Radio communication Station under Radiocommunication Act.

The Office of the NBTC organized focus group meetings to seek feedback on revising the Notification of the NBTC on Exemption of License for Radiocommunication Equipment and Radio Communication Station under Radiocommunications Act B.E. 2498 (1955). The Notification amendment aims to ensure the Integrated Receiver Decoders (IRD), for satellite television signal reception, are exempted from licensing requirements for activities

of manufacturing, possessing, using, importing, exporting, and trading, considered a convenience in preparing documents, reducing steps and time in government contacts. It can reduce complexity and burden on operators in licensing processes. Understanding compliance with relevant laws and regulations regarding broadcasting and television operations, as well as identifying operational challenges can lead to problem-solving approaches and clarifying guidelines for regulatory compliance and relevant laws in laying communication lines (cable TV). Accordingly, the mentioned focus group meetings were organized in 3 provinces, including Ayutthaya province, during August 31, - September 1, 2023, Phuket province during September 28 – 29, 2023, and Nakhon Phanom during November 16 – 17, 2023.

3.1.9 Developing the Notification of the Office of the NBTC on Guidelines for Presenting Program Content in the Context of Elections in Broadcasting and Television Businesses.

The Office of the NBTC published the Notification of the Office of the NBTC on Guidelines for Presenting Program Content in the Context of Elections in Broadcasting and Television Businesses, on March 29, 2023, to serve as operational practices for mass media in disseminating election news in accordance with legal frameworks, relevant regulations, and code of ethics for professional media. The Notification upholds the principles of freedom alongside the responsibility, and people’s rights to acknowledge accurate, impartial, balanced, fair, and comprehensive information, while taking into account the public interest. The Notification also serves as initial guidelines for media organizations and professional bodies in broadcasting and television businesses. It can be further elaborated or customized to suit the specific nature of each channel, and enforced upon employees and members. Furthermore, it serves as guidelines for receiving and considering complaints related to program content presentation in the election context, as well as proposing feedback to the NBTC to ensure proper, appropriate, and legally exercise of discretion, aligned with the duties of the NBTC and the Office of the NBTC, as a regulatory body tasked with promoting and overseeing self-regulation under code of ethics.



3.2 Guidelines for community television service licensing.

The NBTC has conducted a study and data analysis regarding community television service licensing in Thailand under Thai legal context, demands, technological viewing behavior, and other factors affecting community television service provision, to ensure licensing guideline development and community television service provision in Thailand create maximum benefits to the public. Additionally, the guidelines should be realistic, in compliance with changing technology, demands, and current television viewing behavior of people. The guidelines for community television service licensing in Thailand have been established, comprising 3 approaches as follows:

Approach 1: Licensing for community television service for frequency-based service (terrestrial network)

Approach 2: Licensing for community television service for non-frequency service (satellite, cable, and IPTV networks)

Approach 3: Licensing for community television service on other platforms (OTT/5G Broadcast)

In addition, the benefits, observations, and timeframe for the operational plan for each approach, have been summarized into a study report of outlining the guidelines for community television service licensing, and proposed to the Secretary-General of the NBTC for acknowledgement.

3.3 Regulating fee rates and service charges in television broadcasting business.

3.3.1 Reviewing the rental rates for the use of digital terrestrial television frequency-based network infrastructure.

The NBTC has reviewed the rental rates for the use of digital terrestrial television frequency-based network infrastructure to align with current service costs, as the rental rates for television network infrastructure have been enforced for 4 years. Moreover, there has been the documentation review of the cost evidence for each item, submitted by television network service providers, to examine the rental rate calculation methods for digital terrestrial television frequency-based network infrastructure to align with the Notification of the NBTC on Standards for Calculating Rental Rates for Digital Terrestrial Television Frequency-Based Network Infrastructure. This also includes prescribing efficient cost structure evaluation practices, in part of joint and common cost, aligning with criteria from governmental agencies and economic principles, to prevent unrelated costs from being included in the calculation of television network infrastructure rental rates.

In this regard, the NBTC, on the 35th/2022 meeting, on December 21, 2022, approved the television rental rates of the Public Relations Department, the Royal Thai Army, and Thai Public Broadcasting Service. Additionally, the NBTC, in the 14th/2023 meeting, on June 26, 2023, approved the television rental rates of MCOT Public Company Limited. The aforementioned rental rates for television network infrastructure are fixed, at an average rate each year, for a four-year period, effective from January 1, 2023, to December 31, 2026. Details are as shown in Table 2.

Table 2 : The Television Network Infrastructure Rental Rates

Unit: Million Baht/Month/Channel

Channel Type				
Standard-Definition (SD)	3.43	3.18	3.27	3.43
High-Definition (HD)	10.29	9.54	9.81	10.29

Remark : The above rates do not include value-added tax.





3.3.2 Preparing a report in service rates for subscription – based television operations (at the national level).

The NBTC has gathered service rate data from subscription – based television providers who sell or directly charge end users for cable TV, satellite TV, and IPTV services. This includes service provider information, service characteristics, product offerings rates for each product or package, as well as various dimensional analyses, which serve a crucial starting point for establishing a service rate database in the television broadcasting business of the Office of the NBTC to benefit future policymaking by the NBTC. In this regard, the Office of the NBTC has conducted the data gathering since 2021 until present, and published the service rates on <https://broadcast.nbtc.go.th>.

3.3.3 Deduction and exemption of annual licensing fees.

In order to promote business operations of broadcasting and television services that offer news or informative content beneficial to the public, the Office of the NBTC has implemented regulations according to the NBTC Regulation regarding the Reduction or Exemption of Annual Licensing Fees for Broadcasting or Television Businesses B.E. 2556 (2013). The objective is to allow licensees operating broadcasting or television services, according to the specified license types, to request deductions or exemptions of annual licensing fees each year, based on rates, criteria, and procedures set forth. In 2023, the NBTC considered deductions for licensing fees to broadcasting or television channels offering news or informative content beneficial to the public beyond the proportion specified in the criteria. The NBTC, in the 8th/2023 meeting on April 5, 2023, approved granting the exemption of annual licensing fees to the Thai PBS channel of Thai Public Broadcasting Service, for the accounting period of 2021.

3.4 Broadcasting trials on digital terrestrial television using UHD (4K) technology.

The NBTC has consistently been involved in operations related to digital terrestrial television using UHD (4K) technology since 2020 until present, as follows:

1) Developing guidelines for broadcasting television using 4K technology, based on

preliminary test results from Thai Public Broadcasting Service (Thai PBS), a broadcasting and television licensee, for temporary broadcasting trials on digital terrestrial television using UHD (4K) technology, on frequency channel number 22, in the 478 – 486 MHz, effective from October 1, 2022.

2) Thai Public Broadcasting Service (Thai PBS) has commenced broadcasting trials on digital terrestrial television using UHD (4K) technology from November 11, 2022 to March 31, 2023. The trials cover an approximate area of 10 kilometers radius from the television signal tower located at the Thai PBS office on Vibhavadi Rangsit Road, Lak Si, Bangkok. During the trials, the Office of the NBTC has monitored and held discussions to establish image signal formats for broadcasting using 4K technology, serving as guidelines for testing signal transmission system parameters. Additionally, the Office of the NBTC has collaborated to verify signal reception, collect data, and address any technical obstacles encountered. After completing the broadcasting trials, Thai PBS reported the trial results of broadcasting digital terrestrial television using UHD (4K) technology to the NBTC. Subsequently, the Office of the NBTC compiled a summary report and technical analysis of the broadcasting trials, and presented them to the NBTC in the 23rd/2023 NBTC meeting on December 25, 2023.

3) Organizing a focus group meeting with the digital terrestrial television service licensees, on September 22, 2023, in Bangkok, resulting in developing guidelines for television broadcasting using 4K technology, serving as an alternative option that can be utilized in conducting business on other alternative platforms, such as OTT platform, etc.

3.5 On-site inspection of the digital terrestrial television network service system.

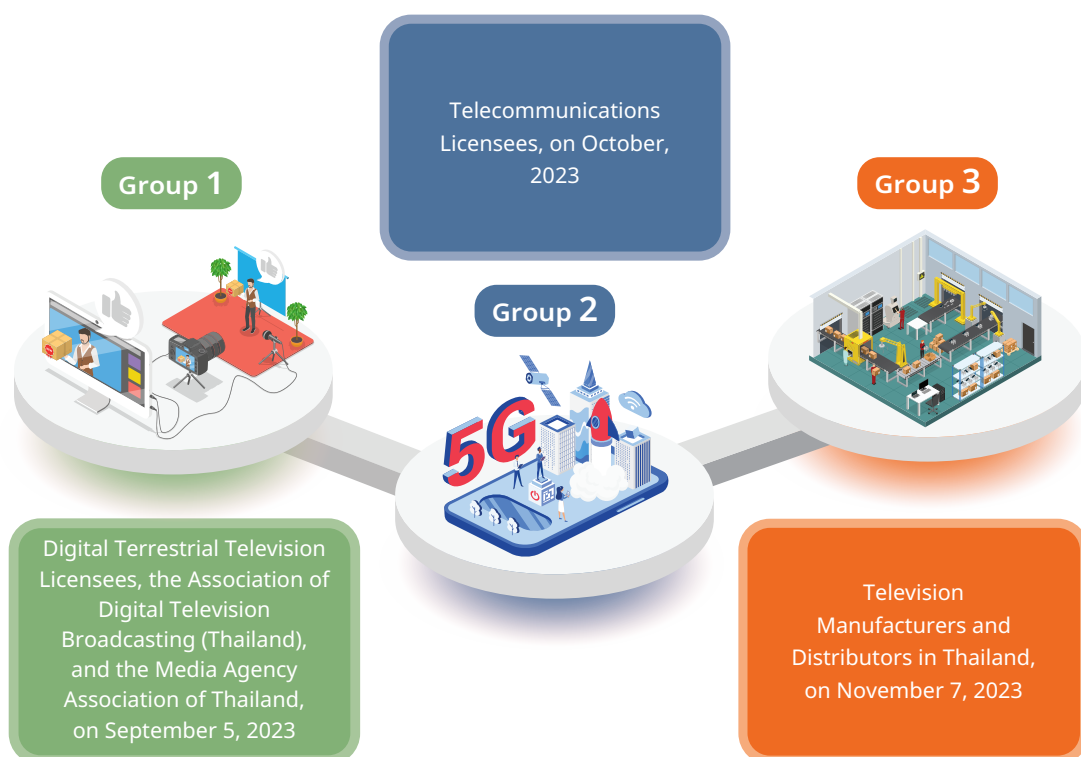
The NBTC has conducted on-site inspections of the digital terrestrial television network service system, and the system to monitor, control and prevent disruptions in the provision of television network services by licensees. This aims to ensure compliance with the conditions attached to the license, prescribing licensees to maintain, monitor, preserve, and improve the efficiency of the digital terrestrial television network as per the terms of the license. They must provide uninterrupted service, especially in areas related to inspection, control, and problem prevention, ensuring the network's reliability

and operation verifiability. In 2023, the NBTC conducted on-site inspections of the digital terrestrial television network service system, including (1) Thai PBS's television network, on May 25, 2023, (2) the MCOT Public Company Limited's television network, on June 1, 2023, (3) the Public Relations Department's television network, on June 7, 2023, and (4) the Royal Thai Army's television network, on July 4, 2023. According to the inspection results of the 4 licensees, every licensee has implemented operational procedures and systems for monitoring and controlling television network services to prevent disruptions. This includes activities related to resolving any issues that may arise, along with preparing reports on the outcomes of the check and service-control monitoring system for digital terrestrial television networks.

3.6 Collaborating with industrial sectors to drive the development of terrestrial television access channels on digital platforms.

The NBTC has implemented the Second Broadcasting Master Plan B.E. 2563 – 2568 (2020 – 2025) (Revised Version), the Strategy 2: developing Thailand's television broadcasting service to international standards, to align with

the digital context and the NBTC's policy to promote television broadcasting industry in the transition period for setting directions for the digital terrestrial television industry after the expiration of the licenses in 2029. The NBTC has considered developing a digital platform prototype for accessing digital terrestrial television. This platform would serve as a centralized hub, aggregating channels from licensees for easier public access. It would also provide centralized viewing data for advertising planning or business regulation, potentially increasing domestic advertising revenue circulation, and revenue shares for television operators, resulting in content quality enhancement. Subsequently, the Office of the NBTC organized consultations with industrial sectors regarding a digital platform prototype development for accessing digital terrestrial television, exchanging opinions, and offering recommendations on guidelines for impact and direction study on digital terrestrial television in the future. The meetings and consultations are divided into 3 sessions (for 3 groups) to ensure comprehensive feedback from all perspectives, as follows:



3.7 Conducting the television popularity survey of cross-platform rating.

The NBTC has collaborated with the Association of Digital Television Broadcasting (Thailand) (“the Association”), as a central agency to conduct the television popularity survey of cross-platform rating based on the Memorandum of Understanding (MOU) on supporting expenses for television rating survey, to support the digital industry, according to the National Council for Peace and Order (NCPO) Order No. 4/2019.

Regarding conducting the television popularity survey of cross-platform rating based on the MOU, the Association employed AGB Nielsen Media Research (Thailand) Company Limited, to conduct the survey. The survey results are published and used for media planning and program schedule creating, to promote business operations of digital terrestrial television operators. Additionally, the survey report is disseminated on a monthly basis to government agencies, state agencies, and educational institutions interested in the information through the Association’s website. Furthermore, to ensure accuracy and appropriateness of the survey data, the Office of the NBTC has made a requirement to the Association to acquire an independent audit organization, recognized in the international level, to audit the survey results. In this regard, the Association selected the Centre d’Etude des Supports de Publicité (CESP) Company Limited, France, to audit the process of the cross-platform rating survey to align with the international practices, including the establishment survey, panel selecting and handling, measurement technology, data for delivery to the industry (data analysis). In addition, the first meeting of progress report on the cross-platform rating survey has been organized on June 30, 2023, at the Office of the NBTC Headoffice, having stakeholders of the industry participated, including representatives from Association of Digital Television Broadcasting (Thailand), digital television operators, representatives from the Media Agency Association of Thailand, and media operators.

3.8 Live Broadcasting and News Reporting on the Asian Games.

The Office of the NBTC signed a Memorandum of Understanding (MOU) with the Royal Thai Army, by the Royal Thai Army Radio and Television and the Television Pool of Thailand (TPT), regarding the management of the live broadcasting center to facilitate live broadcasts and news coverage of the Asian Games 2022, on April 5,

2022. Additionally, they extended the MOU to expand the duration of collaboration, on December 27, 2022, for managing the live broadcasting center to facilitate live broadcasts and news coverage of the 19th Asian Games in Thailand via television services, to ensure that people can consistently and widely access the broadcasts. The Asian Games sports competition took place from September 23 to October 8, 2023 at Hangzhou, People’s Republic of China. There was a total of 10 digital terrestrial television channels broadcasting live coverage of the event.



Subsequently, on October 4, 2023, the NBTC commissioners and the executive team of the Office of the NBTC visited the Live Broadcasting and Reporting Center for Thailand’s Important Event Programs, at the office of the NBTC, Region 1. During the visit, the executive team of the Television Pool of Thailand (TPT), as an agency to oversee and manage the live broadcasting center and equipment for efficient broadcasting, guided the visiting delegates through various areas within the live broadcasting center, such as the staff working areas, studio rooms, editing rooms, and broadcasting control rooms.



The Visit at the Live broadcasting and Reporting Thailand’s Important Event Programs Center



4. Consumer Protection in Broadcasting and Television Businesses.

In 2023, the NBTC has carried out operations to protect consumers in broadcasting and television businesses, by supervising the actions that exploit consumers, empowering consumers, developing media literacy among the public, promoting and protecting the rights of persons with disabilities and underprivileged individuals to access, perceive, and benefit from information and news through broadcasting and television services. This also includes developing criteria regarding consumer protection in broadcasting and television businesses with the processes in three main dimensions, including (1) supervising the actions that exploit consumers by proactive surveillance processes and the efficient handling and consideration of complaints to ensure effective supervision and regulation, (2) promoting and empowering consumers to participate in every step of supervision process, and (3) promoting the rights of persons with disabilities and underprivileged individuals to access to information. The operations to protect consumers can be summarized as follows:

4.1 Supervising the actions that exploit consumers in broadcasting and television businesses.

In 2023, the proactive operations have been carried out by monitoring broadcasting and television businesses operations, and handling complaints based on the Notification of the NBTC on the Action which may Exploit Consumers in Broadcasting and Television Businesses B.E. 2555 (2012), in terms of program broadcasting or advertising, such as advertising of food, medicine, and health products, since there is an impact on receiving inaccurate health information, loss of property, missed opportunities for treatment, and health hazards. This includes advertising exceeding the legally prescribed advertising period, causing annoyance, and advertising products of beliefs that cannot be scientifically proven (talismans). The NBTC has supervised and regulated advertisement of food, medicine, and health products, or actions that exploit consumers in broadcasting and television businesses. Details as shown in Table 3.

Table 3 : Supervising the Actions that Exploit Consumers in Broadcasting and Television services

Service	Number of Licensees in 2023	Misconduct Found (Cases)	Temporary Advertising Suspended (Cases)
Digital TV	25	1	1
Satellite TV	527	1	1
Broadcasting	4,385	156	132

Remark : data as of December 31, 2023

Source : Broadcasting Consumer Protection Bureau, Office of the NBTC

The NBTC, in the 21st/2022 meeting on August 10, 2022, approved the principles and procedures on issuing orders and imposing administrative penalties, in the case where a licensee in broadcasting and television businesses engages in advertising food, medicine, and health products that exploit consumers in broadcasting and television businesses, for swift actions and efficient regulation in broadcasting and television business operations.

According to the monitoring results of the Office of the NBTC and the NBTC Regional Offices, from October 2022 to October 2023, the Office of the NBTC has gathered evidence to present to the NBTC for considering actions that are deemed to be prejudicial to consumers in broadcasting and television businesses, and imposing administrative penalties, in a total of 562 cases. Currently, it is in the process of ordering to suspend actions that exploit consumers.





4.2 Empowering consumers and enhancing media literacy of people.

In 2023, the NBTC has empowered consumers, building knowledge and understanding, enhancing media literacy of consumers in broadcasting and television businesses, to protect their rights, as follows:

4.2.1 Creating consumer networks in broadcasting and television businesses has been operated by creating awareness about consumer rights and protection in the broadcasting and television industry, to foster exchanges, and diverse learning experiences. The decentralized subgroup activities have been carried out and connected into networks, resulting in genuine and sustainable empowerment. The networks comprise government and private organizations, and various consumer networks, such as community leaders, community volunteers, teachers/lecturers, the youth and children's leaders, retired civil servants, and people with disabilities. To drive operational collaboration and inclusion mechanisms for consumer networks covering the north, south, northeast, central regions, Bangkok Metropolis and its vicinity, various activities have been carried out, including creating local monitoring networks for broadcasting and television business operations, promoting the establishment of local media monitoring center, promoting consumer network leaders to organize activities to create awareness of rights to consume media. Additionally, building consumer networks can lead to creating knowledge, understanding, awareness of their rights regarding accessing services from broadcasting and television businesses, and broadcasting, to allow them to monitor media operations and report concerns or complaints to the NBTC and relevant authorities, as well as a tendency to expand knowledge to family, community, and society in the future.

4.2.2 Fostering media literacy by encouraging consumers in broadcasting and television businesses as well as the public to access and knowingly utilize news and information by carrying out the following 3 steps:

(1) The learning process in classrooms to foster media literacy skills involves developing curricula for public skill development regarding broadcasting and television, in 2 levels including a curriculum for high school (junior high

school) and the general public level, and a curriculum for the elderly and people with disabilities. The curricula are promoted to implement in educational institutions/agencies, organizations, together with instructional media providing, such as teaching manuals in both physical and e-book formats, audiovisual media, animations, or other teaching aids, the Media Literacy Monopoly board game, and the Snakes & Ladders of Media Literacy board game, are tailored to the target groups of each group. They also promote the integration of knowledge gained from such curricula into media creation and use them for creative activities in educational institutions or in the communities, to expand media literacy skills in the digital age to cover a wider range of consumer groups. To support the operations of various organizations in both the education system and lifelong learning, people can access a learning source through the website <https://bcp3.nbtc.go.th/melit>.

(2) To promote media literacy activities, a process is established to organize community-based activities, with educational institutions participating in the “Khon Tan Sue” (Media Literacy People) program (<https://www.facebook.com/khontansue>). Many institutions further integrate this project by forming media literacy clubs to sustain ongoing efforts.

(3) To foster public awareness of media literacy, the production support is provided for programs related to developing media literacy skills, for both the general public and specific groups with special needs. Additionally, channels for promoting ‘radio-television’ media literacy have been developed, including <http://bcp.nbtc.go.th> and <https://www.facebook.com/con.rights>, to ensure continuous understanding through a variety of media formats.

5. Promoting People's Rights and Liberty.

5.1 Driving media creation and utilization for accepting and understanding diversity and inclusion context.

The NBTC has driven media utilization for accepting and understanding diversity and inclusion context by implementing through public relations media production project to raise media awareness among people with disabilities, the elderly, and the underprivileged, as well as the general public.

The project aims to promote understanding of the diversity and inclusion of the social context of Thailand, which is a plural society, comprising people with physical, social, and cultural differences, as well as several aspects such as religions, languages, beliefs, attitudes, and lifestyles. Furthermore, the project aims to facilitate access and utilization of relevant media that align with the current interests of the public. The associate universities, including Maejo University, University of Phayao, Uttaradit Rajabhat University, Suan Sunandha Rajabhat University, Mahasarakham University, Rajamangala University of Technology Suvannabhumi, Dhurakij Pundit University, and Hat Yai University, joined the project to promote students in the field of mass media to understand the diversity, and offer opportunities for them to produce creative audiovisual media (short clips), not less than 15 seconds, to drive society for accepting the diversity and inclusion, in a total of 177 clips. The selected clips will be disseminated through online channels, including TikTok channels of broadcasting – television media consumers, the Office of the NBTC (<https://www.tiktok.com/@bcp.nbtc>), and others suitable online channels, such as Facebook Page of broadcasting – television media consumers, the Office of the NBTC (<https://www.facebook.com/con.rights>). Moreover, the audiovisual media (short clips) have been co-produced with famous influencers with physical diversity on online media platforms.

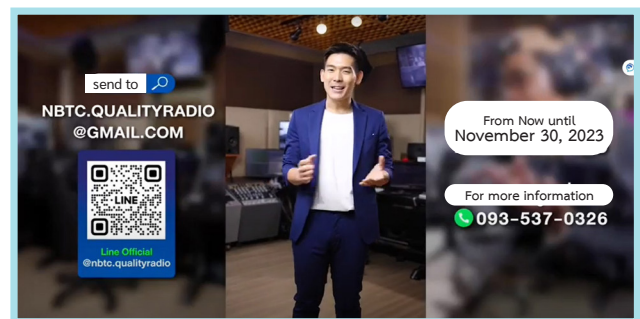


The Public Relations Media to Promote Acceptance of Diversity and Inclusion in the Social Contexts

5.2 Creating awareness of ethics and morality among radio broadcasters.

The NBTC has implemented a project to assess and select high-quality radio broadcasters for the year 2023, which is part of the positive regulatory process, aimed at promoting desired behaviors among radio broadcasters. This initiative serves as an incentive

for conducting operations in accordance with the law, and creating value for society through voluntary compliance, by establishing criteria for evaluating and selecting high-quality radio broadcasters into 3 levels: provincial, regional, and national. The national-level awards will involve collaboration with educational institutions to ensure that quality assessment aligns with academic standards, and provides data for evaluation for selecting diverse and beneficial media for audiences. This initiative also aims to reflect beautiful culture, promote governance within a democratic framework, and support the creation of socially engaging program content. The public relations media of the project have been disseminated through online platforms and nationwide radio broadcasts.



The Public Relations Media of the Project to Select High-Quality Radio Broadcasters for the Year 2023

5.3 Promoting and protecting the rights of the disabled¹ and the underprivileged to access, or perceive, and utilize information from broadcasting and television programs.

People with disabilities can access, or perceive, and utilize information through all digital terrestrial television channels, in a total of 25 channels, via the following services. (1) Sign Language, that people with disabilities can access to, not less than 1,500 minutes/day, (2) Closed Captions, that people with disabilities can access to, not less than 2,100 minutes/day, and (3) Audio Description, that people with disabilities can access to, not less than 1,500 minutes/day. In 2023, the NBTC has carried out operations to promote the rights of the disabled and the underprivileged, and facilitate them to equally access or acknowledge, and utilize information from television programs, on par with the general population, as follows:

¹ People with disabilities include individuals with limitations in vision and hearing.

1) Regulating business operations based on the Notification of the NBTC on Promoting and Protecting the Rights of the Disabled to Access, or Perceive, and Utilize Information from Television Programs, by monitoring the results of service provision of sign language, closed captions, or audio description, for the year 2022. Currently, the NBTC is considering a 50,000 baht fine, for 1 licensee, and warnings for 5 licensees, to ensure their operations aligning with the Notification of the NBTC on Promoting and Protecting the Rights of the Disabled to Access, or Perceive, and Utilize Information from Television Programs.

2) Promoting the rights of the disabled and the underprivileged in news and information access, by organizing a meeting on November 23, 2023, with organizations for each type of disability, and related professional organizations, to seek feedback regarding appropriate service provision, to ensure the business operators to provide appropriate services in accordance with basic provisions and promotional measures, aligning with the needs of people with disabilities.

3) Creating awareness and understanding of the rights to access and benefit from news and information for people with disabilities, as follows:

- Collaborating with the National Association of the Deaf in Thailand to organize training sessions to raise awareness of communication rights for people with disabilities (hearing impairments) during May 10 – 13, 2023, at Samut Prakan province. This aims to enhance their rights to access, or perceive, and utilize television programs, as well as to be aware of communication rights in television business.

- Collaborating with Thailand Association of the Blind to organize training sessions to raise awareness of communication rights for people with disabilities (visual impairments) during July 19 - 21, 2023, in Bangkok. This aims to enhance people with disabilities (visual impairments) to acknowledge information and understand their rights to access, or perceive, and utilize television programs, as well as understanding how to access programs with services, to participate in evaluating service quality, monitoring operation, and providing feedback or complaints about service provision of the licensees.

- Collaborating with the Sign Language Interpreter Association of Thailand to organize training sessions during December 14 – 15, 2023, in Bangkok, to enhance the skills of sign language interpreters in television services, aimed at developing high-quality interpretation skills to maximize the benefits for people with disabilities.

- Collaborating with Suan Dusit University to organize workshop training sessions regarding closed caption preparation for television services, during June 6 – 9, 2023, in Bangkok, to ensure the personnel of the 25 digital TV channels understand closed caption preparation accurately.

- Collaborating with Dhurakij Pundit University to organize workshop training sessions regarding audio description preparation for television services, during June 28 – 30, 2023, in Bangkok, to ensure the personnel of the 25 digital TV channels understand audio description preparation accurately.



The Workshop Training Session regarding Audio Description for Television Services

- Collaborating with the United Nations Development Programme (UNDP), the Australian Embassy, and the Thai Media Fund, to organize 2 seminars on Media for People with Disabilities and Promoting Social Inclusion, on July 14, 2023, in Bangkok, participating by television broadcasting licensees and TV program producers, and on August 16, 2023, participating by students, the youth, and lecturers.



- Building knowledge and understanding, and creating awareness of business operators, people with disabilities, service users, and the general public, regarding television services with sign language, closed caption, and audio description services provided, by producing public relations media for disseminating through television broadcasting and online media.

- Evaluating the service quality with relevant agencies, including (1) the Sign Language Interpreter Association of Thailand, to evaluate sign language service quality on television broadcasts, (2) the National Association of the Deaf in Thailand, to evaluate closed caption service quality, and (3) Thailand Association of the Blind, to evaluate audio description service quality. This aims to promote consistent development of these services.

- Providing a process to support people with disabilities' awareness of their rights to access, or perceive, and utilize news and information. This aims to create knowledge and understanding, and awareness among the public regarding protecting and promoting the rights of people with disabilities, to foster acceptance and support the operations. This includes the "Sue Yod Nak Sueb" to facilitate people with disabilities to acknowledge and benefit from television services knowingly.

- Conducting a study project on criteria for proportion of television services provision with sign language, closed caption, and audio description. A focus group meeting was held with the disabled groups such as the deaf and visually impaired, consumers in broadcasting and television businesses, academic experts, and digital television licensees, to gather feedback, study results, analysis, and recommendations for policy making by the NBTC to develop criteria for proportion of television services provision with sign language, closed caption, and audio description.

6. Promoting and Developing Broadcasting and Television Businesses.

6.1 Promoting group integration.

The mission of receiving notifications under the group integration promotion measures has been carried out in order to gather input from stakeholders related to the mission. In 2023, the NBTC has conducted on-site visits to collect data from associations, clubs, networks, and groups formed from the integration of licensee, program producers, and mass communications professionals related to broadcasting and television

operations, as well as business operators, in a total of 65 organizations, covering every region, in 13 provinces including Rayong, Ratchaburi, Lopburi, Kanchanaburi, Nakhon Ratchasima, Songkhla, Chiang Mai, Lamphun, Khon Kaen, Nan, Krabi, Ubon Ratchathani, and Roi-et. The collected data will be summarized into a field report, and utilized for tasks related to the mission of receiving notifications, as well as for promoting and supporting professional organizations in accordance with the standards for group integration.

6.2 Promoting and developing the capabilities of announcers in broadcasting and television businesses.

1) The NBTC has convened with training institutions to develop courses for announcers in broadcasting and television businesses, as per the memorandum of cooperation with the Office of the NBTC, on February 23, 2023 at the Office of the NBTC Headoffice with 13 participating agencies, including the Government Public Relations Department, the Royal Thai Army, Voice of Navy, MCOT Public Company Limited, Thai Public Broadcasting Service, Sukhothai Thammathirat Open University, Kasetsart University, Suan Sunandha Rajabhat University, Dhurakij Pundit University, Bangkokthonburi University, Saint John's University, Maejo University, and the Public Sector Radio-Television Broadcasting Professional Association. The meeting was organized to enable training institutions to conduct standardized courses for announcers in broadcasting and television businesses, aiming for consistency in direction to achieve the objectives efficiently and effectively.

2) The NBTC has conducted 2 assessments for certification as announcers in broadcasting and television businesses for the year 2023, during July 6 – 7, 2023, at the Operation Building, MCOT Public Company Limited, Bangkok, having 97 applicants, and another session during October 11 – 12, 2023, at the Operation Building, MCOT Public Company Limited, Bangkok, having 87 applicants. A total of 118 applicants have passed the assessment. This aims to promote and support the implementation of the Notification of the NBTC on Training and Assessment for Certification as Announcers in Broadcasting and Television Businesses B.E. 2556 (2013), as well as supporting personnel in broadcasting and television businesses in roles of announcers, hosts, program facilitators, and professional community media service users.



3) The NBTC has organized the training programs to develop the skills of personnel in television broadcasting business, both online and in central and regional locations, for 4 sessions, during June 8 – 9 and 15, 2023, July 12 – 13 and 18, 2023, July 20 – 21, and 26, 2023, and September 5 – 6,

and 12, 2023. The training programs aim to promote and support the potential development of television personnel to meet standardized and high-quality professional standards, ensure impartiality, and foster a sense of social responsibility.



The Online Training for Developing Skills of Personnel in Television Broadcasting Business

4) The NBTC has conducted “The 6th Announcer Camp” training programs for professional announcers to instill ethics and promote professional integrity in mass communication, enhance media language skills appropriately, and foster collaborative networks between the Office of the NBTC and stakeholders. The program was conducted in 4 sessions, including a session at (1) Ratchaburi province during July 26 – 27, 2023, (2) at Khon Kaen province during August 24 – 25, 2023, (3) at Krabi province during September 21 – 22, 2023, and (4) at Chiang Mai province during October 26 – 27, 2023.

5) The NBTC has developed the draft Broadcasting Universal Services Obligation Plan B.E. 2566 - 2568 (2023 - 2025), to serve as a guidelines and goal for promoting and supporting equitable access, perception and utilization of digital news and information for all groups of people, including people with disabilities, and the underprivileged, as well as addressing social dimensions in areas with accessibility issues and limitations. The plan also aims to promote access to high-quality and diverse program content that can be appropriately applied and beneficial in broadcasting and television business operations. The plan was announced to the public during June 12 to July 11, 2023. In addition, the public hearing conference was held on July 10, 2023, at the Office of the NBTC Headoffice, to seek feedback on the draft Broadcasting Universal Services Obligation Plan B.E. 2566 - 2568 (2023 - 2025). The NBTC, in the 23rd/2023 meeting, on December 20, 2023,

approved the draft Broadcasting Universal Services Obligation Plan B.E. 2566 - 2568 (2023 - 2025).

7. Developing Personnel in Broadcasting and Television Businesses, and Enhancing Knowledge and Understanding of Broadcasting and Television Businesses.

7.1 The skills development for personnel in broadcasting and television businesses, knowledge and understanding enhancement in broadcasting and television businesses has been carried out, as follows:

1) Organizing a workshop seminar on the topic of “Korean Media Landscape and the Opportunities for Thai-Korean Co-production”, on January 17, 2023 in Bangkok. This workshop aims to facilitate the exchange of experiences and perspectives from both local and international experts in television program content production for the television industry, regarding directions for regulating media in the rapidly evolving technological landscape and changing consumer behaviors. This includes exploring the success of the Korean media industry, the potential and challenges in content production in Thailand and abroad, as well as strategies for collaboration between Thai and international co-production. This leads to applying knowledge to business operations, strategic planning, capability enhancement in program production, as well as promoting Thai television operators to produce content that can compete on the global stage in the future.



2) Organizing a workshop training course on media ethics and addressing fake news in critical situations during March 1 – 2, 2023 in Bangkok, in collaboration with Silpakorn University. This serves as a guideline and regulatory mechanism for instilling ethics in communication and management, and preventing fake news dissemination in critical situations. This aims to ensure mass media, professional in broadcasting and television industry, professional organizations, and stakeholders, to operate and present media efficiently and appropriately, based on principles of ethics, and standards on ethics and standardized conduct of mass media.

3) Organizing a workshop training course on comprehensive child news report without violating media ethics, on May 3, 2023 at the Office of the NBTC Headoffice, to enhance the profession skills of media personnel, enabling them to apply their knowledge in their works and creating news content effectively in quality, value, and worthiness aspects, adhering to the principles of mass media ethics and professional code of ethics, without violating the rights of children and youth, and relevant laws.



The Workshop on Comprehensive Child News Report
without Violating Media Ethics

4) Organizing training for announcers, news reporters, and program hosts, to enhance their knowledge and understanding of news presenting in various situations, and promote the development of

professional skills among personnel in the broadcasting and television industry, ensuring professionalism, neutrality, and a sense of responsibility in announcer, news reporter, and program host roles. The training sessions were held in 4 provinces, including Samut Songkhram during May 26 – 27, 2023, Songkhla during June 22 – 23, 2023, Ubon Ratchathani during August 10 – 11, 2023, and Sukhothai during August 31 – September 1, 2023.

5) Organizing a workshop training course on standards for news reporting among conflict situations for journalists in Thailand, at Pattani province, during June 16 – 21, 2023, in collaboration with the Faculty of Communication Arts, Chulalongkorn University. This aims to enable stakeholders to work effectively according to the ethical standards of the broadcasting and television industry, and to promote professional ethics in their work. Additionally, this aims to facilitate licensees and media professionals to understand and be aware of the principles of conflict and peace, as well as enhancing analytical skills, and the ability to apply various communication tools in accordance with the principles of peace journalism, aiming to reduce conflict issues in society.

6) Organizing a seminar on “Media Presentations that Led to Hatred and Conflict” on July 14, 2023, at the Office of the NBTC, to enhance understanding and exchange knowledge regarding news reporting that led to hatred and conflict, especially the cases of violence that link to ideological positions, political beliefs, and susceptibility of public to incitement to hatred through radio-television, and online social media in the post-truth era. This also emphasizes the role of representing various interest groups. While the mass media has the right to present ideas and beliefs, the expression through news presentation and various programs, must have a framework of responsibility and clearly defined roles, to avoid producing media that fuel hatred and conflict. Additionally, it should not contribute to or amplify hatred into severe conflicts that have an impact on society.

7) Organizing training to create community network for public sectors (audience) in the broadcasting and television businesses for the year 2023, to enable public participation in monitoring radio and television broadcasts, and notify the Office of the NBTC to take action systematically, swiftly, and efficiently, against those who do not comply with the law. The training was organized in 4 provinces, including Songkhla during July 20 – 21, 2023, Ubon Ratchathani during August 17 – 18, 2023, Samut Songkhram during September 14 – 15, 2023, and Nan during October 19 – 20, 2023.





Telecommunications Businesses Regulation

The NBTC has formulated policies to regulate the telecommunications business to drive communication with 5G technology, which can create economic value added in various industries, and elevate peoples' quality of life, as well as enhancing the country's competitiveness. Additionally, the NBTC emphasizes the importance of cybersecurity measures, privacy protection from technology applications, and consumer protection to ensure that consumers utilize telecommunications services with good standards and fair prices. The significant achievements in 2023 are as follow:

1. Supporting the Networks Establishment and Utilization of 5G Technology.

1.1 Allocating spectrum for international mobile telecommunications of Thailand to promote the application of 5G technology. The NBTC has conducted a study on revising spectrum usage (clear band), prior to spectrum auction, considering spectrum demand and supply, and forecasting trends in technology and its application (Use Cases) in the future. In addition, the NBTC has carried out various activities to prepare for the spectrum auctions for the 3500 MHz band and the Millimeter Wave band, as follows:

1) Allocating the 3500 MHz band for International Mobile Telecommunications. The operational workshop was conducted during August 31 to September 3, 2023, to develop guidelines for managing the 3500 MHz spectrum band, regulating mobile virtual network services, and regulating domestic mobile phone service fee structure. This aims to hold discussions and brainstorming with relevant bureaus on improving the 3500 MHz, in preparation for allocating spectrum for the international mobile telecommunications (IMT), as well as the license – expiring spectrum for 4 bands,

including the 850 MHz, 1500 MHz, 2100 MHz, and 2300 MHz. Subsequently, a working group will be set up to formulate policies on the spectrum allocation, and propose the policies to the NBTC.

2) Spectrum utilization in the 28 GHz band.² In 2023, a focus group meeting to draft Notifications regarding spectrum utilization in the 28 GHz, was held on October 12, 2023. The meeting discussed and reviewed the draft Notifications based on spectrum ranges, including the draft guidelines for fixed-satellite services licensing in the 27.0 – 27.5 GHz, and the draft Notification of the NBTC on criteria for using spectrum bands for fixed-satellite services in the 27.5 – 31 GHz. Subsequently, the Subcommittee on Spectrum and Technical Standards, in the 4th/2023 meeting on November 6, 2023, acknowledged the operations regarding spectrum utilization in the 28 GHz, and approved the draft guidelines for fixed-satellite services licensing in the 27.0 – 27.5 GHz. The draft guidelines were presented to the NBTC in the 22nd/2023 meeting, on November 23, 2023, for consideration.

1.2 Granting licenses for regulatory sandbox.

The NBTC has granted licenses for regulatory sandbox area to the regulatory sandbox participants according to the Notification of the NBTC on Criteria for Permitting Frequency Use for Innovation Development and Testing in a Sandbox Area (Regulatory Sandbox) since 2019 until present, for 14 licensees. In 2023, permission for regulatory sandbox participant have been granted to 3 organizations, including (1) the National Science and Technology Development Agency (NSTDA), for developing autonomous mobile robots and IoTs for industries, (2) Faculty of Medicine, Ramathibodi Hospital, for developing medical learning

² The NBTC, in the 29th/2022 meeting on October 26, 2022, approved the guidelines for spectrum utilization in the 28 GHz band for the International Mobile Telecommunications (IMT), by allocating the 27.0 – 27.5 GHz, and assigned the Office of the NBTC to prepare the Notifications related to criteria on frequency sharing for co-primary services in the 28 GHz band.



system with Virtual Reality (VR) technology and patient service, and (3) Mahanakorn University of Technology, for developing and testing satellite-based communication innovation. Supporting the research in the regulatory sandbox will provide insights into technology trends, the readiness of the ecosystem,

technical feasibility, as well as identifying challenges and obstacles in implementing operations. This will help accommodate the development of innovations and new digital services in the future, benefiting both the economy and society. Details are shown in Table 4.

Table 4 : Regulatory Sandboxes Authorized by the NBTC, and the Office of the NBTC

No.	List of Regulatory Sandboxes	Permitted Spectrum Bands	Testing Areas
1	Chulalongkorn University	748 – 758 MHz 920 – 925 MHz 3.3 – 3.8 GHz 5.850 – 5.925 GHz 24.25 – 24.30 GHz 27.0 – 29.5 GHz 57 – 76 GHz 81 – 86 GHz 6425 – 7125 MHz	In areas of the government education and commerce of Chulalongkorn University, Pathumwan, Bangkok
2	Kasetsart University	24.3 – 26.8 GHz 26.5 – 29.5 GHz 2400 – 2500 MHz	The 23 rd Building, Faculty of Engineering at Sriracha, and the 26 th Building, Faculty of Science at Sriracha, Si Racha, Chon Buri
3	Prince of Songkhla University	703 – 803 MHz 920 – 925 MHz 2300 – 2310 MHz 2370 – 2400 MHz 3.1 – 3.3 GHz 3.4 – 4.2 GHz 5.85 – 6.6625 GHz 9.5 – 9.8 GHz 10.95 – 12.75 GHz 13.75 – 14.10 GHz 24.25 – 26.80 GHz 27.0 – 27.5 GHz 27.50 – 29.50 GHz 27.00 – 30.05 GHz	Areas of Prince of Songkhla University, Kho Hong, Hat Yai, Songkhla
4	WHA Eastern Industrial Estate (WHA EIE)	703 – 803 MHz 1750 – 1785 MHz 1845 – 1880 MHz 2300 – 2310 MHz 2370 – 2400 MHz 24.3 – 26.8 GHz	The office buildings and surrounded areas which are parking areas, green space, and roads within the estate, Map Ta Phut, Mueang Rayong District, Rayong

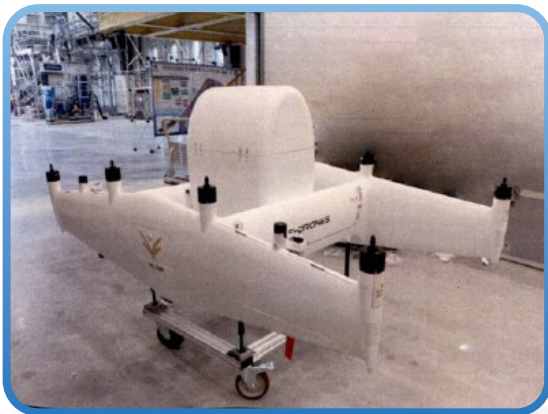
No.	List of Regulatory Sandboxes	Permitted Spectrum Bands	Testing Areas
5	Eastern Seaboard Industrial Estate (Rayong) (ESIE)	703 – 803 MHz 1750 – 1785 MHz 1845 – 1880 MHz 2300 – 2310 MHz 2370 – 2400 MHz 24.3 – 26.8 GHz	Plaza 1, Plaza 2, the office buildings and roads within the estate, Pluak Daeng District, Rayong
6	WHA Eastern Seaboard Industrial Estate (WHA EIE1)	703 – 803 MHz 1750 – 1785 MHz 1845 – 1880 MHz 2300 – 2310 MHz 2370 – 2400 MHz 24.3 – 26.8 GHz	Plaza 3 and roads within the estate, Pluak Daeng District, Rayong
7	The Digital Economy Promotion Agency (DEPA)	3400 – 3600 MHz	The Digital Economy Promotion Agency Headquarters, Ladprao Hills Building, G Floor, reception area, 2 nd – 5 th Floor, 7 th – 8 th Floor, Chatuchak, Bangkok
8	King Mongkut's University of Technology North Bangkok	694 – 703 MHz and 748 – 758 MHz 3300 – 3800 MHz 25.1 – 25.2 GHz 27 – 40 GHz	Headquarters of King Mongkut's University of Technology North Bangkok, Bang Sue, Bangkok
9	Faculty of Engineering, Burapha University	4600 – 4900 MHz	Faculty of Engineering, Burapha University, Mueang District, Chon Buri
10	Khon Kaen University	3300 – 3800 MHz 27.50 – 28.35 GHz	Khon Kaen University, Mueang Khon Kaen District, Khon Kaen
11	Eastern Economic Corridor by PTT Public Company Limited	410 – 480 MHz 915 – 920 MHz 925 – 928 MHz	PTT Public Company Limited (Eastern Economic Corridor) Wang Chan, Rayong
12	National Science and Technology Development Agency	617 – 698 MHz 6.425 – 7.125 GHz 27.0 – 27.5 GHz and 37 – 40 GHz	Eastern Economic Corridor of Innovation (EECi) Headquarters, the National Science and Technology Development Agency, Wang Chan, Rayong
13	Faculty of Medicine Ramathibodi Hospital, Mahidol University	6.425 – 7.125 GHz	Faculty of Medicine Ramathibodi Hospital, Mahidol University
14	Mahanakorn University of Technology	17.50 – 20.00 GHz 27.00 – 30.00 GHz 37.00 – 43.50 GHz 47.00 – 52.40 GHz	Mahanakorn University of Technology in Bangkok and in Phuket, Rayong, Nakhon Nayok, Chai Nat, Phitsanulok, and Chiang Rai

Remark : Data as of December 31, 2023

Source : Facilities-Based Telecommunications Business Licensing Bureau, Office of the NBTC

In 2023, the regulatory sandbox participants have submitted progress and testing reports, on innovation development and testing in the regulatory sandbox areas to the Office of the NBTC for 3 projects, as follows:

1) The Eastern Economic Corridor by PTT Public Company Limited submitted the operational progress report for the period of December 1, 2022 to February 28, 2023. In this regard, PTT Public Company Limited obtained consent for AI and Robotics Ventures Company Limited, to apply to use the sandbox area and frequency for the development and testing of logistic drone technology, to test the efficiency of F-Drone Hyperlaunch for cargo transportation within the designated test areas, and to study the feasibility of practical applications in the future. Initially, the drone was designed to transport medicine, food, and urgent supplies to ships, drilling platforms, replacing costly helicopter transport or long-duration sea transport. The said drone has a payload capacity of up to 5 kilograms and can fly long distances for cargo transport, reaching up to 50 kilometers. In order to ensure remote control and command of the drone, the control system has been designed to utilize multiple frequency bands of radio communications for safe operation during flight.



F-Drone Hyperlaunch HL-170

2) The progress report on the traffic management system to reduce accidents through the utilization of 5G networks by Point IT Consulting Company Limited, conducted within the areas of Thailand 5G Ecosystem Innovation Center (5G EIC), at Digital Economy Promotion Agency (DEPA), for the period of January to March 2023, was submitted to

the Office of the NBTC. In this regard, Point IT Consulting Company Limited has notified the intention to test equipment for experimentation, to develop innovations through connectivity on a 5G network integrated with closed-circuit television (CCTV) technology. Currently, there has been an addition of Artificial Intelligence (AI) technology into CCTV cameras, allowing them to be applied in various situations. For example, detecting unauthorized parking in no-parking zones, reading license plates, monitoring vehicle speed, detecting abnormal movements, and intrusions into restricted areas, as well as identifying suspicious objects. All of these features can be implemented on Cloud technology through 5G network connection, which offers high-speed data transmission, supports a large number of devices, with low latency. This enables reducing the workload of traffic law enforcement, enhancing accuracy in detection, and significantly decreasing accidents and criminal activities. The test results of the platform development, image tracking, and cloud servers, demonstrate successful and efficient connection and fast & accurate data transmission through the 5G network. For full-scale operational testing of real-time image and video data transmission on the cloud platform and actual use of the real-time bio-signal tracking system, precise data viewing is possible. The platform can efficiently pull data and process it through the 5G network in real time.

3) The experimental study and implementation of 5G technology on the 6 GHz band in the regulatory sandbox area of Chulalongkorn University report, for the period of February to June, 2023, was submitted to the Office of the NBTC. The experimental study under the memorandum of cooperation between Chulalongkorn University and Huawei Technology (Thailand) Company Limited, aims to study the 6 GHz, using the frequency range from 6425 - 7125 MHz, and experimental service provision for IMT (5G and Beyond), to study the application in 2 cases, including 1) IMT Test, for testing and measuring coverage of the sandbox areas with the 6 GHz band, and 2) 5G2X, for testing the speed of data transmission with the 6 GHz band, to support services that require high-speed connectivity such as AR, VR, and Metaverse.

1.3 Promoting use cases to further extend Smart Hospital from Siriraj Hospital to Ramathibodi Hospital.

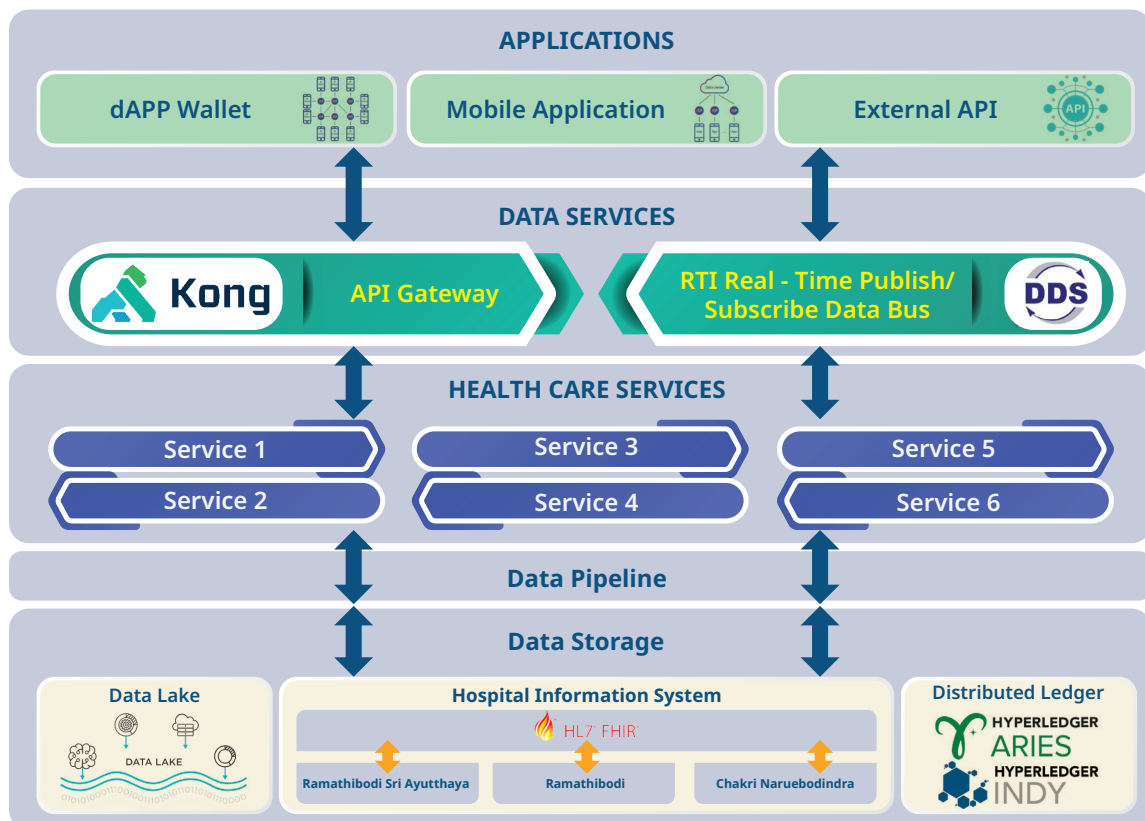
The NBTC, in the 23rd/2023 meeting on August 31, 2023, approved the budget support to the “Hospital and Health Data Management System Using 5G Network Prototype” project of the Ramathibodi Foundation under Her Royal Highness Princess Maha Chakri Sirindhorn, to support the operations of medical personnel of the Faculty of Medicine, Ramathibodi Hospital, for expanding the medical field, and extending the prototype to affiliated hospitals and other hospitals, as well as public health management agencies. This also aims to elevate the efficiency of the nation’s public health with 5G technology, with the budget support for 180.00 million baht. The initiative has 6 subprojects as follows:

1.3.1 Adopting blockchain technology to patient data encryption on the 5G cloud network. The electronic health record system to facilitate patients in receiving medical treatments in affiliated hospitals without traveling to Ramathibodi Hospital, has been developed by utilizing blockchain and 5G technologies to cooperate with the ‘RAMA Application Platform’, showing QR Code

that allows only hospitals to access patient information with the patient’s consent. This will help the destination hospital to retrieve treatment history, medicine record, and history of drug allergy, which are very important to patient treatment, as well as laboratory test results, and x-ray results. Due to large amounts of medical records, without 5G technology adoption, reading results and retrieving treatment history take a long time to process. This will also facilitate accurate diagnosis by linking all data through blockchain technology, enabling patients to be treated across hospitals based on a unified database.

Benefits to be gained

Patients benefit from the ability to connect patient data across 3 hospitals, facilitating the seamless transfer of treatment histories to the destination hospital, using a combination of Blockchain and 5G technologies. This initiative also enables patients and treating physicians to verify the accuracy and treatment history, allowing for precise diagnosis of diseases without the need for patients to physically present their medical history from previous hospitals. For instance, medical records, surgeries, medications, X-ray films, and CT scans can be accessed instantly by specialized physicians, aiding in treatment decisions.



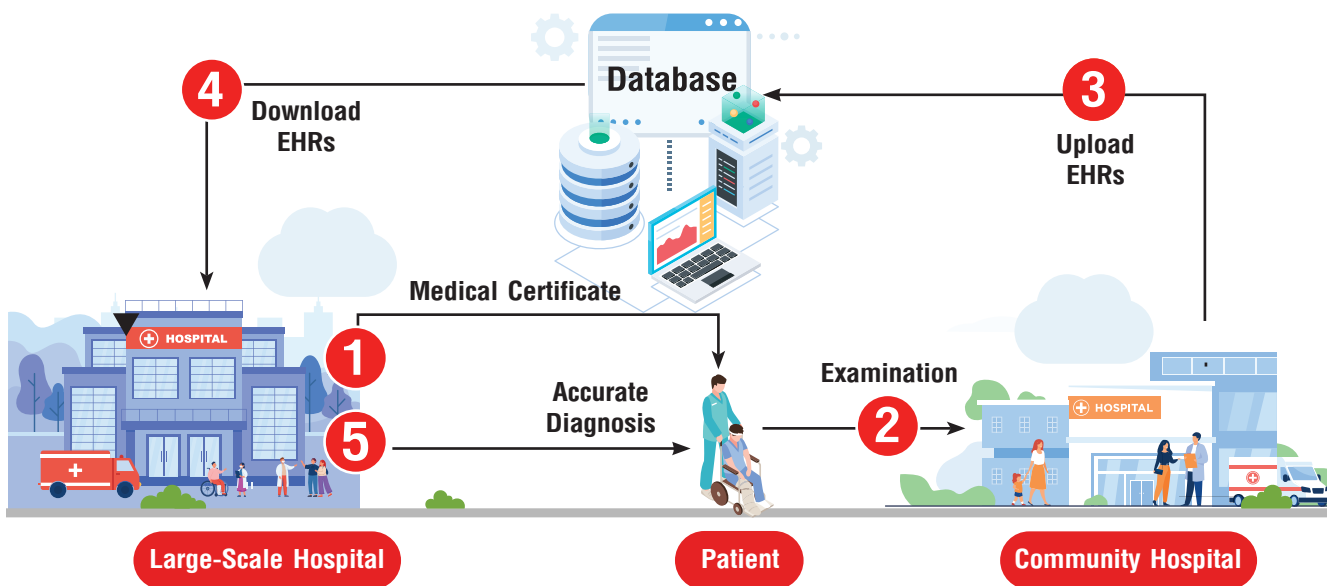
Example of Blockchain Operation

1.3.2 The telemedicine consultation system project along with mobile monitoring and measuring electrocardiogram, vital signs, and blood & urine test results. The Telehealth Solution system with the Telemedicine Consultation System (TMS) equipment can be used for 8 services, such as measuring electrocardiogram, vital signs, and blood & urine test results from outside the hospital or at the patient's house. The patient's test results will be connected to 5G network and transmitted to Cloud to receive the test results. Then, the data will be sent back to the main hospital through the RAMA Application Platform, allowing medical personnel to diagnose the symptom promptly. With 5G technology's ability to handle large

volumes of data transmission, and process real-time analysis seamlessly, physicians can safely consider treatment options, record patient data during each examination, and provide health data warehouse analytics.

Benefits to be gained

The project will benefit medical personnel, by enabling them to bring the equipment to the homes of chronic patients, and send the measurement results back to the hospitals. This allows physicians to continue diagnosing diseases without patients' arrival to the hospital. This greatly benefits patients and their families by providing convenience.

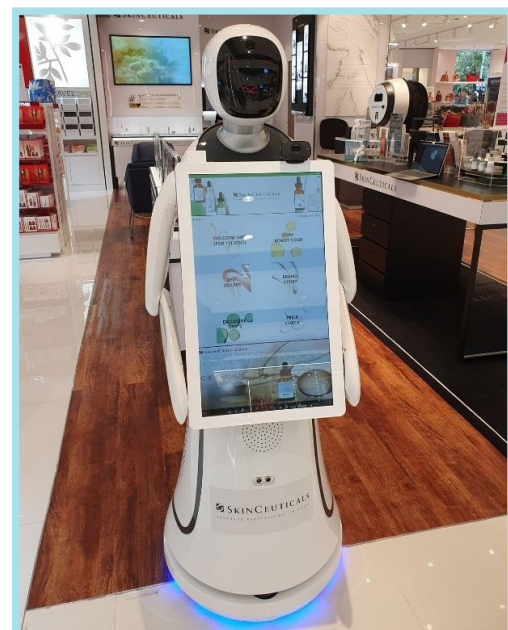


The Architecture of the Telemedicine Consultation System Project

1.3.3 The Robot Assistant/ Delivery Robot Development Project. A robot concierge serves patients by greeting and escorting them to the meeting points, using 5G technology to communicate between patients and medical personnel via video calls. It also assists in delivering medical equipment, medication, or devices from one department to another through 5G network connectivity to the Cloud for collaborative work. In addition, it can work in high-risk areas, such as infection zones, by using it to collect contaminated items, reducing the risk of infection for medical personnel.

Benefits to be gained

A robot concierge facilitates the delivery of medical equipment by reducing process and lead time, and assists patients by providing appointment information, and escorts them to the appointment destinations, reducing patient confusion. It can be used in high-risk areas to reduce the risk of infection for medical personnel.



Example of a Robot Developed to Assist Tasks in Hospital

1.3.4 The Project to Create Virtual Reality with HoloLens 2 through 5G Network Connectivity. Combining AI technology, the project utilizes the 5G network connectivity to create virtual reality with HoloLens 2. It benefits medical personnel by assisting in complicated surgical simulations to reduce the risk of errors during actual surgeries, and to aid medical teams in emergency situations by providing guidance on first aid while waiting for emergency physicians.

1.3.5 The Cloud & AI Diagnosis (Screening) Project. Using web browsers with 5G technology combined with AI to analyze images and physical characteristics of various diseases helps assist physicians in preliminary patient screening before further consultation with specialized physicians. This will help reduce the time for preliminary diagnosis before confirming the results with specialized physicians. In addition, network hospitals can also utilize the system, enabling network hospitals to diagnose and treat patients, thereby reducing patient congestion at Ramathibodi hospital.

1.3.6 The 5G Multi-Access Edge Computing Project. The addition of 50 more 5G signal distribution points is aimed at enhancing the coverage of the 5G network within the 5G Next-Gen Healthcare project area. This expansion is intended to support the usage of smart devices, such as Robot Assistant, HoloLens headset, and portable electrocardiogram monitoring devices, etc. This will enable physicians to access and analyze data promptly, leading to accurate diagnosis.

On May 8, 2023, at Sapathum Palace, Her Royal Highness Princess Maha Chakri Sirindhorn granted the opportunity to dean of Faculty of Medicine, Ramathibodi Hospital, Mahidol University, and Chairman of the board of directors of the Ramathibodi Foundation under Her Royal Highness Princess Maha Chakri Sirindhorn to lead the NBTC and the executives of the Office of the NBTC to contribute funds to the “Hospital and Health Data Management System Using 5G Network Prototype” under the supervision of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University.



Her Royal Highness Princess Maha Chakri Sirindhorn graciously granted the NBTC at Sapathum Palace to contribute funds to the “Hospital and Health Data Management System Using 5G Network Prototype” project.

2. Notifying Emergencies through Cell Broadcast System/Mobile Alert System.

In 2023, the NBTC has engaged in discussions with mobile service providers to explore ways to implement a targeted emergency notification system. This initiative is divided into 2 phases as follows:

Phase 1 (urgent) involves sending short messages (SMS) using the location-based service of smartphones nationwide, through a collaborative effort of mobile service providers. This functionality is already available and operational.

Phase 2 involves implementing the cell broadcast system, which is more efficient than sending short messages (SMS), for immediate and targeted emergency alerts, enabling faster data transmission that covers a wider area. Currently, it is in the process of studying technology and collaborating with mobile service operators to explore guidelines for developing a cell broadcast-based emergency alert system for the public urgently for public interest.

On October 11, 2023, Clinical Professor Sarana Boonbaichaiyapruck, Chairman of the NBTC, consulted with Associate Professor Tavida Kamolvej, and Deputy Governor of Bangkok (Bangkok Metropolitan Administration), to foster collaboration

in developing the emergency alert system through cell broadcast system. This discussion has addressed issues and guideline for developing the emergency alert system collectively.



The Meeting with Bangkok Metropolitan Administration to foster collaboration in developing the Emergency Alert System through Cell Broadcast

3. Promoting Mobile Virtual Network Operators (MVNO), Preparing the Amendment of Relevant Notification of the NBTC, and Reviewing the Notification on Formulating and Regulating the Structure of Domestic Mobile Phone Service Charges.

In 2023, the NBTC prescribed a policy to promote mobile virtual networks, to provide consumers with alternatives. This initiative aims to enhance competitiveness in the mobile phone service market, as the number of mobile virtual network operators (MVNO) has decreased due to business consolidation. Thus, the NBTC assigned the Office of the NBTC to study and analyze the problem landscape and guidelines for promoting MVNO regulatory oversight. The study results will be used for developing policies to amend relevant Notifications, and enhancing competition among MVNOs in Thailand, as follows:

3.1 Promoting mobile virtual network operators (MVNO), and studying guidelines for revising relevant Notifications of the NBTC.

The NBTC has conducted a study and data gathering on challenges and obstacles in enforcing the current Notification of the NBTC on Mobile Virtual Network Operator Service (“MVNO Notification”), dated July 9, 2020, studying the market data of the mobile virtual network operator service, and organizing focus group meetings with mobile network operators (MNO) and mobile virtual network operators (MVNO),

as well as compiling a report on the analysis of the current challenges and regulatory promotion strategies for MVNO service, to present to the Subcommittee on Licensing and Regulating Telecommunications and Radiocommunications Businesses, and proceed to the NBTC for consideration. From gathering data on the current challenges and obstacles in enforcing the existing MVNO Notification, and considering feedback from MNOs and MVNOs, it was found that there are still issues related to pricing, costs, minimum service purchase quantities setting and other areas that require further data analysis. This will help improve regulatory oversight to better suit the current situation, and support the entry of future MVNO into the market.

3.2 Reviewing the structure of domestic mobile phone service charges under the current regulatory oversight, as follows:

1) According to Clause 11 of the Notification of the NBTC on Formulating and Regulating the Structure of Domestic Mobile Phone Service Charges, dated November 13, 2019 (“Service Charge Structure Notification”), it stipulates the Office of the NBTC to conduct a regular review of service charge structures every three years, considering the telecommunications market conditions, trends of proposed service rate structures, and service costs of licensees. Additionally, according to Clause 7 of the Notification of the NBTC on Formulating and Regulating Price Ceiling of Domestic

Mobile Phone Service Rates for the Usage Exceeding the Limit of the Main Promotional Packages, dated November 25, 2020 (“Excess Usage Notification”), it stipulates the Office of the NBTC to review the price ceiling of service rates for the usage exceeding the limit of the main promotional packages, along with the Service Charge Structure Notification. Now the three-year deadline has been met, the Office of the NBTC proposed guidelines and principles for reviewing the service charge structure and the price ceiling of service rates for the usage exceeding the limit of the main promotional packages of domestic mobile phone service, as well as further analysis in accordance with the assigned guidelines from the 5th/2023 meeting of the Subcommittee on Competition and Price, on August 15, 2023. Subsequently, in the 8th/2023 meeting of the Subcommittee on Competition and Price, on November 14, 2023, the meeting assigned the Office of the NBTC to study additional information on legal matters and operational guidelines regarding formulating price ceiling of domestic mobile phone service charges, as stipulated in Section 55 of the Telecommunications Business Act B.E. 2544 (2001), as well as utilizing the data obtained from the National Statistical Office’s survey in the survey project on radio, television, and telecommunication usage and accessing behaviors in Thailand, to supplement the analysis of service charge structures and price ceiling of service rates for the usage exceeding the limit of the main promotional packages of domestic mobile phone service. This aims to verify the consistency of the data obtained from mobile phone service providers. The results will be used to supplement the process of reviewing the service charge structure, price floor of main promotional packages, and price ceiling of service rates for the usage exceeding the limit of the main promotional packages, and proposed to the Subcommittee on Competition and Price meeting. The Office of the NBTC has conducted the analysis and presented the Subcommittee on Competition and Price with the guidelines for reviewing the structure of domestic mobile phone service charges under the current regulatory oversight, according to the Service Charge Structure Notification and the Excess Usage Notification, aligned with timeframe and provision of relevant Notifications of the NBTC. The key aspects of the guidelines for reviewing the service charge structure include various approaches, such as market price-based principles (current method), cost-based

principles, and principles considering efficiency, as well as the resolution adopted at the meeting of the Subcommittee on Competition and Price, that is, utilizing the domestic mobile roaming service rates as per the domestic mobile roaming service contracts approved by the NBTC, and data from the National Telecom Public Company (NT) for benchmarking purposes in the review process.

2) The NBTC, in the 22nd/2023 meeting on November 23, 2023, assigned the Office of the NBTC to propose operational guidelines for spectrum allocation in the 3500 MHz for telecommunications, promoting and regulating mobile virtual network services, and guidelines for reviewing the mobile service charge structure regulation, to the Subcommittee on Licensing and Regulating Telecommunications and Radiocommunications Businesses, Subcommittee on Competition and Price, Subcommittee on Frequency and Technical Standards, Subcommittee on Consumer Protection in Broadcasting and Television Businesses, and Subcommittee on Consumer Protection in Telecommunications Business, for considering and providing recommendations in the Office of the NBTC’s operations, prior to proposing to the NBTC for consideration.



The meeting to consider the operational guideline for spectrum allocation in the 3500 MHz

4. Conducting a Study to Review Regulatory Guidelines for Mobile Internet Service Rates, such as Domestic Mobile Roaming Service, Wholesale Mobile Services to Mobile Virtual Network Operators (MVNO), National Internet Exchange (NIX), and International Internet Gateway (IIG).

Mobile internet service is a telecommunications service of utmost importance for the development of the digital economy and society, with continuously increasing numbers of users and usage volumes. However, the regulatory guidelines for mobile internet service charges that the Office of the NBTC relies on may not reflect the current situation, especially after

the consolidation of mobile phone service providers, which has led to various changes in the industry landscape. Therefore, there needs to be a review of the regulatory guidelines for mobile internet service charges to ensure effective oversight that is fair to both users and providers. This review should also align with the rapidly changing market conditions and technological landscape to keep pace with evolving service delivery. In addition, it is essential to have cost data of relevant services in providing mobile internet service, and cost rates of telecommunications network usage at the wholesale level, to be useful for further consideration, such as domestic mobile roaming service (Domestic Roaming), wholesale mobile services to mobile virtual network operators (MVNO), National Internet Exchange (NIX), and International Internet Gateway (IIG). As there are multiple interconnected wholesale services related to mobile internet service provision, the Office of the NBTC has undertaken the following actions related to the directive:

4.1 Developing the Telecommunications Wholesale Roadmap.

The NBTC has undertaken a consultancy project to develop the Telecommunications Wholesale Roadmap. The outcome is the regulatory guidelines for wholesale services, aligning with the current situations, which will lead to improvements and the drafting of the NBTC Notifications related to telecommunications wholesale service regulation. The project is expected to be completed by June 2024.

4.2 Developing a project plan for studying/reviewing the rates or costs of telecommunications wholesale access related to mobile internet service provision.

The NBTC has conducted a study/review on the rates or costs of telecommunications wholesale access related to mobile internet service provision. In the past, the NBTC has studied preliminary data on rates or costs of the mentioned services by initiating a project to hire consultants to study the compensation rates for connecting to the telecommunications network oversight, both fixed-line and mobile, using the Pure LRIC³ method, along with a project to hire consultants to study the telecommunications wholesale access⁴ service oversight. However, it was found that the data may

not align with the current situation. Therefore, the Office of the NBTC has initiated action plans for relevant projects. The outcome is the cost data of telecommunications wholesale access related to mobile internet service provision. This data will be used to inform considerations for regulatory oversight in accordance with the results obtained from the consultancy project for developing and revising the Telecom Wholesale Roadmap.

5. Organizing Communication Lines and Placing Communication Lines Underground.

5.1 Organizing communication lines⁵ and overseeing last-mile network service provision.

The NBTC and the Office of the NBTC has collaborated with the Metropolitan Electricity Authority (MEA), the Provincial Electricity Authority (PEA), the National Telecom Public Company Limited, telecommunications operators, and relevant agencies to develop an integrated plan for organizing communication lines on utility poles along main routes, both in Bangkok and other provinces. This aims to foster infrastructure sharing to reduce the number of communication lines on utility poles urgently, and enhance last-mile network services to address communication line congestion issues. Additionally, continuous monitoring and overseeing have been implemented to track progress according to the integrated plan, and regularly inform the Prime Minister of the progress. For the budget allocation to implement the integrated plan, the Office of the NBTC should collaborate with relevant agencies to discuss details, and proceed with the plan to achieve the desired outcomes.

In 2023, the organization of communication lines has been an ongoing effort since 2022, focusing on routes that have not yet been completed, and considering the operational area expansions for organizing communication lines. An additional 10 districts in Bangkok have been included in the Communication Lines Organizing Plan B.E. 2566 – 2567 (2023 – 2024), in addition to the existing 16 districts. This aims to address communication line congestion in densely populated areas. The routes for organizing communication lines, according to the Communication Lines Organizing Plan B.E. 2566 – 2567 (2023 – 2024), can be summarized as follows:

³ The project was carried out between B.E. 2563 – 2564 (2020 – 2021).

⁴ The project was carried out between B.E. 2561 – 2562 (2018 – 2019).

⁵ In accordance with the resolution of the Cabinet Meeting, on November 23, 2021.



The meeting with the Royal Thai Police to coordinate efforts in organizing communication lines



5.1.1 The operational plan for organizing communication lines in the Bangkok metropolis and vicinity area.

The organization of communication lines in the Bangkok metropolis and vicinity area is divided into 2 zones: the urgent zone, which comprises densely populated areas requiring urgent communication line organization for the safety of residents and their property, and the non-urgent zone, which includes areas outside the urgent zone covering certain areas in Bangkok, Nonthaburi, and Samut Prakarn provinces, as follows:

1) The communication lines organizing routes in the Bangkok metropolitan area in the urgent zone, in a total of 542 routes, with a combined distance of 796.71 kilometers, consist of the following routes.

- The routes in the Bangkok metropolis area in the urgent zone, that have not yet been completed, in accordance with the communication lines organizing plan for the year 2022, for 180 routes, with a combined distance of 333.39 kilometers
- The routes specified in the experimental single last mile network deployment plan, that have not yet been completed, in accordance with the communication lines organizing plan for the year 2022, for 1 route, with a combined distance of 2.2 kilometers
- The routes in the Bangkok metropolis area in the urgent zone, in accordance with the communication lines organizing plan for the year 2023 - 2024, for 361 routes, with a combined distance of 461.12 kilometers

2) The communication lines organizing routes in the Bangkok metropolis and vicinity area in the non-urgent zone, in a total of 82 routes, with a combined distance of 563.88 kilometers, consist of the following routes.

- The routes in the Bangkok metropolis and vicinity area in the non-urgent zone, that have not yet been completed, in accordance with the communication lines organizing plan for the year 2022, for 34 routes, with a combined distance of 321.79 kilometers.
- The routes in the Bangkok metropolis and vicinity area in the non-urgent zone, that have not yet been completed, in accordance with the communication lines organizing plan for the year 2023 - 2024, for 48 routes, with a combined distance of 242.09 kilometers.

5.1.2 The operational plan for organizing communication lines in other provinces.

The organization of communication lines in other provinces comprises 970 routes, with a combined distance of 1,686.76 kilometers, as follows:

- The routes in other provinces, that have not yet been completed, in accordance with the communication lines organizing plan for the year 2022, for 533 routes, with a combined distance of 927.98 kilometers.
- The routes in other provinces, in accordance with the communication lines organizing plan for the year 2023 - 2024, for 437 routes, with a combined distance of 758.78 kilometers.

5.1.3 The operational results in accordance with the communication lines organizing plan for the year 2023 - 2024.

The operational results in accordance with the communication lines organizing plan for the year 2023 - 2024, in the Bangkok metropolis and vicinity area, and other provinces are shown in Table 5.

Table 5 : The Operational Results in Accordance with the Communication Lines Organizing Plan for the Year 2023 – 2024

Quarter	Bangkok Metropolitan Area & Surrounding Provinces				Routes in Other Provinces	
	Urgent Zone		Non-Urgent Zone			
	Route	Distance (km.)	Route	Distance (km.)	Route	Distance (km.)
Q1/2023	4	11.60	9	71.41	81	140.617
Q2/2023	4	15.90	8	83.30	31	37.471
Q3/2023	4	12.35	13	109.08	33	66.89
Total	12	39.85	30	263.79	145	244.978

Remark : Data as of November 2023

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

In addition to organizing communication lines in accordance with the communication lines organizing plan, the Office of the NBTC has also considered developing a framework for providing last-mile network service, to address communication line congestion issues, since providing last mile network service is crucial for expanding telecommunication services to end users. In other words, it entails extending network connectivity from the point of interconnection (POI) to at least the drop wire, connected to the optical network unit (ONU) or final termination box (FTB) at residential premises. In this regard, the Office of the NBTC received feedback from the focus group meeting with telecommunications operators, regarding significant issues in providing last-mile network service, such as format of licensing and service conditions, etc.

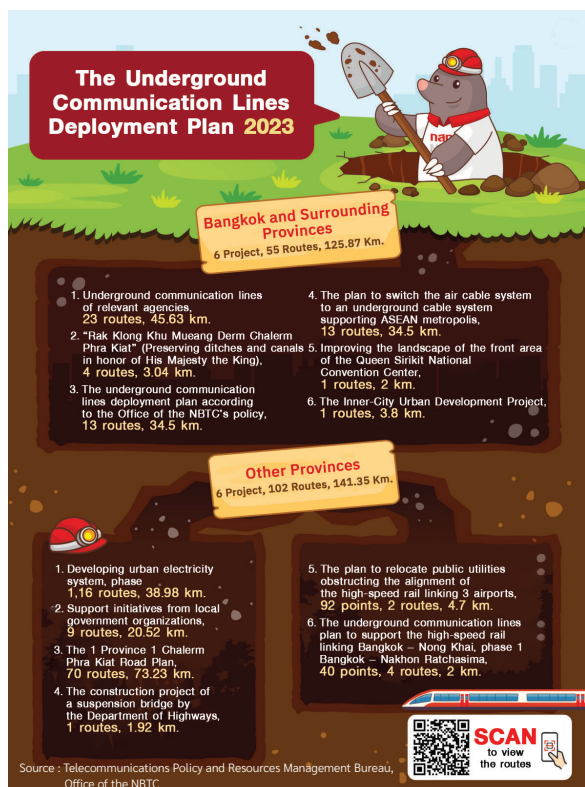


Currently, the Office of the NBTC is in the process of preparing and establishing criteria for drafting the Notification of the NBTC on Providing Last-Mile Network Service. However, the discussions and feedback from the focus group meeting with telecommunications

operators concern some issues affecting the drafting of the Notification, including the definition of the last-mile network, which impacts the consideration of fundamental service principles in new service areas to reduce redundant investment. Additionally, it includes dismantling of unused communication lines, prescribing licensing conditions, and determination of penalties. Therefore, the consideration of drafting the Notification is complex, and requires a comprehensive assessment to ensure fairness to both service providers and users.

5.2 Placing communication lines underground.

In 2023, the Office of the NBTC has developed the Underground Communication Lines Deployment Plan B.E. 2566 (2023), to prepare for the readiness of communication service providers, and coordinated with project owner, land-owning agencies, and related organizations, to establish an operational plan, activities, timelines, and completion deadlines for deploying underground communication lines smoothly. The plan has been outlined under various projects of relevant agencies, such as the converting overhead power lines to underground lines project by the Metropolitan Electricity Authority, and the urban electricity system development project by the Provincial Electricity Authority. In this regard, the Secretary-General of the NBTC approved the Underground Communication Lines Deployment Plan B.E. 2566 (2023) on June 26, 2023. The designated areas to operate underground communication lines deployment in the Bangkok metropolis and vicinity area, and other provinces are summarized as follows:



5.2.1 The operational plan for placing communication lines underground in the Bangkok metropolis and vicinity area.

The operational plan for placing communication lines underground in the Bangkok metropolis and vicinity area for the year 2023, in a total of 55 routes, with a combined distance of 125.87 kilometers, comprises 30 routes that have not yet been completed in 2022, with a combined distance of 73.14 kilometers, and 25 routes according to the operational plan for placing communication lines underground for the year 2023, with a combined distance of 52.73 kilometers. Details are shown in Table 6 and Table 7.

Table 6 : The Operational Plan for Placing Communication Lines Underground for the Uncompleted Routes in 2022

No.	Underground Communication Lines Deployment Plan	No. of Route	Distance (km.)
1	The underground communication lines projects of relevant agencies	5	14.30
2	"Rak Klong Khu Mueang Derm Chalem Phra Kiat" (Preserving ditches and canals in honor of His Majesty the King)	4	3.04
3	The underground communication lines deployment plan according to the Office of the NBTC's policy	12	33.40
4	The plan to switch the air cable system to an underground cable system supporting ASEAN metropolis	8	20.40
5	The project to improve the landscape of the front area of the Queen Sirikit National Convention Center	1	2.00
Total		30	73.14

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

Table 7 : The Operational Plan for Placing Communication Lines Underground for the Year 2023

No.	Underground Communication Lines Deployment Plan	No. of Route	Distance (km.)
1	The plan to switch the air cable system to an underground cable system supporting ASEAN metropolis	5	16.50
2	The Inner-City Urban Development Project	1	3.80
3	The underground communication lines projects of relevant agencies	18	31.33
4	The underground communication lines deployment plan, according to the Office of the NBTC's policy	1	1.10
Total		25	52.73

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

5.2.2 The operational plan for placing communication lines underground in other provinces.

The operational plan for placing communication lines underground in other provinces for the year 2023, in a total of 102 routes, with a combined distance of 141.358 kilometers, comprises

45 routes that have not yet been completed in 2022, with a combined distance of 61.154 kilometers, and 57 routes according to the operational plan for placing communication lines underground for the year 2023, with a combined distance of 80.204 kilometers. Details are shown in Table 8 and Table 9.

Table 8 : The Operational Plan for Placing Communication Lines Underground for the Uncompleted Routes in 2022

No.	Underground Communication Lines Deployment Plan	No. of Route	Distance (km.)
1	The Urban Electricity System Development Project, Phase 1	8	18.73
2	Support initiatives from local administrative organizations	7	12.324
3	The plan to relocate public utilities obstructing the alignment of the high-speed rail linking 3 airports (94 points)	2	4.70
4	The 1 Province 1 Chalerm Phra Kiat Road Plan	24	23.40
5	The underground communication lines plan to support the high-speed rail linking Bangkok – Nong Khai (Phase 1 Bangkok – Nakhon Ratchasima) (40 points)	4	2.00
Total		45	61.154

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

Table 9 : The Operational Plan for Placing Communication Lines Underground for the Year 2023

No.	Underground Communication Lines Deployment Plan	No. of Route	Distance (km.)
1	The Urban Electricity System Development Project, Phase 1	8	20.25
2	Support initiatives from local government organizations	2	8.20
3	The 1 Province 1 Chalerm Phra Kiat Road Plan	46	49.834
4	The construction project of a suspension bridge by the Department of Highways in 2022	1	1.92
Total		57	80.204

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

5.2.3 The operational results of placing communication lines underground for the year 2023.

In 2023, according to the operational results of placing communication lines underground for the year 2023, 3 routes in

Bangkok metropolis and vicinity area have been successfully executed, with a combined distance of 7.4 kilometers. Additionally, 39 routes in other provinces have been successfully executed, with a combined distance of 46.95 kilometers. Details are shown in Table 10.

Table 10 : The Operational Results of Placing Communication Lines Underground for the Year 2023

No.	Details	Underground Communication Line Deployment Plan		Results of Underground Communication Line Deployment		
		No. of Routes	Distance (Km.)	No. of Routes	Distance (Km.)	Completion (Percentage)
Underground communication lines deployment in areas of the Metropolitan Electricity Authority						
1	The Operational Plan for Placing Communication Lines for the Uncompleted Routes in 2022	31	73.14	3	7.4	10.12
2	The Operational Plan for Placing Communication Lines for the Year 2023	25	52.73	-	-	-
	Total	56	125.87	3	7.4	10.12
Underground communication lines deployment in areas of the Provincial Electricity Authority						
1	The Operational Plan for Placing Communication Lines for the Uncompleted Routes in 2022	45	61.154	22	24.22	39.61
2	The Operational Plan for Placing Communication Lines for the Year 2023	57	80.264	17	22.73	28.32
	Total	102	141.418	39	46.95	33.22
	Total MEA and PEA	158	267.288	42	54.35	20.34

Remark : Data as of December 31, 2023

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC



The Opening Ceremony of “Creating Overhead Wire-free Phaholyothin Road”,
under the Underground Power Lines Deployment Project

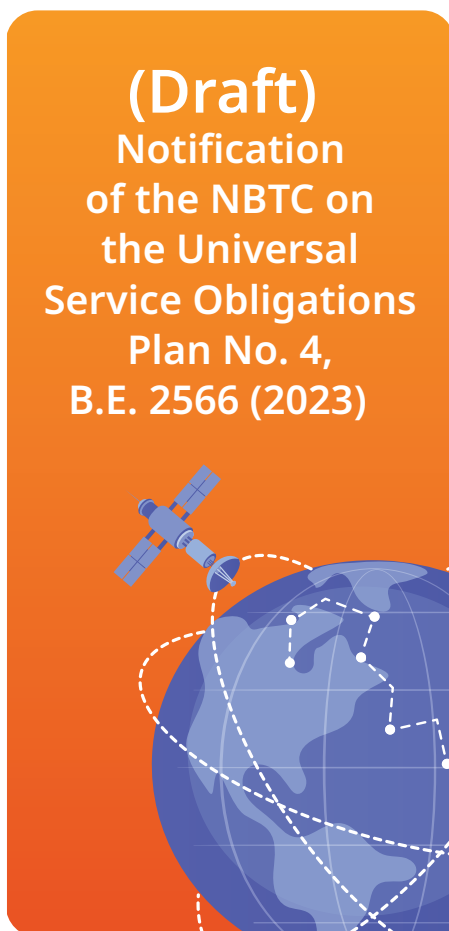


On December 15, 2023, Mr. Trairat Viriyasirikul, Deputy Secretary-General of the NBTC, Acting Secretary-General of the NBTC, attended the “MEA New Year Gift Giving 2024” event, under the Underground Power Lines Deployment Project, “Creating Overhead Wire-free Phaholyothin Road”, serving as gifts to be presented to the public, with Mr. Anutin Charnvirakul, Deputy Prime Minister and Minister of the Interior, presiding over the project opening, alongside executives from the Ministry of Interior, Bangkok Metropolitan Administration (BMA), the National Telecom Public Company Limited, and the Royal Thai Police. The project to switch the air power line system to an underground power line system is one of the significant projects under the 10 policy dimensions of the Ministry of Interior, focusing on providing convenience and ensuring the safety of the people. The Office of the NBTC has coordinated cooperation with communication line operators in carrying out the aforementioned mission.

6. Providing Universal Service Obligations.

6.1 Developing the Universal Service Obligations Plan.

The NBTC has executed the Universal Service Obligations Plan No. 3 B.E. 2565 (2022) since May 30, 2022, and developed an action plan for providing universal service obligations to support the plan. However, to ensure the continuous operations of the USO mission, the NBTC has drafted the Notification of the NBTC on the Universal Service Obligations Plan No. 4 B.E. 2566 (2023), and announced it to the public on May 29, 2023. The draft plan aims to develop and distribute basic telecommunications services to cover areas and the USO target groups nationwide. The plan comprises 6 strategies, 12 approaches, which have been proposed to the NBTC for consideration. Details are shown in Table 11.



The NBTC meeting has resolved to extend the plan's duration to 3 years, and to incorporate feedback from public consultations and various suggestions from the NBTC into the revision of the USO plan No. 4.

6.2 The project on the provision of broadband internet services and mobile phone signal in border areas (Zone C+).

The project is initiated to support the government's policy of expanding mobile phone signal networks and broadband internet services to cover every village in Thailand, aiming to reduce disparities in accessing basic telecommunications services equitably and fairly in both geographical and social dimensions. This will lead to elevating the quality of life for the general population, teachers, students, the elderly, patients, and target groups residing in border areas. The project implementation is divided into 3 phases: The first phase involves equipment procurement, installation, and readiness tests before providing

services within one year. This phase comprises 2 parts: providing broadband internet services and establishing mobile phone signal coverage. The second phase involves continuous service provision for 5 years (60 months), and the third phase focuses on delivering equipment and services after completing the service period (60 days). The types of services and installation points are shown in Table 11. Currently, mobile phone signal coverage (Mobile Services) and broadband internet services (Internet Broadband Services) have been provided in border areas (Zone c+) through 10 contracts since September 28, 2017, and will gradually conclude as contracts expire on June 30, 2024. Throughout the project duration, there have been regular inspections and assessments of service provision, equipment readiness, and signal network preparedness, including 1) preventive maintenance (PM) every 3 months, and 2) corrective maintenance (CM) upon receiving notifications from the responsible officials and conducting repair and maintenance reports for the Office of the NBTC.

Table 11: The Mobile Phone Signal and High-speed Internet Service Provision in Border Areas (Zone C+) Project

Type of Service	Target	In Service	Percentage
Village Wi-Fi	3,135	3,135	100
School Wi-Fi	1,158	1,158	100
Sub-district Health Promoting Hospital Wi-Fi	101	101	100
Public Internet Center (USO Net ⁶)	477*	477	100
Public Internet Room (USO Wrap ⁷)	9	9	100
Mobile Phone Signal	3,051	3,051	100
Total	7,931	7,931	100

Remark : *not include USO Net centers of TOT Public Company Limited as the contracts have been canceled, for 253 service points

Source : Universal Services Bureau, Office of the NBTC

⁶ USO Net includes a provision of a newly built building, computers with Wi-Fi and an ICT administrator for 5 years.

⁷ USO Wrap includes a provision of a renovated classroom, computers with Wi-Fi and an ICT administrator for 5 years.



6.3 The project on the provision of broadband internet service in remote areas (Zone C).

The project is initiated to support the government's policy of expanding high-speed internet services to cover every village in Thailand, aiming to reduce inequality in accessing basic telecommunications services equitably and fairly in both geographical and social dimensions. This will lead to elevating the quality of life for the general population, teachers, students, the elderly, patients, and target groups residing in remote areas. The project implementation is divided into 3 phases: The first phase involves equipment procurement, installation, and readiness tests before providing services within 300 days. The second phase involves continuous service provision for 5 years (60 months), and the third phase focuses on delivering equipment and services after completing the service period (60 days). The types of services and installation points are shown in Table 12. Currently, broadband internet services have been provided in remote areas (Zone C) through 8 contracts, since January 30, 2019, and will gradually conclude as contracts expire on October 30, 2025. Throughout the project duration, there have been regular inspections and assessments of service provision, equipment readiness, and signal network preparedness, including 1) preventive maintenance (PM) every 3 months, and 2) corrective

maintenance (CM) upon receiving notifications from the responsible officials and conducting repair and maintenance reports for the Office of the NBTC.

The NBTC has emphasized continuous monitoring of the progress of the project on the provision of broadband internet service and mobile phone signal in border areas (Zone C+), and the project on the provision of broadband internet service in remote area (Zone C). Also, the NBTC conducted on-site visits to monitor the operations, and to promote the utilization of USO Net centers, as follows:

- Organizing the "USO Net Unwrapped" competitions to promote ideas for encouraging usage and creating benefits for USO Net centers. This activity involves presenting the work of high-speed internet service centers, under the project on the provision of broadband internet service and mobile phone signal in border areas (Zone C+), and the project on the provision of broadband internet service in remote areas (Zone C), through an online system. There are 2,187 participating centers nationwide. This serves as a platform for disseminating and exchanging knowledge, ideas, and practical approaches to promote the usage of USO Net centers. It aims to create sustainable economic and social benefits, stimulate participation from the center staff, teachers, students, and local communities, and enhance their involvement and benefits from the USO Net and USO Wrap's activities.

Table 12 : The High-speed Internet Service Provision in Remote Areas (Zone C) Project

Type of Service	Target	In Service	Percentage
Village Wi-Fi	15,423	15,423	100
School Wi-Fi	2,968	2,968	100
Sub-district Health Promoting Hospital Wi-Fi	79	79	100
Public Internet Center (USO Net ⁸)	177	177	100
Public Internet Room (USO Wrap ⁹)	1,521	1,521	100
Total	20,168	20,168	100

Source : Universal Services Bureau, Office of the NBTC

⁸ USO Net includes a provision of a newly built building, computers with Wi-Fi and an ICT administrator for 5 years.

⁹ USO Wrap includes a provision of a renovated classroom, computers with Wi-Fi and an ICT administrator for 5 years.



On February 13, 2023, Mr. Torpong Selanon, NBTC Commissioner, conducted the on-site visit to present awards, and congratulate the winner of the “USO Net Unwrapped” competitions, at the USO Wrap center at Ban Donyu School, Ubon Ratchathani province.



The “USO Net Unwrapped” competitions for encouraging usage and creating benefits for USO Net centers

- On November 13, 2023, Clinical Professor Sarana Boonbaichaiyapruk, Chairman of the NBTC, conducted the on-site visit at the USO Wrap center, Nikhom Sang Ton Eng Lamtakong 5 School, Pak Chong, Nakhon Ratchasima province, to inspect the center and held joint meeting with the school principal and center supervisors to discuss various issues, including strategies for promoting student use of the internet for educational purposes.



The On-site Visit at the USO Wrap Center

7. Consumer Protection in Telecommunications Business.

The NBTC has been aware of the severity of technology-related crimes, which pose significant threats to the safety and security of people’s lives and property throughout society. Addressing technology-related crimes requires collaboration from multiple relevant agencies. These crimes, such as scam targeting the public through telecommunications services or other online channels, are illegal and may fall under criminal law or other laws outside the direct authority of the NBTC. Thus, meetings have been organized to find solutions and integrate efforts with relevant agencies, including 1) Cyber Crime Investigation Bureau, 2) Thailand’s Action Taskforce for Information Technology Crime Suppression, Royal Thai Police, 3) Ministry of Digital Economy and Society, 4) Bank of Thailand, 5) Telecommunications Association of Thailand under the Royal Patronage, 6) Anti-Money Laundering Office, 7) National Cyber Security Agency, 8) telecommunications licensees providing mobile phone service, and 9) telecommunications licensees providing short messaging service. According to meetings and discussions with relevant agencies in both public and private sectors, the NBTC has outlined concrete preventive and corrective measures to address these issues. This led to disseminating knowledge and understanding, and notifying the public about the latest technological scams through continuous public relation efforts. The operations can be summarized as follows:

7.1 Addressing the issues of call center scam and SMS fraud.

7.1.1 The measures to address the issues of call center scam and SMS fraud have been formulated by developing guidelines for supervising and monitoring short message service (SMS) provision, serving as a framework for acting in case of misconduct, and acting as a central agency for managing the Sender Name registration for licensees. This aims to provide registration information to each service provider to check for sender name duplicates, to verify the blacklist, and to check for similarities or resemblances to the sender names of major private organizations.

Additionally, it aims to ensure that the sender names are not associated with those groups that have previously violated the law.

7.1.2 The measures to tackle fraudulent activities by impersonating others through telephone and electronic media systems (call center scam) have been formulated by conducting the following operations:

- Suspend incoming calls from abroad using “regular fixed-line telephone number”, “short dial number”, and “4-digit phone number” of Thailand, which considered as intentionally falsify or manipulate the numbers.

- Mandate the National Telecom Public Company Limited, Dtac TriNet Company Limited, TrueMove H Universal Communication Company Limited, and Advanced Wireless Network Company Limited, to conduct continuous traffic monitoring by adopting the Test Call Generator (TCG) system to verify illegal incoming traffic from abroad. Such measure can be used to address fraudulent activities by impersonating others through telephone and electronic media systems (call center scam).

- Suspend incoming call traffic from abroad using country codes that have not been specified by the International Telecommunication Union (ITU).

- In case where an incoming call from abroad is non-calling line identification (Non-CLI) from VoIP channel, a “+697” prefix must be added to identify incoming call from an unknown source abroad.

- Require international call operators, call termination operators, and mobile phone service providers to add a “+698” prefix to a roaming call from overseas with calling line identification (CLI) (the incoming traffic from abroad using country codes specified by ITU will show “+” prefix of those countries). Currently, the licensees have completed the operations. This measure has been prescribed since November 11, 2022.

- Develop the Unstructured Supplementary Services Data (USSD) service with the

number “*138” to provide options for service users to reject incoming calls from abroad. The system also allows the users to cancel the service any time. Currently, the licensees have completed the operations. This service has been utilizing since December 15, 2022, by setting the “*138*1 #” and press call for blocking incoming calls from abroad, and “*138*2 #” and press call to cancel the blocking.

7.1.3 Elevating the registration oversight of the mobile phone service users. The NBTC has prescribed every mobile phone service operator to control the number of service user registration for individual users, not to exceed 5 numbers per user. For service users requiring to register more than 5 numbers, they must register at the service centers of the mobile phone service operators. Currently, the licensees have completed the operations. The registration system to control the number of SIM cards outside the service centers has been operating since September 20, 2022. In addition, the NBTC also conducts random inspections of SIM card registrations of service providers to check as they have compared identities to confirm the registered individuals’ identities, and to ensure that registration data is accurate and complete. In cases of non-compliance or violations of the NBTC regulations, the Office of the NBTC will take disciplinary action against the mobile phone service provider on a case-by-case basis. For the measure to control the possession of a large number of SIM cards, the NBTC has discussed with mobile phone service providers, and drafted the Notification on Identity Verification and Mobile Service Usage Data. This Notification emphasizes that service providers must manage and ensure that individuals who register multiple mobile phone numbers annually confirm their ownership and responsibility for each registered number. Once the Notification is enforced, individuals holding 101 or more numbers must confirm their ownership within 30 days, and individuals holding 6 - 100 numbers must confirm their ownership within 180 days. Failure to do so within the

specified timeframe may result in temporary suspension or termination of services. Currently, the Notification of the NBTC on Identity Verification and Mobile Service Usage Data has been published in the Royal Gazette.



7.1.4 Monitoring usage and verifying traffic. The NBTC has collaborated with all sectors to monitor and inspect usual usage patterns and may potentially involve illegal activities. If a licensee detects abnormal usage patterns through traffic, they will coordinate with the Royal Thai Police to handle relevant matters. After the collaboration, the NBTC shall coordinate with relevant telecommunications licensees, which lead to blocking SMS and numbers that violate the law, or may involve illegal activities, or deceive people, or cause trouble and annoyance, as follows:

- Blocking SMS in a total of 79,893 sender names, comprising the messages from (1) Advanced Wireless Network Company Limited, for 39,505 sender names, (2) Dtac TriNet Company Limited, for 29,445 sender names, (3) TrueMove H Universal Communication Company Limited, for 9,935 sender names, and (4) National Telecom Public Company Limited, for 1,008 sender names.

- Blocking numbers in a total of 210,699 numbers, comprising (1) Advanced Wireless Network Company Limited, for 78,467 numbers, (2) Dtac TriNet Company Limited, for 44,624 numbers, (3) TrueMove H Universal Communication Company Limited, for 82,403 numbers, and (4) National Telecom Public Company Limited, for 5,205 numbers (data as of October 30, 2023).

7.1.5 Monitoring, searching, apprehending, and law enforcement in cases of telecommunications services provided unlawfully/ illegally distributed to neighboring countries, and supervising telecommunications services provided by operators to ensure compliance with conditions, as well as seizing illegal radio communication and communication equipment, to dismantle call center scams and SMS frauds. The NBTC has collaborated with relevant agencies to arrest offenders related to the covert use of telecommunications networks as a tool for committing technology-related crimes, exploiting legal loopholes to establish operational bases along border areas, as follows:

- Monitoring points of interconnection (POI) and mobile phone base stations along border areas of Sa Kaeo, Tak, Chiang Rai, Trad, and Chanthaburi provinces.
- Enforcing laws, according to the Telecommunications Business Act B.E. 2544 (2001), the Radio Communications Acts B.E. 2498 (1955), and laws related to telecommunications technology-related crimes and national security, to illegal cross-border signal cabling, for 2 cases, unlawful cross-border usage of telecommunications services by installing wireless link, for 37 cases, unlawful cross-border telecommunications service provision through mobile network, for 30 cases, and illegal SIM card distribution and/or SIM card registration, by collaborating with the Royal Thai Police, in monitoring, searching and arrest, and law enforcement.



In this regard, Police General Nathathorn Prousoontorn, NBTC Commissioner, and Police Lieutenant General Thatchai Pitaneelaboot, Assistant Commissioner General, along with Mr. Trairat Viriyasirikul, Acting Secretary-General of the NBTC, and the Cyber Crime Investigation Bureau (CCIB), involved in field operations to suppress and

enforce the law continuously, and conducted raids to apprehend unauthorized radiocommunication stations establishment along the border areas of Sa Kaeo, Tak, Chiang Rai, Trad, and Chanthaburi provinces. This aims to ensure the telecommunications licensees' oversight aligning with the NBTC's conditions.



The On-site Operations to Suppress and Enforce the Law to Searching and Arrest Unauthorized Radio Communication Stations Establishment along the Border Areas

- Seizing illegal radiocommunication and communication equipment has been conducted by Police General Nathathorn Prousoontorn, NBTC Commissioner, in collaboration with the Royal Thai Police. The widespread usage of illegal radio-communications, together with reports indicating unauthorized disturbing signal transmission that leads to decreased quality of mobile phone signal, have been considered to support online criminal gangs. This is prohibited by law according to Section 6 of the Radio Communications Acts B.E. 2498 (1955), forbidding anyone to build, possess, use, import, export, or trade radiocommunications equipment without license from the authorized licensing official, result in a fine of not more than 100,000 baht, or imprisonment for not more than five years, or both fine and imprisonment.

On November 7, 2023, the team conducted a search and seizure of illegal radiocommunication equipment usage for calling and sending deceitful messages with SIM Box, at 5 locations in Bangkok. In addition, the complaints have been lodged with the investigating officers in 5 police stations, including Sutthisan Police Station, Phaholyothin Police Station, Bang Sue Police Station, Din Daeng Police Station, and Huai Khwang Police Station. Additionally, on December 8, 2023, the team conducted a search at a distribution point and warehouse suspected of storing illegal radiocommunication equipment, and other illegal electronic devices, as well as other suspicious warehouses in Pathumthani. They were able to seize 58,400 items, worth more than two hundred million baht.





The Search and Seizure Illegal Radio communication Equipment and Other Communications Devices

7.2 Continuous efforts to raise awareness among the public.

The NBTC has carried out activities to raise awareness among the public by developing the “SCAM Alert/Be aware of scammers” database, compiling examples of fraud through mobile phone systems and electronic media, methods for addressing specific issues, as well as the agencies to contact for assistance or complaints. The database was urgently publicized to inform the public, aiming to educate people to cope with scammers’ tactics through various channels, including the Office of the NBTC’s website at www.nbtc.go.th, and the Telecommunications Consumer Protection Bureau’s website at <http://tcp.nbtc.go.th>, Facebook of the Office of the NBTC and ThaiTelecomTogether, LINE account of the Office of the NBTC, “Nong Sailom” Chatbot, and LINE account of the Chairman group and NBTC network representatives across 77 provinces nationwide. In addition, educational activities have been organized to the civil society in all 77 provinces nationwide.

Currently, the Office of the NBTC disseminated information to the public regarding addressing the issue of fraudulent SMS and phone calls from scammers through various channels, e.g., the Office of the NBTC’s website at www.nbtc.go.th, or through other channels such as Facebook and YouTube channel of the Office of the NBTC. The useful information disseminated includes problem-solving measures, common scams, whistleblowing channels, safety alerts, and related news, to enable the public to access information more easily and conveniently, as well as the short films “Life Coach” and “Luang Pu Ae” (Venerable Grandfather Ae), regarding knowledge disseminating and public warning to be aware of call center scams, aired through online media channels, e.g. Facebook Page, LINE OA, the Office of the NBTC’s website and Facebook Page, and

influencers, since September 2022. In addition, the Office of the NBTC focuses on raising public awareness by monitoring news, situations, patterns, and content related to technology-related crimes. This is aimed at creating media and promotional content to educate and empower the public to protect themselves promptly from technology-related scammers. For example, in the case of a government policy regarding digital wallet, to prevent people from falling victim to scammers during the registration process for services that the government has not officially launched. The Office of the NBTC recognized that these policy conditions could potentially be exploited by scammers to manipulate understanding and defraud people of their assets. Therefore, the informative infographics creation was expedited to disseminate through the Office of the NBTC’s online media channels. Moreover, if individuals experience distress from technology-related scams in any form, they can lodge complaints or report issues through Call Center 1200, the designated complaint channel of the Office of the NBTC, or directly contact mobile service providers using the following prepared contact numbers for reporting incidents: AIS at 1185, Dtac at 1678, TRUE at 9777, and NT at 1888.

7.3 Developing civil society regarding consumer’s rights protection in telecommunications business.

To ensure that the public understands the current situations, enhances digital literacy skills, and effectively manages issues arising from telecommunication services and communication technology in today’s online society era, the Office of the NBTC has taken the following actions:

- Organizing workshops for civil society leaders regarding consumer’s rights protection in telecommunications business, to support knowledge and dissemination and further systematic work within the community for 5 sessions, participated by Chairmans

of civil society or representatives of civil society from 77 provinces nationwide. The workshops were held in the central region/Bangkok at Kanchanaburi province, the eastern region at Chonburi province during August 30 – September 1, 2023, the northeastern region at Buriram province during September 20 – 22, 2023, the southern region at Krabi province during October 10 – 12, 2023, and the northern region at Chiang Rai province during October 25 – 27, 2023.



The Opening Ceremony of the Workshop for Civil Society Leaders for the Year 2023

- Organizing training and conducting on-site monitoring the operations of the civil society leaders for 10 branches, to understand the problems and obstacles within various community areas, and use this information for developing the Office of the NBTC's plan to empower the civil society regarding consumer's rights protection in telecommunications business.
- Building new telecommunications consumer network groups at a community level, to ensure that they have knowledge and understanding of telecommunications consumer rights, in order to disseminate this new knowledge within their own communities, as well as driving consumer protection initiatives in the telecommunications sector to rapidly expand and cover all areas.
- Conducting practical training workshops ("Train the Trainer") to exchange knowledge in telecommunications consumer protection, aiming to develop cooperation mechanisms between the NBTC Regional Offices and the civil society leaders in the field of telecommunications consumer protection.

7.4 Developing criteria and consumer protection measures.

1) Developing a 3-year action plan for telecommunications consumer protection initiatives of the Office of the NBTC to study guidelines for consumer protection in the telecommunications industry in the digital age. The guidelines include strategies for developing complaint management mechanisms and consumer rights protection mechanisms in the telecommunications industry in the digital era, and strategies for empowering consumers in the telecommunications industry in the digital era, as well as strategies for enhancing performance of consumer protection networks in the digital era. Additionally, the Office of the NBTC has developed the action plan for telecommunications consumer protection initiatives B.E. 2567 – 2569 (2024 – 2026), effective from January 1, 2023.

2) Establishing criteria for determining Administrative Fine Rates and penalties in cases where telecommunications operators fail to comply with the NBTC's orders according to the Notification of the NBTC on Actions that Unfairly Disadvantage Consumers in the Telecommunications Business by Exploiting Networks or Advertisements that Involve Undue Profit-Making or Cause Annoyance or Distress B.E. 2558 (2015) ("Notification on Actions that Disadvantage Consumers"). The NBTC, in the 8th/meeting on April 5, 2023, considered the implementation of the NBTC resolution of the 26th/2022 meeting on September 21, 2022, regarding complaints about cases where it is impossible to cancel mobile phone services. In this regard, the NBTC assigned the Office of the NBTC to propose appropriate Administrative Fine rates, as per Section 77 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010), and its amendment, along with Clause 8 of the Notification on Actions that Disadvantage Consumers, and to present at the NBTC meeting for consideration. Subsequently, the Office of the NBTC has implemented the resolution of the aforementioned meeting by considering criteria for determining Administrative Fine Rates in cases where telecommunications operators fail to comply with the NBTC's orders, according to the Notification on Actions that Disadvantage Consumers. The NBTC, in the 15th/2023 meeting on July 19, 2023, approved the criteria on Administrative Fine Rates.





8. Technology-related crime prevention and suppression.

1) The Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes B.E. 2566 (2023) (“the Emergency Decree for Prevention and Suppression”), effective from March 17, 2023, includes significance that involves the NBTC and the Office of the NBTC, as follows:

Section 4 Paragraph Two: In order to prevent and suppress technological crimes, in the case where there is reasonable cause to suspect that a technological crime has been or may have been committed, the mobile service operator and other related telecommunications operator shall have a duty to disclose or exchange, between them, the information in relation to services via an information disclosure or exchange system or process mutually agreed upon by the Ministry of Digital Economy and Society (MDES) and the Office of the NBTC.

Section 5: In the case where there is reasonable cause to suspect that a technological crime has been or may have been committed and the information of user registration or computer traffic data is required to be obtained, the Royal Thai Police, the Department of Special Investigation or the Anti-Money Laundering Office, as the case may be, shall have power to order the telephone network service providers, the providers of other telecommunications services or other service providers relevant to such commission to disclose relevant information to the extent necessary. And after receiving the order, the telephone network service providers, the providers of other telecommunications services or other service providers relevant to such commission shall have a duty to submit such information to the person who gave the order within a period of time prescribed by such person. In this regard, the Office of the NBTC, the mobile phone service operators, and the Cyber Crime Investigation Bureau (CCIB) conducted a joint meeting and reached 6 settlements of the suspicious incidents according to Section 4 and 5, which include cases involving phone numbers reported by the public or security agencies. In these cases, service providers are authorized to consider suspending the respective phone numbers or monitoring abnormal usage behavior. If such usage falls under the aforementioned criteria, the service provider shall report it to the CCIB for consideration and issue instructions to suspend or continue monitoring the activity. The 6 settlements are as follows:

- Phone numbers or short messages (SMS) that the service provider receives reports or complaints involving deception or suspicion of potential violation of the Emergency Decree for Prevention and Suppression.

- All phone numbers registered under individual names (subject to suspicion) which may be used for offenses, reported by the authorized agencies according to the Emergency Decree for Prevention and Suppression.

- Mobile phone numbers that exhibit abnormal usage patterns (in both calling and SMS sending), considering degradation in network service quality (significant changes), especially along border areas.

- Registration of individuals who do not use Thai national ID cards for registration and have registered with more than 5 numbers under one network

- Mobile phone numbers of ordinary individuals with abnormal call or message volumes from one number to multiple recipients.

- If new technologies are used to commit an offense and all law enforcement agencies and mobile service providers unanimously agree that it falls under reasonable suspicion, it is considered as additional suspicious incidents as per Section 4.

Moreover, the aforementioned meeting has set procedures for data exchange between service providers and law enforcement agencies through the Office of the NBTC’s Numbering Audit System. Currently, it is in the process of connecting the mobile service operators’ systems and the systems of the Royal Thai Police, the Anti-Money Laundering Office, and the Department of Special Investigation, to test future data exchange.

2) Technological crime suppression coordination center (One-Stop Service).

The Ministry of Digital Economy and Society (MDES) has established the Anti-Scam Operation Center (AOC) to function as a one-stop service, with representatives from relevant agencies participating in the operations, including the Royal Thai Police, the Department of Special Investigation (DSI), the Anti-Money Laundering Office (AMLO), the Bank of Thailand, the Thai Bankers Association, and the Office of the NBTC, as well as relevant telecommunications business licensees. This aims to integrate technology-related crime resolution according to the Emergency Decree for Prevention and Suppression, where citizens can report complaints through the call center 1441 of the Cyber Crime Investigation Bureau (CCIB) available at all times.

3) Regulating telecommunications operations in border areas.

The NBTC has coordinated with the Cyber Crime Investigation Bureau (CCIB), Royal Thai Police, to regulate telecommunications operations of licensed operators in border areas,

and to crackdown on unlicensed radio communication stations setups along border areas, particularly in Sa Kaeo province, Chanthaburi province, Tak province, and Chiang Rai province, in order to eliminate crucial factors contributing to telecommunications technology-related crimes. The operations are as follows:

 Operation	 Results
Arresting unlicensed radio communication stations and directing their broadcasts towards neighboring countries	Arrested offenders involved in 90 cases, including the dismantling and confiscation of telecommunications equipment used in the commission of offenses, and handed over to investigators to proceed with legal proceedings
Regulating mobile phone service providers offering services outside the kingdom to neighboring countries (Service Area)	• Sa Kaeo province: modifications and changes were made to the signal propagation direction of 23 stations. • Chiang Rai province: modifications and changes were made to the signal propagation direction of 10 stations. • Tak province: modifications and changes were made to the signal propagation direction of 38 stations. • Chanthaburi province: modifications and changes were made to the signal propagation direction of 3 stations.
Verifying the distribution of mobile phone SIM cards registered under names of individuals other than the actual users, for resale to other individuals	Since May 2023 until present, the investigation has covered the distribution of mobile phone SIM cards registered under names of individuals other than the actual users, for resale to other individuals, totaling 7,668 SIM cards. 20 suspects have been apprehended, comprising 12 Thai nationals and 8 foreigners, which have been proceeded with legal proceedings according to the Emergency Decree for Prevention and Suppression.

4) Organizing the activity “Creating Awareness and Keeping Up with Frauds in the Digital World”, focusing on raising awareness and alerting the public about online threats and various forms of scams.

The event was held at the Office of the NBTC on November 20, 2023, having Police General Nathathorn Prousoontorn, NBTC Commissioner, as a lecturer on the topic of **“Awareness and Keeping up with Online Fraudulence”**. This includes live streaming sessions through online platforms to the USO Net centers, which provide basic telecommunications services to the public targeting more than 20,000 residents in the remote areas, or Universal Service Obligation (USO) of the NBTC. In the past, the Office of the NBTC has been aware of

the problem of technology-related crimes, and has collaborated with the Royal Thai Police to prevent and suppress offenses, including crackdowns on illegal telecommunications stations, organizing signal posts along borders, amending relevant regulations and laws, enforcing compliance among licensees with measures set by the NBTC, and engaging in high-level discussions with neighboring countries’ top executives to seek cooperation in countering threats from call center scams operating along border areas. In addition, the Office of the NBTC has also been proactive in conducting outreach campaigns through various media channels, with a focus on raising public awareness and literacy about the call center scams.

Currently, the majority of the population is more aware and vigilant about the use of technology, but there are still segments of the population, such as

youth, the elderly, and residents in remote areas, who may not have access to information.



The Activity “Creating Awareness and Keeping Up with Frauds in the Digital World”

9. Regulating Telecommunications Operations to Comply with Relevant Licensing Criteria and Conditions Regarding Safeguarding User Data Privacy, Privacy Rights, and Freedom of Communication in Telecommunications, as follows:

9.1 Safeguarding user data privacy.

1) The Notification of the NBTC on Measures to Protect Telecommunications Service Users’ Rights Regarding Personal Data, Privacy Rights, and Freedom of Communication in Telecommunications (“Notification on Rights Protection”) was developed, and effective from September 5, 2023.

2) The NBTC has instructed every licensee to comply with the Notification on Rights Protection, and the Personal Data Protection Act B.E. 2562 (2019), including overseeing licensees in cases where violations may impact users’ personal data.

9.2 Safeguarding cybersecurity.

The office of the NBTC, as the controlling or supervising agency under the Cybersecurity Act, B.E. 2562 (2019), the Office of the NBTC has collaborated with King Mongkut’s University of Technology North Bangkok, to conduct the audit and assessment of the cybersecurity operations of telecommunications service providers, particularly those considered critical information infrastructure entities (CII entities) in the telecommunications and information technology sectors, in 6 entities, covering domestic fixed-line service, domestic mobile service, and fixed broadband internet service.

10. Granting Permission to Use Radiocommunication Equipment for Maritime Mobile Service (MMS), Facilitating Communication between Ships, Ship-to-Shore, or within Ship Communication Areas, to Ensure Navigation Safety.

The NBTC has conducted inspections of the radiocommunication equipment installed on ships that have been granted permission to import such equipment and those kept in reserve for distribution. The inspection reports have been prepared to serve as supporting data for considering granting permits to establish radiocommunication stations and use radio communication equipment in relevant areas. The details of granting radiocommunication permit for maritime mobile service for the year 2023 are shown in Table 13.



**Table 13 :** Number of Radiocommunication Permits for Maritime Operations for the Year 2023

No.	Type of Permit	Quantity (Copies)
1	Commercial Ship Station Establishing Permit	644
2	Radiocommunication Equipment Operating Permit	
2.1	Radiocommunication Equipment Type – VHF Transceiver	10,346
2.2	Radiocommunication Equipment Type – AIS Transponder	1,998
2.3	Radiocommunication Equipment Type – EPIRB	173
2.4	Radiocommunication Equipment Type – RADAR	171
2.5	Radiocommunication Equipment Type – MF/HF Transceiver	126
2.6	Radiocommunication Equipment Type – SART	103
2.7	Radiocommunication Equipment Type – NAVTEX	96
2.8	Radiocommunication Equipment Type – HF/CB VHF Transceiver	64
3	Fishing Vessel Station Establishing Permit	1,161
4	Radiocommunication Equipment Operating Permit	
4.1	Radiocommunication Equipment Type – HF/CB VHF Transceiver	1,656
4.2	Radiocommunication Equipment Type – VHF Transceiver	1,093
4.3	Radiocommunication Equipment Type – MF/HF VHF Transceiver	264
4.4	Radiocommunication Equipment Type – AIS Transponder	43
4.5	Radiocommunication Equipment Type – RADAR	40
5	Shore Station – Pier Station Establishing Permit	
5.1	Shore Station Establishing Permit	2
5.2	Pier Station Establishing Permit	5
6	Aids to Navigation (AToN) (Physical)	13

Source : Government Radiocommunications Licensing Bureau, Office of the NBTC

11. Maritime Radiocommunication Operation.

In 2023, the Office of the NBTC has granted relevant maritime permits in a total of 6,438 copies, comprising the commercial ship station establishing permit for 644 copies, the commercial ship station operating permit for 2,526 copies, the fishing vessel station establishing permit for 1,161 copies, the fishing ship station operating permit for 2,087 copies. However, due to some fishermen's lack of knowledge and understanding of the Radiocommunications Act B.E. 2498 (1955), there have been instances of illegal use of radiocommunication equipment, coupled with the use of equipment that does not adhere to the standards, the spectrum plan, and criteria for frequency usage for maritime mobile services as specified by the NBTC. As a result, they are unable to apply for permits to establish radiocommunication stations, and use radiocommunication equipment on

fishing vessels. This has led to some cases where fishermen are inspected for improper use of radiocommunication equipment, resulting in increased tension. Despite the fishermen's desire to ensure that their radiocommunication equipment is properly permitted in accordance with the law, they are unable to do so due to legal issues involving multiple agencies and inconsistent enforcement.

Therefore, the NBTC has initiated a collaborative effort between government agencies, and the public sector, including the Marine Department, the Department of Fisheries, the Customs Department, the Office of the NBTC, the National Fisheries Association of Thailand, and other relevant agencies, to address the issues. This collaboration includes conducting the Memorandum of Cooperation to jointly tackle the problem, and organizing training sessions to provide knowledge of laws and relevant Notifications to business



operators, shops, fishing vessel owners, and fishermen. This aims to ensure that the fishermen have knowledge and understanding of radiocommunication equipment usage, and radio frequency usage. The continuous collaboration will lead to ongoing efforts to address the issue and disseminate knowledge. Moreover, the Office of the NBTC has also considered updating regulations to keep up with technological advancements, and provided information support to relevant agencies, such as supporting data in maritime mobile service identity (MMIS), allocated by request from the NBTC.

12. Studying Data Portability between the Financial and Telecommunications Sectors Internationally.

The NBTC has collaborated with the Bank of Thailand (BOT) under the Memorandum of Understanding (MOU) in data integration since June 7, 2016 until present. In 2023, the high-level executive meetings between the Office of the NBTC and BOT have been organized to commence policy-oriented discussion regarding directions, and the scope of cooperation that could be jointly implemented. Additionally, a joint cooperation committee was appointed with the Deputy Secretary-General of Telecommunications Cluster, Office of the NBTC, and the Deputy Governor Financial Institutions Stability, Bank of Thailand, as the heads of the joint working group. The framework of operations under the MOU has been outlined, focusing on 3 areas, including guidelines and outcomes, as follows:

12.1 Cross Sectoral Data Portability. The NBTC and BOT convened with representatives from banks, mobile service providers, the Thai Bankers Association, and the Telecommunications Association, to discuss development strategies for establishing a data portability mechanism for users in the telecommunications and financial sectors based on user consent. In this regard, a plan has been established for the data portability operations of the BOT, including use cases of each country, guiding principles for selecting use cases of each country, negotiation guidelines, and approval processes for data portability. Currently, the BOT is in the negotiation process

with mobile service providers to consider the feasibility of user data portability between the financial and telecommunications sectors.

12.2 Fraud and Cybersecurity. The NBTC has addressed the fraudulent SMS problem by commencing the Sender Name registration for SMS service providers, guidelines for verifying the user identity through their mobile phone numbers when opening accounts with financial institutions to prevent mule account. This also includes public relation conducts to disseminate knowledge about cybersecurity and telecommunication technology-related fraud prevention to the public, as well as exchanging information between the telecommunications sector and financial institutions. These actions are in compliance with Section 4 of the Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes B.E. 2566 (2023), aimed at studying guidelines for exchanging information with financial institutions in the future.

12.3 Co-research and Digital Economy. The NBTC has developed indices and nowcasting models with rapid trackers, to forecast revenue from telecommunications, broadcasting, and television business operations, and measure the economic value of telecommunications, broadcasting, and television activities. These tools are used to provide a preliminary picture of the economy's size in terms of gross domestic product (GDP), and facilitate data exchange for co-research purposes, such as knowledge for consumer price index (CPI) preparation, etc.

13. Promoting Telecommunications Infrastructure Development to Support the Advancement of New Technology in the Metaverse Ecosystem.

The NBTC has initiated academic collaboration with Ramathibodi Hospital to promote the application of VR, AR, and XR technologies in medical practices and medical education, operating through a working group to develop proposals to promote new technology usage in the metaverse ecosystem. The practical pilot projects have been developed to utilize the metaverse technology for experimentation to

explore feasibility, limitations, challenges, and beneficial directions for further development of metaverse. The outcomes of these initiatives have been utilized to produce a study report and policy recommendations to promote the development of telecommunications infrastructure to support the advancement of new technology in the metaverse ecosystem. Additionally, policy recommendations have been formulated to promote the application of digital technology to stimulate innovation and telecommunications services for public interest. This aims to foster the development of metaverse in Thailand, and enable stakeholders to benefit from these studies. On December 4, 2023, Clinical Professor Sarana Boonbaichaiyapruk, Chairman of the NBTC, convened a meeting and hosted press conference about the progress of the working group on developing proposals to promote new technology usage in metaverse ecosystem, at the Meeting Room 910 ABC, 9th floor, the Education & Joint Medical Operation Building and Nursing School, Ramathibodi Hospital.



The Meeting and Press Conference of the Progress of the Working Group on Developing Proposals to Promote New Technology Usage in Metaverse Ecosystem

The NBTC is aware of the importance, particularly in the areas of public health and education, which are two crucial sectors that enable people to significantly benefit from the application of technology and data. To enhance the quality of education and public health, the NBTC has collaborated academically to study and develop recommendations to promote the application

of new technologies in the metaverse ecosystem. This prepares for the promotion of digital infrastructure development to support the metaverse ecosystem. Additionally, to consider ecosystem readiness aspects from the group of technology that support metaverse and reality technology, there has been collaboration to set goals for the study of metaverse technology application, aiming to study relevant technologies to gain an overview of current technology usage, and identify needs for new technology applications in the future. In creating a metaverse ecosystem, cooperation among stakeholders from the telecommunications sector, the application sector, technology companies, and relevant regulatory bodies is essential, to collaborate in future innovation design and development.

14. Studying the Impact of Over-the-Top (OTT) Service on Mobile Phone Service Rates.

The NBTC completed the study of the impact of Over-the-Top (OTT) service on mobile phone service rates both domestic and international roaming, comprising case studies in other countries, the results of the survey covered a sample population of no less than 6,000 individuals, representing 5 geographical areas of the country according to statistical principles, the opinion survey of mobile phone service providers who are the telecommunications type 3 licensees, using questionnaires and interviews. The study also covers the analysis of substitution levels, the impact on mobile service rates, and policy recommendations. Currently, it is in the process of presenting the study findings to relevant subcommittees prior to proposing to the NBTC for consideration.

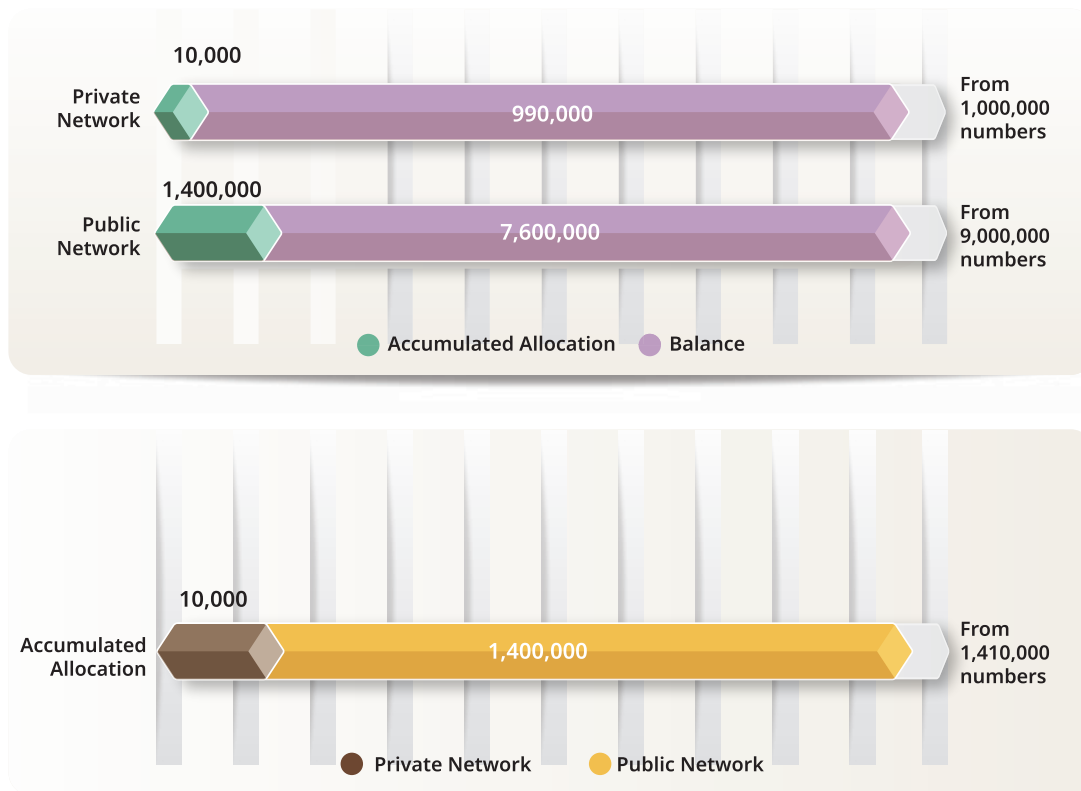
From the aforementioned study, the Office of the NBTC has acquired significant data for policy-making and monitoring market competition trends efficiently in the mobile telecommunications service sector. Additionally, it serves as a tool to monitor trends in service pricing that could be impacted by OTT services, leading to consideration for future adjustments in relevant mobile telecommunications regulatory frameworks.

15. Allocating Telecommunications Numbers for Providing Internet of Things (IoT) Services.

The NBTC allocated telecommunications numbers for providing Internet of Things (IoT) services in accordance with the Notification of the NBTC on Criteria for Telecommunications Numbering Allocation and Management, and Criteria and Procedures for Telecommunications Numbering Management and Data Collection of IoTs Service Usage. According to the data as of October 31, 2023, the number of allocated telecommunications numbers for IoTs services accumulates to 1,410,000 numbers, consisting of private networks for 10,000 numbers, and public networks for 1,400,000 numbers. In January 2023, the Office of the NBTC

allocated the IoTs numbers to Mitsubishi Electric Factory Automation (Thailand) Company Limited, for private network usage, totaling 10,000 numbers. The company has been granted temporary spectrum license in the regulatory sandbox area, according to the Notification of the NBTC on Criteria for Permitting Frequency Use for Innovation Development and Testing in a Sandbox Area. The usage has ended since May 24, 2023. Subsequently, in July 2023, the Office of the NBTC allocated the IoTs numbers to TrueMove H Universal Communication Company Limited, for private network usage, totaling 200,000 numbers. Details are shown in Chart 2.

Chart 2 : Telecommunication Number Allocation for Providing Internet of Things (IoT) Services



Remarks : 1. The numbering allocation for private networks is 10,000 numbers per each group, 10-digit, and can be extended up to 14-digit. Thus, the numbers allocated can be extended up to 100,000,000 numbers.

2. Data as of October 2023

Source : Numbering Management Bureau, Office of the NBTC



16. Developing Personnel in Telecommunications Industry.

In 2023, training and skill enhancement programs have been organized for developing personnel in the telecommunications industry, as follows:

16.1 Training and certification courses for maritime radio operators. The Notification of the NBTC on Criteria for Training and Examination for Certificate and Maritime Radio Operator License stipulates that individuals wishing to organize training and examination for the issuance of maritime radio operator certification typically require them to submit an application to the NBTC to request approval as a training facility. This facility is responsible for conducting the training and examinations for the issuance of the certification according to the NBTC's specified curriculum. During January 1 – October 31, 2023, there have been training and examinations for the General Operator's Certificate (GOC) and the Restricted Operator's Certificate (ROC) curriculum, as follows:

- The General Operator's Certificate (GOC) and the Refresher General Operator's Certificate (R-GOC) Courses, for 36 training sessions, certifying a total of 483 individuals.
- The Restricted Operator's Certificate (ROC) and the Refresher Restricted Operator's Certificate (R-ROC) Courses, for 3 training sessions, certifying a total of 27 individuals.
- The Thai Waters Ship Station Operator's Certificate Course, for 3 training sessions, certifying a total of 72 individuals.

- The "Train the Trainer" Course, for 1 session, certifying a total of 32 individuals.

16.2 Training and certification courses for amateur radio operators. The Office of the NBTC has collaborated with the amateur radio associations of each province to organize training and examinations for the issuance of amateur radio operator certification. This aims to equip participants with knowledge about amateur radio operations, regulations, relevant practices, and licensing procedures, to guide them in becoming proficient amateur radio operators, contributing positively to society as opportunities arise. During January 1 – October 31, 2023, there were training and examinations for amateur radio certification for 18 sessions, certifying a total of 823 individuals.

16.3 Training courses on radio synthesizer usage. The Office of the NBTC, as a governing body to establish criteria and procedures for the radio synthesizer usage for state agencies, aims to ensure that state agencies use radio synthesizers smoothly, without causing interference or security issues to the communication networks of the state agencies, based on the efficient utilization of frequency for the benefit of the public and nation. This also ensures that operators have knowledge and understanding of the proper use of radiocommunication equipment, adhering to relevant laws and regulations. In 2023, there was training for radio synthesizer usage for 4 sessions, certifying a total of 417 individuals.





Satellite Business Regulation

The NBTC has developed the Satellite Orbital Slot Access Rights Management Plan B.E. 2563 (2020) to align with the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment, and issued criteria and procedures for granting permission to use satellite orbit, and criteria to license foreign satellite to provide domestic services. Additionally, the NBTC has conducted frequency coordination for satellite services with domestic and international agencies, as well as international organizations, in compliance with the Radio Regulations of the International Telecommunication Union (ITU), in order to obtain and preserve the rights to access and utilize satellite orbital slots. In 2023, the significant achievements are as follows:

1. Amending the Notification of the NBTC on the Satellite Orbital Rights Management Plan B.E. 2563 (2020).

The NBTC prescribed the Notification of the NBTC on the Satellite Orbital Rights Management Plan B.E. 2563 (2020), effective from February 19, 2020. The Notification serves as guidelines for managing access rights to utilize the country's satellite orbital slots, and preserve the rights to access and utilize satellite orbital slots efficiently, aligning with the National Digital Economy and Society Development Plan and Policy, as well as the Radio Regulations of the International Telecommunication Union (ITU), international obligations, and market conditions of satellite industry. The current market competition of the satellite industry and satellite technology advancement have been developing rapidly. New players have entered the market both in the Geostationary Orbit segment and Non-Geostationary Orbit (NGSO) segment which facilitates market entry of the mega-constellation satellites services to the communication satellite service market. On January 15, 2023, the NBTC held the auction of satellite orbital slot packages. Additionally, the NBTC has conducted frequency coordination for satellite networks, resulting in changes in details of

Thailand's satellite access rights, appendix of the Notification of the NBTC on the Satellite Orbital Rights Management Plan B.E. 2563 (2020). In order to ensure the efficiency and appropriateness of the Satellite Orbital Rights Management Plan, serving as guidelines for managing access rights to utilize the satellite orbital slots, aligning with free and fair market competition of the industry, the NBTC amended the Notification of the NBTC on the Satellite Orbital Rights Management Plan B.E. 2563 (2020), aiming to update details regarding access rights to Thailand's satellite orbital slots, and embrace new practices of satellite orbital slot allocation. Thus, the draft Notification of the NBTC on the Satellite Orbital Rights Management Plan (No. 2) B.E. ... has been developed. Currently, it is in the revision process after gathering feedback from stakeholders and the public, to be presented to the NBTC, prior to implementation.

2. Operations to Preserve the Access Rights to Utilize Satellite Orbital Slot at the Position 50.5 and 51 Degrees East.

The NBTC has preserved the access rights to utilize satellite orbital slots according to the Satellite Orbital Rights Management Plan B.E. 2563 (2020), and the Radio Regulations of the International Telecommunication Union. In 2023, the operations to preserve the access rights to utilize satellite orbital slots at the position 50.5 and 51 degrees East have been carried out. The NBTC, in the 5th/2023 meeting on February 22, 2023, approved the guidelines for preserving the access rights to utilize satellite orbital slots at the position 50.5 degrees East, and the guidelines for response to the Radiocommunication Bureau of the International Telecommunication Union (ITU). Additionally, the NBTC also approved the guidelines for preserving the access rights to utilize satellite orbital slots at the position 51 degrees East in accordance with the results of consideration of the Subcommittee on Satellite Business, and assigned the Office of the NBTC to proceed further actions with reference to the NBTC resolutions to preserve the access rights to utilize satellite orbital slots at the position 50.5 and 51 degrees East.

3. Granting Permission to Use Satellite Orbit.

Since the NBTC has obtained the authority to manage rights to access and utilize satellite orbital slots, grant licenses for access rights to utilize satellite orbital slots, and conduct frequency coordination for satellite business, according to the laws, the NBTC prescribed notifications relating to licensing for access rights to utilize satellite orbital slots which are satellite networks of Thailand, as well as implementing relevant operations as follows:

1) The Notification of the NBTC on Criteria and Licensing Procedures to Obtain the Rights to Use Satellite Orbits, effective from February 19, 2020, serves as the licensing criteria to obtain the rights to access and utilize satellite orbital slots to whom wish to apply for the rights to access the satellite orbital slots for the new filing satellite networks. It also serves as the criteria for granting permission to individuals who previously own such rights prior to the Notification becoming effective in 2020, according to the transitional provisions of the Notification. In 2023, the NBTC has granted permission to access and utilize satellite orbital slots as follows:

1.1) Confirmation of absolute rights and granting permission to access the satellite orbital slots for the THEOS2-SMALLSAT (NGSO) satellite networks for the Geo-Informatics and Space Technology Development Agency (Public Organization).

The NBTC, in the 12th/2023 meeting on May 31, 2023, approved the results of consideration of the Subcommittee on Satellite Business, based on the documents proposed by the Office of the NBTC, by approving the confirmation of absolute rights and granting permission to the Geo-Informatics and Space Technology Development Agency (Public Organization) to exercise the absolute rights to access the satellite orbital slots for the THEOS2-SMALLSAT (NGSO) satellite networks. The permission period is 20 years, starting from the date the International Telecommunication Union recorded the satellite network data in the Master International Frequency Register (on April 4, 2023).

1.2) Granting permission to obtain the primary rights to access satellite orbital slots for LOGSATS (NGSO) networks for Patriot Infovention Company Limited.

The NBTC, in the 18th/2023 meeting on September 22, 2023, granted permission to Patriot Infovention Company Limited as a licensee to obtain primary rights to access satellite orbital slots for LOGSATS (NGSO) Satellite networks, according to the Notification of the NBTC on Criteria and Licensing Procedures to Obtain the Rights to Use Satellite Orbits. The NBTC also assigned the Office of the NBTC to send a notification for Advance Publication Information (API) (A-level) of the LOGSATS (NGSO) satellite networks, to notify the request for satellite network usage on behalf of Thailand to the International Telecommunication Union (ITU). In this regard, the Office of the NBTC has proceeded according to the aforementioned resolution.

2) The Notification of the NBTC on Criteria and Procedures to License Satellite Orbital Slot Package, dated October 31, 2022, was published in the Royal Gazette, and effective from November 5, 2022. The Notification stipulates the NBTC to bring the satellite networks, which the current authorization is about to expire, has expired, or no licensee before the satellite orbital management plan becomes enforceable, to arrange in packages, on the basis of appropriateness and feasibility both technical and commercial. There were 5 satellite slot packages offered for bidders to obtain rights to access such satellite orbital slots with the auction method for determining the winner and the final price for each satellite network.

The NBTC initiated the selection process for applicants to be granted the rights to access and utilize satellite orbital slots, according to the Notification, on December 27, 2023, by allowing applicants to submit their requests at the Office of the NBTC. There were 3 applicants, including Space Tech Innovation Company Limited, National Telecom Public Company Limited, and Prompt Technical Services Company Limited. Then, the Office of the NBTC verified the qualifications and announced the list of eligible bidders on January 10, 2023. Subsequently, the Office of the NBTC held the bidding for satellite orbital slot packages on January 15, 2023, having the winners for 3 satellite orbital slot packages. The NBTC, in the 2nd/2023 meeting on January 18, 2023, certified the bidding results for granting the rights to access and utilize satellite orbital slot packages, as follows:

The Satellite Orbital Slot Package Auction Results					
Package	1	2	3	4	5
Orbital Position (degrees East)	50.5/51	78.5	119.5/120	126	142
Bidding Winner	No applicant submitted a request	Space Tech Innovation Company Limited	Space Tech Innovation Company Limited	National Telecom Public Company Limited	No applicant submitted a request
Final Price (Baht)	-	380,017,850	417,408,600	9,076,200	-

Remark : Price excluding VAT

Source : Satellite and Orbit Management Bureau, Office of the NBTC

Subsequently, the NBTC, in the 11th/2023 meeting on April 16, 2023, approved the consideration results of the Subcommittee on Satellite Business, based on the documents proposed by the Office of the NBTC regarding licensing for access rights to utilize satellite orbital slots according to the Notification of the NBTC on Criteria and Procedures to License Satellite Orbital Slot Package. The resolution details are as follows:

1) Granting licenses to Space Tech Innovation Company Limited to access and utilize satellite orbital slots for the second package (orbital position 78.5 degrees East) for 2 satellite networks, and the third package (orbital position 119.5 and 120 degrees East) for 4 satellite networks, with a licensing period of 20 years, starting from the date of approval according to the Notification of the NBTC on Criteria and Procedures to License Satellite Orbital Slot Package, dated October 31, 2022, as well as approving the licensing conditions.

2) Granting licenses to National Telecom Public Company Limited to access and utilize satellite orbital slots for the fourth package (orbital position 126 degrees East) for 1 satellite network, with a licensing

period of 20 years, starting from the date of approval according to the Notification of the NBTC on Criteria and Procedures to License Satellite Orbital Slot Package, dated October 31, 2022, as well as approving the licensing conditions.



The Satellite Orbital Slot Packages Auction

4. Developing Criteria and Procedures to Obtain the Rights to Access and Utilize Satellite Orbital Slot at the Orbital Position 50.5, 51, and 142 Degrees East.

After the Office of the NBTC held the auction for granting the rights to access and utilize satellite orbital slot packages on January 15, 2023, according to the Notification of the NBTC on Criteria and



Procedures to License Satellite Orbital Slot Package, dated October 31, 2022, the results show that no bidders have submitted requests to obtain rights to access and utilize satellite orbital slots for 2 packages, including the first package (orbital position 50.5 and 51 degrees East), and the fifth package (orbital position 142 degrees East). In light of the aforementioned circumstances, it is necessary for the NBTC to proceed with granting the rights to access satellite orbital slots at the orbital position 50.5, 51, and 142 degrees East (the 1st and the 5th packages), according to the Notification of the NBTC on Criteria and Procedures to License Satellite Orbital Slot Package, dated October 31, 2022. This aims to safeguard and preserve the rights to access satellite orbital slots of Thailand as stipulated by section 60 of the Constitution of the Kingdom of Thailand B.E. 2560 (2017). The operations for granting the rights to access satellite orbital slots are as follows:

1) The NBTC, in the 5th/2023 meeting on February 22, 2023, approved the Office of the NBTC's operational guidelines for granting the rights to access satellite orbital slots at the orbital position 50.5, 51, and 142 degrees East (the 1st and the 5th packages), after finishing the selection process for granting the rights to access satellite orbital slot packages, according to the Notification of the NBTC on Criteria and Procedures to License Satellite Orbital Slot Package, dated October 31, 2022.

2) The Office of the NBTC held a focus group meeting on March 17, 2023, to seek feedback from relevant agencies and stakeholders of the operational guidelines for granting the rights to access satellite orbital slots at the orbital position 50.5, 51, and 142 degrees East (the 1st and the 5th packages). In this regard, the Office of the NBTC gathered information and suggestions from the meeting to incorporate with the consideration, study and analysis, for developing draft licensing criteria.

3) The NBTC, in the 21st/2023 meeting on October 25, 2023, approved the development of draft Notification of the NBTC on Criteria and

Procedures to License Satellite Orbital Slot Packages at the Orbital Position 50.5, 51, and 142 Degrees East. Additionally, the NBTC assigned the Office of the NBTC to organize a public hearing to seek feedback from stakeholders and the public regarding the draft Notification, during November 6, 2023 to December 6, 2023, and to organize a public hearing event on November 24, 2023. It is expected that the licensee selection process for granting the rights to access satellite orbital slot packages at the orbital position 50.5, 51, and 142 degrees East, after the Notification becomes effective in Quarter 1/2024.

5. Amending the Notification of the NBTC on Criteria and Procedures to License Foreign Satellite to Provide Domestic Services.

The NBTC prescribed the Notification of the NBTC on Criteria and Procedures to License Foreign Satellite to Provide Domestic Services, dated February 13, 2020, effective from February 19, 2020. The NBTC, in the 23rd/2022 meeting on August 31, 2022, approved the guideline principles for amending the Notification. Additionally, the Office of the NBTC issued the Order No. 514/2023, dated May 12, 2023, regarding the working group appointment for amending the draft Notification of the NBTC on Criteria and Procedures to License Foreign Satellite to Provide Domestic Services. The Office of the NBTC has considered the guidelines for amending and improving the Notification, by gathering information on the problems related to the enforcement of the current Notification, along with considerations regarding the development of satellite technology, the High Throughput Satellite (HTS), and the Low Earth Orbit (LEO) Satellite. This also includes new satellite service business models of current satellite operators, consumers' needs, promotion of competition, domestic satellite service market, impact on Thai satellite operators and related business operators, promotion of the space economy, satellite industry, development of digital infrastructure, and enhancing the nation's competitiveness, including benefits for service users and the general public. Thus,



the first focus group meeting for considering the guidelines for the Notification amendment was held on March 22, 2023, and the second meeting on August 10, 2023, resulting in the amendment of the draft Notification of the NBTC on Criteria and Procedures to License Foreign Satellite to Provide Domestic Services. The NBTC, in the 22nd/2023 meeting on November 23, 2023, assigned the Office of the NBTC to conduct a public hearing to seek and consider feedback from stakeholders and the public, prior to enforcement of the Notification. In this regard, the Office of the NBTC set the public hearing period from December 8, 2023 to January 22, 2024. It is expected that the draft Notification will be revised after receiving feedback, and presenting it to the NBTC for approval, followed by enforcement within Quarter 1/2024.

6. Granting License for Foreign Satellite Transponder Usage.

After the Notification of the NBTC on Criteria and Procedures to License Foreign Satellite to Provide Domestic Services became effective from February 19, 2020, the NBTC granted licenses to TC Broadcasting Company Limited to use foreign satellite transponders for providing domestic services with the CHINASAT-12 and the Globalstar satellites, as well as granting a license to National Telecom Public Company Limited to use foreign satellite transponder for providing domestic services with the AsiaSat 5 satellite, according to the annual report 2022. In 2023, the Office of the NBTC has carried out activities related to granting licenses to use foreign satellite transponder, as follows:

1) The NBTC, in the 10th/2023 meeting on May 3, 2023, granted licenses to TC Broadcasting Company Limited to use foreign satellite transponder for providing domestic services, using AsiaSat 7, and AsiaSat 9, valid from the date of the NBTC's approval until March 31, 2026, or until the winner of the selection process for the 2nd package of the satellite orbital slots is ready to provide satellite services at the orbital position 78.5 degrees East.

2) The NBTC, in the 9th/2023 meeting on April 18, 2023, granted licenses to the Royal Thai Armed Forces Headquarters to use foreign satellite transponder with ABS-2A, at the orbital position 75 degrees East, INTERSPUTNIK-75E-Q satellite network of the Russian Federation, to temporarily support military security missions. The license is valid from the date of the NBTC's approval until March 31, 2026, according to the Foreign Satellite Transponder Management Plan B.E. 2566 – 2571 (2023 – 2028), of the Royal Thai Armed Forces Headquarters.

3) The NBTC, in the 22nd/2023 meeting on November 23, 2023, approved the licensing terms to use foreign satellite transponder for providing services in the country with AsiaSat 5 of the National Telecom Public Company Limited, and CHINASAT-12 of TC Broadcasting Company Limited, to valid from the date of the NBTC's approval until March 31, 2026, or until the winner of the selection process for the 2nd package of the satellite orbital slots (THAICOM-A2B and THAISAT-78.5E) is ready to provide satellite services at the orbital position 78.5 degrees East, or until a specified timeframe.

4) The NBTC, in the 23rd/2023 meeting on December 26, 2023, granted licenses to Mahanakorn University of Technology as a regulatory sandbox coordinator of 7 areas, including the area of Mahanakorn University of Technology, valid for 5 years from the date of approval, and the areas of Mahanakorn University of Technology's property in Phuket, Rayong, Nakhon Nayok, Chai Nat, Phitsanulok, and Chiang Rai provinces, valid for 1 year. Additionally, the university was granted licenses to use spectrum for development and innovation experiment in the regulatory sandbox, using foreign satellite transponder of Galaxy-3A, with the Galaxy-3A (NGSO) network of the People's Republic of China, for research, experimentation, and telecommunications testing purposes temporarily, as well as for satellite communications development and testing. However, usage is restricted to regulatory sandbox areas only.



5) The NBTC, in the 23rd/2023 meeting on December 25, 2023, granted licenses to Prince of Songkhla University to use the Ku-Band spectrum, by using the foreign satellite transponder of the Starlink satellite constellation, STEAM-1 (NGSO) network of the Kingdom of Norway, for temporary experiment and testing purposes of internet signal transmission via satellite. This also aims to support missions of search & rescue for distressed ships, distance learning in remote areas, as well as remote and maritime medical missions. The licenses are valid from April 1, 2024 until September 27, 2024 (totaling 180 days).

7. Regulating Satellite Business.

The NBTC oversees satellite operations in accordance with licensing conditions related to telecommunications laws and radiocommunication laws, as well as licensing conditions for access rights to use satellite orbital slots. However, the Spectrum Management Master Plan B.E. 2562 (2019) and its amendment, stipulates the establishment of a National Spectrum Monitoring Center to consolidate monitoring data from all agencies of the Office of the NBTC, for integrating the spectrum usage monitoring data to be utilized for policy guidelines formulation regarding effective spectrum management to maximize benefits for the public and people. The spectrum for satellite operations is also important and challenging to regulate. Additionally, the NBTC currently lacks of sufficient tools and equipment to monitor and track spectrum usage in satellite operations. In order to align satellite business regulation with the development of satellite technology, the NBTC has initiated a project to study the establishment of a satellite monitoring system to conform to their responsibilities. Currently, the project is under consideration for funding recipients by the Broadcasting and Telecommunications Research and Development Fund for Public Interest (BTFP) for conducting the study project.

8. Studying Guidelines for Regulating Satellite Services in Thailand.

The NBTC initiated the project to study policies for providing and regulating Non-Geostationary Satellite Orbit (NGSO) services to develop Thailand's satellite industry and space economy ecosystem. The Geo-Informatics and Space Technology Development Agency (Public Organization) is the funding recipient from the BTFP. The project has studied the space and satellite industry, trends and directions in Non-Geostationary Satellite Orbit (NGSO), and the application and future benefits of satellites. It has conducted case studies from 8 countries (the United States, the United Kingdom, Luxembourg, New Zealand, the United Arab Emirates, the People's Republic of China, India, and Japan) comparing satellite service regulations with those of Thailand, assessed the impact of non-geostationary satellite orbit (NGSO) services on the satellite and telecommunications industries, and evaluated the economic, social, and security impacts. Additionally, it has formulated key policy recommendations, e.g., technology, laws, and economics, serving as guidelines for establishing appropriate policies, licensing criteria and procedures, in response to changing contexts. The study findings were disseminated in the "Thailand Space Week 2023" event, under the topic of "Thailand NGSO Policy Guideline: The Impact from Present to the Future", on October 26, 2023. Currently, the project is under evaluation for its fourth phase (final phase), and the findings will be published on the websites of the BTFP and the Office of the NBTC, in the next phase.

Academic Affairs

The NBTC has focused on elevating the Office of the NBTC into a leading international regulatory organization for broadcasting, television, telecommunications, and satellite businesses, and a transparent and impartial communication regulator. The NBTC has also facilitated comprehensive studies on various impacts, and carefully established policies/measures to ensure that regulatory policies/measures are based on evidence-based practices, similar to leading global regulatory organizations. It also aims to ensure the Office of the NBTC's personnel possess advanced academic capabilities, and actively contribute to the creation of academic works both domestically and internationally. In 2023, the NBTC conducted studies, analyzed, and provided academic recommendations regarding the market and competition in the broadcasting, television, and telecommunications industries. Additionally, the NBTC has analyzed the impacts of regulatory policies on the nation's economy, compiled academic databases, developed indices, for public dissemination, and established academic networks with international agencies. The significant achievements are as follows:

1. Developing Academic Recommendations for Establishing Regulatory Policies for Broadcasting, Television, Telecommunications, and Satellite Businesses.

1.1 Studying the regulatory impact assessment (RIA), serving as tools for examining and evaluating the anticipated impacts of systematic policy formulation and regulatory measures, using evidence-based practices, has been conducted to provide guidance to the NBTC and the Office of the NBTC in enhancing the quality of regulatory policies, or for better regulation. Additionally, this includes studying the issues in legislation and the necessity of impact assessments in regulation, the principles and reasons for conducting RIA, objectives and goals, and the RIA process, utilizing data from reliable sources, such as the Organization for Economic Co-operation and Development (OECD), as well as the RIA

conducting practices of various countries, including the United States of America, the United Kingdom, Australia, Japan, Republic of Korea (South Korea), and Thailand.

1.2 Studying the systematic foresight and frameworks for technology-driven regulatory communications governance foresight have been conducted for the benefits to policy formulation and regulation for the future. Additionally, this includes the preparation and presentation of academic articles on "Technology Foresight in Communications Regulation", at the ITS European Conference 2023, held by the International Telecommunications Society (ITS), at Madrid, Spain, during June 19 – 20, 2023. This has facilitated the exchange of ideas with experts, contributing to enhancing the academic capabilities of the Office of the NBTC, and establishing its academic reputation on the global stage. Furthermore, it is in the study process of emerging issues related to technologies that will be crucial for the communications industry in the future, and the future of the space industry. This information will enable the Office of the NBTC to prepare for related activities effectively.

1.3 Studying the definition and scope of the relevant markets in broadcasting, television, and telecommunications businesses has been conducted. In 2023, the NBTC appointed the working group to review the definitions and scopes of relevant markets in broadcasting, television, and telecommunications businesses, for studying and compiling study findings, such as preliminary reports on market definition and market scope relevant to the telecommunications industry. The working group has analyzed the level of substitutability between fixed-line telephone services and mobile phone services, as well as substitutability between fixed internet services and mobile internet services. From the study findings, it was observed that these services exhibit a tendency not to be substitutable. Therefore, it is deemed necessary to categorize these services into submarkets as before. Additionally, the study examined frameworks and factors to be used in

analyzing substitutability among services in the wholesale market, starting with the wholesale market for broadband access services.

1.4 Studying the economic impact analysis

to provide data-driven insights for decision-making processes to the NBTC.

1) The economic impact of a merger between Advanced Wireless Network Company Limited (AWN) and Triple T Broadband Public Company Limited (TTTBB) The economic impact studies have been conducted on the relevant markets, and the quantitative impact of the merger using the merger simulation model. The findings of these studies have been presented to the Subcommittee on Studying and Analyzing the Merger between Advanced Wireless Network Company Limited (AWN) and Triple T Broadband Public Company Limited (TTTBB) in Areas of Economics.

2) The economic impact of a merger between True Corporation Public Company Limited (TRUE) and Total Access Communication Public Company Limited (DTAC) The economic impact studies have been conducted, by using 2 models including the upward pricing pressure model and the merger simulation model, adhering to international guidelines for study frameworks. Additionally, academic articles presenting the study results have been prepared, and presented at the 32nd International Telecommunications Society (ITS) Conference, at Madrid, Spain. These articles were published in the EconStor database.

1.5 Studying and developing a framework for assessing the spectrum value of the 1800 MHz and 3.5 GHz have been conducted by collecting data related to spectrum auctions globally, the socio-economic status of those countries, the number of cell sites per province and per service provider, 5G service speeds, as well as financial data of service providers. Additionally, it involves calculating the spectrum value using the benchmarking, econometrics, cost saving, and business value methods.

1.6 Studying and developing indices in telecommunications and television industries have been conducted, to serve as tools to track the dynamics of the telecommunications and television industries, particularly in the retail market affecting

consumers broadly. These indices will serve as a crucial tool for monitoring market conditions in these industries, and supporting evidence-based information to the NBTC for regulatory implementation. The study has examined the principles of compiling the international price index, and case studies abroad. Additionally, the practical workshops and focus group meetings have been organized with relevant sectors, including representatives from the Trade Policy and Strategy Office, Ministry of Commerce, Bank of Thailand, academics, and interested individuals, to share knowledge, experiences, and opinions regarding the compilation of price indices in the telecommunications and television industries. The aim was to develop appropriate methods and models for compiling price indices in telecommunications and television sectors that are suitable for market monitoring. The Office of the NBTC will consider the study findings for inclusion in price index calculations, and disseminate to the public. In addition, there has been the framework study for creating indices and variables to be used as rapid trackers, and estimating telecommunications and television business revenue. This included joint meetings with the Bank of Thailand to collect data that accurately reflects the market, which will be used to create indices as rapid trackers to indicate trends in telecommunications business revenue

The development of a database system for the academic division (Strategic Database System: SDS) aims to design a data architecture and develop a strategic database system that connects data within the office of the NBTC, NBTC Data Center, and necessary information for easy access. This data will be used for research analysis to formulate policies and evaluate the policy impacts of the NBTC effectively and academically. In addition, a system for storing and gathering raw data from various sources (Data Lake) both internally and externally from the office of the NBTC has been developed, using a MySQL database. The system for storing and collecting raw data from various sources (Data Lake) will be developed using PHP, and the Data Lake system will be accessible to academic staff through <http://academicadmin.nbtc.go.th/>.

1.7 Studying and developing database on broadcasting, television, and telecommunications businesses have been conducted to provide policy insights for the future, such as usage behavior, media access of television viewers, radio listeners and telecommunication network users in Thailand. The study also analyzes trends in radio listener behavior, television viewership, and advertising revenue across various media channels, as well as analyzing market trends in the telecommunications, broadcasting, and television industries in Thailand, along with a comparative analysis with international markets, serving as a benchmark for future regulatory oversight.



The academic journal
“NBTC Telecom and Broadcasting Barometer”

2. Training Sessions on Academic Aspects and Presenting Academic Work for Public Dissemination.

2.1 The academic work regarding broadcasting, television, and telecommunications businesses has been conducted and disseminated. In 2023, the academic journal “NBTC Telecom and Broadcasting Barometer” was conducted, comprising academic articles and analysis of market conditions and consumer behavior in the broadcasting, television, and telecommunications industries. This includes data collection, study, analysis, and compilation to establish a foundation for evidence-based policy formulation, as well as analyzing the impacts of policies and measures thoroughly before actual implementation. The data presented in the journal will be updated regularly to reflect the overall picture of the broadcasting, television, and telecommunications industries, which are the important sectors of Thailand both presently and in the future. It also serves as fundamental information for the NBTC to swiftly and comprehensively regulate and oversee these sectors.

2.2 The academic performance leverage has been facilitated through specialized training sessions provided to the officials of the Office of the NBTC, including “Regulatory Impact Assessment (RIA)”, “Thailand Technology Foresight”, “The Application of Regulatory Impact Assessment (RIA) in Regulatory Work”, and “Case Study: Media Innovation, Media Business, and International Digital Platform Industry”. The meetings to exchange specialized knowledge were organized to support cross-disciplinary learning between academic cluster and related clusters, covering key policy areas, such as market scope and definition, future technologies, geopolitics in policy-making, strategic database, index development, spectrum valuation assessment, cloud service competition, and policy impact assessment.

3. Building Academic Networks with International Organizations and Exchanging Knowledge through International Academic Conferences and Seminars.

3.1 The Regulatory Network Meeting (RNM 2023) was held at Dusit Laguna Phuket Hotel, Phuket province, during December 6 – 8, 2023, to serve as platforms for exchanging experiences in regulatory policy and insights among representatives of high-level organizations, regulatory bodies, experts from both public and private sectors, international organizations, and domestic and international educational institutions.



The Regulatory Network Meeting (RNM 2023)

The RNM 2023 can be considered a platform where policy stakeholders worldwide drive the regulatory direction in the telecommunications and communication technology industries, aiming for policy balance that fosters competition and improves the economy. It also stimulates innovation in the industry while safeguarding the interests of consumers and society as a whole. The aforementioned meeting covers 5 key policy issues that are challenging and significant in the current landscape, as follows:

(1) Merger and Competition. At the meeting, experiences regarding business merger occurring across almost every industry worldwide, particularly the telecommunications industry, were discussed. Perspectives on the challenges facing regulators, and “pre and post-merger” regulatory guidelines were exchanged. This aims to foster a balanced approach that enhances competitiveness and stimulates innovation in industries, while safeguarding consumer and societal interests.

(2) Privacy Regulations, Cross-border Data and Digital Trade. Experiences regarding the challenges of regulating privacy in the era of rapid technological advancement were shared. This era has facilitated freedom of trade and data transmission in the online world. In addition, guidelines for creative and appropriate regulation were discussed, aiming to foster collaboration among businesses, governments, and regulatory bodies, for promoting a balance between socio-economic benefits and the security of users.

(3) New Regulatory Challenges from OTT and AI. There were discussions on the challenges faced in the era of disrupted television businesses by Over-the-Top (OTT) and Artificial Intelligence (AI) technologies. These challenges stem from rapidly changing consumer behaviors worldwide. Regulatory agencies and scholars are concerned that these challenges may lead to issues impacting privacy rights, consumer rights, and unfair competition in the industry. Therefore, regulatory efforts in the television industry need to adapt swiftly to keep pace with new technologies and emerging challenges to foster a balanced and secure media landscape.

(4) Digital Divide. There were exchanges of experiences regarding inequality in the digital age, particularly concerning how digital technology impacts people’s lives, especially in education, professions, and healthcare, which are fundamental factors affecting quality of life. Additionally, there were discussions focusing on fostering appropriate regulatory frameworks to promote a society where access to technology is more equitable, particularly for the elderly, people with disabilities, and low-income groups.

(5) Technology and Public Policy Challenges. At the meeting, there were exchanges of perspectives on the trends and challenges of future technologies, as well as discussions on coping strategies to address emerging challenges. This could enable regulatory agencies, governments, and private sectors to plan and formulate policies proactively, especially regarding data privacy, cybersecurity, and innovations & new technologies such as AI.

3.2 Establishing a memorandum of understanding with the National Statistical Office, on March 8, 2023, at the Office of the NBTC, for the exchange of academic statistical data, beneficial to the Office of the NBTC’s mission.

3.3 Establishing a memorandum of understanding (Mou) with the Research Center for Inequality and Social Policy, Thammasat University, on March 30, 2023, at the Office of the NBTC, to support academic research, surveys, and data collection aimed at promoting and developing research on issues of digital divide in Thailand.



The office of the NBTC Establishing MOU with the Research Center for Inequality and Social Policy, Thammasat University

3.4 Organizing the 16th International Telecommunications Society Asia-Pacific Regional Conferences (ITS Asia-Pacific 2023), during November 26 – 28, 2023, at Royal Orchid Sheraton Hotel and Towers Bangkok, to provide the opportunity to experts, including regulators, policymakers, entrepreneurs, independent researchers and academic researchers, to exchange perspectives on technology advancements, and challenges in technology and telecommunications through the main conference platform on the following topics:



The 16th International Telecommunications Society Asia-Pacific Regional Conferences (ITS Asia-Pacific 2023)

(1) The Telecom Merger and Acquisition. Associate Professor Suphat Suphachalasai, the NBTC Commissioner, the ITS Chair, and professors from Victoria University of New Zealand, and Thammasat University, engaged in discussions regarding the economic impacts of mergers between leading telecommunications service providers over the past two years. They also criticized legal aspects associated with these mergers. Although mergers and acquisitions may lead to higher prices, they may result in increased efficiency and innovation.

(2) AI Governance and Ethics. Emeritus Professor Pirongrong Ramasoota participated in discussions to exchange experiences on the topic of “AI Governance and Ethics: Asian Countries’ Perspectives” with faculty members and experts from Japan, South Korea, and China. They concluded that the rapid advancement of artificial intelligence or AI raises questions about the potential dangers AI may pose to humanity. For example, algorithms used by online social media platforms and video streaming services are designed to attract viewers to increase screen time rather than blocking false information. Furthermore, AI now learns and makes decisions autonomously to a greater extent, sometimes without humans fully understanding the underlying reasoning behind its decisions. Additionally, the increased role of AI worsens the problem of inequality, from the individual level to the national level. Therefore, it is crucial to find a balance in regulating the development and use of AI. Excessive control may restrain innovation, while too much freedom could pose risks to society.

(3) Climate Action in the Telecom Sector. The ITS Chair, along with telecommunications and communication experts from the United States of America and South Korea, collaborated to discuss greenhouse gas mitigation strategies among the telecommunications industry, involving industry sector, governments and consumers. The discussion

also involved exploring other options of Net Zero scheme for climate action, leading to a transition towards a sustainable digital industry. In addition, the NBTC also convened a closed group meeting with the ITS Chair, the ITS European Regional Committee, and the Asia-Pacific Regional Committee, to seek cooperation between the Office of the NBTC and the ITS on academic and challenging regulatory issues. At the meeting, there was consensus on jointly driving the telecommunications and broadcasting sectors forward.

(4) Building Partnership. The academic and high-level policy meetings for global regulators emphasized the importance of exchanging experiences in the Asia-Pacific region. It also focused on linking academic roles with governmental regulatory. The development of this collaboration will begin with the ITS Biennial Conference, in June 2024, in South Korea, involving 150 participants from over 17 countries. It aims to convene and present academic work covering a diverse range of research topics, including digital sustainability, digital space, mis and dis information, media industries, digital transformation, ICT in business and society, digital services, digital economy, algorithm, data and platform, as well as ICT, politics and social issues.

3.5 The “NBTC Academic and Futuristic Conference 2023” (NAFC 2023) was held at the Office of the NBTC, during December 14 – 15, 2023, to exchange regulatory knowledge, enhance the academic capability of the Office of the NBTC, and monitor the competition in broadcasting, television, and telecommunications industries. The topics of academic work include market conditions of the industry, competition and business consolidation, geopolitics in technological policy establishment, and case studies abroad on disaster alert systems.



The NBTC Academic and Futuristic Conference 2023 (NAFC 2023)



International Affairs

The NBTC has fulfilled important missions as the government's administrative agency in managing international communication affairs with the International Telecommunication Union, or other international organizations, governments, and international agencies. This also includes coordination regarding international spectrum management in broadcasting, television, and telecommunications businesses, or other related businesses. In 2023, the significant achievements are as follows:

1. Operations as an ITU Council Member.

1.1 The NBTC attended the 23rd Global Symposium for Regulators (GSR-23), during June 5 – 8, 2023, at Sharm El-Sheikh, the Arab Republic of Egypt. The symposium involved 786 representatives from ITU member states, jointly considering various key issues, including Universal Service Obligation, reducing the infrastructure gap and digital divide, regulation regarding digital transformation, child online protection from cyber threats, benefits and opportunity of Metaverse usage, and digital technology adoption in daily life and work processes that leads to stable growth and environmental sustainability for the future.



Global Symposium for Regulators: GSR-23

In addition, Mr. Trairat Viriyasirikul, Acting Secretary-General of the NBTC, attended the Heads of Regulators' Executive Roundtable to receive reports on best practices and the impacts on the potential of information technology in terms of

policies, regulations, and regulatory agencies, as well as the conclusion of the best practices on regulatory guidelines for member states to implement. This also included key issues, operational progress, and member states' perspectives that benefit telecommunications regulation.

1.2 The NBTC attended the International Telecommunication Union's 2023 Session of the Council during July 10 – 21, 2023, at the ITU Headquarters, Geneva, Swiss Confederation, to discuss the progress of preparations for various meetings of ITU, budgetary issues, and topics related to ITU's policies and strategies. This was to ensure that operations align with the rapidly changing telecommunications landscape, and to integrate further information technology and digital development.



The International Telecommunication Union's 2023 Session of the Council

Furthermore, Clinical Professor Sarana Boonbaichaiyapruk, Chairman of the NBTC, was invited from the Secretariat Office of International Telecommunication Union, to participate



as a panelist alongside senior representatives from Japan, Ghana, Kenya, Poland, Romania, Saudi Arabia, South Africa, Swiss Confederation, and Tanzania, in the High Level Segment Panel 1 session, on the topic of “Ensuring Meaningful Connectivity for All”, and the issues regarding reducing the digital divide by telecommunications infrastructure development, digital skills enhancement, and collaboration with various sectors, such as universities, Ministry of Public Health, and hospitals. This was to ensure the utilization of telecommunication technologies to enhance quality of life. After the discussion, several member states expressed interest and asked questions on various issues that the Chairman has discussed, and the overall feedback from the meeting was positive.

1.3 The NBTC attended the meeting of the Council Working Group and Expert Group, during October 9 – 18, 2023, and attended the International Telecommunication Union’s 2023 Additional Session of the Council during October 19 – 20, 2023, at Geneva, Swiss Confederation. The meetings were held to provide representatives from member states with the opportunity to discuss and consider various issues related to the consideration of ITU’s strategic plans, work plans, budget, human resource plans, and ITU’s Action Plan for the Year 2024 – 2027, as well as internal management of the ITU. The recent meeting held in July, 2023, still had some unresolved issues that needed further consideration and collective approval.

2. Meetings under the International Telecommunication Union (ITU) Frameworks.

2.1 The World Summit on the Information Society (WSIS) Forum 2023, on the topic of “WSIS Action Lines for Building Back Better and Accelerating the Achievement of the SDGs, at the ITU Headquarters, Geneva, the Swiss Confederation, during March 13 – 17, 2023, was held annually under the collaboration of ITU, UNESCO, UNCTAD, and UNDP, that brings together stakeholders involved in the use of information and communications technology (ICT) for development. It serves as a platform to promote the implementation of the WSIS Action Lines for sustainable development. Additionally, discussions were held regarding the direction of telecommunications regulation or policy formulation to enhance the information society.

2.2 The 2nd Conference Preparatory Meeting for WRC-23 (CPM23-2) during March 27 to April 6, 2023, held at the International Conference Centre Geneva (CICG) and the ITU Headquarters, aimed to revise the Conference Preparatory Meeting Report (CPM Report), which is the study results of the ITU-R Study Group for the year 2019 – 2023, to align with the latest findings of the ITU-R, covering all possible approaches for reconciling the benefits for ITU-R member states in determining frequency assignment for various operations. Additionally, it includes amendment to satellite orbit regulations to accommodate future technology use, prior to submitting for incorporating revisions into the Radio Regulations (RR) in the World Radiocommunication Conference 2023 (WRC-23). The meeting approved the revised CPM Report, derived from the CPM23-2. Thailand has used the CPM Report document as part of its considerations to determine a direction and prepare Thailand’s proposals, to be submitted to the Conference Preparatory Meeting 2023, for the 6th Meeting of the APT Conference Preparatory Group (APG23-6) and the WRC-23.

2.3 The Radiocommunication Assembly 2023 (RA-23), during November 13 – 17, 2023, at Dubai World Trade Center, Dubai, the United Arab Emirates, was organized to establish the structure and select the chairperson of the ITU-R Study Group, to align with the WRC’s academic cycle. This includes proposing study topics to be included in the WRC agenda of future meetings for consideration, as well as approving the ITU-R Recommendations documents and the ITU-R Questions, proposed by the ITU-R Study Group for the Radiocommunication Assembly 2023 (RA-23).

2.4 The World Radiocommunication Conference 2023 (WRC-23) was held from November 20 to December 15, 2023, at Dubai, the United Arab Emirates. In this regard, Clinical Professor Sarana Boonbaichaiyapruk, Chairman of the NBTC, attended the conference as the head of the Thai delegation, along with the NBTC Commissioners, Mr. Torpong Selanon, Police General Nathathorn Prousoontorn, and Associate Professor Somphob Purivigraipong, to discuss the revision of the Radio Regulations related to frequency allocation and satellite orbit utilization to accommodate technological changes. Thailand has prepared

a proposal and standpoint document with a total of 77 points, for presenting to the WRC-23 meeting. These proposals reflect the benefits to Thailand resulting from discussions held among relevant

agencies of domestic frequency users. Additionally, at the conference, the Chairman of the NBTC participated in signing the Final Acts on behalf of Thailand on December 15, 2023.



World Radiocommunication Conference 2023 : WRC-23

Furthermore, there were key meetings with international regulatory agencies, and/or representatives from various countries during the World Radiocommunication Conference 2023 (WRC-23). For example, the meeting with the delegates from the Telecommunications and Digital Government Regulatory (TDRA) of the United Arab Emirates, on December 13, 2023, with the participation of Clinical Professor Sarana Boonbaichaiyapruk, Chairman of the NBTC, and Mr. Torpong Selanon, NBTC Commissioner, aimed to discuss important topics outlined in the memorandum of understanding (MoU) between agencies. These included investment and development strategies for telecommunications infrastructure of the United Arab Emirates, to ensure high-quality and widespread telecommunications services for all

demographics, supporting policies for digital economy systems, providing fair telecommunications services to diverse populations and the underprivileged, and utilizing artificial intelligence in the public sector for governance and public service processes.

. In addition, during December 11 – 15, 2023, Associate Professor Somphob Purivigraipong, NBTC Commissioner, and team held discussions with regulatory agencies from various countries during the WRC-23. This included the following: (1) The meeting with the Head of Policy and Regulation, Ofcom Spectrum Advisory Board (OSAB), and Ofcom Group Directors, Spectrum, to discuss spectrum usage plan for the 3500 MHz for IMT, Private 5G operations on the spectrum range 3700 – 4200 MHz of the United Kingdom and Europe, Private 5G licensing and regulations, frequency interference management between adjacent areas, and the best practices regarding resource management to accommodate increased workloads in Private 5G regulation, (2) The meeting with the Indian National Space Promotion and Authorization Center (IN-SPACe) to discuss non-geostationary satellite orbit regulation, trend of India's satellite system demand, and future regulatory plans, (3) The meeting with Chief Strategist Officer of Wireless Network Sector, and regulatory policy experts for wireless business of Huawei Technologies Company Limited, to discuss the 5G deployment in the industrial sector, Private Network in Asia, particularly China and



The meeting with the delegates from Telecommunications and Digital Government Regulatory (TDRA)

South Korea, and future trends, as well as watching a demonstration of 5G usage on the 6 GHz frequency band, and the technology for data transmission and creating 3-dimensional images without the need for glasses, (4) The meeting with the Malaysian Communications and Multimedia Commission (MCMC), to discuss the regulation of mobile phone networks, spectrum allocation for Private 5G, and Malaysia's experiences in the migration of users from the C-band satellite system on the spectrum range 3400 – 3700 MHz,

(5) The meeting with the National Telecommunications Commission (NTC) of the Philippines, to discuss the regulation, spectrum allocation, investment conditions in telecommunications business, and promoting new operators in the market, (6) The meeting with the Bundesnetzagentur, the regulatory agency of Germany, to discuss licensing conditions, spectrum allocation, Private 5G regulation, frequency interference prevention, the spectrum usage in the 3700 – 3800 MHz and the demand in the future.



The discussion meeting with international regulatory agencies during the WRC-23

3. Free Trade Agreement Negotiation on Relevant Services and Implementation of International Economic Cooperation.

3.1 The negotiations under the Indo-Pacific Economic Framework (IPEF). The negotiations aimed to facilitate discussions on the draft texts under the Pillars 1 regarding trade in the areas of digital economy. Agreements were made to establish open market commitments for trade in services to comply with laws and regulations under the oversight of the Office of the NBTC. In this regard, the current status of the IPEF negotiations in the digital economy area has resulted in 10 subjects including (1) Protecting Online Consumers, (2) Creating a Safe Environment in the Online Realm, (3) Unsolicited Commercial Electronic Messages, (4) Accessing and Utilizing the Internet,

(5) Electronic Transactions Regulatory Framework, (6) Electronic Contracts, (7) Identity and Electronic Signature Verification, (8) Modifiable Electronic Documents, (9) Internet Network Connectivity Fee Sharing, and (10) Contact Points. Nevertheless, the issue related to the Office of the NBTC's authority is unsolicited commercial electronic messages.

3.2 The negotiations with the European Free Trade Association (EFTA) regarding the Annex on Telecommunication Services, under the subjects of Trade in Service, and Electronic Commerce. This aimed to facilitate the discussions on the draft texts of the Annex on Telecommunication Services, under the subjects of Trade in Service, and Electronic Commerce, proposals of open market commitments for telecommunications services, and other subjects needed to consider the



compliance with laws and regulations under the oversight of the Office of the NBTC. In this regard, the current status of the recent negotiation rounds has seen the majority of agreements reached, with two outstanding issues remaining for further consideration, including licensing procedure, and telecom regulatory. The Office of the NBTC anticipates that these negotiations can be concluded in the next meeting.

3.3 The negotiations for the European – Thailand Free Trade Agreement (FTA TH-EU) under the digital economy negotiation group and the services and investment negotiation group. The European Union has proposed a telecommunication subject that covers crucial aspects of telecommunications services regulation, including (1) Telecommunications Regulatory Agencies, (2) Licensing, (3) Telecommunications Network Access, Utilization, and Connectivity, (4) Limited Resources, and (5) Suspending Disputes in Telecommunications services. Due to being the first round of negotiations, Thailand inquired about the details regarding the agenda, facts, principles and rationale, as well as the meaning of the proposals put forth by the European Union. Additionally, discussions were held to establish a framework for comprehensive negotiations to ensure mutual understanding and adherence to the principles of engaging in free trade agreements. Negotiations on the agendas will continue in the next meeting.

3.4 The negotiations under the Thailand – United Arab Emirates Comprehensive Economic Partnership Agreement (CEPA TH-UAE). The negotiations were made on the issues related to the Annex on Telecommunications Services under the subject of Trade in Service, resulting in 10 subjects including (1) Scope and Definitions, (2) Competitive Safeguard, (3) Interconnection, (4) Universal Service, (5) Licensing Procedure, (6) Independent Regulatory Authority, (7) Scarce Resources, (8) Resolution of Telecommunications Disputes, (9) Transparency, and (10) Flexibility in the Choice of Technologies. This also includes 2 issues under the subject of Electronic Commerce that related to the NBTC's authority, including (1) Principle on Access to and Use of the Internet for Digital Trade, and (2) Unsolicited Commercial Electronic Messages. During the fourth round of negotiations, both parties were able to reach conclusions on the negotiation items, held

at the United Arab Emirates and via teleconference system, during September 25 – 28, 2023. The Office of the NBTC proceeded with the translation of the Annex on Telecommunications Services, and forwarded it to the Department of Trade Negotiations to continue with the relevant process.

3.5 The negotiations for elevating the agreements under the ASEAN – China Free Trade Agreement (ACFTA), on the issues related to digital economy, under 4 subjects, including (1) Unsolicited Commercial Electronic Messages, (2) Digital Infrastructure Connectivity, (3) Digital Economy-related Network, and (4) Submarine Cable System. This aims to reach an agreement by the end of 2024.

4. Cooperation within Regions and Between Regions at Both Bilateral Cooperation and Multilateral Cooperation Levels.

The NBTC and the Office of the NBTC have recognized the importance of promoting cooperation between countries, including coordinating collaboration between agencies, and international cooperation. This aims to foster good relations between countries, and promote cooperation in regulating broadcasting, television, and telecommunications businesses, allocating frequencies to accommodate new technology and innovations, and reducing the digital divide. These benefits would advance collaboration between agencies and policymaking for the future development of Thailand's communications industry. In 2023, the NBTC attended meetings and/or served as speakers or panelists on key topics as follows:

4.1 The exchange of academic knowledge and collaboration between the Office of the NBTC and the Global Research Institute, Keio University, Japan, on February 18, 2023. In this regard, Associate Professor Suphat Suphachalasai, the NBTC Commissioner, discussed with Mr. Kyoichi Iida, Mr. Haruki Kadotani, and Mr. Taiki Sato, from the Global Research Institute, Keio University, Japan, to exchange information, policies, and experiences regarding emerging challenges in regulation, and to foster academic collaboration and research, particularly focusing on future regulation issues, including security and privacy of new technologies, Artificial Intelligence (AI), and accessibility to new technology of the elderly such as the digital platform.





The Exchange of Academic Knowledge and Collaboration between the Office of the NBTC and the Global Research Institute, Keio University

4.2 The discussion meeting with regulatory agencies, universities, and government agencies, at Melbourne and Canberra, Australia, during April 23 – 29, 2023. In this regard, Associate Professor Suphat Suphachalasai, the NBTC Commissioner, discussed with regulatory agencies, universities, and government agencies, including (1) the Australian Communications and Media Authority (ACMA), on the issues of strategic database preparation for policy making, and data governance, (2) the Productivity Commission, to exchange information



The Discussion Meeting with the Australian Communications and Media Authority (ACMA) and the Productivity Commission

regarding the Digital Trade Agreement, (3) Coral Bell School of Asia Pacific Affairs, the Australian National University, to attend the Roundtable Meeting with experts on the topics of technological competition through geopolitical perspectives, and the promotion of academic cooperation among each other.

4.3 The Annual Muslim World Policies Conference 2023. Emeritus Professor Pirongrong Ramasoota, the NBTC Commissioner, participated the opening ceremony of the Annual Muslim World Policies Conference 2023, on June 1, 2023, at Al Meroz Hotel Bangkok, on the topic of “The Middle East Scenarios: Geopolitical and Geo - economic Polarization in an Information Society”. This aimed to exchange policy perspectives and academic information on the challenges in the current information society, especially the technological polarization of major powers leading to political conflicts between countries. Additionally, it includes discussions on policy conflicts related to technology (Geopolitics of Telecommunications Policy) that impact decision-making of the government, regulatory agencies, and relevant sectors, involving more than 200 participants including government representatives, diplomats, regulators, policymakers, entrepreneurs, as well as independent scholars and academics, from both public and private sectors from various countries.



The Annual Muslim World Policies Conference 2023, at Al Meroz Hotel Bangkok

4.4 The meeting with the Malaysia Communications and Multimedia Commission (MCMC) On June 8, 2023, the NBTC Commissioners, Associate Professor Suphat Suphachalasai, Emeritus Professor Pirongrong Ramasoota, and Associate Professor Somphob Purivigraipong, attended the meeting to discuss and exchange important regulatory information, such as business merger, particularly post-merger experiences,

cross-border content service regulation, Over-the-Top (OTT) services, cybersecurity, and satellite business licensing and regulation. In addition, at the meeting, mutual agreements were reached to continue fostering positive relationships between both organizations, as well as the proposal to advance policy initiatives on challenging regulatory issues by convening joint meetings with regulatory agencies from other ASEAN countries.



The Meeting with the Malaysia Communications and Multimedia Commission (MCMC)

4.5 The meeting with the AWS Executive Briefing Centre, and the meeting with the high-level executives of Ofcom and the World DAB Organization, at the United Kingdom, and the DVB World Conference 2023, at the Kingdom of Belgium, during June 17 – 25, 2023 The NBTC Commissioners, Air Marshal Thanapant Raicharoen, and Police General Nathathorn Prousoontorn, along with the Office of the NBTC’s representatives, participated the meetings to discuss the direction of technology implementation within government agencies, the overall market trends in satellite usage, and strategies to promote the Digital Audio Broadcasting (DAB) standards.



The Meeting with the AWS Executive Briefing Centre, Ofcom and the World DAB Organization at the United Kingdom

4.6 The Asia Video Summit 2023 was held on June 20, 2023, at Hong Kong. The Summit serves as an international platform for discussions on video development. In this regard, Emeritus Professor Pirongrong Ramasoota, the NBTC Commissioner, represented Thailand at the seminar on “Thailand’s Time” regarding the potential of Thai video content that has received international awards, and discussed the extensive acceptance of Thai content in various markets across Asia and globally, as well as exploring relevant strategic promotion approaches. This also includes the efficient resource allocation, promotion of a media ecosystem conducive to fair competition, provision of creative and innovative content spaces, and encouragement of self-regulation among businesses, both domestically and internationally, to establish standardized regulations within the operator community. The NBTC and state organizations will play crucial roles as promoters of necessary resources.



Asia Video Summit 2023

4.7 The meeting with the Telecommunication Regulator of Cambodia (TRC), and the General Department of Immigration (GDI), during November 7 – 9, 2023, at Phnom Penh, Cambodia. Police General Nathathorn Prousoontorn, the NBTC Commissioner, met with Mr. Chenda Thong, Chairman of the Telecommunication Regulator of Cambodia (TRC), and the General Department of Immigration (GDI) of Cambodia, to strengthen cooperation in controlling mobile phone and internet signals along the Thai-Cambodia border, and limiting illicit radio stations used by criminals. This systemic solution aims to eliminate key factors, hinder criminals’ activities conveniently, and enable law enforcement to detect and apprehend offenders more easily. Additionally, the NBTC Commissioner discussed with

the Director General of the Department of Immigration, and police of Cambodia, on the approaches to track and apprehend the call center scams.



The Meeting with Mr. Chenda Thong, Chairman of the Telecommunication Regulator of Cambodia (TRC), and the General Department of Immigration (GDI)

4.8 The meeting with the Korea Communications Standards Commission (KCSC), Republic of Korea, on November 21, 2023. Emeritus Professor Pirongrong Ramasoota, the NBTC Commissioner, along with representatives from the Office of the NBTC, warmly welcomed the delegation from the Korea Communications Standards Commission (KCSC), Republic of Korea, and engaged in discussions regarding regulating broadcasting and television businesses in Thailand, Over-the-Top (OTT) services, content censorship, and policies to protect children and adolescents from harmful content. The Office of the NBTC has signed a memorandum of understanding (MoU) with the KCSC since 2015, under the framework of cooperation in broadcasting, television, and communications businesses, and has continuously fostered collaboration with the KCSC through the exchange of knowledge and experiences in content regulation for television business.



The Meeting with the Korea Communications Standards Commission (KCSC), Republic of Korea

4.9 The meeting with the Centre of Policy Study (CoPs) of Victoria University. Associate Professor Suphat Suphachalasai, along with representatives from the Office of the NBTC, attended the meeting to expand academic cooperation between organizations, under the memorandum of understanding (MoU) between Victoria University and the Office of the NBTC. The purpose was to develop the Computable General Equilibrium (CGE) model for analyzing the impact of policies on the national economy, such as determining which industries benefit or suffer from increases or decreases in the country's Gross Domestic Product (GDP). The model illustrates the relationship among 180 manufacturing industries, including the classification of the population into 5 income groups. The Office of the NBTC organized training sessions to impart knowledge on using the aforementioned model to its staff, by inviting experts from the CoPs as trainers during the training sessions.



The Meeting with the Centre of Policy Study (CoPs) of Victoria University

4.10 The signing of the memorandum of understanding (MoU) between the Office of the NBTC and the Telecommunications and Digital Government Regulatory Authority (TDRA) of the United Arab Emirates, during February 8 – 11, 2023, at Dubai, the United Arab Emirates. The MoU aimed to foster cooperation and provide support for the exchange of knowledge and experiences in telecommunications regulation and digital innovation. In addition, they also participated in the exchange of knowledge and experiences regarding telecommunications regulation between the two countries, focusing on

important issues, such as measures to address phone fraud, call scams through call centers, and fraudulent SMS.



The Signing Ceremony of the MoU between the Office of the NBTC and TDRA

5. Hosting Meetings with International Organizations.

5.1 The Office of the NBTC, in collaboration with the International Telecommunication Union (ITU), hosted a hybrid meeting of the Girls in ICT Day Thailand 2023, on April 27, 2023, at Carlton Hotel Bangkok, to support the potential of women and girls worldwide, and encourage them to pursue education and careers in ICTs in the future, as well as enabling them to enhance their quality of life.



The Girls in ICT Day Thailand 2023

5.2 The Office of the NBTC, in collaboration with the Asia-Pacific Telecommunity (APT), hosted the APT Symposium 2023, during September 11 – 12, 2023, at W Bangkok Hotel, to provide opportunities for the APT member states, associate countries, and representatives from international organizations, to meet, exchange information, share visions, discuss policy frameworks and telecommunications/ICT regulations at the Asia-Pacific level. The focus was on digital inclusion, including effective and equitable access to and utilization of ICT technologies.



The office of the NBTC hosted the APT Symposium 2023

5.3 The Office of the NBTC, in collaboration with the International Telecommunication Union (ITU), hosted the ITU Regional Development Forum for Asia and the Pacific (RDF-ASP), during September 13 – 15, 2023, at W Bangkok Hotel, to provide opportunities for the representatives from regulatory agencies of the ITU member states, international organizations, and various agencies, to meet, and exchange experiences and opinions, as well as to receive updates on the progress of the telecommunication development sector over the past year.



The ITU Regional Development Forum for Asia and the Pacific (RDF-ASP)

Organization Management

Management of the Office of the NBTC

The NBTC has prescribed operational policies based on the principles of integrity, ensuring that executives, officers, employees and staff of the Office of the NBTC perform their duties with honesty and integrity, maintaining operational standards with transparency and accountability. Moreover, the NBTC emphasizes on driving the organization towards digital organization at international standards, to facilitate convenience for service users, while promoting and supporting staff excellence in academics, ensuring readiness for the digital economy era to be a vital force in driving the country's communication regulatory mission. In 2023, the significant achievements are as follows:

1. Maintaining Operational Standards in Accordance with Ethical Policies and Transparency, and Elevating Organizational Governance Sustainably.

1.1 The Office of the NBTC participated in the Integrity and Transparency Assessment (ITA) for the year 2023, receiving the assessment result with a score of 98.48, from the Office of the National Anti-Corruption

Commission (NACC), ranking first among other government agencies assessed. Additionally, it was awarded the recognition plaque, ITA Award 2023, for achieving the highest ITA assessment score among government agencies in the fiscal year 2023, from the Prime Minister. The award is the pride of the NBTC and the Office of the NBTC, stemming from the dedication and collaboration of every executive and employee in adhering to key operational policies for the year 2023. It reflects the collective efforts to uphold ethical standards and transparency in the operations of the Office of the NBTC, and foster sustainable development for the future. The results of the assessment will be used to extract lessons learned, and analyze areas for organizational development, as well as establishing measures to promote ethics and transparency within the Office of the NBTC, leading to practices that maximize benefits for the service recipients.



ITA Award 2023 receiving

1.2 The Office of the NBTC compiled the Notification of the NBTC on Code of Ethics of the Office of the NBTC, and published it in the Royal Gazette on April 7, 2023, to serve as the implementation guideline for the ethical behavior of executives and employees of the Office of the NBTC. The lectures were also organized to enhance understanding of the Office of the NBTC's Code of Ethics, and promote integrity among staff, ensuring honesty, fairness and reliability, earning trust and respect from the public.

1.3 The Office of the NBTC made the declaration of intention that all executives and officials of the Office of the NBTC shall not accept all types of gifts for performing duties (No Gift Policy), neither before, during, nor after performing the duties which would cause corruption and misconduct at the present and in the future, and shall adhere strictly to the Notification of the Office of the National Anti-Corruption Commission regarding the Provisions of the Acceptance of Property or Any Other Benefit on an Ethical Basis by State Officials B.E. 2563 (2020).

1.4 The Office of the NBTC developed the six-year term good governance promotion plan for the Office of the NBTC (2022 – 2027), and the anti-corruption action plan for the year 2023, to serve as guidelines for driving operations related to corruption prevention and internal transparency within the organization. Additionally, it aims to promote ethical standards within the Office of the NBTC, enabling the development of operational systems that are aligned with current circumstances.

1.5 The Office of the NBTC has organized activities continuously to promote good governance, morality, and anti-corruption efforts within the organization. Additionally, efforts have been made to foster employee participation in elevating the efficiency of work processes, aiming to establish the Office of the NBTC as an organization with sustainable ethics. The aforementioned activities are as follows:

1) Organizing training sessions on the International Standards of Supreme Audit by the International Standards of Supreme Audit

Institutions (ISSAI), to ensure that the Office of the NBTC's personnel have knowledge and understanding in the International Standards of Supreme Audit, as well as knowledge of procurement procedures, focusing on data disclosure for transparency, fairness, and worthiness, adhering to standardized practices.

2) Organizing lectures to promote ethical and moral principles within the Office of the NBTC, fostering a culture of learning and self-development by applying ethical principles as guidelines for both personal and professional conduct. This initiative aims to drive operations in alignment with the Office of the NBTC's good governance promotion plan.

3) Organizing training sessions to facilitate the preparation for the Integrity and Transparency Assessment for the fiscal year 2023, for the internal stakeholders (International Integrity and Transparency Assessment : IIT), to ensure readiness to evaluate integrity and transparency in the Office of the NBTC operations, as well as to announce the declaration of intention against receiving gifts for performing duties (No Gift Policy). Additionally, meetings have been organized to provide information to external stakeholders (External Integrity and Transparency Assessments : EIT), explaining the Office of the NBTC's operations, and allowing them to involve in improving the Office of the NBTC's operations to align with service recipients' needs. Furthermore, external stakeholders were briefed on conducting the EIT assessment by themselves via the ITAS system, to align with the criteria and timelines set by the Office of the National Anti-Corruption Commission.

4) Organizing ceremonies to grant honors and certificates to the employees who have been selected as the Best of NBTC for the year 2023, to inspire and honor talented and virtuous employees, demonstrating dedication and effort in performing their duties according to ethical and moral standards.

2. Elevating the Development of the Office of the NBTC to the Digital Office Role Model.

2.1 The Digital Development Strategic Plan of the Office of the NBTC B.E. 2565 – 2570 (2022 – 2027) has been developed as operational framework related to information technology and communications of the Office of the NBTC, aiming for transition into the nation's bleeding digital data-driven organization that utilizes data to drive standardized operations. This is done under a secure digital infrastructure and management that is modern, inclusive, and fully operational, adhering to both Thai and International regulations and laws. In addition, a working group to drive the digital development strategy of the Office of the NBTC was appointed. Their responsibilities include developing the office of the NBTC's digital action plan, and driving workplan, projects, and activities to achieve objectives and align with the Digital Development Strategic Plan of the Office of the NBTC B.E. 2565 – 2570 (2022 – 2027),

adhering to the national plan and policy regarding elevating governmental services to the digital government entities. This also includes implementing the Strategic Plan of the Office of the NBTC, aiming to be the fully-digitalized organization (NBTC Digitalization). **These efforts resulted in the office of the NBTC receiving the ASOCIO 2023 ICT Award in the field of the Digital Government Award, held in Seoul, Republic of Korea, during the ASOCIO Digital Summit 2023, supported by the Ministry of Science and ICT of the Republic of Korea. The award is considered an international-level award organized by the Asian-Oceanian Computing Industry Organization (ASOCIO), comprising 24 economic zones (countries) across Asia-Pacific. It is a significant achievement for the Office of the NBTC's staff and the working group to drive the digital development strategy who collaborated wholeheartedly to propel the Office of the NBTC towards becoming a digital organization upon international standards.**



The ASOCIO 2023 ICT Award receiving in the field of the Digital Government Award in Seoul, Republic of Korea



2.2 The digital technologies and systems have been integrated in the work processes and regulation to enhance the efficiency and operational speed of employee, as well as to elevate service delivery to all sectors of the public, including the Single Point Data Searching System, the NBTC Service Portal, and the e-BCS electronic licensing application. In 2023, the Office of the NBTC developed an information system to serve as a central platform for users within the Office of the NBTC (NBTC Employee Portal), aiming to integrate and streamline the organization's information systems. This initiative enhances efficiency among employees and provides them with tools for self-designing and developing

applications (Citizen Developer), fostering a digital work culture within the Office of the NBTC.



The Digital Government Award 2023 Ceremony



With these efforts, in 2023, the Office of the NBTC won the Digital Government Award 2023 (DG Award 2023), being the 1st rank in Thailand, among government agencies at the department level in providing primary services, organized by the Digital Government Development Agency (Public Organization) (DGA). The award is given to the government agencies that have transformed their organizations into high-level digital government entities. In addition, the Office of the NBTC also received 3 certificates of recognition, given to agencies that dedicated to develop their organizations into digital government entities in Thailand, according to the survey results on the readiness level of digital government entities in Thailand, conducted by the DGA for the year 2023. The awards include the Quality Organization on Government Data Governance Award, the Quality Organization for Information Disclosure Award, through the Public Sector Information Center (data.go.th) and the Quality Organization for Digital Personnel Award, as well as the Chief Innovation Officer (CIO) Honorary Award, from the National Innovation Agency (Public Organization), given to the agencies to honor and recognize the contributions of individuals from all sectors, including government agencies, private companies, educational institutions, and associations, who play a crucial role in driving innovation within their organizations. Additionally, it aims to instill pride in being key contributors to supporting innovation in Thailand towards becoming “the innovation nation”.

2.3 The Office of the NBTC participated in the IIC’s Annual Asia Telecommunications and Media Forum, organized by the International Institute of Communications (IIC), in collaboration with the Telecommunication Regulator of Cambodia (TRC). In this regard, the Office of the NBTC joined the Regulators Roundtable, which is a closed-group meeting among high-level executives from various countries, such as Cambodia, Malaysia, Philippines, Bahrain, Mongolia, the United Kingdom, and Hong Kong, to exchange knowledge and experiences in regulatory policy on the topic Regulation in the Digital Era: What Does It Take to Adapt to the Rapidly Changing Landscape?”. Additionally, the Office of the NBTC shared the experiences of transforming the organization into the digital organization, amending

regulations to support new technologies, supporting the Office of the NBTC’s 5G network application, such as Siriraj 5G Smart Hospital, and regulatory sandbox in the Eastern Economic Corridor (EEC). The forum also aimed to facilitate discussions on operational guidelines and collaborative policy establishment. The Office of the NBTC and the IIC will co-host the International Regulators’ Forum (IRF) in 2024, regarded as a collaboration enhancement between the Office of the NBTC and the IIC, as well as an opportunity to extend the relationships with regulatory agencies from various countries worldwide.

3. Policy and Practices Regarding Personal Data Protection and Cybersecurity.

3.1 The Office of the NBTC emphasizes and prioritizes personal data protection and cybersecurity, along with declaring its stance on fortifying the information technology and telecommunications industries, to enhance cybersecurity and personal data protection. This proactive approach aims to mitigate the risk of potential data leak, surpassing those of other industries, in accordance with the Cyber Security Act B.E. 2562 (2019), and the Personal Data Protection Act B.E. 2562 (2019), through organizing an academic seminar on the topic “Policy and Practices Regarding Personal Data Protection and Cybersecurity and the Office of NBTC’s Roles towards Becoming a Smart Regulator”. This seminar serves as a platform for exchanging various issues related to personal data protection and cybersecurity, as well as developing the regulatory cooperation among regulatory agencies for the future, and enabling the Data Protection Impact Assessment (DPIA) that licensees should perform systematically to align with the international standards. The seminar was honored to have the Chairman of the NBTC, Clinical Professor Sarana Boonbaichaiyapruk, participate as a panelist in the panel discussion on the topic “PDPA v. Sectoral Regulation Privacy Policy in Telecommunication Sector”. This presentation highlighted perspectives on the roles and responsibilities of the Office of the NBTC related to personal data protection in the telecommunications industry of the country. In addition, Police General Nathathorn Prousoontorn, the NBTC Commissioner,



participated in a special panel discussion on the topic “Security Laws in Telecommunication Sector”, to impart knowledge and foster legal literacy related to telecommunication technologies, arising from the rapid technological advancements, and their implications on the NBTC’s operations, such as the Personal Data Protection Act B.E. 2562 (2019), the Cyber Security Act B.E. 2562 (2019), and the Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes B.E. 2566 (2023). All three of these laws are interconnected and interlinked to address issues of unauthorized personal data usage, such as call center scams, which are the significant problem in Thai society today. Moreover, a subcommittee to integrate the legal enforcement related to telecommunications technology and cybersecurity was appointed, chaired by Police General Nathathorn Prousoontorn, the NBTC Commissioner. The subcommittee includes representatives from government agencies, financial institutions, and telecommunications operators, to collaborate on setting guidelines and coordinating efforts to interconnect data among agencies to suppress phone users’ accounts, internet signals, and other telecommunications services that may be involved in or suspected of wrongdoing. These efforts also include awareness creation and information dissemination about various online threats to raise public awareness and vigilance, preventing them from falling victim to cybercriminals. Additionally, it aims to enforce relevant laws effectively.



The Academic Seminar on the Topic
“Policy and Practices Regarding Personal Data
Protection and Cybersecurity and the Office of NBTC’s
Roles towards Becoming a Smart Regulator”

3.2 The Office of the NBTC has undertaken the enhancement of information security management in accordance with the ISO/IEC 27001:2022 standards, and has developed processes for managing the security of personal data in line with the ISO/IEC 27701:2019 standards. This involves applying frameworks for information security and personal data to guide operational practices. These efforts have resulted in the Office of the NBTC being certified and receiving certificates for the information security management system with the ISO/IEC 27001:2022 standards, and the personal data security management system with the ISO/IEC 27701:2019 standards, evaluated by the BSI Group Thailand Company Limited.

3.3 The Office of the NBTC has assessed the Record of Processing Activities (ROPA) to ensure the alignment with policy and practices regarding personal data protection and cybersecurity of the Office of NBTC. Also, it organized training sessions to create information security policy, cybersecurity and PDPA awareness, to employees of the Office of the NBTC, ensuring the adherence to regulations stipulated by the Personal Data Protection Act B.E. 2562 (2019), the Cyber Security Act B.E. 2562 (2019).

4. The Office of the NBTC’s Budget Management for the Year 2023.

In 2023, the Office of the NBTC prepared the budget surplus, by having collected revenue in a total of 8,214.909 million baht, and setting the expenditure budget for the year 2023, in a total of 6,271.250 million baht. The actual expenditure for the operational budget of the Office of the NBTC was 5,687.620 million baht. Additionally, the Office of the NBTC transferred the money to the Digital Economy and Society Development Funds, according to Section 24 (4) of the Development of Digitality for Economy and Society Act B.E. 2560 (2017), on cash basis, for 1,225.583 million baht. It is expected to remit the money as the state revenue for 1,301.706 million baht.



5. Risk Management and the Internal Control of the Office of the NBTC.

The Office of the NBTC established the Internal Audit Committee, the Office of the NBTC Internal Control Assessment Committee, and the Risk Management Committee, to oversee internal control and risk management in accordance with the Ministry of Finance's Criteria on Internal Control Standards and Practical Guideline for Government Agency B.E. 2561 (2018), and the Criteria on Risk Management Standards for Government Agency B.E. 2562 (2019), based on international standards. This includes defining guidelines for assessing internal control, and developing internal control plan, and annual anti-corruption risk management plan, specifying a mechanism for monitoring and evaluating outcomes every six months. This aims to ensure that the internal control and risk management processes of the Office of the NBTC align with the organization's mission and responsibilities, following the standards and criteria set by the Ministry of Finance. This will result in operations efficiently and effectively achieving their objectives.

Furthermore, efforts have been made to enhance the internal control and risk management systems of the Office of the NBTC. This includes monitoring and evaluating the implementation of the Office of the NBTC's Internal Control and Risk Management Plan for the Year 2022, and summarizing the results of internal control and risk management over the three-year period (2020 – 2022). These operations aim to create opportunities for organizational development and mitigate impacts that affect organizational success.

In addition, training sessions on risk management and internal control have been conducted to enhance the knowledge and understanding of the Office of the NBTC's staff regarding internal control and risk management practices, and to align with the organization's mission, responsibilities, and the standards and criteria set by the Ministry of Finance. Currently,

it is in the process of analyzing risks and developing the Office of the NBTC's Internal Control and Risk Management Plan B.E. 2566 – 2570 (2023 – 2027), to serve as the operational frameworks.

6. Developing the Capabilities of the Office of the NBTC's Personnel and Continuously Imparting Knowledge to Relevant Staff.

6.1 The Office of the NBTC has been promoting and supporting the continuous development of knowledge and skills among its personnel to drive the organization's digital transformation, by organizing training programs, aimed at enhancing skills and expertise in job performance. The Office of the NBTC has also recognized the importance of enhancing the academic capabilities of personnel to a high level, and promoting the academic contribution within the organization, aimed at elevating the regulatory capacity of the Office of the NBTC through internationally recognized academic achievements. This resulted in the Office of the NBTC's academic works being selected to present at the ITS European Conference 2023 (Europe), at Madrid, Spain. The academic works approved by the committee of highly qualified global experts, are as follows:

1) The Implications of the 3-to-2 Merger on Telecommunication Service Prices: Case Study of Thailand, utilizing economic models and techniques to analyze the impact of the 3-to-2 merger on the telecommunications market in Thailand. The work was praised by the consideration committee on the ITS stage for its outstanding contribution to academia.

2) The study of emerging technology issues in the telecommunications sector of Thailand on the topic "Technology Foresight in Communications Regulation". The work garnered feedback and recommendations from knowledgeable experts worldwide. This input is invaluable for establishing policy and regulation for the future, leading to advancements in the Academic Cluster development. It is a significant milestone for the Office of the NBTC's academic work to be selected for presentation on the global stage for the first time. This achievement serves as a strong starting point, showcasing the high





academic capabilities and potential of the personnel that contribute to driving the organization towards the global-recognized evidence-based policy and regulation organization gracefully.

6.2 The Office of the NBTC organized internal training sessions, and sent personnel to participate in training sessions conducted by external agencies, as part of the Office of the NBTC's annual human resources development plan. These sessions cover various areas such as the frequency management training courses, the workshop on technology trends and the television industry, the Effective Corporate Business Writing course to elevate abilities and capabilities of the Office of the NBTC's staff who are responsible for coordinating with international agencies, to have the English writing skills at a high-level. In addition, the Office of the NBTC organized the NBTC Learn and Grow 2023, and

put efforts into enhancing the digital skills for its staff to support the data-driven organization, developing the knowledge of personal data protection laws, and regulation in broadcasting, television, telecommunications, and communication satellite businesses, as well as enhancing foreign languages skills. In this regard, the Office of the NBTC invited qualified experts from within the organization and external agencies who possess specialized knowledge and expertise to deliver lectures and participate in academic seminars on relevant topics that are beneficial to the personnel to efficiently apply this knowledge in their work. This initiative aims to elevate the capabilities of the Office of the NBTC's personnel in regulating the broadcasting, television, telecommunications, and communication satellite businesses, and adapting to changes in the industries.



Follow-up and Monitoring the Spectrum Usage in Broadcasting, Television, and Telecommunications Businesses

The Office of the NBTC conducts monitoring and inspection of spectrum usage in broadcasting, television, and telecommunications businesses, by carrying out searches for violations, in accordance with the Radio Communications Act B.E. 2498 (1955), the Broadcasting Businesses Act B.E. 2551 (2008), and the Telecommunications Business Act B.E. 2544 (2001). It also conducts inspections on radio frequency possession, interference resolution measures, unauthorized frequency usage, regulation of human health safety from the use of radiocommunication equipment and electromagnetic field (EMF) strength measurements, and technical standards for frequency propagation. In addition, the Office of the NBTC also collaborates with relevant agencies to regulate telecommunications operations in border areas. In 2023, the significant achievements are as follows:

1. Inspections on Radio Frequency Possession.

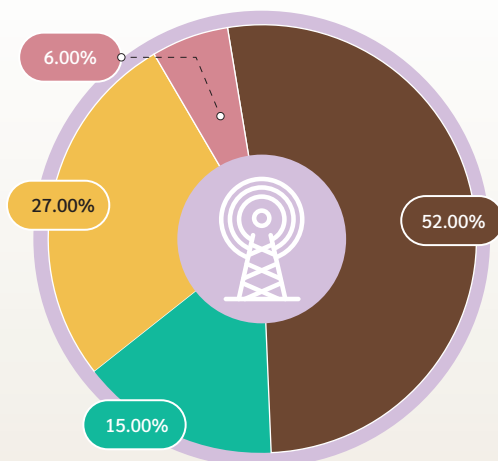
According to the Radio Frequency Possession Inspection Plan, the inspection is divided into 2 parts as follows:

1.1 Frequency occupancy inspection

From the data collection and analysis of frequency occupancy inspections in the range of

30 – 3000 MHz, conducted by the NBTC Regional Offices, it was found that there is high-density frequency usage in certain frequency bands. The proportion of usage volume can be classified in the following groups: 1) No occupancy range group, in reference to frequency bands that either lack of frequency allocation plans, or have plans but have not been allocated, accounting for 6 percent. 2) Low occupancy range group, including frequency bands with very low transmitting power, or specific usage, such as wireless microphone, RFID, and Studio – Transmitter Link, accounting for 27 percent. 3) Moderate occupancy range group, including frequency bands for communication networks utilized in specific areas/times, such as communication networks of various agencies, and trunked radio, accounting for 15 percent. 4) High occupancy range group, including frequency bands used continuously or in nationwide networks, such as radio broadcasting stations, terrestrial digital television stations, and nationwide mobile phone base stations, accounting for 52 percent. The details of proportion of frequency occupancy range categorized by type are shown in Chart 3 and Chart 4.

Chart 3 : Proportion of Frequency Occupancy Categorized by Type 2023



High Occupancy
Frequency bands used continuously or in nationwide networks, including radio broadcasting, terrestrial digital TV, and mobile phone



Moderate Occupancy
Frequency bands used for communication networks utilized in specific areas/times, including communication networks of various agencies, and Trunked Radio



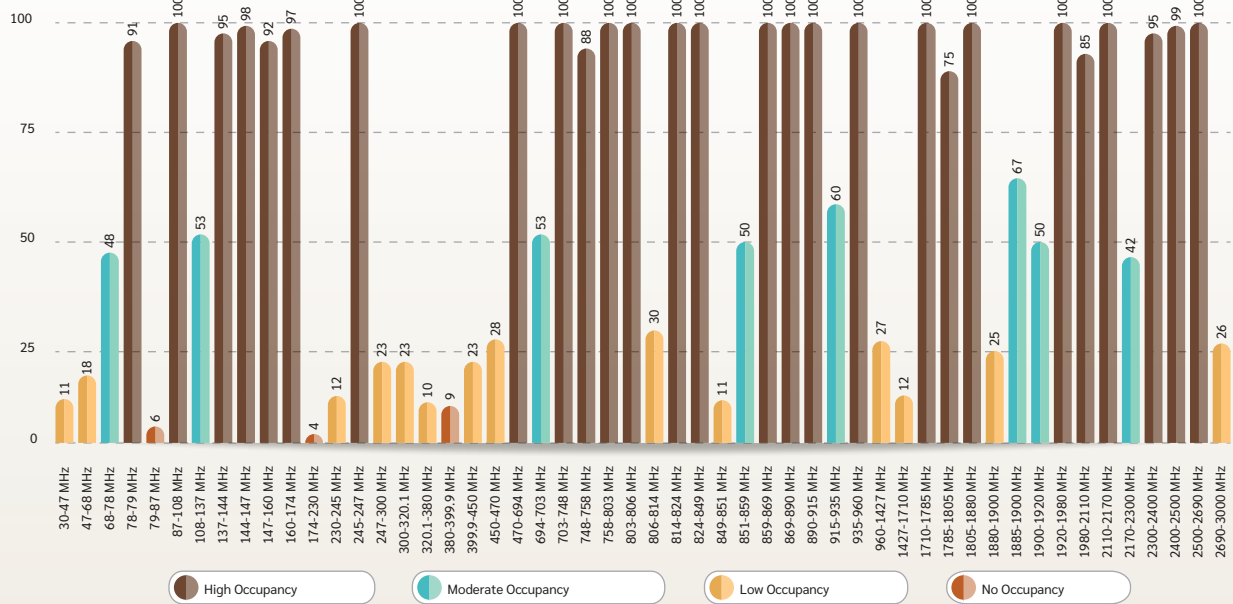
Low Occupancy
Frequency bands with very low transmitting power, or specific usage, such as wireless microphone, RFID, and Studio – Transmitter Link



No Occupancy
Frequency bands specified in the frequency allocation plans but have not been allocated



Chart 4 : Frequency Occupancy in the Range of 30 – 3000 MHz in 2023



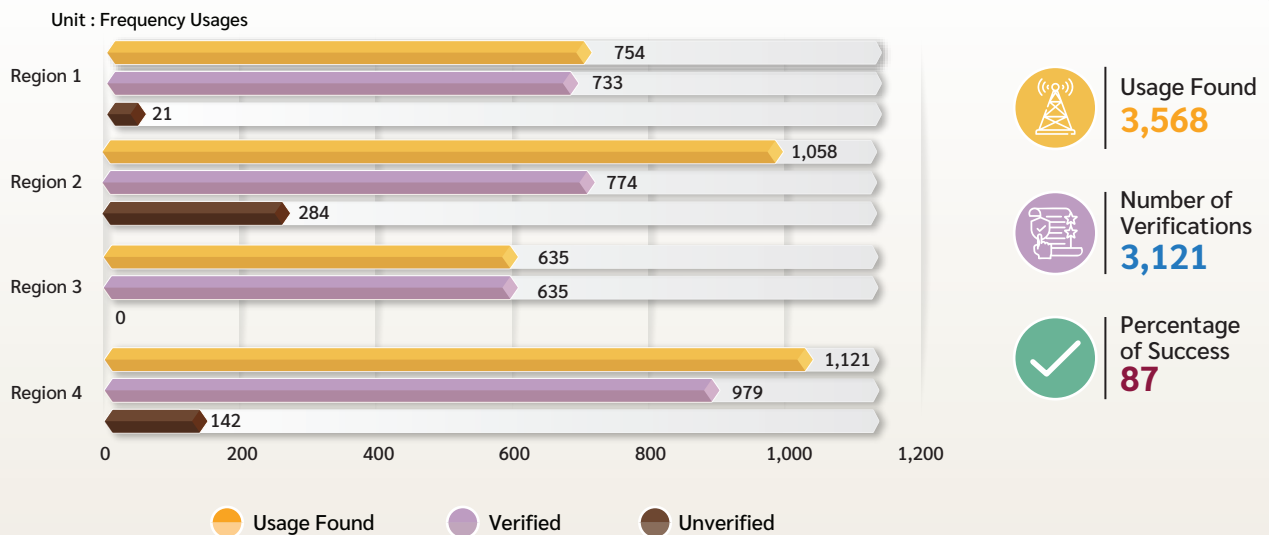
Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

1.2 Frequency Ownership verification in the range of 137 – 174 MHz. After conducting the frequency occupancy inspections, the NBTC Regional Offices will conduct verifications of agencies using frequency bands to ensure that there is an updated database of radio frequency users with detailed usage information in the area.

From the frequency usage inspection in the range of 137 – 174 MHz, it was found that there are 3,568 frequency usages. And 3,121 frequency usages have been verified that they are used by various agencies. Additionally, the radio frequency user database has been updated. Details are shown in Chart 5.

Chart 5 : Frequency Ownership Verification in the Range of 137 – 174 MHz



Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC



2. Frequency Interference Inspection and Resolution.

The process of inspecting and resolving frequency interference typically begins with notifications from affected agencies/entities, and frequency interference identified from the frequency possession inspections. The Office of the NBTC and the NBTC Regional Offices will conduct searches to locate sources of interference signals, and analyze the causes of interference. Afterward, responsible

parties will be informed of the inspection results for corrective actions. This may include issuing orders to suspend frequency propagation, or suspend the use of equipment causing the interference, to ensure resolving actions by the operators, as well as preparing preventive measures to avoid recurrence of interference issues. In 2023, the NBTC Regional Offices received the interference notifications and conducted the frequency interference inspection and resolving, in a total of 418 cases. Details are shown in Table 14.

Table 14 : Frequency Interference Inspection and Resolution in 2023

Regulator	No. of Cases	Affected Business			
		Telecom munications	Broadcasting/ Television	Radio Communications	Aeronautical Radio
Office of the NBTC, Region 1	282	134	9	43	96
Office of the NBTC, Region 2	55	31	2	11	11
Office of the NBTC, Region 3	24	10	2	2	10
Office of the NBTC, Region 4	57	48	0	3	6
Total	418	223	13	59	123

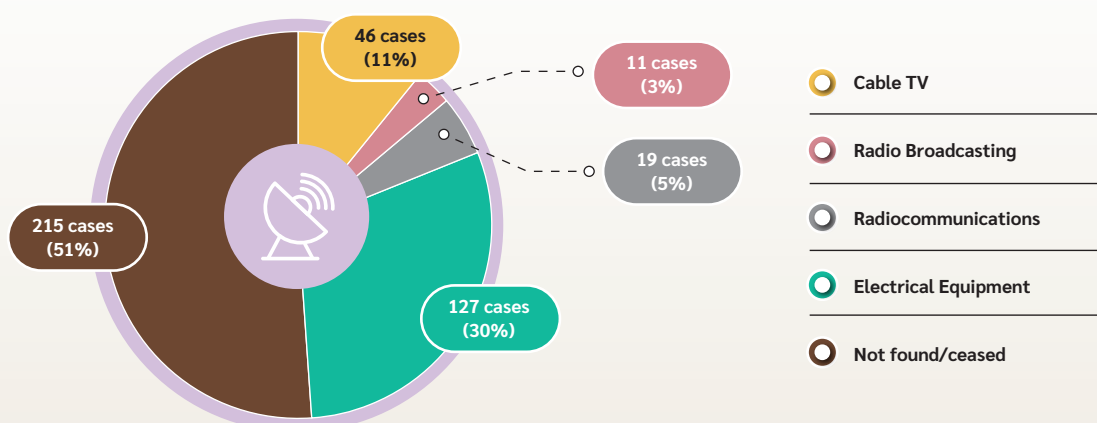
Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

In 2023, the Office of the NBTC received the interference notifications and conducted the frequency interference inspection and resolving, in a total of 418 cases. The cases have successfully been resolved, accounting for 100 percent of the total complaints. The most common causes of interference were as follows: 1) Spurious emissions from electrical equipment and electronic devices, 127 cases, accounting for 30 percent. 2) Spurious emissions from cable TV devices, 46 cases,

accounting for 11 percent. 3) Spurious emissions from radiocommunications stations, 19 cases, accounting for 5 percent. 4) Spurious emissions from radio broadcasting stations, 11 cases, accounting for 3 percent. 5) Cases where interference ceased or no interference found, 215 cases, accounting for 51 percent. The NBTC Regional Offices have conducted the inspections and resolved all frequency interference cases. Details are shown in Chart 6.

Chart 6 : Proportions of Interference, categorized by the Types of Businesses Affected



Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

3. Regulation of Human Health Safety from the Use of Radiocommunications Equipment and Radiocommunications Station Electromagnetic Field (EMF) Strength Measurements.

To comply with the Notification of the NTC Regarding Safety Standard for the Use of Radiocommunication Equipment on Human Health (NTC. TS. 5001 – 2550), the Office of the NBTC conducted the measurement on the EMF emission. The measurement results will be compared against the exposure limits

for receiving electromagnetic fields from the radiocommunication equipment that can emit electromagnetic fields near the head, or less than 20 centimeters of the body, in normal operating positions. The specific absorption rate (SAR)¹⁰ in the frequency range of 100 kHz – 10 GHz for the group exposed to specific electromagnetic fields from work-related activities and the group exposed to general electromagnetic fields, must not exceed the standard limits according to the NTC. TS. 5001 – 2550. Details are shown in Table 15.

Table 15 : The NTC. TS. 5001-2550 Standards

1	SAR Limits for Occupational Exposure Group	SAR Limits (W/Kg)
	Average SAR for Whole-Body	0.4
	SAR for Only Head & Trunk	10
	SAR for Only Limbs	20
2	SAR Limits for General Exposure Group	SAR Limits (W/Kg)
	Average SAR for Whole-Body	0.08
	SAR for Head & Trunk	2
	SAR for Limbs	4

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

The Office of the NBTC has continuously conducted the technical standard measurement on radio frequency propagation of the telecommunication operators' mobile base stations. The frequency propagation measurement operational plan was developed to ensure the efficiency of human health safety oversight from the electromagnetic field emission of the radiocommunication equipment after establishing the radiocommunication stations. This also aims to comply with the regulatory measures on human health safety from the use of radiocommunication equipment, and related NBTC Notifications. However, the Office

of the NBTC mandated that telecommunications operators with base station installations must display signs clearly indicating the exposure limits for electromagnetic fields from radiocommunication equipment with components capable of emitting electromagnetic fields near the head, or less than 20 centimeters of the body, in normal operating positions. This also includes permanent radiocommunication equipment, and radiocommunication stations with electromagnetic field emission covering wide areas, according to the NTC. TS. 5001-2550 standards.

¹⁰ 1) The overall specific absorption rate (SAR) levels are the average rate in any 6-minute period.

2) The average SAR for the whole body derives from a quotient of the total power absorbed into the body and the total mass.

3) The partial body SAR is the average rate per 10 grams of tissue mass in a cubic shape.

In 2023, there were inspections and measurements of the electromagnetic field strength levels of radiocommunication base stations nationwide from 4 telecommunications operators. These inspections involved measuring the electromagnetic field emission levels of radiocommunication stations based on the plan, totaling 1,008 measurements, additional inspections from the plan, totaling 102 measurements, and additional inspections as notified by people, totaling 32 measurements. From a total of 1,142 measurements, it was found that the overall electromagnetic field strength levels were within the standards limits prescribed. The density of electromagnetic waves compared to the limits of the electromagnetic field strength standards of the NTC. TS. 5001 – 2550, averaged at 0.0686 percent. Additionally, the measurements indicated that the electromagnetic field

emission levels of the radiocommunication stations from all 4 operators met the standard requirements, as follows:

1) Advanced Wireless Network Company Limited (AWN), 262 stations, having the density of electromagnetic waves compared to the standards at 0.0859 percent.

2) Total Access Communication Public Company Limited (dtac), 241 stations, having the density of electromagnetic waves compared to the standards at 0.0473 percent.

3) True Corporation Public Company Limited (True Corp), 254 stations, having the density of electromagnetic waves compared to the standards at 0.1192 percent.

4) National Telecom Public Company Limited (NT), 385 stations, having the density of electromagnetic waves compared to the standards at 0.0132 percent. Details are shown in Table 16 and Table 17.

Table 16 : Plan and Outcomes of Electromagnetic Field (EMF) Emission Measurement of the Radiocommunication Stations in 2023

Month	Regulator								Total	
	Office of the NBTC Region 1		Office of the NBTC Region 2		Office of the NBTC Region 3		Office of the NBTC Region 4			
	Plan	Outcome	Plan	Outcome	Plan	Outcome	Plan	Outcome	Plan	Outcome
JAN	24	15	20	5	20	41	20	35	84	96
FEB	24	29	20	25	20	32	20	24	84	110
MAR	24	26	20	26	20	42	20	30	84	124
APR	24	36	20	21	20	19	20	21	84	97
MAY	24	36	20	16	20	19	20	38	84	109
JUN	24	8	20	32	20	16	20	26	84	82
JUL	24	19	20	8	20	28	20	19	84	74
AUG	24	56	20	33	20	18	20	18	84	125
SEP	24	26	20	12	20	17	20	28	84	83
OCT	24	42	20	30	20	26	20	42	84	140
NOV	24	18	20	25	20	9	20	19	84	71
DEC	24	0	20	2	20	19	20	10	84	31
Total	288	311	240	235	240	286	240	310	1,008	1,142

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

Table 17 : Results of Electromagnetic Field (EMF) Emission Measurement of the Radiocommunication Stations in 2023, categorized by Operator

Unit : Stations

Regulator	EMF Emission Measurement Plan 2023	Number of EMF Emission Measurements categorized by Operator (Stations)				Measurement Results
		AWN	dtac	True Corp	NT	
Office of the NBTC Region 1	288	73	72	76	90	311
Office of the NBTC Region 2	240	61	52	57	65	235
Office of the NBTC Region 3	240	59	58	62	107	286
Office of the NBTC Region 4	240	69	59	59	123	310
Total	1,008	262	241	254	385	1,142
EMF Density Compared to the Standards (Percentage)		0.0859	0.0473	0.1192	0.0132	0.0686

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

5. Technical Standards for Frequency Propagation Inspection.

The Office of the NBTC has inspected the technical standards of frequency propagation of broadcasting, television, and telecommunications operations, within the areas of responsibility, totaling 3,838 stations. It was found that 3,733 stations were

compliant with the standards, while 105 stations were not. Consequently, notifications were issued for these stations to rectify their equipment and transmitters to adhere to the specified standards. A re-inspection was conducted on 105 stations to monitor the corrective actions. Details are shown in Table 18.

Table 18 : Technical Standards for Frequency Propagation Inspection of Broadcasting, Television, and Telecommunications Operations in 2023

Unit : Stations

Regulator	Inspection Plan	No. of Inspections	Types of Inspected Businesses (Times)		
			Radio Broadcasting Stations	Experimental Radio Broadcasting	TV Stations (MUX)
Office of the NBTC Region 1	1,105	980	84	786	110
Office of the NBTC Region 2	824	1,213	65	938	210
Office of the NBTC Region 3	975	1,040	69	781	190
Office of the NBTC Region 4	641	605	77	326	202
Total	3,545	3,838	295	2,831	712

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

6. Search and Offender Apprehension.

In 2023, the Office of the NBTC took legal proceeding against offenders according to the Radio Communications Acts B.E. 2498 (1955), the Broadcasting Business Act B.E. 2551 (2008), and the Telecommunications Business Act B.E. 2544 (2001). The searches of places where offenses may have

occurred were conducted to apprehend offenders and seize evidence to prosecute in 50 cases, including 29 cases related to radiocommunication operations, 11 cases related to broadcasting and television operations, and 10 cases related to internet and telecommunications operations. Details are shown in Table 19.

Table 19 : Technical Standards for Frequency Propagation Inspection of Broadcasting, Television, and Telecommunications Operations in 2023

Regulator	Source		Offending Business Operation			Total Offenses Found
	Notification	Inspection	Broadcasting/ Television	Radio Communication	Telecommunications/ Internet	
Office of the NBTC Region 1	9	2	1	5	5	11
Office of the NBTC Region 2	7	12	7	8	4	19
Office of the NBTC Region 3	9	3	3	8	1	12
Office of the NBTC Region 4	4	4	0	8	0	8
Total	29	21	11	29	10	50

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

7. Inspection of Radiocommunication Devices and Equipment Traders.

The Office of the NBTC scheduled activities to inspect business traders in radiocommunication devices and equipment, to ensure compliance with the Notification of the NBTC Regarding Selling Radiocommunication Equipment, and the Notification of the NBTC on Criteria and Procedures for Granting a Permit to Manufacture, Import, Sell, or Offer for Sale or Install Receiver, Apparatus or Device Enabled for Receiving or Decoding Signals to Receive Programs of the Subscription Broadcasting Business. These regulations mandate licensees to maintain a register showing a list of radiocommunication devices, receivers, instruments, or equipment at their premises or storage locations.

Upon inspection of a total of 481 shops, which are licensed to trade/repair radiocommunication devices and equipment, it was found that 112 shops have not complied with the Notifications' conditions to maintain the aforementioned register. The NBTC Regional Offices have taken regulatory measures according to the Notifications, and found that 225 businesses or shops did not have stock reserves. This was primarily because most of them obtained licenses for occasional supply to specific agencies or organizations, and they did not maintain stock for general sale. Thus, the Offices promoted awareness among business owners to cancel their licenses if they no longer wish to operate and do not maintain stock reserves. Details are shown in Table 20.

Table 20 : Inspection of Radiocommunication Devices and Equipment Traders in 2023

Regulator	Quantity	Inspection Results (Shops)		
		Register Found	Register Not Found	Stock Reserves Not Found
Office of the NBTC Region 1	81	57	4	20
Office of the NBTC Region 2	139	29	38	72
Office of the NBTC Region 3	73	43	3	27
Office of the NBTC Region 4	188	15	67	106
Total	481	144	112	225

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

8. Inspection of Radiocommunication Equipment, Stations, and Licenses.

In 2023, the Office of the NBTC scheduled activities to inspect radiocommunication equipment, stations, and licenses, to ensure compliance with the Notification of the NBTC on Criteria and Procedures for Granting Licenses to the Local Government Organizations (LGO) for Frequency Use, as well as to ensure that licensees adhere to relevant regulations, rules, conditions or orders, in a total of 1,033 stations.

Upon inspection, it was found that 152 stations were using frequencies without obtaining the licenses, while 36 stations were using frequencies not in accordance with the authorized frequency allocation data. In total, there were 188 stations. The Office of the NBTC promoted activities to encourage these agencies to apply for and amend frequency licenses, ensuring compliance with the authorized frequency allocation data. Details are shown in Table 21.

Table 21 : Inspection of Radiocommunication Equipment, Stations, and Licenses in 2023

Regulator	No. of Inspections	Business		Frequency Licensing and Usage			
		Radio Communications (LGO)	Radio Communications (Foundations/the Public)	Licenses /Usage Found	Licenses/ No Usage Found	No License/ Usage Found	No Licenses/ No Usage Found
Office of the NBTC Region 1	604	592	12	127	11	88	378
Office of the NBTC Region 2	272	209	63	126	6	36	104
Office of the NBTC Region 3	222	167	55	192	13	10	7
Office of the NBTC Region 4	113	107	6	11	7	54	41
Total	1,211	1,075	136	456	37	188	530

Remark : Data as of December 31, 2023

Source : Regional Affairs Bureau, Office of the NBTC

Efficiency and Effectiveness in Considering Consumer Complaints in Broadcasting, Television, and Telecommunication Businesses



The NBTC and the Office of the NBTC have continuously performed missions to protect consumers in the broadcasting, television, and telecommunications businesses. In 2023, mechanisms for addressing complaints have been developed, and processes have been improved to make operations faster and more efficient. Additionally, criteria and measures to protect consumers have been developed to be comprehensive and in line with the situation, focusing significantly on public benefit, such as developing and enhancing the efficiency of the Call Center 1200, by improving and expanding channels for public complaints to be more comprehensive, convenient, and efficient. Channels for people with visual or hearing impairments have been made accessible. The system for receiving and managing complaints were improved for greater efficiency. In addition, collaboration networks with relevant agencies were established to coordinate efforts and integrate shared databases, as well as linking the telecommunications business license database with the corporate registration number through the Office of the NBTC's integrated central database system (the NBTC Data Center) and the database of the Office of the Consumer Protection Board (OCPB), to enhance efficiency in consumer protection within the broadcasting, television, and telecommunications businesses. The significant operations and achievements in 2023 are as follows:

1. Providing Information Services to the Public.

The Office of the NBTC has a duty to provide information services to the public, including receiving and coordinating for forwarding complaints as part of the NBTC's regulatory responsibilities to relevant internal departments. It has developed and improved the Call Center 1200 (toll free) to efficiently handle complaints and serve as a continuous communication channel for the public. Also, the Office of the NBTC has expanded service channels for the public to inquire about information, receive initial service-related advice, and learn how to file complaints, operating every day from Monday to Sunday, from 8.30 AM to 4.30 PM (except on public holidays), through various channels, including the Call Center 1200, by mail, email (1200@nbt.go.th), website serviceportal.nbt.go.th, social media through

Facebook: NBTC1200, and LINE Application @NBTC1200, as well as through the "Drop Call" voice message system that can accept voice messages outside of regular business hours, 24 hours a day. Additionally, channels for people with visual or hearing impairments have been made accessible.

Furthermore, collaboration networks with agencies related to receiving complaints were established to coordinate efforts and integrate shared databases for consumer protection purposes, including the Government Contact Center "GCC 1111", the Office of the Permanent Secretary, and the Office of the Consumer Protection Board (OCPB) "OCPB 1166". The Office of the NBTC also linked the telecommunications business license database with the corporate registration number through the Office of the NBTC's integrated central database system (the NBTC Data Center) from various channels in contacting the Call Center 1200. This has led to the current development of the Call Center 1200 system into a unified service platform to communicate with the public or external agencies, consolidating various channels into one (omni-channel). This enhances efficiency in providing services to the public or external agencies, including information retrieval, responsiveness, and tracking of various requests, resulting in satisfaction and positive experiences for the public.

NBTC CALL CENTER 1200

"The NBTC Call Center 1200" Channel for inquiry and complaint from people

User can contact "The NBTC Call Center 1200" for inquiry or filing a complaint via the following

- Hotline 1200** (Mon - Sun, 8.30 - 16.30, except public holidays)
- serviceportal.nbt.go.th**
- 1200@nbt.go.th**
- NBTC1200**
- @NBTC1200** (For Disorganized Communication Lines Issues)
- Drop Call** (24 Hrs. Voice messaging service, an officer will return the call within the next business day.)
- Contact in person at the Call Center 1200 Office**
The Office of the NBTC (Head office) 87 Phaholyothin Soi 8 (Sailom)
Samsen Nai, Phayathai, Bangkok, 10400



In 2023, the Call Center 1200 has provided information services to the public, in a total of 82,432 cases, divided into 1) telecommunications service-related matters, totaling 38,251 cases, such as complaint procedures, and reporting the call center scams and fraudulent SMS, which has been integrated with the Online Fraud and Complaint Center (Hotline 1212), 2) broadcasting and television service-related matters, totaling 1,405 cases, such as

program contents, 3) other information service related to the Office of the NBTC, totaling 31,349 cases, and inquire about information related to the Office of the NBTC, such as advice/channels asking for contacting telecommunications operators and government agencies, and 4) notifying communications lines issues, totaling 11,427 cases, increasing from the previous year for 1,274 cases. Details are shown in Table 22.

Table 22 : Information Service Provision through the Call Center 1200 of the Office of the NBTC in 2023

No.	Type of Service	Number of Cases		Increase/ (Decrease)
		2022	2023	
1	Telecommunications Service - related information	40,136	38,251	(1,885)
2	Broadcasting and television Service - related information	2,127	1,405	(722)
3	Other information Service - related to the Office of the NBTC	15,427	31,349	15,922
4	Receiving complaints about unorganized communication lines	10,153	11,427	1,274
Total		67,843	82,432	14,589

Remark : Data as of December 31, 2023

Source : Data Operation Center Bureau, Office of the NBTC

2. Efficiency and Effectiveness in Resolving Consumer Complaints in Broadcasting, Television, and Telecommunications Businesses.

2.1 Resolving complaints in broadcasting and television businesses.

1) The Office of the NBTC has carried out operations in accordance with the provisions of the Notification of the NBTC on Process and Completion Period of Request or Complaints Consideration Regarding Broadcasting Business, and the process of collecting facts according to the Notification of the NBTC on Criteria and Procedures for Fact Finding of Offense with Administrative Penalty in Broadcasting and Television Businesses B.E. 2556 (2013). Additionally, the analysis and proposals to the NBTC were conducted to consider complaint issues according to the Notification of the NBTC on Actions Considered as Consumer Exploitation in Broadcasting and Television Businesses B.E. 2555 (2012). Overall, the Office of the NBTC was able to address complaints within or even faster than the specified timeframes. The process and procedures in handling complaints can be summarized as follows:

- Receiving complaints through various channels, ensuring accessibility, and clearly assigning responsibility to efficiently address them.

- Notifying complainants and investigating facts by reaching out to licensees, service providers, and other relevant sources, as well as coordinating with government agencies and other relevant agencies in cases requiring interconnected involvement, such as the Food and Drug Administration (FDA), and the Office of the Consumer Protection Board (OCPB).

- Considering complaints according to the process, involving a subcommittee on consumer protection for the broadcasting and television businesses, established under the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment. This committee comprises experts in consumer protection and related sectors, tasked with drafting proposals for further consideration by the NBTC.

- Implementing the NBTC resolutions, such as issuing administrative acts to licensees engaged in conduct actions that disadvantage consumers, settling complaints, or coordinating with relevant agencies.

- Notifying the consideration results, proceeding with the complaint handling process, and notifying consumer's rights to the complainants.

- Specifying conditions to ensure digital terrestrial television operators to develop specific complaint receiving mechanisms, and report the resolving results to the NBTC every 6 months.

In addition, complainants and the public can follow up the proceeding with complaint handling and the results through various channels of the Office of the NBTC and its website.

In 2023, there was a total of 58 complaints regarding broadcasting and television businesses. Of these, 38 complaints were resolved and concluded according to the process, accounting for 65.52 percent, while 20 complaints are still ongoing, accounting for 34.48 percent. Details are shown in Table 23.

Table 23 : Complaints regarding the Actions that Disadvantage Consumers in Broadcasting and Television Businesses, categorized by Types of Businesses in 2023

Type of Business	Total Cases	Settled/Completed Cases		Ongoing Process	
		No. of Cases	Percentage	No. of Cases	Percentage
Television Business					
1. Digital Terrestrial Television					
1.1 Channels	7	1	14.28	6	85.72
2. Subscription Television					
2.1 Networks					
2.1.1 Satellite TV	37	35	94.60	2	5.40
2.1.2 Cable TV	1	1	100.00	-	-
2.2 Program Channels	1	-	-	1	100.00
Total	46	37	80.43	9	19.57
Radio Broadcasting Business					
1. Main Radio (Existing)	-	-	-	-	-
2. Broadcasting Trial Licensee					
2.1 Public	-	-	-	-	-
2.2 Community	-	-	-	-	-
2.3 Business	1	-	-	1	100.00
Total	1	-	-	1	100.00
Others					
IPTV	11	1	9.10	10	90.90
Total	11	1	9.10	10	90.90
Grand Total	58	38	65.52	20	34.48

Remarks : The complaints filed during October 1, 2022 to September 30, 2023, as the overall process of considering and handling complaints in broadcasting and television businesses based on the Notification of the NBTC on Process and Completion Period of Request or Complaint Consideration regarding Broadcasting Business takes at least 90 - 120 days.

Source : Broadcasting Consumer Protection Bureau, Office of the NBTC

However, in the process of investigating complaints, an administrative act from the NBTC may affect the rights of the parties involved. Therefore, the committee on consumer protection in broadcasting and television businesses, appointed by the NBTC, offers the opportunity for the licensee to be adequately informed, to dispute, and present evidence according to the procedures. The committee also clarifies the procedures to ensure understanding for proper legal compliance, and provides suggestions to allow

licensees to improve their services for broadcasting programs and advertisements while considering consumer protection, aiming to reduce future misconduct that could impact consumers.

Upon reviewing all 58 complaints, it was found that there was a total of 39 complaints falling within the scope of misconduct as stipulated by the Notification of the NBTC on Standards of Subscription Television Service Contract B.E. 2556 (2013). Details are shown in Table 24.

Table 24 : Complaints Falling within the Scope of Misconduct According to the Standards of Subscription Television Service Contract in 2023

Standards of Subscription Television Service Contract	Total Cases	Settled/Completed	Ongoing Process
Fixing to Ensure Normal TV Program Broadcasting	27	24	3
Device Insurance Fee Refund	3	3	-
Service Usage Termination	3	3	-
Billing Error Review	2	2	-
Service Fee Refund	2	2	-
Service Fee Exemption	2	1	1
Total	39	35	4

Remark : Data as of December 31, 2023

Source : Broadcasting Consumer Protection Bureau, Office of the NBTC

Upon reviewing 39 complaints falling within the scope of misconduct according to the Standards of Subscription Television Service Contract, it was found that a total of 35 cases were resolved completely, as the service providers have taken actions to resolve the issues, and the complainants intended to conclude their complaints. In addition, the NBTC considered and had resolutions to conclude the complaints as the service operators had resolved the issues completely.

In considering the complaints, procedures are followed according to the Notification of the NBTC on Process and Completion Period of Request or Complaint Consideration regarding Broadcasting Business. When calculating the time taken to resolve

and manage the complaints filed between October 1, 2022 and September 30, 2023, it was found that the average lead time was 100 days, which is less than the stipulated period of 120 days as per the aforementioned Notification. The ongoing complaints are in the process of facts clarification by service operators, or are still under consideration by other relevant agencies, such as the Food and Drug Administration (FDA). However, in some cases, complaints necessitate gathering technical facts requiring evidence, and may involve complexities, or requests for recording materials for analysis and proposal preparation. In many cases, reliance on both internal departments of the Office of the NBTC and external agencies is required.

2) The Office of the NBTC has taken actions to handle complaints regarding program schedules and contents in broadcasting and television businesses within a 120-day timeframe¹¹ according to the Notification of the NBTC on Process and Completion Period of Request or Complaint Consideration regarding Broadcasting Business, and the process of collecting facts according to the Notification of the NBTC on Criteria and Procedures for Fact Finding of Offense with Administrative Penalty in Broadcasting and Television Businesses B.E. 2556 (2013). This involves the subcommittee on program contents, self-regulation promotion, and professional organization development in broadcasting and television industries, for considering complaints prior to presenting to the NBTC meeting for further consideration.

The Office of the NBTC has a process for receiving complaints about program schedules through various accessible channels, such as email (1200@nbt.go.th), telephone (Hotline 1200 Toll Free), mailing application on website (<https://1200.nbt.go.th/contact/>), Facebook (NBTC1200), LINE application (@NBTC1200), and mobile application, as well as a process for notifying the receipt of complaint and consideration results to complainants to acknowledge and follow up the status of their complaints. Moreover, the Office of the NBTC Headoffice, the Regional Offices, and the Radio and Television Illegal Content Inspection Center of the Office of the NBTC, also act as the examiner, and coordinate with external agencies to oversee program content, such as Ministry of Social Development and Human Security, Ministry of Foreign Affairs, Ministry of Culture, the Center for Morality Promotion (Public Organization), and the

Siam Society under Royal Patronage. All these 3 cases¹² are brought into the inspection and complaint resolution process. Performance standards for addressing complaints have been established to expedite the resolution process beyond the timeframes specified in the Notification of the NBTC on Process and Completion Period of Request or Complaint Consideration regarding Broadcasting Business. These standards are divided into five levels: the first level aims for an average of one percent faster resolution than the specified timeframe in the Notification, the second level aims for an average of two percent faster resolution, the third level aims for an average of three percent faster resolution, the fourth level aims for an average of four percent faster resolution, and the fifth level aims for an average of five percent faster resolution.

Furthermore, there is a categorization of complaint complexity¹³ to set targets for resolving issues quickly. 1) Low complexity Level, aims to resolve complaints within 45 days. 2) Moderate complexity Level, aims to resolve complaints within 90 days. 3) High complexity Level, aims to resolve complaints within 120 days. In addition, the Office of the NBTC has laws used to oversee business operations to regulate the quality of program schedules and content in broadcasting and business, including 1) the Broadcasting Business Act B.E. 2551 (2008), 2) the Notification of the NBTC on Licensing Criteria and Procedure for Radio or Television Broadcasting Service B.E. 2555 (2012), 3) the Notification of the NBTC on Criteria on Program Schedule Preparation for Broadcasting and Television Services B.E. 2556 (2013) and its amendment, and

¹¹ In cases where an extension is permitted, it should not exceed 157 days.

¹² 3 cases comprise 1) receiving complaints through various channels, 2) examining by the Radio and Television Illegal Content Inspection Center, and the Office of the NBTC Headoffice, and the Regional Offices, 3) coordinating with external agencies to oversee program content.

¹³ 1) Complaints with low complexity are those with complete and comprehensive evidence, requiring no further input from external agencies or experts.

2) Complaints with moderate complexity are those that may involve difficulties in gathering evidence or may require input from no more than one external Regulator or expert.

3) Complaints with high complexity involve significant challenges in gathering evidence, may require input from multiple external agencies or experts, or may necessitate additional actions to resolve the issues raised, aiming to promote effective regulation of program schedules and content in broadcasting and television businesses.



4) the Notification of the Office of the NBTC on Guidelines for Content Suitability Rating of Television Programs, based on the Notification of the NBTC on Criteria on Program Schedule Preparation for Broadcasting and Television Services B.E. 2556 (2013). The guidelines for considering program content in broadcasting and television businesses comprise 6 cases with operational measures, as follows:

1) In cases where content is prohibited from airing under Section 37 of the Broadcasting Business Act B.E. 2551 (2008), administrative penalties imposed range from fines of 50,000 to 500,000 baht.

2) In cases where the classification of TV program suitability (P, C, G, 13+, 18+, M) does not comply with the Notification of the Office of the NBTC on Guidelines for Content Suitability Rating of Television Programs, based on the Notification of the NBTC on Criteria on Program Schedule Preparation for Broadcasting and Television Services B.E. 2556 (2013), the subcommittee and the NBTC must review the content presented and establish measures for licensees to adjust the program's suitability level to align with the specified criteria. This is done to protect child and adolescent viewers from inappropriate content for their age and development.

3) In cases where TV program content violates the boundaries and conditions of the broadcasting and television licensing as stipulated by the Notification of the NBTC on Licensing Criteria and Procedure for Radio or Television Broadcasting Service B.E. 2555 (2012), licensees have the responsibility to select, procure, and oversee program content in accordance with media code of conduct. In such cases, governance measures are established in sequential order, starting with a warning for the licensee to rectify or amend their actions. However, if violations persist or the directives are not followed, the NBTC may escalate the measures, including suspension or revocation of the license.

4) In cases where the program content is not illegal and does not violate the licensing terms,

but is deemed inappropriate, the subcommittee and the NBTC may request cooperation to exercise caution in presenting the content. This action is taken under the authority granted by Section 27 (6) and (16) of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010).

5) In cases of promoting professional and occupational group formation and establishing ethical standards for professional practice, as well as self-regulation under ethical standards pursuant to Section 39 of the Broadcasting Business Act B.E. 2551 (2008), the subcommittee and the NBTC may consider forwarding the complaint and the outcome of the review to the professional organization where the licensee is a member. This action aims to inform and benefit the organization in promoting future group formation and ethical standard development.

6) In cases where the public offers suggestions for regulation to the Office of the NBTC, the subcommittee and the NBTC may consider these suggestions to enhance the quality and efficiency of regulating the broadcasting and television businesses.

In 2023, there was a total of 63 complaints regarding program schedules and contents in broadcasting and television operations, categorized by service types, as follows: 1) digital terrestrial television service, 57 complaints, 2) non-frequency used television service (satellite TV and cable TV), 1 complaint, and 3) audio broadcasting service, 5 complaints (4 complaints related to existing radio service, and 1 complaint related to experimental radio broadcasting). Among these, 30 complaints (24 complaints related to digital terrestrial television, 1 complaint related to non-frequency used television service (satellite TV and cable TV), 4 complaints related to existing radio service, and 1 complaint related to experimental radio broadcasting) were filed by the public directly to the Office of the NBTC, while 33 complaints (all complaints related to digital terrestrial television) were identified by the Office of the NBTC's inspections.

All 63 cases were completely resolved, accounting for 100 percent. Furthermore, no other agencies have submitted complaints to the Office of the NBTC. The only submissions received were requests for cooperation in overseeing the broadcasting program content or advertisement related to online government lottery, which were not authorized by the Government Lottery Office, and may promote gambling among the public. Thus, the Office of the NBTC circulated letters to licensees in broadcasting

and television businesses, informing them of the guidelines for presenting such program content, and urging strict adherence to these guidelines. In addition, the processing time for complaints adhered to the specified timelines outlined in the Notification of the NBTC on Process and Completion Period of Request or Complaint Consideration regarding Broadcasting Business, and aligned with the average standard processing timeframe for handling complaints. Details are shown in Table 25, and the complaint issues are shown in Table 26.

Table 25 : Complaints Regarding Program Schedules and Content in Broadcasting and Television Businesses in 2023

Source	Total	Type of Service				Completed	
		Digital Terrestrial TV	Satellite & Cable TV	Existing Radio Station	Radio Broadcasting Trial	No. of Cases	Percentage
Complaints filed by the public	30	24	1	4	1	18	28.57
Problems identified by the Office of the NBTC's inspections	33	33	-	-	-	33	52.38
Total	63	57	1	4	1	63	100.00

Remarks : 1.Data as of December 31, 2023

2.Data of complaints in the process during October 1, 2022 – September 30, 2023

3.No other agencies submitted complaints to the Office of the NBTC in such a period. The submissions received were requests for regulating according to duties.

Source : Content Regulation and Announcer Development Bureau, Office of the NBTC

Table 26 : Complaint Issues Regarding Program Schedules and Contents

Complaint Issue	No. of Cases	Percentage
Violent contents or scenes	18	28.57
Use of inappropriate words or language, impolite, rude, ungrammatical Thai language, or creating conflicts and animosity	10	15.87
Classification of TV program suitability	5	7.94
Distorted and incomprehensive presentation of news and information	5	7.94
Inconsistency with professional ethical standards or civil rights violation such as child's rights and women's rights	19	30.16
Others such as contents about online government lottery, alcoholic beverages, or inappropriate behaviors	6	9.52
Total	63	100.00

Source : Content Regulation and Announcer Development Bureau, Office of the NBTC

Upon reviewing the complaints, the most common issue raised was the presentation of content that did not meet professional ethical standards, and violated human rights. This includes complaints about the dissemination of news regarding cases of child sexual abuse in a manner that exposes information about the child and the family, causing psychological harm and jeopardizing the reputation, dignity, or other rights of the child, as well as complaints about presentations that diminished human dignity, accounting for 30.16 percent.

The next common issue was content containing violence or violent scenes, such as presenting polls encouraging the public to express opinions through acts of violence, using violence against animals, or using weapons to harm others. Licensees often presented clips of violent content repeatedly, and news announcers might use provocative or sensational language in reporting news, eliciting emotions from viewers and potentially leading to imitation behaviors, accounting for 28.57 percent.

Next in line was the issue of inappropriate language used in broadcasting and television businesses, such as rude or vulgar language, spreading of hate speech, inciting conflict, and using improper Thai language, accounting for 15.87 percent.

In addition, the other complaint issues were content about online government lottery, alcoholic beverages, or inappropriate behaviors, accounting for 9.52 percent. Furthermore, there were also issues where complaints accounted for 7.94 percent equally, including the television program content suitability rating, which did not adhere to the Notification of the Office of the NBTC on Guidelines for Content Suitability Rating of Television Programs, regarding gender, language, and violence, as well as the issue of presenting inaccurate and incomprehensive news and information, without thorough verification before broadcasting, leading to misunderstandings among the public.

The NBTC recognizes the importance of various complaint issues and aims to promote collaboration and the establishment of ethical standards. Therefore, they instructed the Office of the NBTC to forward complaints related to professional and ethical standards of the media to the organization responsible for self-regulation where the licensee is a member, to be informed of this for the purpose of promoting collaboration and the establishment of ethical standards, as per Section 39 of the Broadcasting and Television Businesses Act B.E. 2551 (2008).

2.2 Resolving complaints in telecommunications business.

The Office of the NBTC has undertaken various initiatives to enhance the efficiency and effectiveness of addressing complaints in the telecommunications business, according to the Notification of the NBTC on Complaint Handling Process and Consideration in the Telecommunication Business B.E. 2559 (2016) (“the Complaint Handling Notification”). These efforts aim to resolve issues swiftly and satisfactorily for the complainants, and ensure faster resolution and increased satisfaction, adhering to the Notification process as follows:

1) The Office of the NBTC has addressed consumer complaints in the telecommunications sector and instances where individuals have suffered from telecommunication services, in accordance with the procedures outlined in the Notification of the NBTC on Complaint Handling Process and Consideration in the Telecommunication Business B.E. 2559 (2016). Overall, the Office of the NBTC has considered complaints within the designated timeframes or even faster, following a process and steps for resolving complaints, as outlined below:

- Receiving complaints through various accessible channels, as well as verifying relevant documents and evidence.
- Notifying the licensee, who is the counterpart in the complaint, to inform about the complaint, and investigating by requesting the licensee to provide clarifications and present relevant documents and evidence to ascertain the facts.
- Notifying the complainant to inform about the resolution results and the clarifications. In cases where the complainant is satisfied with the clarifications provided by the licensee, the case is considered resolved. However, if the complainant remains dissatisfied with the clarifications, the Office of the NBTC shall proceed to the next step of the resolution process. That is, in cases where complaints are not complicated, those complaints will be proposed to the Secretary-General of the NBTC to consider based on the diagnostic approach, and/or the complaints are complicated, they will be brought to the Subcommittee on Consumer Protection in Telecommunications Business, appointed by virtue of the Act on the Organization B.E. 2553 (2010) and its amendment, comprising experts in consumer protection and related sectors, tasked with drafting proposals for further consideration by the NBTC.

- Notifying the complainant and the service provider to inform the results of consideration.

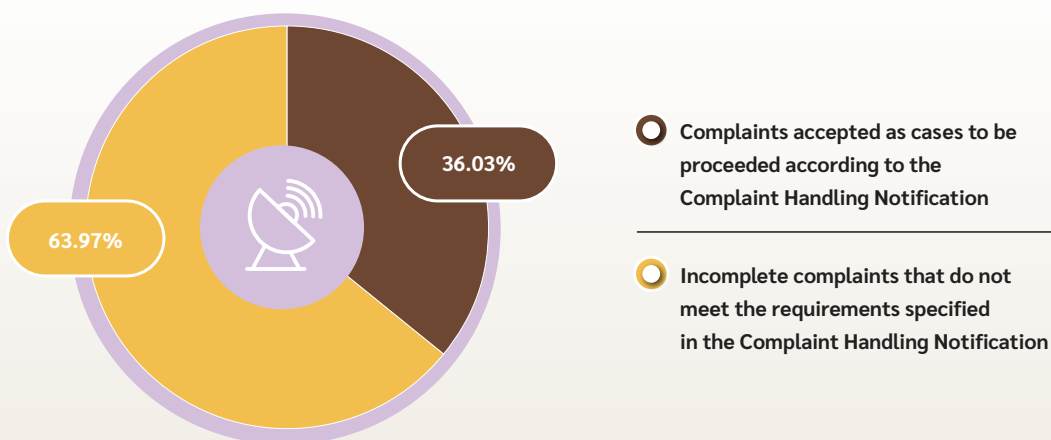
In 2023, the Office of the NBTC received complaints in telecommunications business, in a total of 4,421 cases, divided into 1) incomplete complaints

that do not meet the requirements specified in the Complaint Handling Notification, 2,828 cases, and 2) complaints accepted as cases to be proceeded according to the Complaint Handling Notification, 1,593 cases. Details are shown in Table 27 and Chart 7.

Table 27 : Complaint Receiving and Handling in 2023

Complaint Receiving and Handling	Quantity	Percentage	Status			
			Settled	Percentage	Ongoing Process	Average Settling Time (Days)
Complaints accepted as cases to be proceeded according to the Complaint Handling Notification	1,593	36.03	1,287	80.79	306	19.21
Incomplete complaints that do not meet the requirements specified in the Complaint Handling Notification	2,828	63.97	2,209	78.11	619	21.89
Total	4,421	100.00	3,496		925	

Chart 7 : Complaint Receiving and Handling in 2023



Remark : Data as of December 31, 2023

Source : Telecommunications Consumer Protection Bureau, Office of the NBTC

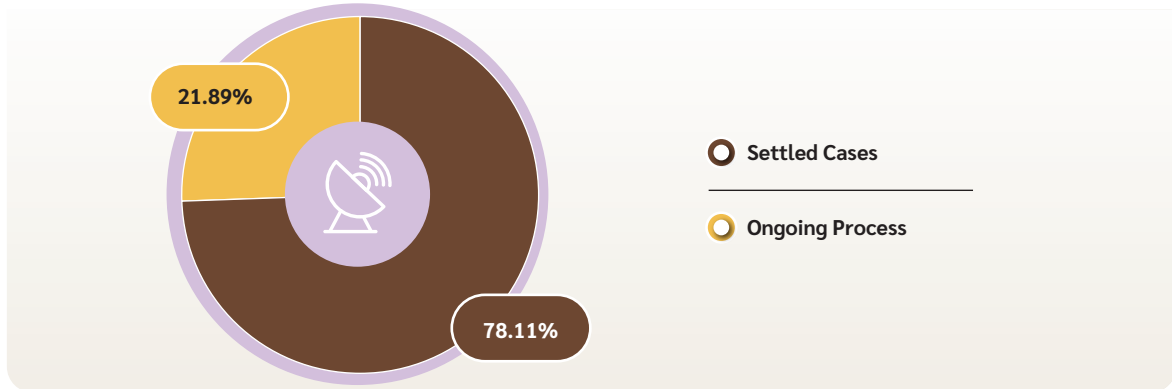
The results of complaint handling by the Office of the NBTC are as follows:

2.2.1 Handling incomplete complaints according to the Complaint Handling Notification, in a total of 2,828 cases, accounting for 63.97 percent of all complaints received. To handle the complaints, the Office of the NBTC has coordinated with licensees in advance, aiming to enhance the efficiency of complaint handling, resulting in problems settled

swiftly without proceeding to the handling process based on the Complaint Handling Notification, totaling 2,209 cases, accounting for 78.11 percent, more than half of the total complaints. However, 619 cases are in the coordination process, accounting for 21.89 percent of the total incomplete complaints received according to the Complaint Handling Notification. Details are shown in Chart 8.

Chart 8 : Handling Incomplete Complaints that

Do Not Meet the Requirements Specified in the Notification of the NBTC on Complaint Handling Process
and Consideration in the Telecommunication Business B.E. 2559 (2016) in 2023



Remark : Data as of December 31, 2023

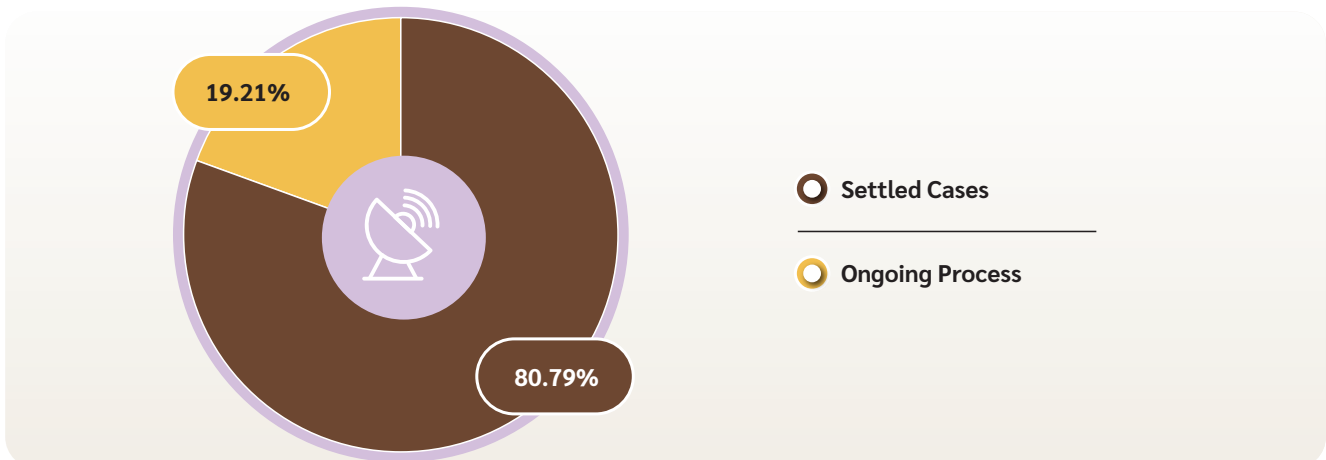
Source : Telecommunications Consumer Protection Bureau, Office of the NBTC

2.2.2 Handling complaints in telecommunications business accepted as complaints to be proceeded according to the Complaint Handling Notification, such as problems regarding unable to cancel fixed internet service without incurring fees, number suspension/cancellation and seeking to have the number reinstated, unsolicited chargeable SMS, poor mobile signal and internet quality (voice and data), and billing errors. In 2023, the Office of the NBTC received complaints in telecommunications

business and proceeded to the complaint handling process, in a total of 1,593 cases. Out of these, 1,287 cases have been successfully resolved by the Office of the NBTC, accounting for 80.79 percent, while 306 cases are currently being processed, accounting for 19.21 percent of all complaints received. From the total cases currently being processed, 156 cases were the complaints received in December, accounting for 9.79 percent of all received complaints. Details are shown in Chart 9.

Chart 9 : Handling Complaints in Telecommunications Business

According to the Process in 2023



Remark : Data as of December 31, 2023

Source : Telecommunications Consumer Protection Bureau, Office of the NBTC

According to the statistics of all complaints, when classified by provincial areas, it was found that there were 523 complaints from Bangkok. Of these, 420 complaints have been resolved, accounting for 80.31 percent, and 103 complaints are still being processed, accounting for 19.69 percent of all processed complaints. Additionally, there were 1,070 complaints from other provinces. Of these, 867 complaints have been resolved, accounting for 81.03 percent, and 203 complaints are still being processed, accounting for 18.97 percent of all processed complaints. Details are shown in Table 28.

Furthermore, when classified by type of service, the complaints can be divided as follows: 1) Mobile phone service, 1,013 complaints, accounting for 63.59 percent, 2) fixed internet service, 556 complaints, accounting for 34.90 percent, 3) establishment of radiocommunications stations/signal towers, 14 complaints, accounting for 0.88 percent, and 4) fixed-line telephone service, 10 complaints, accounting for 0.63 percent. Details are shown in Table 29.

Table 28 : Statistics of Complaints of the Office of the NBTC, classified by Provincial Areas

Area	Total (Cases)	In Progress		Settled Cases		
		No. of Cases	Percentage	No. of Cases	Percentage	Average Settling Time (Days)
Bangkok	523	103	19.69	420	80.31	28
Other Provinces	1,070	203	18.97	867	81.03	24
Total	1,593	306	19.21	1,287	80.79	25

Table 29 : Number of Complaints, classified by Type of Service in 2023

No.	Type of Service	Total Cases	
		No. of Cases	Percentage
1	Mobile phone service	1,013	63.59
2	Fixed internet service	556	34.90
3	Establishment of radiocommunications stations/signal towers	14	0.88
4	Fixed-line telephone service	10	0.63
Total		1,593	100

Remark : Data as of December 31, 2023

Source : Telecommunications Consumer Protection Bureau, Office of the NBTC

The top five types of issues with the most complaints received are as follows: 1) Problems related to service cancellation, 506 complaints, accounting for 31.76 percent, 2) service quality standards, 429 complaints, accounting for 26.93 percent, 3) billing

inaccuracy, 246 complaints, accounting for 15.44 percent, 4) problems related to quality of service (QoS), 235 complaints, accounting for 14.75 percent, and 5) problems related to SMS, 138 complaints, accounting for 8.66 percent respectively. Details are shown in Table 30.

Table 30 : Resolved Complaints, classified by Complaint Issue in 2023

Complaint Issue	No. of Cases	Percentage	Status	
			Settled	Ongoing Process
Service cancellation	506	31.76	468	38
Service quality standards	429	26.93	359	70
Billing inaccuracy	246	15.44	208	38
Quality of service	235	14.75	135	100
Problems related to SMS received	138	8.66	98	40
Privacy rights and personal data	19	1.19	11	8
Establishment of radiocommunications stations/cell towers	14	0.88	5	9
Incorrect/insufficient information provided	5	0.31	2	3
Service usage period limitation	1	0.06	1	0
Total	1,593	100.00	1,287	306

Remark : Data as of December 31, 2023

Source : Telecommunications Consumer Protection Bureau, Office of the NBTC

When considering the efficiency of complaint handling, classified by complaint issues in 2023, the Office of the NBTC has resolved the complaints in the outlined process in the Complaint Handling Notification, totaling 1,287 complaints, accounting for 80.79 percent, from a total of 1,593 complaints. The most common issue in 2022 was about disturbing/fraudulent SMS received. In this regard, the Office of the NBTC has cooperated with relevant agencies, including the Ministry of Digital Economy and Society, representatives from the Royal Thai Police, the Cyber Crime Investigation Bureau (CCIB), and telecommunications operators, as well as convening discussions with

regulatory agencies of other countries. This aims to strengthen measures against SMS frauds, and enforce stricter administrative penalties on content providers who disseminated fraudulent SMS to the public, by prosecuting against criminals, according to the computer-related Crime Act. Additionally, the Office of the NBTC exchanged knowledge and experiences in addressing problems and awareness of crimes in telecommunications business, aiming to resolve problems more efficiently. All these efforts resulted in a reduction of SMS complaints from 1,036 cases in 2022 to 138 cases in 2023, or a decrease of 898 cases. Details are shown in Table 31.

**Table 31 :** Efficiency of Complaint Resolution and Settlement during 2022 to 2023

No.	Complaint Issue	2022			2023		
		Total Cases	Settled	Ongoing Process	Total Cases	Settled	Ongoing Process
1	Service cancellation	706	674	32	506	468	38
2	Problems related to service provision	-	-	-	429	359	70
3	Billing inaccuracy	499	442	57	246	208	38
4	Quality of signals	-	-	-	235	135	100
5	Problems related to SMS received	1,036	1,012	24	138	98	40
6	Privacy rights and personal data	241	169	72	19	11	8
7	Establishment of radiocommunications stations/signal towers	38	12	26	14	5	9
8	Incorrect/insufficient information	8	8	-	5	2	3
9	Service usage period limitation	53	36	17	1	1	-
10	Service quality standards	631	556	75	-	-	-
11	Quality of service	219	213	6	-	-	-
Total		3,431	3,122	30	1,593	1,287	306

Remark : Data as of December 31, 2023

Source : Telecommunications Consumer Protection Bureau, Office of the NBTC

In addition, the Office of the NBTC has developed the complaint receiving and dispute settlement system (CRM), aiming to swiftly and efficiently resolve complaints of the public in various issues. Thus, the complaint receiving and dispute settlement system (CRM) serves as a significant tool for data management and systemic complaint handling.

In 2023, the system was improved by adding more channels to follow-up complaint resolving by telecommunications licensees, enabling the follow-up of the progress of complaint inspection and resolution to be faster and more efficient, as well as reducing the process of hard-copy document submission between the Office of the NBTC and the telecommunications

licensees. Currently, the project is in progress, expected to be completed in mid-2024. Additionally, the website for telecommunications consumer protection was updated and enhanced the web security, in compliance with the international standards, utilizing advanced technologies and platforms to comply with technological dynamic, and to safeguard the website against cyberattack. The website structure format of the user and administrator parts was also enhanced to be more modern, convenient, and user-friendly, enabling the web administrator to manage data efficiently, as well as responding to consumers' need for use in various activities promptly and effectively. The project is expected to be completed in mid-2024.



Management of the Broadcasting and Telecommunications Research and Development Fund for Public Interest

In 2023, the Broadcasting and Telecommunications Research and Development Fund for Public Interest (BTFP), under the management by the Fund Management Committee, have significant achievements as follows:

1. Important Operating Results.

1.1 Operating directions and mechanisms of the BTFP for the year 2023.

In 2023, the Fund Management Committee and the Subcommittee on Policy and Plan Implementation conducted a half-plan revision of the 4-year Action Plan of the Broadcasting and Telecommunications Research and Development Fund for Public Interest B.E. 2563 - 2566 (2020 - 2023), by evaluating the results of fund allocation in the past whether they completely adhered to the outlined strategies and strategic approaches. In this regard, the Fund Management Committee assigned the representatives of the Office of the National Economic and Social Development Council, the Comptroller General's Department, the Bureau of the Budget, and the Office of the Prime Minister, to participate as advisors to provide revising suggestions for the 4-year action plan of the fund B.E. 2563 - 2566 (2020 - 2023), as well as setting directions for the fund allocation for the maximum benefit. Additionally, in 2023, the term of reference for the Category 2 Fund, the fund allocated to projects specified by the Fund Management Committee's policy, was developed, with a focus on the development in accordance with the Thailand 4.0 Policy, such as a focus on 5G network development, supporting research on driving the economy through 5G technology, finance technology, Smart Health, Smart Agriculture, Smart City, Industry 4.0, research and development in broadcasting, television, and telecommunications businesses, spectrum-related technology, information technology, assistive technology for people with disabilities, the elderly, or the underprivileged, as well as the telecommunications industry and its related industries.

1.2 Strategic plan implementation.

In 2023, it was in the process of evaluating the 4-year action plan of the fund B.E. 2563 - 2566 (2020 - 2023), and drafting the Action Plan of the Broadcasting and Telecommunications Research and Development Fund for Public Interest, No. ..., (B.E. ...). Since the plan was nearing its end of the period, the Fund Management Committee decided to temporarily continue using the plan until the new action plan was completed. The Committee also directed that the monitoring and evaluation results of projects funded under the 4-year action plan be incorporated in drafting the new action plan. This process should take into account the directions and strategies for national development as outlined in various national policies and plans, especially the National Digital Economy and Society Development Plan, the Thailand's Operational Plan for Promoting 5G Technology Utilization, the NBTC's master plans, including the Spectrum Management Master Plan, the Broadcasting Master Plan, the Telecommunications Master Plan, and the Universal Service Obligation Plan. Additionally, it was mandated that the duration of the new plan should align with the aforementioned master plans, aiming to ensure that the Fund's action plan will sustainably guide its activities, and ensure that expenditures are efficient and provide maximum benefit.

1.3 The development and improvement of relevant criteria to align with the current situation.

1) Reviewing the criteria, guidelines, methods, extension permissions and penalties, for projects supported by the Fund, as well as revising the draft funding agreements for those who receive financial support from the Fund.

2) Revising the criteria, procedures, and conditions to ensure that expenditures of the Broadcasting and Telecommunications Research and Development Fund for Public Interest in B.E. 2560 (2017) are align with current situations, such as the issue of eligible individuals for promoting and supporting, types of fund allocation, as well as fund allocation process. Currently, the revised criteria was published in the Royal Gazette on August 18, 2023.

3) Reviewing and providing feedback on the definitions and alignment of the Fund's objectives as stipulated in Section 52 (2). This includes promoting and supporting the development of communication resources, research and development in broadcasting, television, and telecommunications sectors, as well as technology media literacy on spectrum usage, information technology, assistive technology for persons with disabilities, the elderly, and the underprivileged, the telecommunications industry and its related industries.

1.4 The actions undertaken to fulfill the objectives outlined in Section 52 (6).

The actions include supporting the optimum use of the spectrum, facilitating the frequency reclamation from authorized users for reallocation, and supporting compensation or reimbursement for the reclaimed frequencies. These actions aim to maximize the efficient use of the spectrum and meet the objectives of Section 52 (5), including the allocation of resources to the Thai Media Fund.

1.5 Maintaining the BTFP's funds.

At the end of the fourth quarter (December 31, 2023), the BTFP had a remaining balance of 56,720.18 million baht. Throughout the year 2023, the BTFP received a total of 10,098.34 million baht, which comprised the following: 1) Funds allocated from the Office of the NBTC, totaling 1,000.00 million baht, 2) Contributions from broadcasting, television, and telecommunications business licensees, totaling 7,675.08 million baht, 3) Interest earned from the Fund, totaling 413.40 million baht, 4) Revenue from administrative fines, totaling 262.69 million baht, and 5) Others, totaling 747.17 million baht, comprising returned funds from grantees, and refunded value-added tax. Additionally, the BTFP had expenditures in a total of 10,291.24 million baht, which comprised the following:

1) Project payment under the BTFP's objectives, totaling 5,061.33 million baht, consisting of Category 1 projects: for 129.35 million baht, Category 2 projects: for 412.36 million baht, Category 3 projects: for 25.70 million baht, Category 3 projects (Telecommunications USO): for 3,993.92 million baht, and Category 4 projects: for 500 million baht, 2) Other payments, totaling 5,229.91 million baht, consisting of transfers to the Ministry of Finance from the project supporting internet expenses for low-income individuals: 4,683.73 million baht, refunds for administrative fines as ordered by the court: 4.58 million baht, refunds of security deposits for the project supporting the transition to digital terrestrial television: 2.62 million baht, and remittance of VAT and withholding tax: 538.98 million baht.

The BTFP has managed to retain funds by depositing them in commercial banks and specialized financial institutions in accordance with the Fund Management Committee's regulation on fund collection, expenditure, accounting, and accounting systems B.E. 2564 (2021). It received an average return rate of 1.96 percent per annum, at the end of the fourth quarter (December 31, 2023).

1.6 Fund allocation.

In 2023, the Fund has allocated the resource in accordance with the objectives of the BTFP for the benefit of the public and people, aiming to promote and support the outlined frameworks, as follows:

Category 1: No budget allocation¹⁴

Category 2: Classified into 2 types, including the following: (1) Projects that focus on achieving the objectives of the Fund Management Committee, by outlining the scope of projects. In 2023, the NBTC approved a budget framework of 600.00 million baht, and defined the terms of reference (TOR) for 44 projects, in a total of 849.21¹⁵ million baht. The projects in Category 2 are currently in the process of presenting the TOR to the Subcommittee on the Fund's Policy and

¹⁴ In 2023, there was no announcement for project proposals under the Category 1 due to the Office of the NBTC, by the Research and Development Fund Bureau, has revised the Fund Management Committee's Notification on Criteria, Procedures, and Conditions for the BTFP's Expenditures, based on the feedback of the NBTC and the Committee. The Notification was published in the Royal Gazette on August 18, 2023. Additionally, there are legal issues regarding the interpretation of the BTFP's expenditure objectives under Section 52 (2) of the Act on the Organization, which is considered the highest priority objective for fund allocation, and has not yet been concluded. Currently, it is awaiting presentation to the Subcommittee on Legal Consultants of the NBTC, for interpretation.

¹⁵ Currently, it is in the process of proposing to the Subcommittee on the Fund's Policy and Strategic Plan Implementation's meeting for considering the TOR.

Strategic Plan Implementation's meeting, as well as coordinating with responsible units to adjust the TOR according to the feedback received from the meeting. However, in order to ensure efficient fund allocation within the budget framework of 600.00 million baht approved by the NBTC, and considering the legal issues regarding the interpretation of the BTFP's expenditure objectives under Section 52 (2) of the Act on the Organization B.E. 2553(2010) and its amendment, which is deemed the highest priority objective for fund allocation, and has not yet been concluded, and currently awaiting presentation to the Subcommittee on Legal Consultants of the NBTC, for interpretation, it is necessary to clarify these matters before prioritizing projects and presenting them to the Fund Management Committee and the NBTC for approval. (2) Consecutive funding projects. In 2023, there were 9 consecutive funding project proposals in Category 2, in a budget framework of 168.54 million baht. Of these, 2 projects were approved, totaling 16.34 million baht, consisting of 1) the Edge Computing platform development to integrate with the NETPIE IoT platform, totaling 14.38 million baht, and 2) the development of 5G standard signal decoder equipment for educational media and FEC speed accelerator cards for the O-RAN networks, totaling 1.96 million baht. Additionally, 1 project was disapproved, in a budget framework of 43.82 million baht, and 6 projects are under consideration, in a budget framework of 108.38 million baht.

Category 3: Projects or operations announced by the NBTC, to fulfill the objectives of the BTFP, including organizing a training program in high-level management, regulation, and legal development in broadcasting, television, and telecommunications businesses, totaling 27.54 million baht.

Category 4: Supporting legal proceedings related to the Thai Media Fund, in a budget framework of 500.00 million baht.

1.7 Monitoring and evaluation .

The Subcommittee on Project Monitoring and Evaluation, and the Committee on Research Result Inspection were appointed from selected experts in relevant fields, to monitor and evaluate the expenditure, as well as consider work of each fund-allocated project from 2015 to 2023, in a total of 579 projects.

1.8 Enhancing the BTFP's image.

The BTFP publicized information and enhancing the organization's image for the year 2023, by producing and disseminating publicity materials and information about the BTFP's roles and responsibilities, mission, and the operational results, as well as promoting the provision of project funding, through various communications channels, including television, print media, and online media, enabling the information dissemination to reach the public massively and swiftly, and appropriate with accessible information for people today. This includes publicizing information in formats of news clipping and articles, infographic, VDO clip, special interview, as well as publicizing projects of the grantees through television programs, print media, and various online channels, such as Facebook, YouTube, Instagram, and LINE Today. Additionally, this includes publicizing through famous online influencers, and through public relations channels of relevant government agencies, as well as organizing activities for publicizing the BTFP's roles and responsibilities, and mission.

Moreover, the electronic flip book to publicize funded projects' outcomes was conducted, aiming to publish completed projects for educational benefits, and to serve as examples for those interested in furthering research ideas. This also aims to improve the efficiency of submitting funding proposals and to build on the successful framework for developing broadcasting, television, and telecommunications sectors for public interest. In addition, publicity materials and information

dissemination have been conducted, aiming to produce the 30-second and 60-second advertising movies conveying the BTFP's roles, responsibilities, and mission.

2. Efficiency and Effectiveness Evaluation.

2.1 Efficiency.

1) The financial management of the BTFP are continuously efficient. The funds are safely kept with the appropriate rate of return. The BTFP has estimated the cash flow according to the revenue and expenditure plans, with necessary obligations in saving accounts. The remaining money was invested in fixed deposits of commercial banks and specialized financial institutions in the country, according to the consideration criteria prescribed by the Fund Management Committee. The credit risk (the return on asset, credit rating, ownership/asset size, and capital ratio), and liquidity risk (the ratio of non-performing loans to total loans, and the ratio of loans to deposits) of each bank and financial institution were taken into account. These efforts aim to earn best returns at the lowest risk. At the end of the fourth quarter (December 31, 2023), the BTFP received the rate of return at 1.96 percent, higher than the average rate of return of 5 large commercial banks at 1.10 percent.

2) The financial management achieved the outlined objectives as the BTFP has continuously stable and secure financial status.

(1) The operational results of the BTFP (according to the accrual basis shown in the financial

report of the BTFP) in 2023 at the end of the fourth quarter (December 31, 2023), the BTFP earned revenues in a total of 15,620.55 million baht (3,206.11 million baht decreased, compared to data at the end of the fourth quarter at December 31, 2022).

(2) The BTFP has expenditures in a total of 8,364.05 million baht (355.02 million baht decreased, compared to data at the end of the fourth quarter (at December 31, 2022). However, the BTFP has project contract obligations for 23,899.51 million baht (the year 2022, totaling 28,585.42 million baht).

(3) According to the financial status of the BTFP in 2023 at December 31, 2023, it has total assets of 97,288.13 million baht (2,160.35 million baht decreased, compared to the previous year at December 31, 2022), and total liabilities of 40,296.12 million baht (9,416.85 million baht decreased, compared to the previous year at December 31, 2022).

(4) In 2023, the BTFP has a stable financial status, with the current ratio accounting for 11.38 times, an increase of 4.65 times from the previous year, exceeding the accounting benchmark, which should not be less than 1.5 times. The BTFP has the debt ratio, accounting for 0.41 times, a decrease of 0.09 times from the previous year, exceeding the accounting benchmark, which should not be more than 1.5 times. Details are shown in Table 32.

Table 32 : Financial Report of the BTFP, Comparing 2023 and 2022

Unit : Million Baht

	2023	2022	Increase (Decrease)	Percentage	Remark
1. Performance (Accounting)					
Revenues	15,620.55	18,826.66	(3,206.11)	(17.03)	3
Revenue allocated by the Office of the NBTC	1,000.00	1,000.00	0.00	0.00	
Contributions from licensees	13,684.10	16,234.14	(2,550.04)	(15.71)	
Income from deposit interests	671.81	286.68	385.13	134.34	
Administrative fines	218.28	198.16	20.12	10.15	
Contribution to the Digital TV Frequency Auction Fund (Section 53 (2))	0.00	1,000.11	(1,000.11)	(100.00)	
Other incomes	46.36	107.57	(61.21)	(56.90)	
Expenses	8,364.05	8,719.07	(355.02)	(4.07)	4
Expenses supporting projects 1-4	1,068.70	1,790.83	(722.13)	(40.32)	
Expenses supporting project 3 (USO)	5,385.00	3,882.62	1,502.38	38.70	
Depreciation and amortization	1,838.00	1,834.58	3.42	0.19	5
Other expenses	72.35	0.00	72.35	n/a	
Other expenses (state remittance-digital TV project)	0.00	1,211.04	(1,211.04)	(100.00)	6
Revenues greater (less) than expenses	7,256.50	10,107.59	(2,851.09)	(28.21)	
2. Financial Position					
Assets	97,288.13	99,448.46	(2,160.33)	(2.17)	7
Cash and cash equivalents	11,479.27	14,412.17	(2,932.90)	(20.35)	
Short-term investment	45,240.91	42,500.91	2,740.00	6.45	
Accrued revenue from contributions	8,332.46	7,653.18	679.28	8.88	
Accrued deposit interests	381.39	122.98	258.41	210.12	
Other current assets	154.48	1,247.22	(1,092.74)	(87.61)	
Accrued revenue receivable from spectrum reclamation (Section 53 (8/1))	27,174.01	27,174.01	0.00	0.00	8
Fixed assets and infrastructure assets - net	4,525.61	6,337.99	(1,812.38)	(28.60)	
Liabilities	40,296.12	49,712.97	(9,416.85)	(18.94)	9
Short-term liabilities	5,758.78	5,114.47	644.31	12.60	
Funds to be remitted to the treasury as national revenue	0.00	4,693.73	(4,683.73)	(100.00)	
Other current liabilities	3.06	0.93	2.13	229.03	
Accrued spectrum reclamation compensation payable	3,089.51	3,089.51	0.00	0.00	8
Deferred contributions to the fund	31,412.62	36,741.56	(5,328.94)	(14.50)	
Retention money and coupons	23.40	51.13	(27.73)	(54.23)	
Deferred administrative fines	8.75	31.64	(22.89)	(72.35)	

	2023	2022	Increase (Decrease)	Percentage	Remark
Net Assets	<u>56,992.01</u>	<u>49,735.49</u>	<u>7,256.52</u>	<u>14.59</u>	10,11
Founding capital	2,926.32	2,926.32	0.00	0.00	
Revenue greater (less) than accumulated expenses brought forward	46,809.18	36,701.58	10,107.60	27.54	
Revenue greater (less) than expenses of the current year	7,256.50	10,107.59	(2,851.09)	(28.21)	
Project contract obligations	<u>23,899.51</u>	<u>28,585.42</u>	<u>(4,685.91)</u>	<u>(16.39)</u>	
3. Cash Flow					
Cash inflow	<u>10,098.34</u>	<u>8,403.08</u>	<u>1,695.26</u>	<u>20.17</u>	12
Cash received from the Office of the NBTC's allocation	1,000.0	1,000.00	0.00	0.00	
Cash received from licensees' contributions	7,675.08	5,791.50	1,883.58	32.52	
Cash received from deposit interests	413.40	352.49	60.91	17.28	
Cash received from administrative fines	262.69	64.32	198.37	308.41	
Others	747.17	1,194.77	(447.60)	(37.46)	
Cash outflow	<u>10,291.24</u>	<u>15,866.84</u>	<u>(5,575.60)</u>	<u>(35.14)</u>	13
Cash paid to support projects 1-4	1,067.41	2,070.29	(1,002.88)	(48.44)	
Cash paid to support project 3	3,993.92	7,636.43	(3,642.51)	(47.70)	
Others	5,229.91	6,160.12	(930.21)	(15.10)	
Cash receipts greater (less) than cash paid	<u>(192.90)</u>	<u>(7,463.76)</u>	<u>7,270.86</u>	<u>(97.42)</u>	
4. Financial Ratio					
Current Ratio (times)	11.38	6.73	4.65	69.09	
Debt Ratio (times)	0.41	0.50	(0.09)	(18.00)	

Remarks : 1. Data as of December 31, 2023

- The financial statements for the year end December 31, 2023 shown for comparison have not been audited and reviewed by the State Audit Office of the Kingdom of Thailand (SAO).
- The accounting revenue of the BTFP in 2023 decreased by 3,206.11 million baht, or 17.03%, compared to 2022
This was primarily due to a reduction in recognized revenue from fee contributions to the BTFP from telecommunications, broadcasting, and television licensees, by 2,550.04 million baht, compared to the previous year. In 2022, there was also recognized revenue from contributions to the digital TV frequency auction fund (Section 53 (2)), totaling 1,000.11 million baht (along with recognized expenses for the transition to digital terrestrial TV project, with equal amounts. The remaining balance was resolved to be remitted to the Ministry of Finance as national revenue.)
- The accounting expenses of the BTFP in 2023 decreased by 355.02 million baht, or 4.07%, compared to 2022.
This was primarily due to an increase of 1,502.38 million baht in disbursements for the Category 3 project support (Telecommunications USO), compared to the previous year. Additionally, in 2022, there was a second remittance of remaining funds from the transition to digital terrestrial TV project to the Ministry of Finance as national revenue, totaling 1,211.04 million baht (comprising 1,000.11 million baht in principal and 210.93 million baht in accrued interest).
- The depreciation and amortization as shown in the financial statements for comparison (2022/2023) was shown in the year 2022, totaling 2,270.71 million baht. After the SAO's audit, a revision was made, showing the amount of 1,834.58 million baht.
- Other expenses in 2022, totaling 1,211.04 million baht were the second remittance of remaining funds to the Ministry of Finance as national revenue (comprising 1,000.11 million baht in principal and 210.93 million baht in accrued interest) from the transition to digital terrestrial TV project.



7. The assets of the BTFP in the year 2023 decreased by 2,160.33 million baht, or 2.17%, compared to 2022. This was primarily due to disbursements in cash and cash equivalents for the mission of the BTFP, and a reduction in other current assets, totaling 1,092.74 million baht. Additionally, it included the adjustments and write-off other accrued income (penalty fees for the breach of contract conditions related to the provision of high-speed internet services by TOT Public Company Limited, recorded in the year 2022, totaling 725.31 million baht, a response letter from the Comptroller General's Department advising against imposing penalties for delays in operations during the COVID-19 pandemic, as well as the adjustment of the advance payments for the Telecommunications USO project recorded in 2022, reclassifying them as equipment and related accounts according to the project's progress in 2023, totaling 214.79 million baht. In addition, there was an adjustment of the input tax awaiting credit to input tax upon payment to support the BTFP's mission, totaling 48.78 million baht. The asset transfer account (equipment for the high-speed internet-based tele-health service application in rural areas) was reclassified as the Telecommunications USO project support expenses, totaling 74.53 million baht. Also, there was a write-down of the net asset value of the basic infrastructure in the year 2023 to account for depreciation and amortization, totaling 1,838.00 million baht.
8. The accrued revenue receivable from allocated spectrum reclamation according to Section 53 (8/1), for 27,174.01 million baht was the money to be received from the Office of the NBTC (the Office of the NBTC shall receive installments from the spectrum auction winners of the 2500 – 2690 MHz, due in the year 2025 to 2030), for 4,529.00 million baht per year, totaling 27,174.01 million baht. This was aimed to pay MCOT Public Company Limited as compensation for spectrum reclamation in the 2600 MHz during 2025 to 2030, 514.92 million baht per year, totaling 3,089.51 million baht (in the accrued spectrum reclamation compensation payable), in accordance with the Act on Organization B.E. 2553 (2010) and its amendments, Section 27 (12/1) regarding spectrum reclamation of unused or underutilized to repurpose the spectrum for more efficient use, and Section 52 (6) regarding supporting spectrum utilization for the maximum benefit, as well as supporting reclamation of licensed spectrum for reallocation, and supporting replacement, reimbursement and compensation for reclaimed spectrum, aiming for the utmost benefit of spectrum utilization.
9. The liabilities of the BTFP in the year 2023 decreased by 9,416.85 million baht, or 18.94%, compared to 2022. This was primarily due to the fact that in 2022, a debt of 4,683.73 million baht was recorded for funds to be remitted to the Ministry of Finance under the project supporting internet for low-income individuals (Telecommunications USO). These funds were remitted during 2023. Additionally, the adjustments to clear the recorded deferred contributions to the fund from 2022 were recognized as income during 2023, along with the recognition of expenses incurred during 2023.
10. The net assets of the BTFP at the end of the year, as of December 31, 2023, were 56,992.01 million baht, an increase of 7,256.52 million baht from the previous year. Although the revenue greater (less) than expenses for 2023 decreased by 2,851.09 million baht, the cumulative revenue greater (less) than expenses brought forward increased by 10,107.60 million baht. This increase was due to the retrospective adjustments made to the recognition of infrastructure assets and related accounts.
11. The net assets = assets – liabilities
12. The cash inflow for 2023 of the BTFP increased by 1,695.26 million baht, or 20.17%, compared to 2022. This increase was primarily due to an additional 1,883.58 million baht in contributions received from licensees.
13. The cash outflow for 2023 of the BTFP decreased by 5,575.60 million baht, or 35.14%, compared to 2022. This decrease was primarily due to lower disbursements for support funds under the BTFP's mission in the Category 1-4 projects in 2023 compared to the disbursements in 2022.

Source : The Research and Development Fund Bureau, Office of the NBTC

3) Efficiency, effectiveness, impact, and sustainability of granted projects. The operations of the BTFP achieved the outlined objectives efficiently since the granted projects have created benefits to the radio, television, and telecommunications businesses, in various aspects, including research and development, innovation and facility, learning and developing quality of life, and comprehensive human resources development in radio and television businesses. The evaluation of efficiency, effectiveness, impact, and sustainability of granted projects was conducted and completed in 2023. The results can be utilized for impact and sustainability evaluation in every aspect. In this regard, the BTFP has monitored and evaluated the project efficiency and effectiveness, in a total of 18 projects, having a high effectiveness evaluation score, with a fairly high total score of 4.17, described as follows:

(1) The funded projects that were completed in 2023 were highly efficient, achieving an average efficiency score of 4.33 out of 5. This was classified into the area of work plan and policy establishment in broadcasting, television, and telecommunications businesses, scored a perfect 5, training and skill development, scored of 4.40 out of 5, media and program production, scored 4.33 out of 5, followed by the area of service provision, learning promotion, and quality-of-life enhancement, scored 4.25 out of 5 respectively. Additionally, the areas with a fairly high score of 4.00 out of 5 are the area of research and development, and the area of technology, innovation and facility.

(2) The funded projects that were completed in 2023 were highly effective, achieving an average effectiveness score of 4.78 out of 5. This was classified into the areas of research and development,

training and skill development, and work plan and policy establishment in broadcasting, television, and telecommunications businesses, scored a perfect 5, followed by media and program production, scored 4.67 out of 5. Additionally, the areas with a high score of 4.50 out of 5 are the area of technology, innovation and facility, and the area of service provision, learning promotion, and quality-of-life enhancement.

(3) The funded projects that were completed in 2023 had a fairly high impact, receiving an average score of 3.77 out of 5. This was classified into the areas of training and skill development, and work plan and policy establishment in broadcasting, television, and telecommunications businesses, scored a fairly high impact score of 4.00 out of 5. Additionally, the area of service provision, learning promotion, and quality-of-life enhancement received a score of 3.75 out of 5, the area of research and development, and the area of media and program production, scored 3.67, followed by the area of technology, innovation and facility, scored 3.50 respectively.

(4) The funded projects that were completed in 2023 had a fairly high impact sustainability, receiving an average score of 3.79 out of 5. This was classified into the area of work plan and policy establishment in broadcasting, television, and telecommunications businesses, and the area of media and program production, which scored a fairly high sustainability score of 4.00 out of 5. Additionally, the area of training and skill development received a score of 3.80, the area of service provision, learning promotion, and quality-of-life enhancement scored 3.75, the area of research and development, scored 3.67, followed by the area of technology, innovation and facility, scored 3.50 respectively. Details are shown in Table 33 to Table 35.

Table 33 : Efficiency, Effectiveness, Impact, and Sustainability of Funded Projects that were Completed in 2023

Area	Average Score				
	Efficiency	Effectiveness	Impact	Sustainability	Final Rating
1. Research and development	4.00 (Fairly High)	5.00 (High)	3.67 (Fairly High)	3.67 (Fairly High)	4.08 (Fairly High)
2. Technology, innovation and facility	4.00 (Fairly High)	4.50 (High)	3.50 (Fairly High)	3.50 (Fairly High)	3.88 (Fairly High)
3. Service provision, learning promotion, and quality-of-life enhancement	4.25 (High)	4.50 (High)	3.75 (Fairly High)	3.75 (Fairly High)	4.06 (Fairly High)
4. Training and skill development	4.40 (High)	5.00 (High)	4.00 (Fairly High)	3.80 (Fairly High)	4.30 (High)
5. Media and program production	4.33 (High)	4.67 (High)	3.67 (Fairly High)	4.00 (Fairly High)	4.17 (Fairly High)
6. Work plan and policy establishment in broadcasting, television, and telecommunications businesses	5.00 (High)	5.00 (High)	4.00 (Fairly High)	4.00 (Fairly High)	4.50 (High)
Total Average Score	4.33 (High)	4.78 (High)	3.77 (Fairly High)	3.79 (Fairly High)	4.17 (Fairly High)

Remarks : 1. 1) Total score range between 1.00 - 1.80 is regarded as a low level.

2) Range between 1.81 - 2.60 is regarded as a fairly low level.

3) Range between 2.61 - 3.40 is regarded as a moderate level.

4) Range between 3.41 - 4.20 is regarded as a fairly high level.

5) Range between 4.21 - 5.00 is regarded as a high level.

2. Data as of December 31, 2023

Source : The Research and Development Fund Bureau, Office of the NBTC

Table 34 : Valuation Results of Efficiency, Effectiveness, Impact, and Sustainability of Funded Projects that were Completed in 2023 (by Project)

Area	No. of Projects	Budget (Million Baht)	Efficiency	Effectiveness	Impact	Sustainability	Final Rating
1. Research and development	3	20.95	4.00	5.00	3.67	3.67	4.08
1.1 Development of system or equipment for inspection/acceptance	1	14.15					
The study project for developing frequency inspection system for low-power transmission radio communications devices, Suranaree University of Technology		14.15	4 (Fairly High)	5 (High)	4 (Fairly High)	4 (Fairly High)	4.25 (High)
1.2 Agricultural technology development	2	6.80					
Prototype Development of SMART Agriculture Platform Integrating Remote Sensing Technology with the AquaCrop Model		4.07	3 (Moderate)	5 (High)	3 (Moderate)	4 (Fairly High)	3.75 (Fairly High)
Development Project of SMART Pig Farm using LoRaWAN Network		2.73	5 (High)	5 (High)	4 (Fairly High)	3 (Moderate)	4.25 (High)
2. Technology, innovation and facility	2	4.42	4.00	4.50	3.50	3.50	3.88
2.1 System and smart devices	2	4.42					
A Smart Ambulance with Information System for Enhancing Rescue Efficiency		4.05	4 (Fairly High)	5 (High)	3 (Moderate)	3 (Moderate)	3.75 (Fairly High)
The Water Quality Alerting and Monitoring System For Fish Farming in Cages in Mekong River		0.37	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)
3. Service provision, learning promotion, and quality-of-life enhancement	4	24.55	4.25	4.50	3.75	3.75	4.06
3.1 Service provision of online system /platform/blockchain	1	4.61					
The Health Care and Food Safety Handbook on a Permissioned Blockchain		4.61	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)
3.2 Wireless network	1	6.93					
The Project on intelligent wireless emergency backup network with geolocation capabilities for monitoring natural disasters and SAR		6.93	4 (Fairly High)	5 (High)	3 (Moderate)	3 (Moderate)	3.75 (Fairly High)



Area	No. of Projects	Budget (Million Baht)	Efficiency	Effectiveness	Impact	Sustainability	Final Rating
3.3 Examination and measurement service provision	1	10.45					
The Project on electromagnetic field measurement for radio and digital television broadcasting base station		10.45	5 (High)	5 (High)	4 (Fairly High)	4 (Fairly High)	4.50 (High)
3.4 Service provision/learning promotion via technology and facility for specific groups of people	1	2.56					
The Project on House Bookkeeping Intelligence System for Developing Thai Agricultural toward Thailand 4.0		2.56	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)	4 (Fairly High)
4. Training and skill development	5	22.03	4.40	5.00	4.00	3.80	4.30
4.1 Training/skill development for vulnerable groups	1	7.82					
The Project on digital literacy skill development for creating educational and commercial opportunities for USO net communities in border areas		7.82	3 (Moderate)	5 (High)	4 (Fairly High)	3 (Moderate)	3.75 (Fairly High)
4.2 Training/skill enhancement for telecommunications personnel	2	7.97					
The Project on national readiness development of 5G wireless communication, phrase 1 encryption technology, technology: transfer, telecommunications personnel development, and the creation of knowledge manuals and media		0.99	5 (High)	5 (High)	4 (Fairly High)	3 (Moderate)	4.25 (High)
The Project on Digital Transformation Expert Platform		6.98	5 (High)	5 (High)	4 (Fairly High)	4 (Fairly High)	4.50 (High)



Area	No. of Projects	Budget (Million Baht)	Efficiency	Effectiveness	Impact	Sustainability	Final Rating
4.3 Training/skill enhancement for the youth and students	2	6.24					
The Project on Training Camp for Career Path in Information Technology, Radio Broadcasting, Television, and Telecommunications Businesses for Students and Scholar in Kamphaeng Phet and Nearby Provinces		2.44	5 (High)	5 (High)	4 (Fairly High)	5 (High)	4.75 (High)
The project on media literacy enhancement and supporting the youth's roles (Rak Santi) in developing southern border provinces		3.80	4 (Fairly High)	5 (High)	4 (Fairly High)	4 (Fairly High)	4.25 (High)
5. Media and program production	3	27.87	4.33	4.67	3.67	4.00	4.17
5.1 Children, youth, and families	2	21.58					
The Mahidol Channel Kids		10.25	4 (Fairly High)	5 (High)	4 (Fairly High)	5 (High)	4.50 (High)
The "Mali the Mischievous: The Series" television series for children, youth, and families (early childhood)		11.33	5 (High)	5 (High)	4 (Fairly High)	4 (Fairly High)	4.50 (High)
5.2 Consumers and the public	1	6.29					
Kaoteekla TV Program Project		6.29	4 (Fairly High)	4 (Fairly High)	3 (Moderate)	3 (Moderate)	3.50 (Fairly High)
6. Work plan and policy establishment in broadcasting, television, and telecommunications businesses	1	3.80	5.00	5.00	4.00	4.00	4.50
6.1 Others	1	3.80					
The Project to Survey the Attitude and Demand of People with Hearing Disabilities towards Television Programs of NBTC		3.80	5 (High)	5 (High)	4 (Fairly High)	4 (Fairly High)	4.50 (High)
Total Average Score	18	103.62	4.33 (High)	4.78 (High)	3.77 (Fairly High)	3.79 (Fairly High)	4.17 (Fairly High)



Table 35 : Details of Evaluation Results of Efficiency, Effectiveness, Impact, and Sustainability of Funded Projects that were Completed in 2023 (by Project)

Area	Weighting	Rating	Description
1. The study project for developing frequency usage monitoring system for low-power transmission radiocommunications devices			
Efficiency	25	4 (Fairly High)	- The RF Switch equipment can be applied with signal transmission control in the 2.4 GHz and 5.0 GHz frequency bands effectively. - The frequency usage monitoring equipment can be effectively used both as vehicle-mounted and handheld devices. These devices are portable and meet the objectives of the research project.
Effectiveness	25	5 (High)	- The project was carried out according to the planned schedule, and the RF Switch equipment can be adapted for use in controlling signal transmission in the 2.4 GHz and 5.0 GHz frequency bands. - The test results of the equipment design system determined the minimum signal strength level or the minimum received power using the RF measuring sensor system. This was done by considering equal distance and height level of the active antenna used for receiving signals, as well as the position of the vehicle during signal measurement at each distance. These tests successfully achieved the research objectives.
Impact	25	4 (Fairly High)	Documents were published in conference proceedings and academic journals, and the copyright registration process is underway for all 3 programs, including (1) the RF Switch controlling program for low-power radio frequency detection systems, (2) the program for monitoring frequency usage of radiocommunications devices that use low power transmission, and (3) the program for displaying detection results of frequency usage for low-power radiocommunications devices.
Sustainability	25	4 (Fairly High)	
Final Rating		4.2 (High)	
2. Prototype Development of SMART Agriculture Platform integrating Remote Sensing Technology with the Aqua Crop Model			
Efficiency	25	3 (Moderate)	- The development of the application for farmers in Ayutthaya and Roi-Et provinces, which serve as the pilot areas, allows tracking of rice cultivation situations and predicting production outcomes for Thailand using satellite data. The aim is for farmers to access the application via mobile devices, enabling them to choose the optimal planting periods. This will facilitate efficient cultivation planning, tracking, water management, and advanced production forecasting. - The average satisfaction rate among participants in the training sessions for using the mobile application and the web application in Ayutthaya province is 95.40% for users, and 97.60% for staff members, while in Roi-Et province is 91.60% for users, and 82.20% for staff members. - The RiceSAP mobile application is now available for download on both Android and IOS operating systems, and there is also a web application accessible via standard web browsers. However, users currently cannot register for membership, preventing new users from accessing the application.

Area	Weighting	Rating	Description
Effectiveness	25	5 (High)	- The project was carried out according to the planned schedule, and the RicesAP application is role model for SMART agriculture cultivation. The relevant agencies can use this prototype as a guideline for developing applications having various other functions for future benefits of farmers and cultivation. - The average satisfaction rate among participants in the usage monitoring sessions of the mobile application and web applications in Ayutthaya province is 83.80% for users, and 81.00% for staff members, while in Roi-Et province is 85.40% for users, and 92.00% for staff members.
Impact	25	3 (Moderate)	The RiceSAP application manual was disseminated for rice farm management purposes in Maha Sarakham province, which was out of the study area. The application users are students from Mahasarakham College of Agriculture and Technology, and farmers in Suea Kok community enterprise groups engaging in integrated agriculture. The project has positive impacts on agriculture in Ayutthaya, Roi-Et, and Maha Sarakham provinces.
Sustainability	25	4 (Fairly High)	- The mobile application and web applications were tested in the study areas in Ayutthaya and Roi-Et provinces, with the application usage training before cultivation. - The data of each rice field retrieved from the mobile application is useful for generating database of produce and cultivation. The database can be further analyzed and studied for the "SMART agriculture platform prototype development project" by integrating remote sensing technology with the AquaCrop model. This is a collaboration between the BTFP and the Office of Agricultural Economics, Bank for Agriculture and Agricultural Cooperatives (BAAC), Faculty of Agriculture, Kasetsart University, the Ayutthaya Provincial Agricultural Extension Office, the Provincial Agricultural Extension Office, the Department of Agriculture, the Department of Agricultural Extension, AIS Digital for Thai, the Rak Ban Kerd project, Dtac, and the Rice Department. The meetings were held to brainstorm opinions, and offer opportunities in collaboration and integration for improving and developing the application functions to suit the usage requirements for future benefits of farmers.
Final Rating			3.75 (Fairly High)
3. Development Project of Smart Pig Farm using LoRaWAN Network			
Efficiency	25	5 (High)	- The project results show that sensor measurements for temperature, humidity, and electrical power can accurately display values on the online web interface. Additionally, the pig images from cameras placed above and beside them can be analyzed to determine pig weights with an accuracy of approximately +/- 1.86 kilograms from an average pig weight of around 105 kilograms. The parameters of temperature, humidity, electrical power, and pig weight can be used to create platforms for applying with other pig farms for the future. The knowledge gained from the research can be relayed or transferred to other entrepreneurs, especially medium and small businesses, to foster further development and enhance competitiveness on par with developed countries that utilize technology to increase productivity.

Area	Weighting	Rating	Description
			- The investment on system installment starting from installing the basic LoRaWan system in a farm needs an approximately budget of 700,000 baht, along with the feeding and weighing unit, 50,000 baht per unit, which can feed 70 pigs per year. In cases of 1,000 breeding pigs which can produce 20,000 meat pigs per year, it needs approximately 300 feeding and weighing units, with an investment budget of 15 million baht, while a profit from selling a meat pig is around 1,000 baht. Currently, using this system would lead to a profit increase from labor cost reduction by approximately 10% coupled with a 10% increase in production. Assuming a net profit of around 20 million baht per year for the farm, this would result in an additional profit of 4 million baht per year, taking 4 years to recoup the investment. In addition, the farm can also use employee movement data to increase efficiency. By relocating the staff cafeteria to a garden near the school, reducing travel distance to less than 500 meters, employees can work more efficiently. This can increase efficiency by up to 20% as they save time and energy from not having to travel long distances, leading to cost savings for the farm, increasing the profit by 5%.
Effectiveness	25	5 (High)	The project was carried out according to the planned schedule. The SMART Pig Farm prototype using LoRaWAN communication networks was developed by establishing 3 LoRaWAN Gateway signal poles, working as transmission medium of data retrieved from various sensor measurements, such as temperature, humidity, and electrical power. The image detecting sensors (cameras) are used for analyzing and detecting dead pigs and pig weights, by using images for monitoring pig behaviors, environment, and electrical systems. Such data and sales volume of pigs are shown on online web interfaces accurately, beneficial to the pig farm prototype entrepreneurs to apply the telecommunications technologies with their farms, enabling them to reduce cost incurred from dead pigs, and weight cheating while trading. The data from sensors can be analyzed for the optimal pig feed, and environment for raising pigs. The knowledge gained from the research can be relayed or transferred to other entrepreneurs, especially medium and small businesses.
Impact	25	4 (Fairly High)	- Pig farmers, either in big or small businesses, can reduce labor shortages due to the use of automated systems, and increase the efficiency of skilled labor on farms. And if implemented on larger scales, it can lower production costs per unit, making the project more cost-effective and worthwhile investments. Additionally, the shortage of skilled labor can be addressed by using automated systems to enhance the efficiency of employees, enabling them to work more and save costs, thereby increasing profits. - Implementing a pig health forecasting system in the care of weaned piglets can reduce the post-weaning mortality rate by 4.76% – 6.09%. Combining machines with IoTs in the prototype farm, it can increase a profit by 20%. In one year, the volunteer pig farms can produce 22,000 weaned pigs, with an approximately profit of 1,000 baht per pig, totaling 22 million baht per year, resulting in an additional profit of 4 million baht per year. By adopting the technology, it can raise a pig weight up to 120 kilograms, selling at 9,600 baht each, creating more economic values. In addition, it can reduce the impact on the environment since reducing the use of human labor can help mitigate the spread of diseases transmitted by pigs. For example, Thailand may face issues with the spread of African Swine Fever, which has a mortality rate of 70% in pigs. The primary factors for the spread of this disease are infected pigs and contamination through human goods and equipment. Therefore, reducing the use of human labor can help mitigate the spread of diseases. When compared to the loss of an entire herd after an infection, the financial impact on the farm and the nearby residents is enormous.

Area	Weighting	Rating	Description
Sustainability	25	3 (Moderate)	In the long term, this project will conduct a procurement of the following: (1) Partner companies to expand the production capacity and customer base. Due to insufficient capital to cover farms nationwide, it is necessary to find external capital sources, such as contacting the country's top 3 largest pig farms, or requesting a bank loan, (2) developing the system to suit all farm sizes in Thailand, and developing the system to the international standards.
Final Rating			4.25 (High)
4. A Smart Ambulance with Information System for Enhancing Rescue Efficiency			
Efficiency	25	4 (Fairly High)	The developed application program is compatible with the VDO conference system. The global positioning system developed by this research project is compatible with smart glasses both via mobile phones, personal computers, or laptop computers. Overall, all functions of the application program comply with the service procedures of the emergency vehicles in Thailand. The test results are also in line with real-situation simulations, confirming that the program is practical. However, since there is no feedback from real users, including rescue units, control centers, and counseling doctors, the efficiency test of the program by real users cannot be done.
Effectiveness	25	5 (High)	The project can develop an overall work process for the emergency vehicle. The process starts from individual calls to report an emergency to the emergency center. The emergency center coordinates with the emergency operating unit. When received the notification, the emergency operating unit takes charge at the scene of incident, and reports the patient's condition to the emergency center, as well as asking for advice from medical counselors, and delivering the patient to the expertise hospital. The emergency center coordinates with related agencies for clearing traffic, and notifies the hospital. The emergency operating unit notifies the patient's information, including identification number or passport number, name-surname. To use the application program, it requires a user registration for the system's security.
Impact	25	3 (Moderate)	This project is beneficial to accident victims in various places. It is overseen by experts, and ensures rapid delivery to hospitals for treatment. However, it is currently only implemented in the Bangkok area and has not yet been expanded to other regions.
Sustainability	25	3 (Moderate)	The application program was developed to support the Android operating system, and work well with the video conference system, the global positioning system, and the created medical vital sign system. The efficiency level of the program functions in communication, display and response depends on the quality of WIFI and mobile phone signals in the area where the operating emergency vehicle locates. However, currently the program does not support the iOS, preventing rescue units using iOS devices from utilizing it. In addition, as communications between rescuers and the control center, or medical counselors, require internet signals or WIFI, it is an obstacle for communications where internet signals are unavailable.
Final Rating			3.75 (Fairly High)

Area	Weighting	Rating	Description
5. The Water Quality Alerting and Monitoring System for Fish Farming in Cages in Mekong River			
Efficiency	25	4 (Fairly High)	The efficiency of the equipment allows for installation, testing, monitoring, and alerting for water quality with satisfactory results. The knowledge level of project participants and their satisfaction with the project was found to be high overall
Effectiveness	25	4 (Fairly High)	The project results achieved the objectives of the project to develop the water quality monitoring and alert system for fish cage farmers, and utilize the system to reduce the mortality rate of fish in the cages. The participants are able to apply the system to their work at a high level.
Impact	25	4 (Fairly High)	The project has various economic and social impacts, such as maximizing the use of water resources, providing employment and income for fish farmers, reducing migration to large cities, and strengthening community stability and resilience.
Sustainability	25	4 (Fairly High)	The project fosters the capacity enhancement of the professional fish cage farmers along the Mekong River. Additionally, Grobest Company, a fish processing factory for export, located in Nakhon Phanom province, buy fish from the fish farmers to process for export, which can promote job creation and income for farmers in Nakhon Phanom province.
Final Rating		4.00 (Fairly High)	
6. The Health Care and Food Safety Handbook on a Permissioned Blockchain			
Efficiency	25	4 (Fairly High)	The project was carried out according to the planned schedule. The Health Record Book application has been well-received in pilot areas, with the amount of data entered exceeding the target. It helps officials quickly understand the health situation and issues of the local population, and reduces the problems of data loss or damage compared to using traditional paper records. However, there are some target groups that have no digital literacy or have barriers to use, such as the elderly and people with disabilities. After the application trials by the target groups, 1,043 individuals were able to conduct community health reports, used to address the problems or outline the operational plans in the communities. For example, the Ban Phaya Chomphu Subdistrict Health Promotion Hospital has 905 target users. Such users are at risk of eye health problems and also at risk of developing heart disease. The Ban Ton Kwow Subdistrict Health Promotion Hospital has 138 target users. Such users are at risk of falls and oral health problems.
Effectiveness	25	4 (Fairly High)	The Health Record Book application is available for 4 groups, including the record book for mother and child, the record book for the elderly, authorized to use content from the Department of Health, with a focus on safety and data privacy, by developing the security model as permissioned blockchain. Only authorized personnel can access the data, ensuring user confidence in using the application. However, the record books for people with disabilities, and for nutrition, developed by the researchers, do not fully cover or clearly address the needs of the target groups. The overall satisfaction of using the real version 1.0 is at the highest level, scoring 4.26. From the understanding assessment and satisfaction of using the Health Record Book application, it was found that the officials have the understanding and overall satisfaction at a high level, with an average score of 4.13. The data owners have the understanding and overall satisfaction at a high level, with an average score of 4.41. Besides, the quality of life of application users, according to WHO standards, has improved from 16.13% to 62.73%, an increase of 46.60%.

Area	Weighting	Rating	Description
Impact	25	4 (Fairly High)	Although the quality of life of application users, according to WHO standards, is improving, and the users/related people are quite satisfied with the application usage experiences, some users feel that the application still does not meet their needs and have requested improvements, such as the ability to edit incorrect data entries. However, there are plans to disseminate knowledge to the public through sharing and exchanging experiences, as well as creating networks between the leading subdistrict health promotion hospitals and the community through training on how to use the application.
Sustainability	25	4 (Fairly High)	Due to the pilot areas being within the areas of subdistrict health promotion hospitals, located in semi-urban semi-rural areas, the potential impact may be more limited in terms of diversity, compared to a pilot area within an urban area. Additionally, some target groups do not have digital literacy or have barriers to use, such as the elderly and people with disabilities. Currently, the Ministry of Public Health announced the use of the record book for the elderly, while other record books have not been announced for use. This situation may lead to issues regarding data connectivity from the Health Data Center (HDC) database of the Ministry of Public Health.
Final Rating			4.00 (Fairly High)
7. The Project on intelligent wireless emergency backup network with geolocation capabilities for monitoring natural disasters and SAR			
Efficiency	25	4 (Fairly High)	- The network was designed by adopting the technology related to the automatic positioning reporting system, along with the applicable design concept, enabling efficient data connection via wireless networks for monitoring natural disasters. The monitoring devices provide necessary weather conditions. This information will be combined and transmitted through authorized amateur radio frequency bands, in accordance with the NBTC Notifications, directly to the receiving stations, established in the first phase in a total of 40 stations nationwide. Each station will receive the VHF radio frequency. - The price of chosen equipment is within the prepared budget. It has taken into account the impact of climate around equipment-installed areas, geographical limitations of the stations, and determining the risk measuring and monitoring points. However, the WX station design was for temporary installment, enabling convenient assembling and installment. To replace the equipment-installed station, it requires station dismantling and transport to the new place, resulting in the dismantling and transport costs.
Effectiveness	25	5 (High)	- The 40 installed stations nationwide receive the VHF radio frequency signals, with the characteristics of a very long-distance line of sight communication, enabling using the portable weather station (PWS) in the remote areas or underserved areas, without having to rely on internet signals or electrical power. - The transmission devices use power from batteries and solar energy, and are able to transmit signals farther by adjusting the aerial cable system and the height of monitoring devices to suit the area condition. Thus, the data signals can be transmitted through VHF radio waves, covering hundreds of kilometers. The preliminary design results were brought to create a device prototype for actual use, considering environment factors in operations, impacts of climate conditions around equipment-installed areas, geographical limitations of the stations, and determining the risk measuring and monitoring points, as well as determining the installing points for monitoring disasters. The portable WX stations would be installed in the explored areas at the specific time. The size of the portable WX station is not quite big, compared to the installing equipment, enabling convenience for relocating and installing. - After the completion of installing devices in 40 provinces, the trainings on how to use the devices were organized to general public with device manuals, in a total of 4 sessions, including the first session in Nong Bua Lamphu province, having 23 participants, the second session in Bangkok, having 30 participants, the third session in Nakhon Pathom province, having 29 participants, and the fourth session in Rayong province, having 30 participants, as well as organizing online sessions.





Area	Weighting	Rating	Description
Impact	25	3 (Moderate)	The progress of installment and system operation as well as relevant information were publicized through online media, including the society's websites, http://www.rast.or.th and http://www.qsl.net/rast , and online social media, such as Facebook, Twitter, Instagram, and LINE of amateur radio stations, working as the provincial network controlling centers, utilizing the simplex and the provincial amateur radio repeaters, as well as organizing press conferences.
Sustainability	25	3 (Moderate)	People in remote areas are not familiar with information technology adoption on a daily basis. Thus, many of them do not pay enough attention. In addition, the location landscape of the IGate receiving stations is varied. Some areas have unstable electrical systems, and some have lots of dust, causing damage to the electronic devices. A redesign of installment is required. Additionally, devices have not been installed in many provinces.
Final Rating			3.75 (Fairly High)
8. The Project on electromagnetic field measurement for radio and digital television broadcasting base station			
Efficiency	25	5 (High)	The project achieved the project objectives. The significant outcome includes the consumer protection in Thailand according to international standards, and the NBTC's policy. It provides the electromagnetic wave propagation measurement techniques and the search for various signal source stations according to international standards. It also includes a laboratory capable of conducting measurements at actual broadcasting stations, which is crucial in helping service providers prevent and resolve potential impacts.
Effectiveness	25	5 (High)	- There are methods and processes to measure electromagnetic field strength propagated from radiocommunication stations, adhering to the NTC. TS. 5001-2550 standards. The standards can be used to measure electromagnetic field strength propagated from experimental broadcasting radio stations and digital television broadcasting stations, which have not been conducted the electromagnetic field strength measurement propagated from the stations, totaling 101 stations nationwide. Additionally, the project outcome report has been conducted. - The onsite test laboratory was certified the ISO/IEC 17025:2017 standards in the scope of the electromagnetic field strength measurement propagated from radiocommunication stations, making it the first of its kind in Thailand. It can conduct the electromagnetic field strength measurement propagated from radiocommunication stations according to the NTC. TS. 5001-2550 standards, certifying various radiocommunication station inspection processes for post-installation surveillance, in line with the international structures of service provider inspection and certification.
Impact	25	4 (Fairly High)	The parameters gained from the electromagnetic field strength measurement propagated from main radio stations, experimental broadcasting radio stations and digital television broadcasting stations, totaling 101 stations, can be brought to compare with the electromagnetic field strength limits according to the Safety Standard for the Use of Radiocommunication Equipment on Human Health, NTC. TS. 5001-2550, and the international standards (ICNIRP 1998), for the group exposed to general electromagnetic fields.
Sustainability	25	4 (Fairly High)	It is able to control the impacts of electromagnetic fields propagated from radio broadcasting stations, and television broadcasting stations, on human health. The guidelines for primarily preventing and resolving problems to protect consumers.
Final Rating			4.40 (High)

Area	Weighting	Rating	Description
9. The Project on House Bookkeeping Intelligence System for Developing Thai Agriculture toward Thailand 4.0			
Efficiency	25	4 (Fairly High)	The technology is applied to reduce inequality among farmers nationwide, and foster them to access and utilize the technology with their household businesses. This enables them to recognize the actual cost, and utilize the technology in manufacturing, marketing, and financial planning, for transitioning to the Smart Agriculture era. Additionally, the developed system is compatible with other government systems, such as e-Tax Invoice. When encouraging farmers to conduct fundamental accounting records, they can see the operational results and financial status from concrete accounting data, resulting in the enhancement of analytical thinking, financial planning, and calculation error mitigation, prior to business operation. It also helps reduce risks, while increasing investments that lead to the expansion and registration of businesses for commercial purposes.
Effectiveness	25	4 (Fairly High)	- To study the technology acceptance model among farmers and community development planning with the use of the intelligent household business accounting system by the community leaders, the survey has been conducted among sample groups to extract information for designing and developing the system to suit the target group of farmers in Ayutthaya, Chachoengsao, Nakhon Pathom, and Pathum Thani provinces, aiming to develop the prototype of the most efficient and intelligent household business accounting system. - According to the results of onsite household business accounting entry data collecting, farmers confirmed that the dashboard of ledger records, both household account and business account, can be utilized for agricultural cost management, and financial status management within households. The system enables them to know the sources of income and expenses for family and systematic investments. Additionally, classifying the income record categories helps clearly identify the different sources of farmers' income in each province. - The training sessions were held to provide knowledge to the target group of farmers in Ayutthaya, Chachoengsao, Nakhon Pathom, and Pathum Thani provinces. The satisfactory survey on the usage of the intelligent household business accounting system was also conducted among 400 target farmers. The results show that the average overall perception of benefits from using the application is 4.54, the average overall perception of how to use it is 4.45, the average overall perception of usage control and management is 4.47, above the minimum acceptance threshold. However, some farmers are unable to install the application because they are using older smartphone models, have unsupported operating systems, or insufficient memory.
Impact	25	4 (Fairly High)	The community leaders in Ayutthaya, Chachoengsao, Nakhon Pathom, and Pathum Thani provinces support the training sessions for recording household accounts via the application in their community development plans. They also recognize that the application can help develop the communities, such as promoting saving behaviors, providing data of circular economy in communities, and allowing users to know their business costs, etc.

Area	Weighting	Rating	Description
Sustainability	25	4 (Fairly High)	- The results of brainstorming and prototype application reviews indicate that farmers are interested and find the prototype application easier and more convenient for record-keeping, compared to using a notebook. However, if they were to use the application for actual household accounting, it is anticipated that they might encounter problems and have questions during use. Additionally, they suggested adding certain record-keeping items. For example, some farmers do not have emails. The additional user menu was added for using the system without email registration. In addition, the data display was adjusted to separate the household account and business account, for the cost management purposes, as required by the farmers. - In the past, most farmers did not record household income and expense accounts and business accounts, making them unaware of household business costs. However, according to the onsite research, farmers were willing to attend the training on how to use the household accounting system, since the accounting application enables them to be aware of their financial status, regarded as the positive impact to the project.
Final Rating			4.00 (Fairly High)
10. The Project on digital literacy skill development for creating educational and commercial opportunities for USO net communities in border areas			
Efficiency	25	3 (Moderate)	- The Digital Literacy prototype center was established in the area which facilitate practical use, near the community and school. The center is also served as a view point of the community. - According to the onsite survey results, it was found that more than 80% of the residents living near the school know the community's Digital Literacy prototype center, as well as acknowledging and understanding the roles of the community's Digital Literacy prototype center. Additionally, up to 50% of the residents have used the center services. This reflects the efficient publicity about the center. However, from the survey among the residents living outside the community, it was found that only 20% of the residents know the community's Digital Literacy prototype center. This indicates a lack of public relations from the center, resulting in a lack of awareness among the public. Therefore, the center should engage in public relations to promote its functions and activities to raise awareness among the local population.
Effectiveness	25	5 (High)	The Digital Literacy prototype center was situated in Mueang Rae I-Tong school, Pilok Village. The center serves as an internet learning center for residents in I-tong community. The residents can use Google for searching for information, and Gmail for communications, as well as primarily utilizing Microsoft Office. Teachers and students have attended additional basic programming training to enhance their technological skills. From the training of 4 sessions of community representatives, each session consisting of 30 participants, it was found that the participants cooperated well throughout the training period. All participants attended according to the curriculum. There were pre- and post-training knowledge assessments, and it was found that knowledge increased by more than 80%. This shows that the participants gained a significantly better understanding of digital technology usage. Additionally, most participants mentioned that the digital literacy training was beneficial to the usage of the community enterprises. However, it is necessary to practice to become familiar with and proficient in using, particularly in researching information, using document transmission programs, creating content, expanding trading channels through online media, and financial management.

Area	Weighting	Rating	Description
Impact	25	4 (Fairly High)	It has a positive impact on society. That is, the community's digital literacy prototype center serves as a digital technology learning center, as well as a common space for the community, connecting areas of the school and the village. It also provides commercial areas and travel services. The school and the community are planning to organize technology training for outsiders, aiming to exchange knowledge, create benefits to the educational sector, and create income for the community from tourism. In addition, the project has an impact on the nation, since the community's digital literacy prototype center project is important and adheres to the national policies, such as the 20-year National Strategic Framework, the National Economic and Social Development Plan, Thailand 4.0, and Net Pracharat (the village broadband internet project). It helps reduce the inequality among people in the country, and promotes access to information for all people, which can lead to the quality-of-life enhancement of the public.
Sustainability	25	3 (Moderate)	To build sustainability for the community's digital literacy prototype center, there is a plan for the center caretakers to oversee and provide guidance on managing the Facebook pages of entrepreneurs. This aims to expand customer outreach, promote business connections with nearby communities to expand channels, exchange information and products, and increase the recognition of community products. In addition, it also aims to promote utilization of the center area, by requesting collaboration from the community leaders for using the center area to conduct various activities, as well as using the area as a tourist attraction, aiming to create benefits from the center area and economic values. In the future, there may be commercial plans to sell community products within the center.
Final Rating			3.75 (Fairly High)
11. The Project on national readiness development of 5G wireless communication, phrase 1 encryption technology: technology transfer, telecommunications personnel development, and the creation of knowledge manuals and media			
Efficiency	25	5 (High)	- There are books or manuals on encryption in 5G wireless communication systems that provide readers with knowledge about the accurate and reliable transmission of digital signals in communication systems. They also inform readers about the advancements in 5G technology and its benefits. - A total of 659 people have gained modern knowledge leading to the creation of technology roadmaps or becoming part of the telecommunications master plan through training and seminars.
Effectiveness	25	5 (High)	The knowledge about the advancements in 5G wireless communication standards, encryption in 5G wireless communication systems, and technological application with 5G, has been developed. The opinion poll results regarding the training are as follows: From the first 5G technology training session, held in the 41 st Electrical Engineering Academic Conference, at Sunee Grand Hotel, Ubon Ratchathani province, it was found that the participants gained more knowledge about 5G, with an average score of 4.24. From the second 5G technology training session, held at Building 4, the Faculty of Engineering, Chulalongkorn University, it was found that the participants gained more knowledge about 5G, with an average score of 3.95. Furthermore, the opinion poll results regarding 6 seminars organized in universities are as follows: The 1 st seminar, held at the Faculty of Engineering, King Mongkut's University of Technology North Bangkok, the participants gained more knowledge about 5G, with an average score of 4.5. The 2 nd seminar, held at the Office of Academic Resource, Chulalongkorn University, the participants gained more knowledge about 5G, with an average score of 4.29. The 3 rd seminar, held at the Faculty of Science and Technology, Nakhon Pathom Rajabhat University, the participants gained more knowledge about 5G, with an average score of 4.23. The 4 th seminar, held at the Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, the participants gained more knowledge about 5G, with an average score of 4.27. The 5 th seminar, held at the Faculty of Engineering, Prince of Songkhla University, the participants gained more knowledge about 5G, with an average score of 4.69. The 6 th seminar, held at the Faculty of Engineering, Mahidol University, the participants gained more knowledge about 5G, with an average score of 4.30.





Area	Weighting	Rating	Description
Impact	25	4 (Fairly High)	There are educational videos available online for public dissemination, allowing interested viewers to engage in a learning process that leads to an understanding of 5G technology, and 5G strategies for Thailand. These videos cover advancements in 5G communication technology, knowledge of millimeter-wave communication, communications with Massive MIMO technique, channel coding standards in 5G, and the application of network slicing.
Sustainability	25	3 (Moderate)	The training/seminar attendants gained knowledge and understanding of 5G technology advancements. The educational videos and articles about 5G were disseminated through the website https://www.5G-thailand.org/ , and YouTube channel, attracting a total of 1,936 viewers.
Final Rating			4.25 (High)
12. The Project on Digital Transformation Expert Platform			
Efficiency	25	5 (High)	The participants who passed the course have knowledge and understanding in digital transformation, and are able to conduct the startup business models for various types of business in the digital economy era. The project also fosters the establishment of network partners for developing digital transformation, and ensures that users benefit from the developed digital transformation learning platform.
Effectiveness	25	5 (High)	- The digital transformation learning platform is comprehensive, including general features, user-specific functionalities (front-end) and administrative functionalities (back-end). - The training course for developing experts in digital transformation aims to develop trainees to be experts in digital transformation or transforming organizations towards the digital era. According to the satisfactory survey results, the trainees were highly satisfied with the training course.
Impact	25	4 (Fairly High)	The digital transformation learning platform has been publicized to the general public via Facebook pages, LINE, email, and the website, to promote “Free Online Digital Transformation Course”. There were more than 5,000 people registered for the online course.
Sustainability	25	4 (Fairly High)	The memorandum of understanding (MOU) and seminars were conducted by 3 agencies, including the Federation of Thai SME, the National Science and Technology Development Regulator (NSTDA), and Panyapiwat Institute of Management.
Final Rating			4.50 (High)

Area	Weighting	Rating	Description
13. The Project on Training Camps for Career Path in Information Technology Radio Broadcasting, Television, and Telecommunication Businesses, for Students and Scholar in Kamphaeng Phet and Nearby Provinces			
Efficiency	25	5 (High)	There were 1,720 students in Kamphaeng Phet province and nearby provinces interested in attending the training for careers in information technology for broadcasting, television, and telecommunications businesses, exceeding the target of 1,000. Most of the students showed great interest in the activities and were excited to learn and practice. The satisfaction evaluation of the trainees was 87.60%.
Effectiveness	25	5 (High)	The students in Kamphaeng Phet province and nearby provinces gained knowledge and understanding of careers in information technology for broadcasting, television, and telecommunications businesses, which can be utilized for educational and career planning for the future.
Impact	25	4 (Fairly High)	When receiving the knowledge and understanding in information technology for broadcasting, television, and telecommunications businesses, and the exchange of knowledge with experts in each field, the students are able to plan their educational path in their desired universities, as well as career path to their dream jobs. This creates concrete guidelines and work plans to step forward to their planned future.
Sustainability	25	5 (High)	The memorandum of understanding (MOU) for academic collaboration was signed between Kamphaeng Phet Rajabhat University and Technical Colleges in 5 target provinces, including Kamphaeng Phet Technical College, Nakhon Sawan Technical College, Tak Technical College, Song Kwae Technical College, and Sukhothai Technical College. All parties will collaboratively support, promote, and publicize various information, as well as exchanging information in various aspects including other relevant factors, aiming to cooperatively further develop personnel in information technology business.
Final Rating		4.75 (High)	
14. The Project on media literacy enhancement and supporting the youth's roles (Rak Santi) in developing southern border provinces			
Efficiency	25	4 (Fairly High)	The youths who participated in the project to enhance media literacy skills and support their role (Rak Santi) in developing the southern border provinces expressed a high level of satisfaction with the project. However, their satisfaction with their own skills was the least when compared to other aspects of knowledge and skills. In the 3 southern border provinces and 4 districts in Songkhla, dissenting groups have used media and communication techniques to create sensitive narratives aimed at influencing the youth. Therefore, it is critical for the youth to receive information from knowledgeable and credible sources, and to be supported in becoming media literate.
Effectiveness	25	5 (High)	Training activities for youth knowledge management (Rak Santi), media literacy, comparative multicultural field trips, and peace-building camps have increased awareness and understanding of media literacy of the youth. These activities have enhanced their ability to utilize art in media, and to critically analyze the creation of meaning in media messages, including stereotype and hate speech.

Area	Weighting	Rating	Description
Impact	25	4 (Fairly High)	The youths who participated in the training gained a higher level of media literacy skills, and were able to utilize the knowledge. For example, they would reconsider before sharing information, and be aware of media consumption in a correct way. Additionally, they can relay the knowledge received to their parents and close friends, to discuss, comprehend, and set up small groups in their villages.
Sustainability	25	4 (Fairly High)	The youths are able to create information content and media that can be utilized in the community, educational institutions, or their societies. The comparative multicultural field trips under the project help enhance the media literacy skills, and support their roles in developing southern border provinces. This aims to offer them opportunities to express their views and propose solutions for issues in the southern border provinces, fostering their active participation. Additionally, the activity provides opportunities for the youth to play a supportive role in addressing and resolving these problems in the future. In addition, academics and government agencies, related to public network driving for fostering a peaceful society among the Rak Santi youth groups of the southern border provinces, have supported, promoted, and encouraged their roles in southern border provinces, as well as promoting various activities, including creating information content and media for developing society in southern border provinces through Facebook Fan Page: Peaceful of Southern Boundary's Organization: POSBO.
Final Rating			4.25 (High)
15. The Mahidol Channel Kids			
Efficiency	25	4 (Fairly High)	- There was a total of 112 episodes of the programs broadcasted on Thai PBS Channel, accounting for 62%, exceeding the target of 50% or 94 episodes. - The qualitative evaluation results were as follows: 1) Viewers were satisfied with the presentation of the programs at a level of 7 - 8, and realized the benefits of the programs according to the program objectives. 2) Directors, teachers, and students were satisfied with the presentation of the programs at a high to very high level, or scored 7 - 10. 3) The average number of viewers per episode was 26,571 people, exceeding the target (3 programs, 112 episodes, total viewers 2,976,000 people). 4) According to the group discussion results, it was found that 8 of the target group, which are parents with their children in early childhood, primary school, and intermediate school, have followed the program "Animals Speak", and were highly satisfied. Among them, there were intermediate school students who watched all 70 episodes of the program. The rest followed the program mostly, depending on their available time. 5) Regarding overall satisfaction with Mahidol Channel Kids' programs, 20% of the target group, both parents and children, gave 4 out of 5 points, and 80% of the target group gave a perfect 5. The group giving 4 points clarified that the physics program was fun but difficult to understand, and unexciting to watch, even though it was a beneficial program. 6) All 7 broadcasted programs have already been qualified by Dr. Rapee Boonplueang. - The Mahidol Kids Care Van activity was conducted in 12 small and medium schools in Ubon Ratchathani, Chiang Rai, and Satun provinces, having a total of 1,779 participants, divided into 1,564 students, and 215 teachers, exceeding the target of 10 schools and 1,000 participants. However, there were some problems and obstacles occurred in the project operations as follows: 1. Currently, online platforms are more popular than television among youth viewers. Therefore, it is essential to reconsider and adapt to this trend for better suitability. 2. The Mahidol Kids' programs still have to adhere to traditional television formats, which reduces the flexibility, enjoyment, and natural appeal that are popular on online platforms. 3. Programs broadcast online for early childhood audiences might not be suitable for elementary school audiences. Online platforms or YouTube have clearly defined viewer demographics. 4. Due to limited time, students' health check-up activities may not be comprehensive. However, a common issue found in many schools during such activities is dental health and lice problems.

Area	Weighting	Rating	Description
Effectiveness	25	5 (High)	The program was implemented in 12 schools out of the total 12 schools that organized activities, addressing the specified objectives. However, there was a suggestion to include programs about various professions to educate children about the educational paths required for their desired careers. For the evaluation conducted after the activities, which took place 3 – 4 months later, using online questionnaires and interviews, with 10 teachers as planned, the results showed that teachers utilized the Mahidol Kids' programs in their teaching at a rate of 94.10%. The program "Animals Speak" was used the most for teaching purposes, particularly by the science subject group. In addition, the results from implementing the programs in teaching showed an increase in enjoyment of learning by 36.11%. Additionally, feedback from teachers indicated a desire for more frequent activity organization.
Impact	25	4 (Fairly High)	The project can empower the youth with knowledge that they can utilize in the future. However, a reconsideration of media dissemination channels may be necessary as they might not reach as many youths as desired, potentially resulting in limited impact.
Sustainability	25	5 (High)	- The school directors supported the Mahidol Kids' program usage in teaching, and allowed equipment request and budget allocation to conduct experiments according to the programs. There has been an extension of activities focusing on children's health and well-being, including continuous health monitoring and care for children. Moreover, the students have also watched the programs at homes, and continuously followed the programs, as well as introducing their friends and parents to watch the programs "Animals Speak" and "the Little Ingenious Inventor", as they were easy-to-understand programs. Also, there was a request for Mahidol University to organize these activities again. - The video clips were continuously disseminated and publicized through social media (Facebook, YouTube, and the website), such as the program "Bio O-YEAH!", adding more episodes about COVID-19 pandemic, and other continuing programs, such as "Animals Speak", "Fun Science", and "Safety Kids". Overall, the programs received quite good feedback from audiences.
Final Rating			4.50 (High)
16. The "Mali the Mischievous: The Series" television series for children, youth, and families (early childhood)			
Efficiency	25	5 (High)	The "Mali the Mischievous: The Series" has been broadcasted on GMM25 television channel, and on the internet through Facebook and YouTube. The total viewers from all broadcast channels were 2,751,024 people.
Effectiveness	25	5 (High)	The audience satisfaction survey results showed that 80% of viewers were satisfied with the program, and they found the content highly beneficial for children.
Impact	25	4 (Fairly High)	The program can provide knowledge and understanding for age-appropriate development in terms of mental, physical, emotional, discipline, and moral values. It can also serve as a model for producing content related to children and the youth.
Sustainability	25	4 (Fairly High)	The project was expanded through the "Mali the Mischievous: The Series" roadshow activities held at 18 welfare facilities, charitable foundations, schools, and educational institutes.
Final Rating			4.50 (High)



Area	Weighting	Rating	Description
17. Koa tee kla TV Program Project			
Efficiency	25	4 (Fairly High)	There were 50 episodes of the Koa tee kla TV program, with an episode length not less than 25 minutes each, with closed caption service for facilitating individuals with hearing impairments to access the program. The program was disseminated through online media channels, such as Facebook Fan Page, YouTube, Instagram, and LINE. The public and people with disabilities who watched the Kao Thi Kla were satisfied with the program at the highest level.
Effectiveness	25	4 (Fairly High)	The program has 325,494 views, and 10,988 followers. The general public and people with disabilities who watched the program expressed that it was informative and beneficial, inspirational, and supporting people with disabilities and the general public to recognize their worth and potential for self-development to create a more livable society. Additionally, the content of the program helps reduce disparities, promote equality, and foster attitudes of acceptance and coexistence.
Impact	25	3 (Moderate)	The overall satisfaction with the Koa tee kla program was very high. Satisfaction was high across all aspects, with the highest satisfaction among the general public and people with disabilities being for the documentary program, which were beneficial, inspirational, and valuable, contributing to a more livable society. However, regarding the Koa tee kla program for the disabled group, there were suggestions for more news & information, communications, telecommunications services, information technology & communications, as well as facilitating technologies for communications of all groups of people with disabilities. Additionally, there were requests for additional service opportunities for the disabled, and promoting jobs and employment for people with disabilities, providing marketing channels, and encouraging work acceptance for people with disabilities.
Sustainability	25	3 (Moderate)	The viewership on YouTube can be leveraged to enhance and make the program more engaging and accessible for people with disabilities. This can generate income for project supporters or organizers. With further development, the program may receive support from other sources beyond the BTFP, and become self-sufficiency. In addition, the program has been disseminated through Facebook and YouTube, enabling individuals seeking inspiration and self-improvement to access and watch the program.
Final Rating		3.50 (Fairly High)	
18. The Project to Survey the Attitude and Demand of People with Hearing Disabilities towards Television Programs of NBTC			
Efficiency	25	5 (High)	The project collected data on the attitudes and demands of individuals with hearing impairments or communication disabilities from 5 regions nationwide. This included 2,023 quantitative samples, exceeding the target of 2,000 samples, and 39 qualitative samples, exceeding the target of 30 samples, all within the specified timeframe. The survey enabled insights of the media consumption needs of this group, enhancing operational efficiency and raising awareness among television program producers. This can be verified through policy recommendations received.

Area	Weighting	Rating	Description
Effectiveness	25	5 (High)	The project achieved the specified objectives, as it revealed the opinions and demands of individuals with hearing impairments or communication disabilities regarding television programs under the supervision of the NBTC, both qualitatively and quantitatively. This has led to the development of policy recommendations to inform the creation of policies for improving content and format of television programs to better suit consumers with hearing and communication impairments. Additionally, it promotes social responsibility of the NBTC by encouraging and raising awareness among television producers about the needs of this consumer group. The survey results indicated that the majority of individuals with hearing impairments or communication disabilities were particularly interested in the news content of television programs under the NBTC's supervision. They consistently rated the quality of these programs as good, primarily because many channels offer sign language interpreters. This met the demands of 50% of the hearing and communication-impaired audience, resulting in greater benefits for these viewers. In addition, overall, the target group expressed satisfaction with the programs under the NBTC's supervision, rating them between 8 and 10 points. However, studies from various television perspectives revealed that current broadcasts already offer sign language and closed caption services to some extent. Yet, feedback from individuals with hearing impairments indicated that they are not receiving these services. This discrepancy likely stems from unclear communication between the television providers and consumers regarding the availability of these supplementary service. Therefore, it is essential to increase public awareness about the available services through the following methods: 1. Providing guidance on using technology related to signal reception and sign language services, ensuring that individuals with hearing impairments are well-informed. 2. Clearly disseminate program schedules that include sign language interpreters and closed captions, making it easier for viewers to plan and choose which programs to watch.
Impact	25	4 (Fairly High)	According to the survey on attitudes and demands of individuals with hearing impairments or communication disabilities to the television programs under the NBTC's supervision, it was found that the programs have created impacts on society. The television programs with sign language interpreters and closed captions are more popular than those without such services.
Sustainability	25	4 (Fairly High)	- Recognizing the importance of enabling equal access to program content for individuals with hearing impairments, agencies should collaborate to provide necessary support. However, enhancing services like sign language interpretation and closed captions entails significant costs. Therefore, relevant agencies should implement additional incentive measures to motivate television stations, such as offering rental discounts for stations in addition to tax benefits received from the Revenue Department. - The policy recommendations for promoting are as follows: 1) Promote research to further study regarding facilitating the group that cannot access media to ensure they can access content equally with individuals with general hearing impairments. 2) Focus on tailoring services to suit the content expected to be consumed by groups with difficulty accessing media. For example, programs for the elderly should feature larger sign language interpreter screens and bigger closed captions. Additionally, establish television viewing centers with large screens in underserved areas, which are the northeastern and southern regions, and/or rural areas. 3) Promote the idea of individuals with hearing impairments or communication disabilities helping one another to better access content. The government can facilitate this by acting as a mediator, enabling these individuals to meet and exchange information or reiterate content. For instance, support younger individuals in assisting older ones, those with higher education in helping those with less education, and students from schools for the deaf in aiding those in general schools.
Final Rating			4.50 (High)



The implementation of the projects funded by the BTFP for the year 2023 has achieved the objectives according to Section 52 of the Act on the Organization B.E. 2553 (2010) and its amendment. It drives the development of broadcasting, television, and telecommunications businesses, and can be a part of the mechanism for the development of Thailand in multiple dimensions, including the economy, society, human resources, and security.

In the dimension of economic development, promoting and supporting the innovation and application of 5G and digital technology in various fields can help drive the economy, such as the Prototype development of SMART agriculture platform integrating remote sensing technology with the AquaCrop model, and the development project of SMART Pig Farm using LoRaWAN network.

In the dimension of social development, the implementation of the projects can help improve the life quality of children, the youth, the elderly, and the underprivileged. Such projects include the Mahidol Channel Kids, the “Mali the Mischievous: The Series” television series for children, youth, and families (early childhood), the health care and food safety handbook on permissioned blockchain.

In the dimension of human resources development, the implementation of the projects can help develop and enhance the capabilities of human resources in broadcasting, television, telecommunications, and information technology businesses. Such projects include the project on digital literacy skill development for creating educational and commercial opportunities for USO net communities in border areas, the project on national readiness development of 5G wireless communication, phase 1.

In the dimension of security development, the implementation of the projects can help promote and support digital technology adoption and application for building stability and security in life and property. The projects include a smart ambulance with information systems for enhancing rescue efficiency, the project on intelligent

wireless emergency backup network with geolocation capabilities for monitoring natural disasters and SAR, and the water quality alerting and monitoring system for fish farming in cage in Mekong River.

3. Operational Framework for the Year 2024.

3.1 Goals for driving policies and strategies.

The Fund Management Committee set the operational goals for driving policies and strategies in 2024, as follows:

1) Evaluating the implementation of the 4-year Action Plan of the Broadcasting and Telecommunications Research and Development Fund for Public Interest B.E. 2563 - 2566 (2020 - 2023), to achieve the specified goals, and developing a draft action plan of the Broadcasting and Telecommunications Research and Development Fund for Public Interest, No. ..., (B.E. ...).

2) Developing guidelines for collaboration with relevant agencies to drive the allocation of funds to reach grassroots target groups, proactively create platforms to educate and raise awareness about fund allocation to ensure comprehensive and equitable access for the target groups. This also includes reviewing and adjusting the allocation process of funds from the BTFP, such as regulations, notifications, and grant agreements, to adhere to the Fund Management Committee’s policies, focusing on proactive working. Additionally, the development of guidelines aims to open up comprehensive communication channels to address questions or concerns about fund allocation requests. In addition, it involves utilizing research findings to integrate and further develop for the sustainable development of the country.

3) Developing the budget framework and timeframe for the allocation of funds in 2025.

3.2 Goals for the allocation of funds.

The Fund Management Committee approved the budget framework for the allocation of funds for the year 2024, under the budget limit of 1,500 million baht. Currently, it is under consideration of the NBTC for approval of the budget framework and the fund allocation directions. Details are shown in Table 36.

**Table 36 :** The Budget Framework and the Fund Allocation Directions for the Year 2024¹⁶

No.	Budget Framework for Allocation for the Year 2024	Amount (Million Baht)
1	Category 1 Projects : projects proposed by eligible grantees, requesting for promotion and fund support, based on the objectives of the BTFP (Open Grant)	300.00
2	Category 2 Projects : projects specified by the Fund Management Committee	700.00
	2.1 Strategic Grant ¹⁷	600.00
	2.2 Ongoing Grant (by agreements with granted agencies)	100.00
3	Category 3 Projects : projects or tasks specified by the NBTC for achieving the BTFP objectives	– ¹⁸
4	Category 4 Projects : supporting legal proceeding of the Thai Media Fund according to Section 52 (5) of the Act on Organization B.E. 2553 (2010) and its amendment	500.00
Total		1,500.00

Source : Research and Development Fund Bureau, Office of the NBTC

3.3 Goals for monitoring and evaluating the efficiency of fund spending.

The Fund Management Committee will continuously enhance the BTFP management system to be more efficient and secure than in previous years. This includes managing and maintaining the fund's growth and stability, as well as updating rules, regulations, and criteria related to the operations to be modern, aligned, and integrated with other relevant strategic plans. The approach will be comprehensive in the context of operational processes, transparent, and auditable. Additionally, information technology will be utilized to facilitate more efficient operations for the Research and Development Fund Bureau, and fund recipients. In addition, the BTFP fund recipient

manual will be created and disseminated via the website, and printed in booklet form to clarify the steps and processes for applicants and stakeholders. The development of the Research and Development Fund Bureau's personnel will also be enhanced to ensure they are equipped to implement the BTFP's policies and plans effectively. This includes improving their skills and experience in policy and plan analysis, project evaluation, financial management accounting, research management, intellectual property, and foreign languages. Furthermore, efforts will be made to promote the BTFP's achievements and the projects it supports, highlighting beneficial research and information for society and the BTFP's image to increase its recognition.

¹⁶ It is under consideration of the NBTC for approval the budget framework and the fund allocation policies.

¹⁷ The budget limit for strategic grants particularly by the Fund Management Committee only. Regarding the strategic grant assignments within the clusters, as directed by the NBTC, it is deemed appropriate to set the framework for Category 3 projects.

¹⁸ Unlimited budget limit



Resolutions of the National Broadcasting and Telecommunications Commission (NBTC) in the Significant Topics in 2023

The Transfer of the License to Use the 700 MHz Frequency Band, for 2x5 MHz, between the National Telecom Public Company Limited and Advanced Wireless Network Company Limited

The National Telecom Public Company Limited (NT) transferred the license to use the 700 MHz frequency band, for 2x5 MHz, in the range from 738 – 743 MHz paired with 793 – 798 MHz, to Advanced Wireless Network Company Limited (AWN), according to the Notification of the NBTC on Criteria and Procedures for Transferring Licenses to Use the Spectrum Bands. In this regard, the NBTC, in the 17th/2023 meeting on August 23, 2023, reached the following resolutions.

1. The meeting considered the transfer of the license to use the 700 MHz frequency band, for 2x5 MHz, between NT and AWN, and noted that the Cabinet (on March 14, 2023) approved in principle the 4G/5G mobile phone project on the 700 MHz frequency band, with a total investment framework of approximately 30,602 million baht, and acknowledged the operational budget framework (business budget) of 31,026 million baht for NT. Therefore, the meeting resolved to allow NT (the company requesting the transfer of the spectrum license) to transfer the license to use the 700 MHz frequency band, in the range from 738 – 743 MHz paired with 793 – 798 MHz, with a bandwidth of 2x5 MHz, to AWN (the company requesting to receive the license), according to Section 44/3 of the Act on the Organization B.E. 2553 (2010) and its amendment, as well as Clause 18 of the Notification of the NBTC on Criteria and Procedures for Transferring Licenses to Use the Spectrum Bands B.E. 2564 (2021), as proposed by the Office of the NBTC.

2. The meeting authorized the involved parties, as permitted in item 1, to proceed with matters related to the spectrum license and the telecommunications business license, as follows:

2.1 Advanced Wireless Network Company Limited.

2.1.1 The meeting approved the revision of licensing conditions to use spectrum for telecommunications business, No. FREQ/TEL/001 (700 MHz) of AWN, in the 700 MHz (in the range 738 – 743 MHz paired with 793 – 798 MHz), by including such frequency range to attach the licensing conditions according to the draft licensing conditions proposed by the Office of the NBTC.

2.1.2 The meeting approved AWN to expand the international mobile telecommunications (IMT) services in the 700 MHz band (in the range 738 – 743 MHz paired with 793 – 798 MHz), by enhancing services under its telecommunications business license Type 3, No. TEL3/2551/003, and revising licensing conditions, specifically in the area of international mobile telecommunications (IMT) services in the 700 MHz band (in the range 738 – 743 MHz paired with 793 – 798 MHz), according to the draft licensing conditions proposed by the Office of the NBTC.

2.1.3 The meeting acknowledged the cybersecurity plan, the personal data protection plan, the social and environmental responsibility plan, and the consumer protection plan, as stipulated



in Clause 19 and Clause 20 of the Notification of the NBTC on Licensing Criteria and Procedures to Use the Spectrum Bands for International Mobile Telecommunications with the 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz, as proposed by the Office of the NBTC.

2.2 National Telecom Public Company Limited.

2.2.1 The meeting approved the revision of licensing conditions to use spectrum for telecommunications business, No. FREQ/TEL/005 (700 MHz), by revising licensing conditions to use the 700 MHz to the frequency range 743 – 748 paired with 798 – 803 MHz, according to the draft licensing conditions proposed by the Office of the NBTC.

2.2.2 The meeting approved the revision of licensing conditions of the telecommunications business license Type 3, No. TEL3/2564/001 of NT, specifically in the area of international mobile telecommunications (IMT) services in the 700 MHz band (in the range 743 – 748 paired with 798 – 803 MHz), which are services provided after the transfer of the license to use the 700 MHz spectrum band of the company, according to the draft licensing conditions proposed by the Office of the NBTC.

3. The meeting agreed to set additional specific conditions and measures according to Clause 14 of the Notification of the NBTC on Criteria and Procedures for Transferring Licenses to Use the Spectrum Bands B.E. 2564 (2021), as follows:

3.1 To promote competition and access to 5G technology, the meeting agreed to set additional specific conditions and measures for the company receiving the license, according to Clause 14 of the Notification of the NBTC on Criteria and Procedures for Transferring Licenses to Use the Spectrum Bands, as follows:

3.1.1 AWN (the company receiving the license to use the spectrum) must

provide telecommunication network services with the capacity of at least 20 percent of its entire 700 MHz telecommunication networks possessed by AWN to mobile virtual network operators not affiliated with itself upon request for such services.

3.1.2 In the roaming agreements between AWN and other service providers, the agreements must ensure that those providers, including mobile virtual network operators (MVNOs) using the service provider's networks, can use services that employ technology with capabilities no less than those offered by AWN to its own customers.

3.1.3 The licensee resulting from the spectrum license transfer, as well as its subsidiaries under its control, must ensure that the licensed MVNOs can use and connect networks with other licensees in the same manner as it does itself.

3.1.4 MVNO licensees must have the rights to access services from all frequency bands of the transferee with usage rights, including direct rights and sublicensed rights, under the same technology standards.

3.1.5 Access to network services for MVNO licensees must be guaranteed under the quality-of-service (QoS) standards set by the NBTC.

3.1.6 Service must not be denied to MVNO licensees resulting from inadequate network capacity reasons, or as stipulated in the criteria and conditions set by the NBTC.

3.1.7 Access to the mobile network requested by the MVNO must be ready within 60 days from the date of the request for network access.

3.1.8 The wholesale mobile service compensation rates for MVNOs shall not exceed the average service rates per unit of each service as per the usage rights of each promotional package, less a rate no less than 30 percent of the average retail sales price per unit for promotional





bundle packages or the average sales price per unit for unbundled packages for actual services usage (e.g. voice, data, and SMS services) (retail – 30 percent), that the licensee or subsidiaries under that control of the corporate entity arising from this transfer offer to end-users.

3.1.9 Mobile network service providers must not set a minimum purchase threshold for services, such as voice, data, messaging, etc., of the MVNO licensees. Charges for services should be based on actual usage.

3.2 In order to protect consumers and prevent undue impact on user rights, or any adverse effects on service quality and standards provided by the transferring parties, the meeting agreed to set measures for the transferring parties, in accordance with Clause 7 and Clause 13 (4) of the Notification of the NBTC on Criteria and Procedures for Transferring Licenses to Use the Spectrum Bands, as follows:

3.2.1 In cases where users receive services that do not meet the quality standards set by the NBTC, experience emergencies preventing service use, or encounter inadequate network capacity to support increased traffic or as advertised by NT, which arise from service provision on the 700 MHz band (2x5 MHz). For example, users encounter internet speed issues that lower than specified in the packages or lower than the quality standards set by the NBTC, or the service network experiences issues rendering it unusable for a longer period than usual during a certain period of time. Thus, NT must follow the proposed remedial plan, by providing compensation to users affected by the license

transfer in a fair and appropriate manner. Prompt action should be taken to rectify the issues and minimize the impact on users as much as possible.

3.2.2 NT must issue service packages that suitable for the capabilities of the remaining frequency band on the 700 MHz (2x5 MHz), and negotiate with partners to ensure sufficient and appropriate usage on their networks as confirmed by the company.

3.2.3 In order to maintain service quality to support service provision efficiently and support the increasing number of users, NT must operate and develop the following management plans to be presented to the NBTC for acknowledgement.

(1) The plan involves adopting more modern network technologies and efficiently utilizing frequency bands to enhance service delivery (from 4G/5G to 5G), or

(2) The plan involves increasing the number of base stations in areas where the capacity falls short of demand, or

(3) The plan involves utilizing the current 26 GHz band to support additional services, and consider additional capacity procurement from other service providers as deemed appropriate.

3.2.4 NT must develop a service provision and wireless telecommunications network management plan to be proposed to the NBTC for acknowledgement, to ensure service provision for the period after the 850 MHz, 2100 MHz and 2300 MHz spectrum authorization expires in 2025, as this may impact overall service provision.



The Merger between Advanced Wireless Network Company Limited and Triple T Broadband Public Company Limited

In 2023, there was a notification of the merger between Advanced Wireless Network Company Limited (AWN) and Triple T Broadband Public Company Limited (TTTBB). In this regard, AWN sent the letter informing the merger, along with the merger report, to the Secretary-General of the NBTC on November 22, 2022. The details of AWN and TTTBB merger are as follows:

The merger took place when AWN acquired TTTBB in a total of 7,529,242,385 shares from Acumen Company Limited, equivalent to 99.87 percent of the total issued shares of TTTBB, accounting for 99.87 percent of total voting rights. The merger between AWN and TTTBB is considered a business merger under the definition of business merger (3) in Clause 3 of the Notification of the NBTC on Measures for Regulating Business Mergers in Telecommunications (“Notification on Business Mergers”). It falls under the category of holding a business in the same service type by acquiring or holding more than 10 percent of the total shares of another licensee, or by acquiring all or part of the assets to control the policies or management of another licensee’s business, according to the Notification of the NTC on Measures to Prevent Monopolistic Conduct or Unfair Competition in Telecommunications Business B.E. 2549 (2006) (“NTC Notification on Measures to Prevent Monopoly”).

The NBTC in the 12th/2023 Special Meeting on November 10, 2023, considered the report of the AWN and TTTBB merger. The resolutions are summarized as follows:

1. The majority at the meeting resolved that the merger between AWN and TTTBB considered holding a business in the same service type, according to Clause 8 of the Notification of the National Telecommunications Commission on Measures to Prevent Monopolistic Conduct or Unfair Competition in Telecommunications Business B.E. 2549 (2006). This could potentially lead to monopolization, or reduce, or limit competition in the telecommunications

service sector. Consequently, the meeting resolved to approve the merger and set specific measures in accordance with the aforementioned Notification.

2. The meeting considered 3 points of concern and resolved to approve the conditions or specific measures for AWN and TTTBB to implement the following:

2.1 The issue of service fees and service quality.

2.1.1 The NBTC regulations regarding service fees must be followed strictly.

2.1.2 AWN must not increase service package pricing, or reduce service quality. The packages with the lowest price existing before the acquisition between AWN and TTTBB must be maintained, and inform the NBTC. Additionally, it must maintain service quality and package prices for at least five years from the date of acquisition approval.

2.1.3 The price options for unbundle packages must be provided.

2.1.4 Service users must be protected by maintaining the promotional packages, service quality, and prices for current customers who were using the service before the acquisition, until the end of the service contract with that provider. This condition applies unless the user agrees to cancel the service or chooses to change the promotional packages themselves after the acquisition, for five years from the date of acquisition approval.

2.1.5 AWN must strictly maintain the quality of service (QoS) according to the Notification of the NBTC on Service Quality Standards of Telecommunications Service Provision. Additionally, it must be prepared to accommodate the increased number of customers resulting from the merger to ensure that the quality of service provided to users does not decline. This includes having a sufficient number of staff to support service delivery at service centers and call centers, as well as ensuring that customer service centers have adequate space to accommodate service users.





2.1.6 AWN must facilitate users by providing convenient, fast, comprehensive and easily accessible service channels. These channels should make it easy for users to purchase, modify (increase/decrease) their fixed internet services according to their needs, without any restrictions. Additionally, the company must clearly and accurately display up-to-date service details, rates for each service, or promotional rates, as well as the methods and conditions for selecting services.

2.1.7 Information about service provision must be provided comprehensively to users. The service rates of unbundle service or unbundle packages must be specified and shown. For example, separating the rates for high-speed fixed internet from the rates for mobile phone services and set-top boxes for television, content, and entertainment, so that end users are informed beforehand.

2.1.8 AWN must publicize and communicate to the public that it will maintain service quality and offer fair pricing to its users.

2.1.9 AWN must submit information according to the Notification of the NBTC on Criteria and Procedures for Preparing Account Separation Reports in Telecommunications. This information should be detailed monthly and submitted to the NBTC every three months or upon request by the NBTC.

2.1.10 AWN must acquire an advisor with at least five years of experience and expertise in verifying cost structures, service rates, or rate-related information in the telecommunications industry abroad. The NBTC will determine the advisor, and AWN will be responsible for all expenses incurred from procuring and hiring the advisor. Additionally, the advisor must have no direct or indirect affiliations, connections, or conflicts of interest with either company to verify the accuracy of the information, according to item 2.1.9 of both companies. The advisor will be appointed for a period of five years, and the appointment must be completed within six months after the merger.

2.1.11 AWN must adhere to the principle of net neutrality by not differentiating service quality based on access to content from other businesses or service providers.

2.1.12 Users must be informed about the merger and any changes in service conditions, such as changes in the service provider's name, contact channels, and service centers.

2.2 The issue of supporting small entrepreneurs.

The conditions or specific measures were established to address concerns about limited competition in certain geographical areas, and to maintain the current level of competition. They aim to remove barriers to market entry for new operators, and to promote new internet service operators that do not have their own networks in specific areas, in order to increase geographic coverage. Therefore, the post-merger conditions and specific measures for AWN and TTTBB were prescribed to promote competition in the market, and offer opportunities to small entrepreneurs, particularly entrepreneurs who do not have their own networks or infrastructure, to compete in the market, as well as preventing the misuse of market power that could exclude or create obstacles for other licensees in conducting their business. The conditions and specific measures are as follows:

2.2.1 AWN must allow other service providers to lease its network (open access) for service provision. It is required to prepare a proposal for the use of its telecommunications network, including wholesale broadband access service for all service technologies. This proposal should be accompanied by documentation detailing the principles and methods used to calculate the cost-based compensation rates for network usage, and submitted to the Office of the NBTC within 60 days after the business merger.

2.2.2 The fixed broadband wholesale service unbundling must be offered in all service areas of both companies on the cost-based basis, and at prices not exceeding the rates set by the NBTC for those requesting such services. The service must be available within 60 days from the date the request is made.

2.2.3 AWN must develop a plan to expand fixed broadband access to areas with low economic value, potentially using fixed wireless access to expand networks to areas that currently have no service. This should be in addition to the regular annual investment plan, and should not include projects already approved by the government. This plan must cover a period of five years, detailing the annual investment plan, and specifying the amount to be invested in fixed broadband access network expansion, which should be no less than 10,000 million baht over the five-year period. The plan should be proposed to the NBTC for approval, prior to implementation. Additionally, AWN must report the business operation to the NBTC every six months or upon request by the NBTC for monitoring.

2.2.4 Licensees without their own networks must be granted the same rights and conditions for network access (open access) for network access as those given to subsidiaries or affiliates of both companies.

2.2.5 Licensees without their own networks accessing the network must be guaranteed the rights to receive services under the quality-of-service (QoS) standards according to the NBTC Notification or as mandated by the NBTC.

2.2.6 Service provision must not be denied to licensees that do not have their own network resulting from inadequate network capacity reasons, or as stipulated in the criteria and conditions set by the NBTC.

2.2.7 Minimum quantities and prices for network service rental must not be set for licensees who do not have their own network, in order to ensure that the licensees can rent the network services of both companies specifically in the desired areas, without the need to cover the entire country. In addition, service charges must be based on actual usage.

2.2.8 The network must be opened for other service providers to lease its network for providing services within buildings or private areas, without discrimination in terms of service access and pricing.

2.3 Merger monitoring and evaluation mechanisms.

2.3.1 The business operation report must be developed under operations according to designated timeframe and conditions set by the NBTC, every six months, or as determined by the NBTC, in the format as determined by the NBTC, for a period of at least five years.

2.3.2 After the merger, if the NBTC consider or receive complaints regarding actions, behaviors, or causes that may constitute monopolistic practices, reduction, or limitation of competition in telecommunications service provision, or if significant changes occur that render the conditions or specific measures unsuitable or inefficient, the NBTC may suspend, terminate, add, or revise the conditions or new specific measures as deemed appropriate and necessary.

PART 3

Report on Market Situation and Competition in Broadcasting, Television, and Telecommunications Businesses in 2023

Market Situation and Competition in Broadcasting, Television, and Telecommunications Businesses

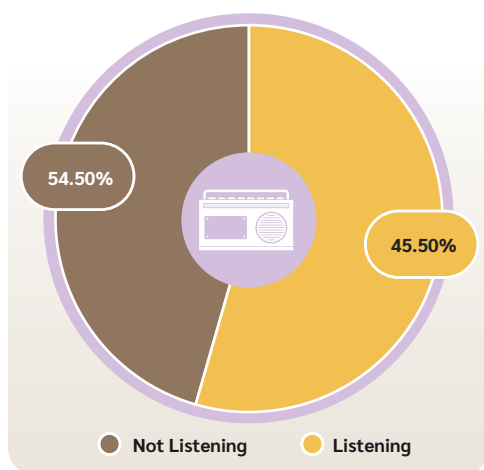
1. Market Situation and Competition in Broadcasting Business in 2023.

1.1 Radio program listenership behavior.

The Office of the NBTC cooperated with the National Statistical Office, Ministry of Digital Economy and Society, to conduct a survey on radio and television media access in 2023. The results show that 45.50 percent of the population nationwide listen to radio programs through radio waves, online radio, and music

streaming service, while 54.50 percent do not listen to radio programs. The population group that listens to the radio the most are those aged 18 - 24 (Generation Z), accounting for 64.70 percent, followed by those aged 25 - 42 (Generation Y), accounting for 55.50 percent, and those aged 43 - 57 (Generation X), accounting for 41.50 percent, while those aged 58 - 76 (Baby Boomer) listen the least, accounting for 28.20 percent. Details are shown in Chart 10 and Chart 11.

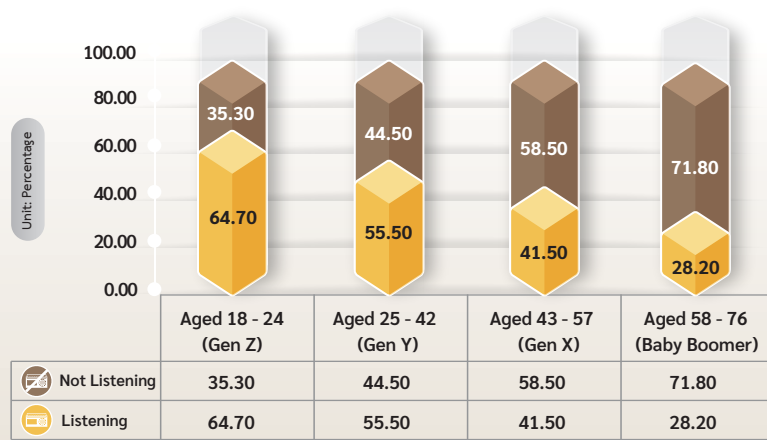
Chart 10 : The Proportion of Radio Listenership Nationwide in 2023



The proportion of radio listenership nationwide through FM radio broadcasts is 33.30 percent, while 66.70 percent do not listen to FM radio programs. Among these listeners, Baby Boomer has the highest proportion, accounting for 56.50 percent, followed by Generation X, accounting for 39.40 percent, Generation Y, accounting for 27.50 percent, and Generation Z, accounting for 16.60 percent respectively. Details are shown in Chart 12 and Chart 13.

The frequency of FM radio listenership nationwide shows that listening 3 - 4 days per week has the highest proportion at 30.20 percent, followed by

Chart 11 : The Proportion of Radio Listenership in 2023, classified by Age



listening every day at 29.70 percent, listening 1 - 2 days per week at 28.70 percent, and listening 5 - 6 days per week at 11.40 percent respectively. Details are shown in Chart 14. Additionally, there are people listening to the radio through various devices, including radio receivers, accounting for 64.31 percent, followed by mobile devices such as mobile phones or tablets, accounting for 31.29 percent, and computers such as desktop computers or laptop computers, accounting for 3.77 percent respectively. Details are shown in Chart 15.



Chart 12 : FM Radio Listeners Nationwide in 2023

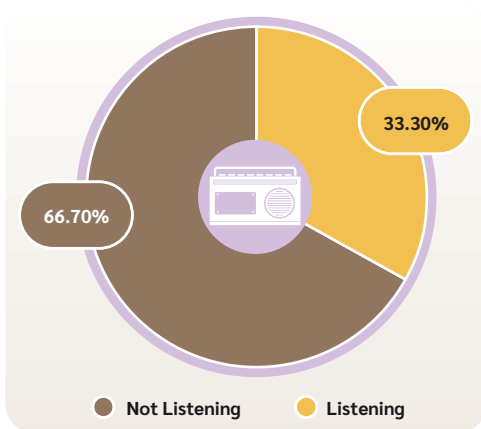


Chart 13 : FM Radio Listenership Nationwide in 2023, classified by Age

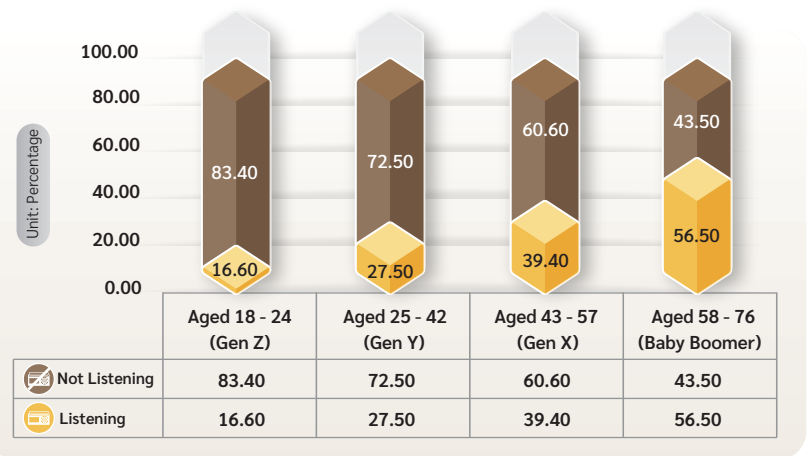


Chart 14 : Frequency of FM Radio Listeners Per Week Nationwide in 2023

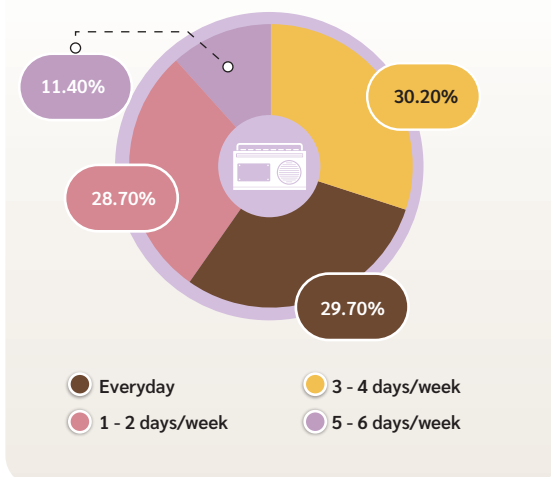
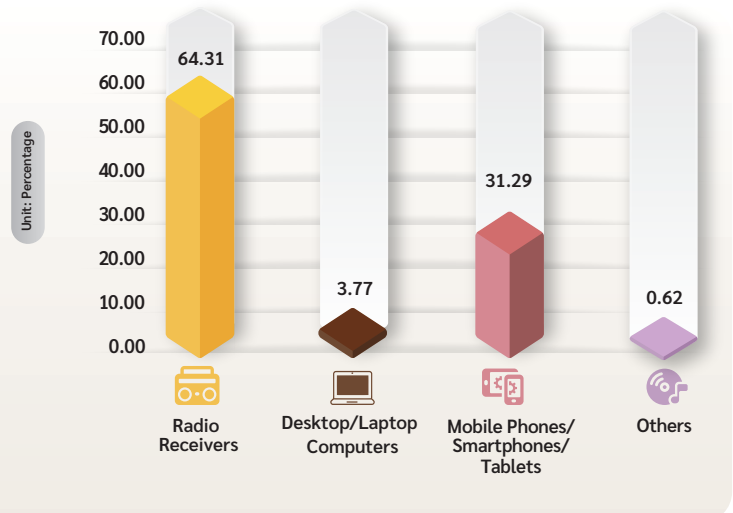


Chart 15 : Radio Listeners Nationwide, classified by Device in 2023



The proportion of radio listenership nationwide through AM radio broadcasts is 4.50 percent, while 95.50 percent do not listen to AM radio programs. Among these listeners, Baby Boomer has the highest proportion, accounting for 10.70 percent, followed by Generation X, accounting for 5.50 percent, Generation Y, accounting for 2.70 percent, and Generation Z, accounting for 1.80 percent respectively. Details are shown in Chart 16 and Chart 17.

The frequency of AM radio listenership nationwide shows that listening 1 – 2 days per week has the highest proportion at 43.90 percent, followed by listening every day at 26.10 percent, listening 3 – 4 days per week at 24.40 percent, and listening 5 – 6 days per week at 5.60 percent respectively. Details are shown in Chart 18. For online radio listenership,

there are people listening to online radio nationwide, accounting for 11.70 percent, while 88.30 percent do not listen to online radio. Among these listeners, Generation Z has the highest proportion, accounting for 14.10 percent, followed by Generation Y, accounting for 13.70 percent, Generation X, accounting for 10.00 percent, and Baby Boomer, accounting for 6.90 percent respectively. Details are shown in Chart 19 and Chart 20. The frequency of online radio listenership shows that listening 1 – 2 days per week has the highest proportion at 43.70 percent, followed by listening 3 – 4 days per week at 27.50 percent, listening every day at 23.00 percent, and listening 5 – 6 days per week at 5.80 percent respectively. Details are shown in Chart 21.



In addition, **the proportion of radio/music listenership through music streaming (Joox, YouTube, Spotify) nationwide** in 2023 is 80.30 percent, while 19.70 percent do not listen to radio/music through music streaming. Among these listeners, Generation Z has the highest proportion, accounting for 92.60 percent, followed by Generation Y, accounting for 88.10 percent, Generation X, accounting for 76.40 percent, and

Baby Boomer, accounting for 53.40 percent respectively. Details are shown in Chart 22 and Chart 23. The frequency of music streaming listenership per week shows that listening every day has the highest proportion at 34.80 percent, followed by listening 3 – 4 days per week at 31.70 percent, listening 1 – 2 days per week at 25.30 percent, and listening 5 – 6 days per week at 8.20 percent respectively. Details are shown in Chart 24.

Chart 16 : AM Radio Listeners Nationwide in 2023

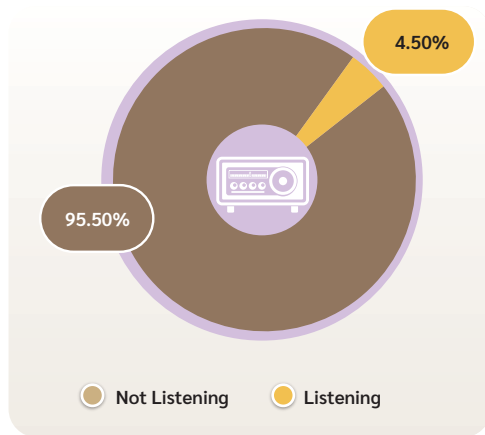


Chart 17 : AM Radio Listenership Nationwide in 2023, classified by Age

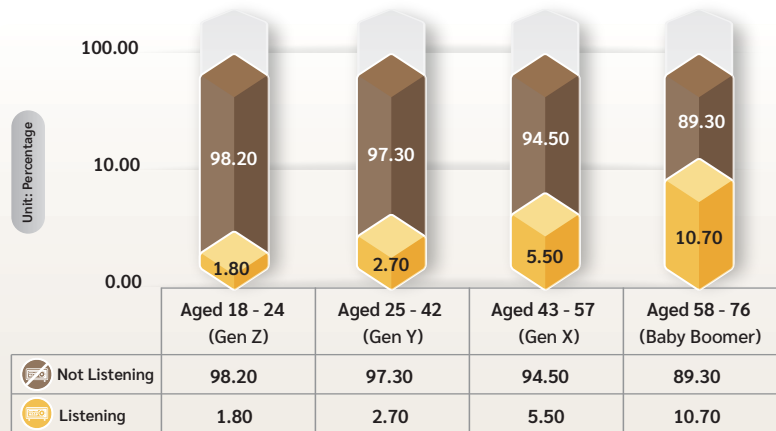


Chart 18 : Frequency of AM Radio Listenership Per Week Nationwide in 2023

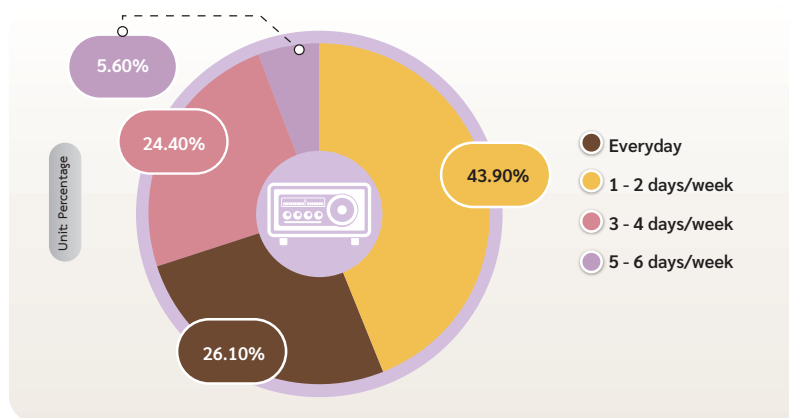


Chart 19 : Online Radio Listeners Nationwide in 2023

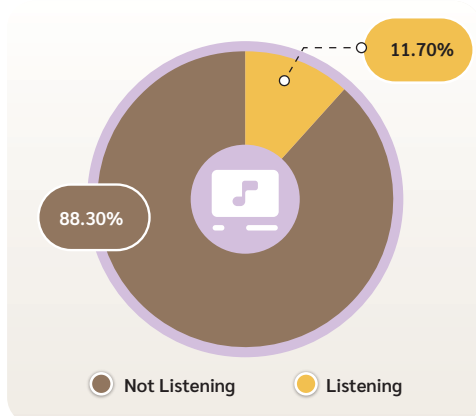


Chart 20 : Online Radio Listenership Nationwide in 2023, classified by Age

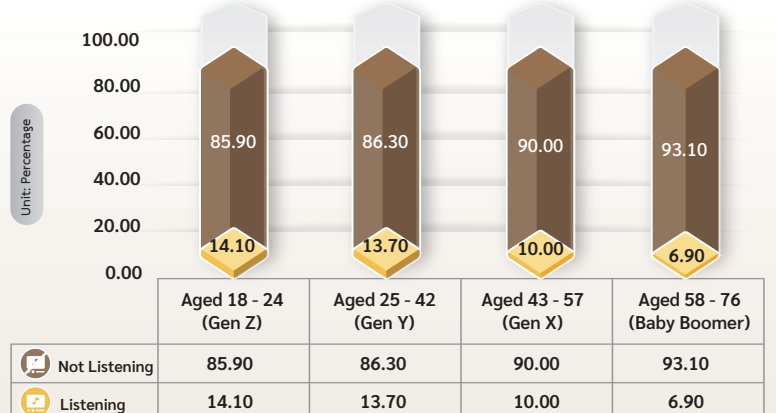


Chart 21 : Frequency of Online Radio Listenership Per Week (Nationwide) in 2023

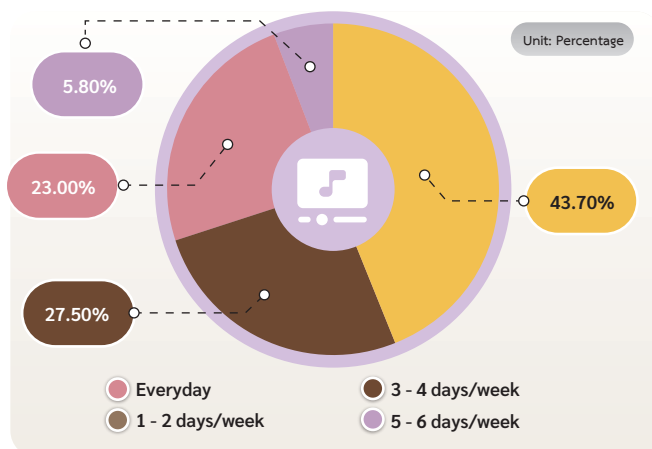


Chart 22 : Music Streaming Listeners Nationwide in 2023

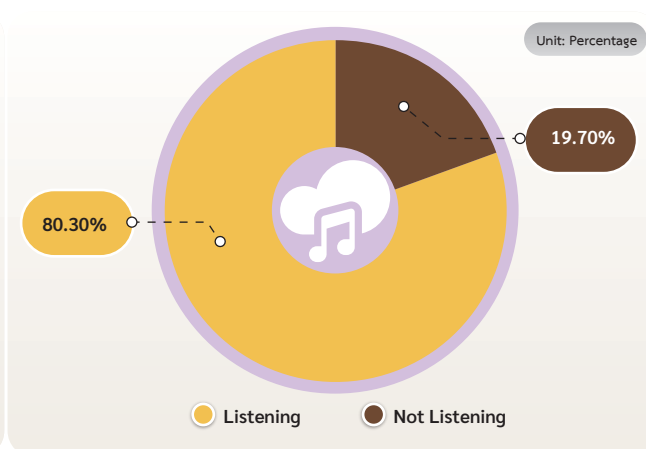


Chart 23 : Music Streaming Listenership Nationwide in 2023, classified by Age

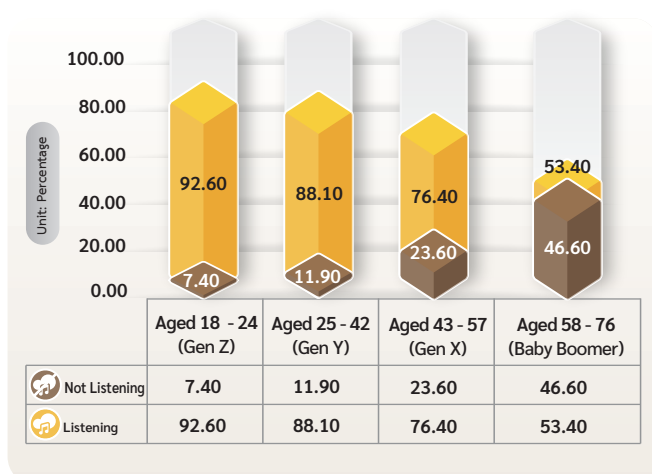
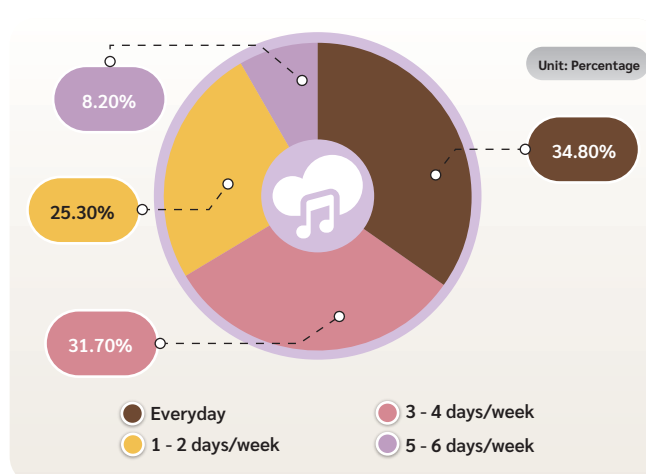


Chart 24 : Frequency of Music Streaming Listenership (Joox, YouTube, Spotify) Per Week Nationwide in 2023



1.2 Market situation in broadcasting business 2023.

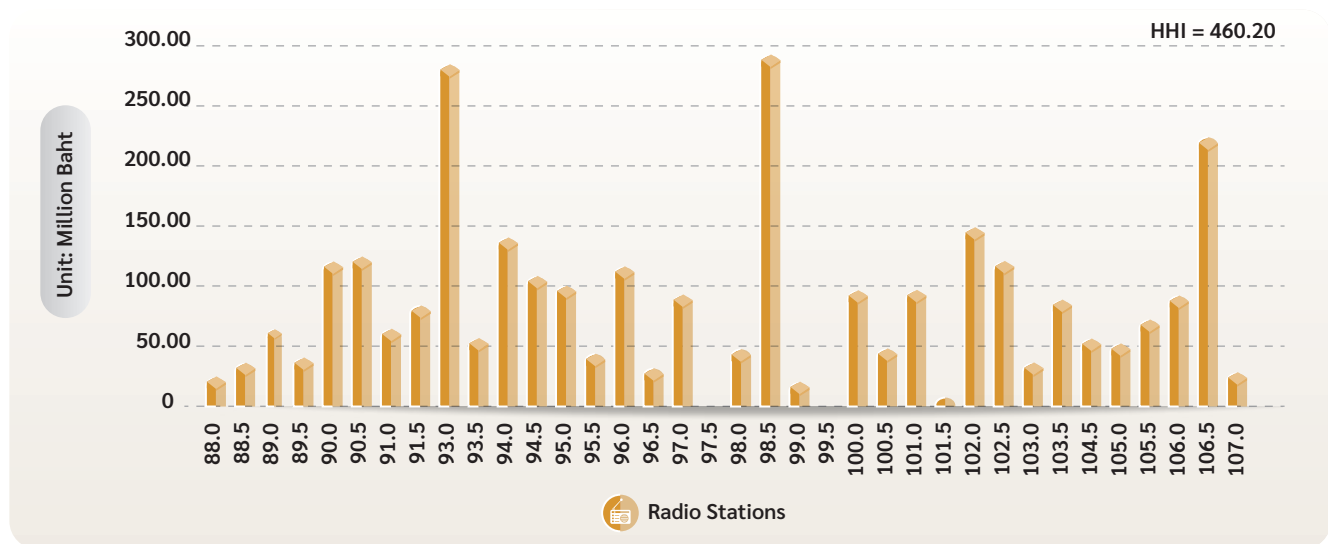
The competitive landscape in the broadcasting business still predominantly has operators conducting trial FM radio broadcasts. As of December 2023, **there were a total of 3,902 trial radio broadcasting operators**, comprising 3,132 business service operators, 611 public service operators, and 159 community service operators.

In addition, since February 2022, there have been 71 frequencies auctioned for FM broadcasting (9 operators). However, competition in the broadcasting business is still localized to the areas where licenses are granted to operate. Therefore, the level of competition needs to be measured separately for each area. The competitive landscape assessment using the Herfindahl-Hirschman Index (HHI) based on advertising revenue data per station in

Bangkok metropolis and vicinity in 2023 shows an index value of 460.27¹⁹, indicating a market that is not concentrated and has high competition. The top 3 FM radio stations in Bangkok metropolis and vicinity with the highest advertising value are as follows: 98.50 MHz station (Luk Thung Network Station), with an advertising value of 290 million baht, 93 MHz station (Cool 93 Fahrenheit Station),

with an advertising value of 281 million baht, and 106.5 MHz station (GreenWave Station), with an advertising value of 223 million baht. All these stations provide music programs, reflecting the radio usage for entertainment, which aligns with the lifestyle of Generation X and Generation Y as previously mentioned. Details are shown in Chart 25.

Chart 25 : The Advertising Value of FM Radio Stations in Bangkok metropolis and it vicinity in 2023



Remark : Data as of December 31, 2023

Source : The Nielsen Company (Thailand) Limited

2. Market Situation and Competition in Television Business in 2023.

2.1 Television program viewership behavior.

The Office of the NBTC cooperated with the National Statistical Office, Ministry of Digital Economy and Society, to conduct a survey on radio and television media access in 2023. **The results show that 85.60 percent of the population watch television, while 14.40 percent do not**

watch television programs. Details are shown in Chart 26. The population group that watches television the most are those aged 58 – 76 (Baby Boomer), accounting for 90.10 percent, followed by those aged 43 – 57 (Generation X), accounting for 88.80 percent, those aged 25 – 42 (Generation Y), accounting for 83.00 percent, while those aged 18 – 24 (Generation Z), have the least proportion, accounting for 75.80 percent.

¹⁹ Calculated from advertising value data of 36 FM radio stations, in Bangkok metropolis and it vicinity (88.0 – 91.5, 93.0 – 103.5 and 104.5 – 107.0 MHz) as of December 2023.

The population across all age groups use conventional television sets to watch programs the most, accounting for 68.30 percent, followed by smartphones, accounting for 37.40 percent, smart TVs, accounting for 27.70 percent, tablets, accounting for 9.00 percent, and others, 2.50 percent. Details are shown in Chart 27. In 2023, the majority of people across the country accessed television

programs via satellite set-top boxes, accounting for 47.40 percent. Following this, 43.10 percent watched through internet channels, including websites or applications, 38.50 percent accessed programs via digital TV set-top boxes/terrestrial networks, 8.80 percent watched through IPTV set-top boxes, and 4.20 percent watched via cable TV. Details are shown in Chart 28.

Chart 26 : Television Program Viewership Nationwide in 2023 and the Age Groups of Viewers

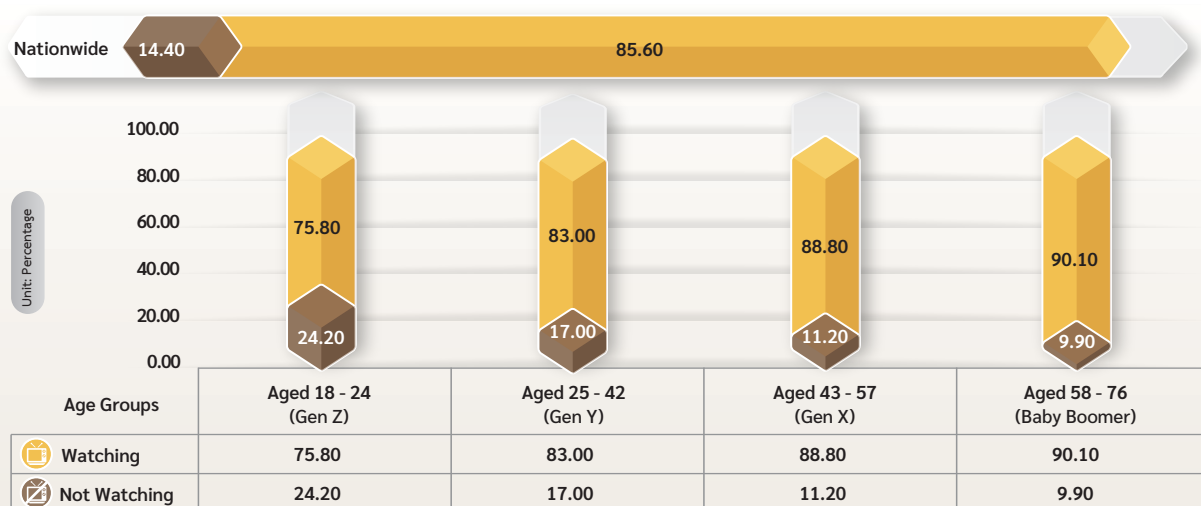


Chart 27 : Devices Used for Watching Television Nationwide in 2023

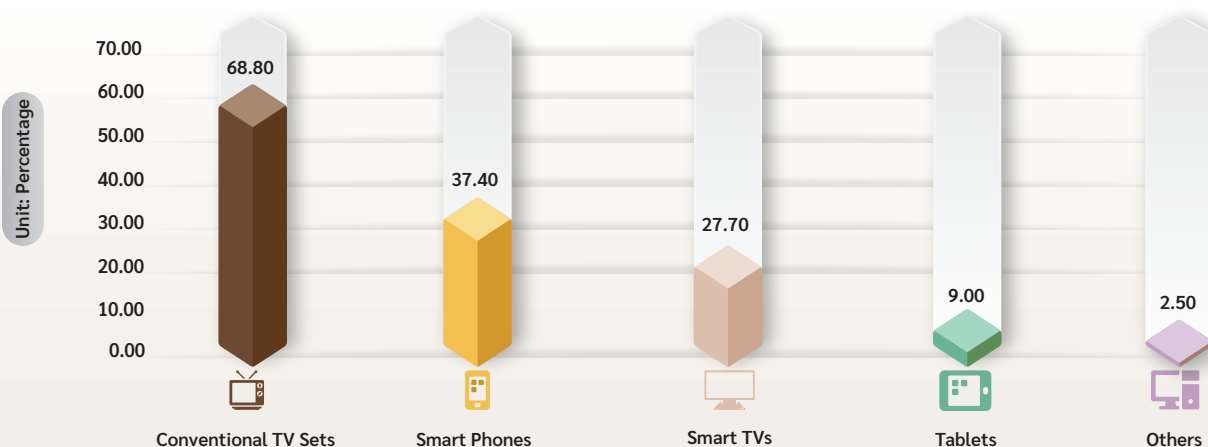
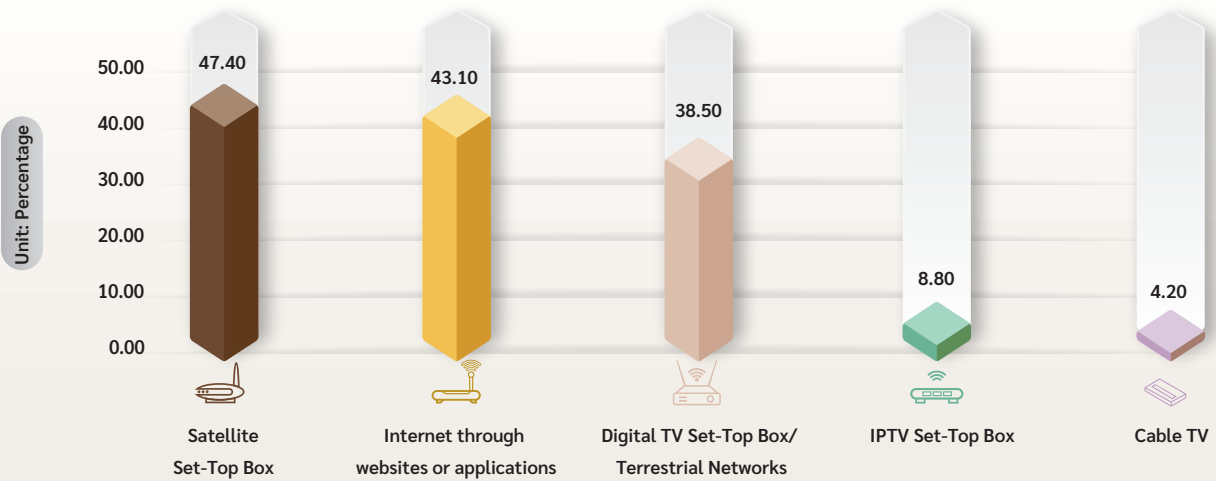


Chart 28 : The Access Channels for Watching Television Programs Nationwide in 2023



According to the survey, in 2023, the population who watched programs according to the broadcast schedule nationwide was 93.40 percent, while 6.60 percent did not watch. The Baby Boomer group watched the most, accounting for 97.50 percent, followed by Generation X, accounting for 94.40 percent, Generation Y, accounting for 91.10 percent, and Generation Z accounting for 86.90 percent. Additionally, 52.90 percent of the population watched television programs every day. Details are

shown in Chart 29 – 31. The top 5 most-watched types of programs are as follows: news programs were watched the most at 91.50 percent, followed by dramas/series at 73.50 percent, variety shows at 49.30 percent, movies at 32.90 percent, and sports programs at 32.10 percent respectively. Details are shown in Chart 32. In addition, 31.30 percent of the population watched television programs on replay, while 68.70 percent did not. Details are shown in Chart 33.

Chart 29 : Proportion of Television Programs Viewers According to the Broadcast Schedule Nationwide in 2023

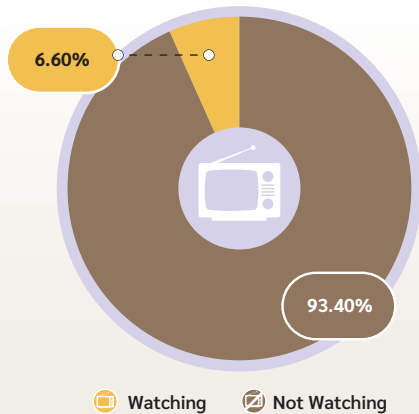


Chart 30 : Proportion of Television Program Viewership According to the Broadcast Schedule Nationwide in 2023, classified by Age Group

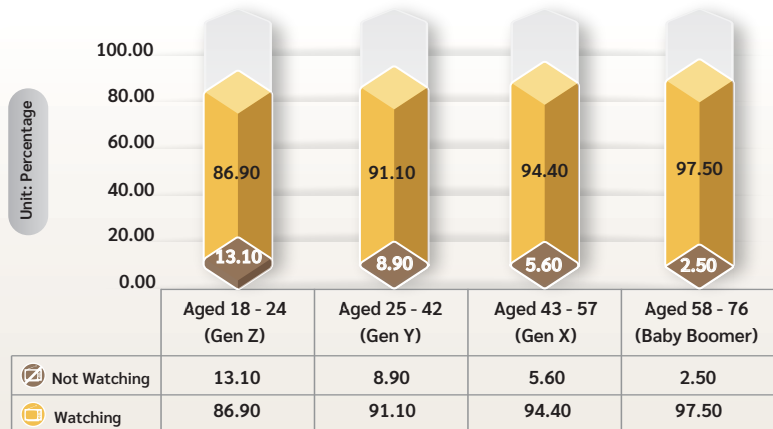




Chart 31 : Frequency of Television Program Viewership
According to the Broadcast Schedule Nationwide in 2023

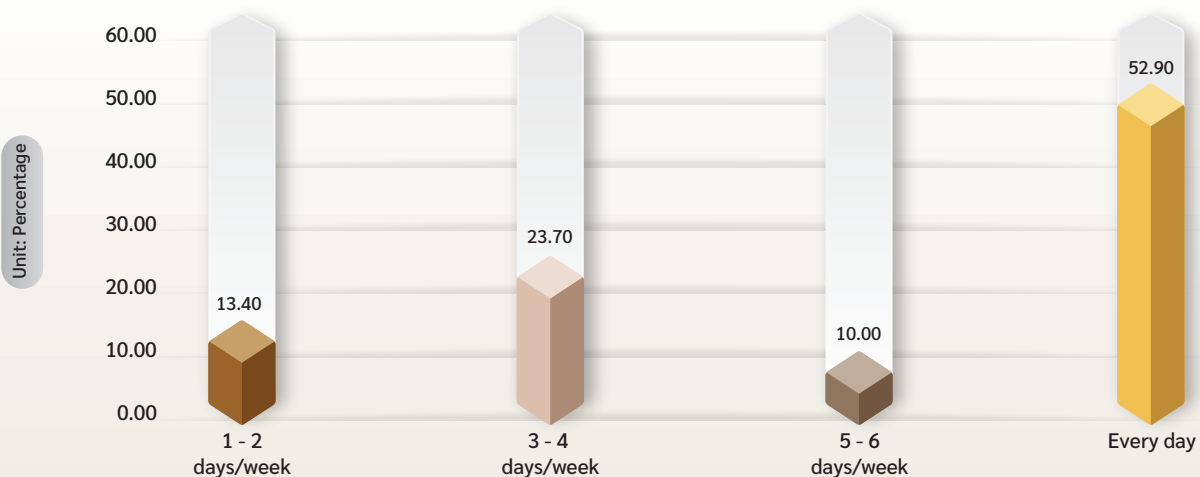


Chart 32 : The Top 5 Most-Watched Types of Television Program Viewership According to the Broadcast Schedule Nationwide in 2023

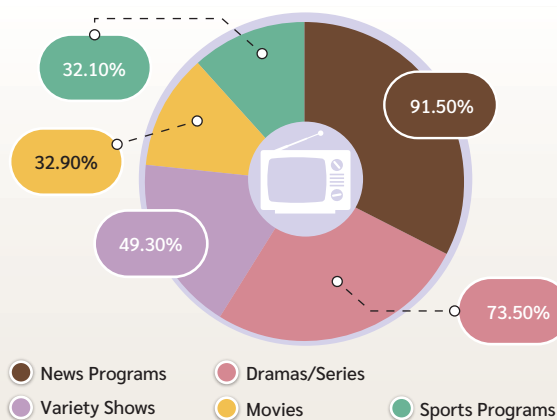
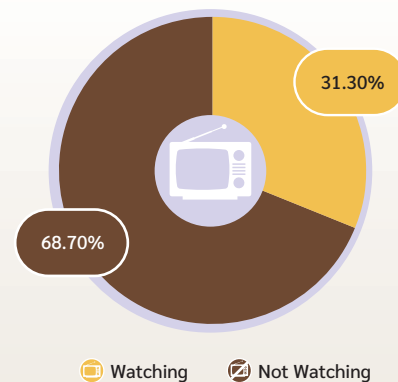


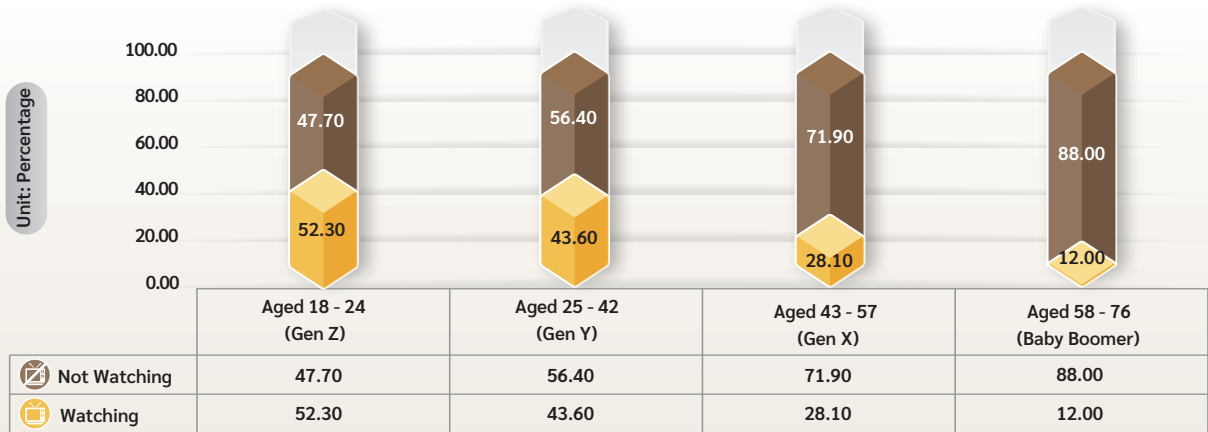
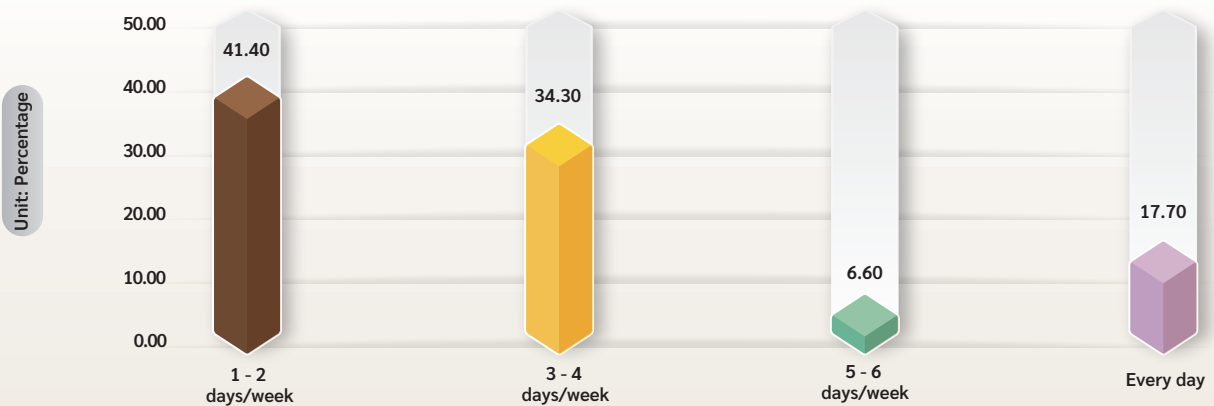
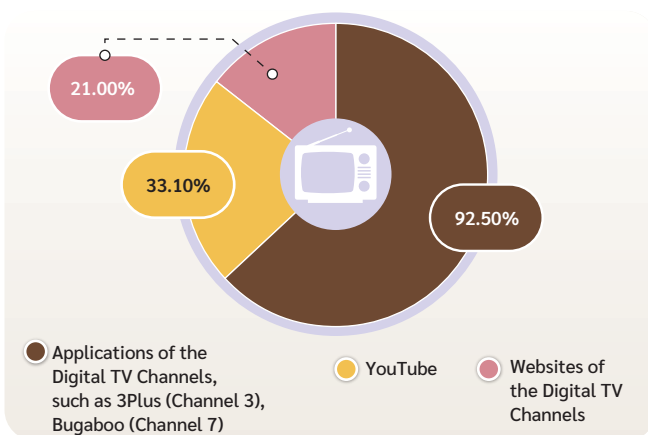
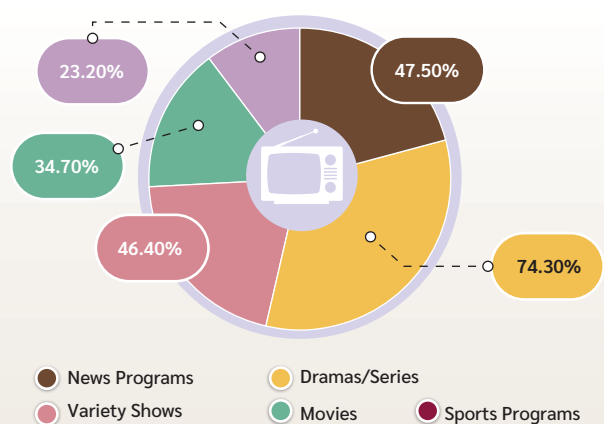
Chart 33 : The Viewers who Watched Television Programs on Replay Nationwide in 2023



According to the survey, in 2023, the population group watching television programs on replay the most was Generation Z, accounting for 52.30 percent, followed by Generation Y, accounting for 43.60 percent, Generation X, accounting for 28.10 percent, and Baby Boomer, accounting for 12.00 percent respectively. The frequency of television programs on replay viewership shows that watching 1-2 days per week has the highest proportion at 41.40 percent, followed by watching 3-4 days per week at 34.30 percent, watching every day at 17.70 percent, and watching 5-6 days per week at 6.60 percent respectively. Details are shown in Chart 34 and

Chart 35. For watching television programs on replay nationwide, most people accessed them through the applications of the digital television channels, such as 3Plus (Channel 3), Bugaboo (Channel 7), accounting for 92.50 percent, followed by YouTube, accounting for 33.10 percent, and websites of other digital television channels, accounting for 21.00 percent respectively. Details are shown in Chart 36. Among these, the highest proportion of viewership was drama series at 74.30 percent, followed by news programs at 47.50 percent, variety shows at 46.40 percent, movies at 34.70 percent, and sports programs at 23.20 percent respectively. Details are shown in Chart 37.



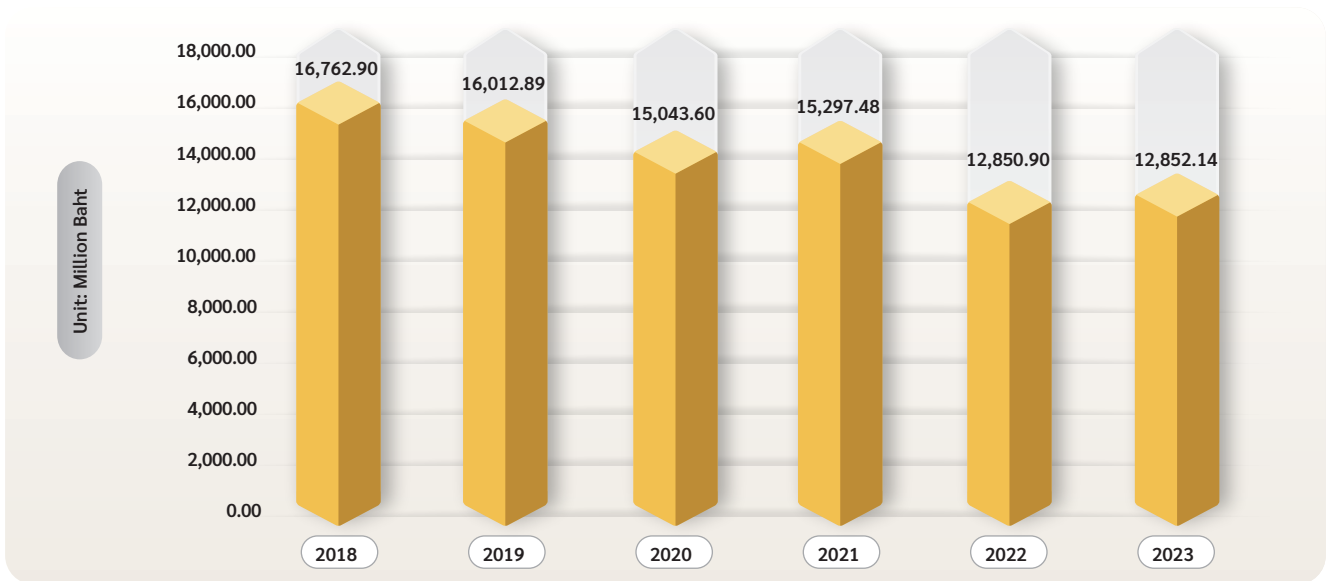
**Chart 34 :** Television Program on Replay Viewership Nationwide in 2023**Chart 35 :** Frequency of Television Program on Replay Viewership per Week in 2023**Chart 36 :** Channels of Television Program on Replay Viewership Nationwide in 2023**Chart 37 :** The Top 5 Most-Watched Types of Television Program on Replay Viewership Nationwide in 2023

2.2 Television business competition in 2023.

The competition in the television business can be divided into 2 main services: network services and channel services. Network services involve transmitting television signals to end users through

various networks, including terrestrial networks, cable networks, and satellite networks. Based on the assessment of total revenue data for network services in 2023²⁰, the total market value was 12,852.14 million baht. Details are shown in Chart 38.

Chart 38 : The Total Market Value of Network Services in Television Business



Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

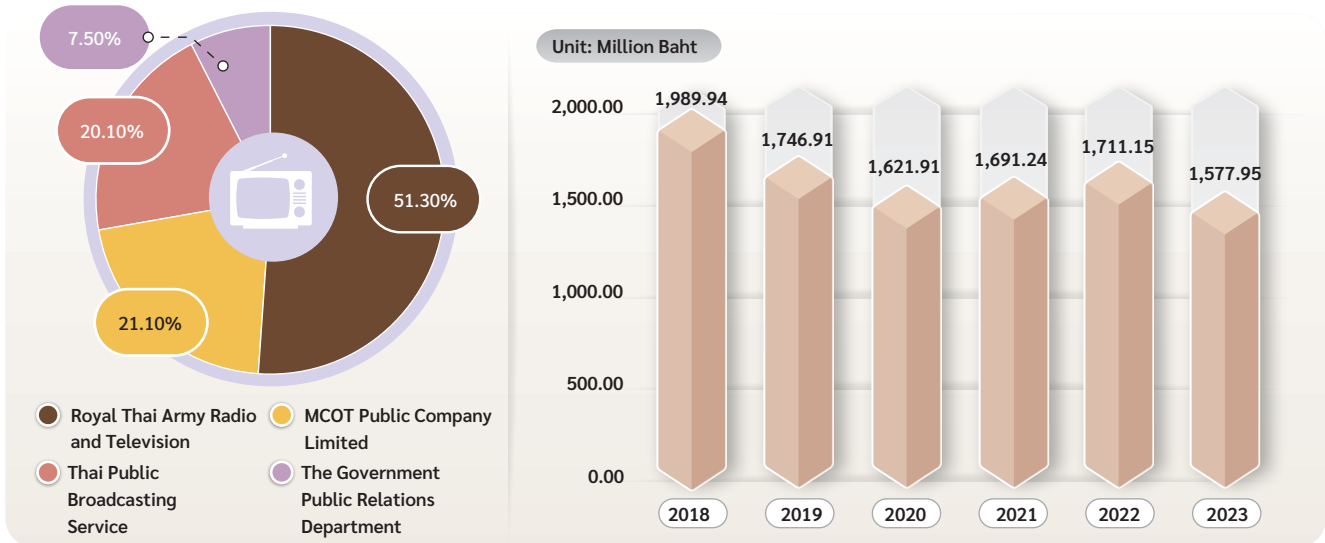
2.2.1 Terrestrial network service and facility service markets.

1) Television signal transmission service through the terrestrial networks market (Multiplexing: MUX) involves the collection and broadcasting of signals by licensed broadcasting and television operators for various types of digital channels to end-users, including signal multiplexing and distribution. Currently, there are 4 licensed entities (5 licenses) providing these services, consisting of 2 licenses for the Royal Thai Army Radio and Television, 1 license for the Government Public Relations Department, 1 license for the Thai

Public Broadcasting Service, and 1 license for the MCOT Public Company Limited. The valuation of television signal transmission services through terrestrial networks in 2023²¹, based on business revenue, was a total of 1,577.95 million baht. Considering the market share based on business revenue until 2022, it was found that the Royal Thai Army Radio and Television had the largest market share at 51.30 percent, followed by MCOT Public Company Limited at 21.10 percent, Thai Public Broadcasting Service at 20.10 percent, and the Government Public Relations Department at 7.50 percent respectively. Details are shown in Chart 39.

²⁰ The revenue data for 2023 is based on statistical estimation methods because operators will submit their revenue information to pay their annual fees to the Broadcasting Tariffs Bureau, Office of the NBTC, in the middle of the following year.

²¹ The revenue data for 2023 is based on statistical estimation methods because operators will submit their revenue information to pay their annual fees to the Broadcasting Tariffs Bureau, Office of the NBTC, in the middle of the following year.

Chart 39 : The Value and Market Share of Digital Signal Transmission Services through Terrestrial Networks

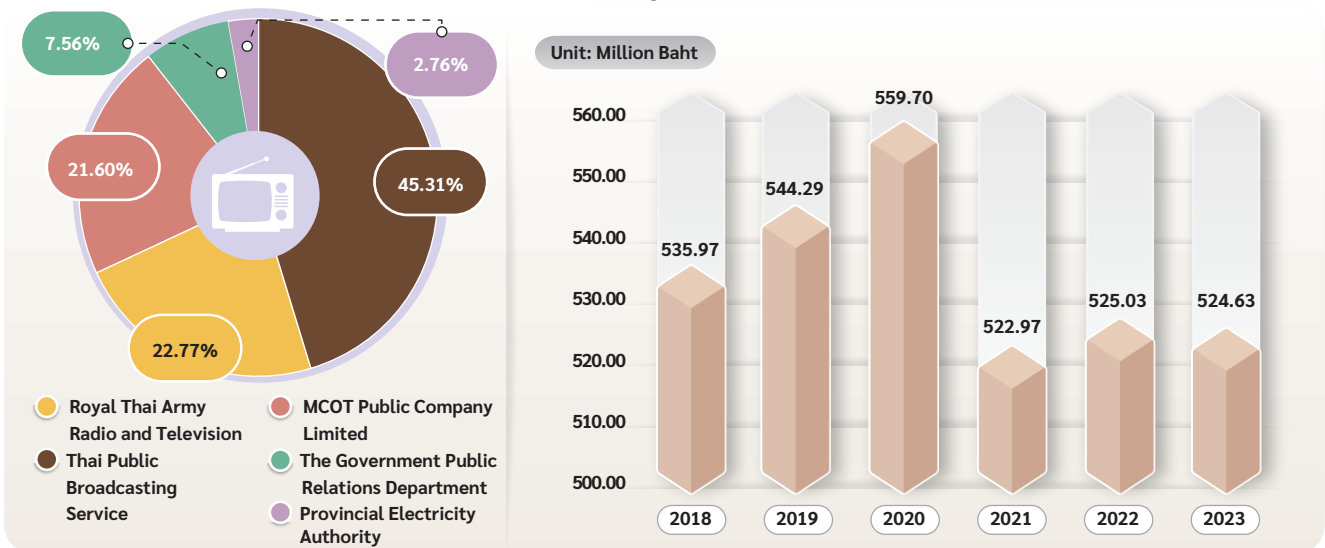
Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

2) Facility service market

involves a provision of infrastructure or facilities for providing broadcasting or television services, such as setting up cell towers, laying of cables, installation of conduits, or installation of equipment for broadcasting or television services, to cover areas and support the expansion of digital terrestrial network services. Additionally, the valuation of the facility service market for digital television networks in 2023²², based on business revenue,

was a total of 524.63 million baht. Considering the market share based on business revenue until 2022, it was found that Thai Public Broadcasting Service had the largest market share at 45.31 percent, followed by the Royal Thai Army Radio and Television at 22.77 percent, MCOT Public Company Limited at 21.60 percent, the Government Public Relations Department at 7.56 percent, and the Provincial Electricity Authority at 2.76 percent respectively. Details are shown in Chart 40.

Chart 40 : The Market Value and Market Share of the Facility Service for Main Stations in Digital Television Networks

Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

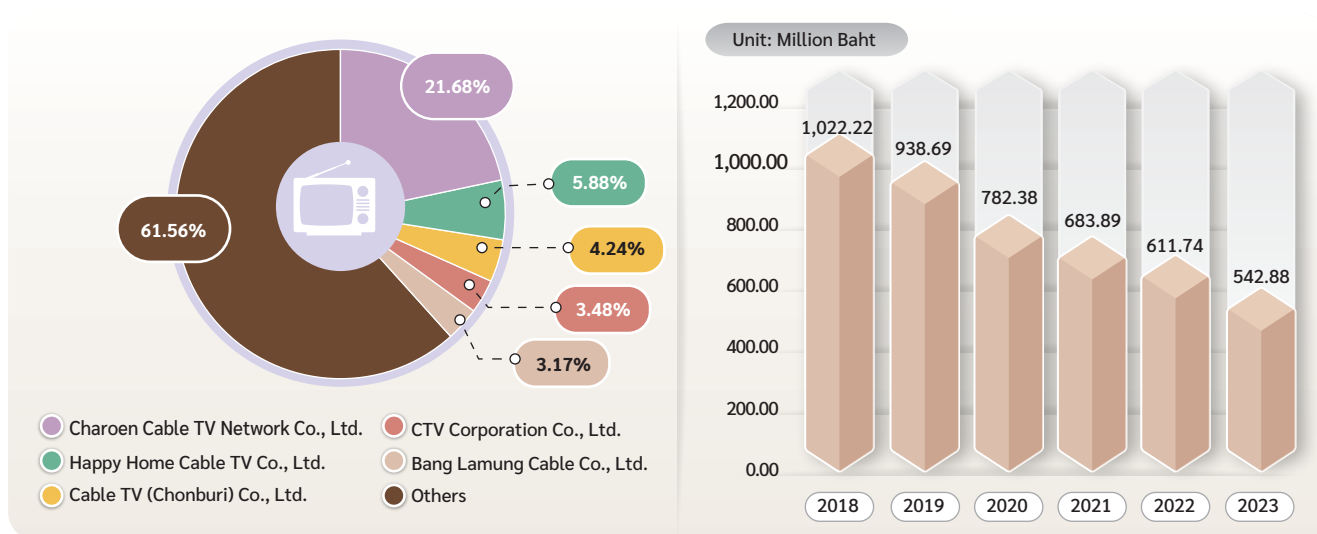
²² The revenue data for 2023 is based on statistical estimation methods, because operators will submit their revenue information to pay their annual fees to the Broadcasting Tariffs Bureau, Office of the NBTC, in the middle of the following year.

2.2.2 Television signal transmission service through cable networks (Cable Television).

Cable television service, which does not use frequencies, involves licensed operators to broadcast television signals through cable networks to end-users. There are 3 types of services, comprising (1) signal multiplexing and distribution through networks to end-users, (2) head-ends leasing or head-ends sharing with other licensees, and (3) internet service on cable TV. Based on the business licensing data, as of December 31, 2023, there were 162 service providers in the cable television service market according to the law governing broadcasting and television operations, including (1) 4 national-level operators, (2) 35 regional-level operators, and (3) 122 provincial-level operators.

The valuation of the cable television service market in 2023²³, based on business revenue, was a total of 542.88 million baht. Considering the market share based on the top 5 highest business revenue until 2022, it was found that Charoen Cable TV Network Company Limited had the largest market share at 21.68 percent, followed by Happy Home Cable TV Company Limited at 5.88 percent, Cable TV (Chonburi) Company Limited at 4.24 percent, CTV Corporation Company Limited at 3.48 percent, and Bang Lamung Cable TV Company Limited at 3.17 percent respectively. Details are shown in Chart 41. Additionally, based on the evaluation of competition levels using the Herfindahl-Hirschman Index (HHI), it stands at 609.67, which is below the 1,000 thresholds. This indicates that the market is not concentrated, and there is effective competition. Details are shown in Chart 42.

Chart 41 : The Value and Market Share of Signal Transmission and Facility Service Wholesale Market through Cable Networks

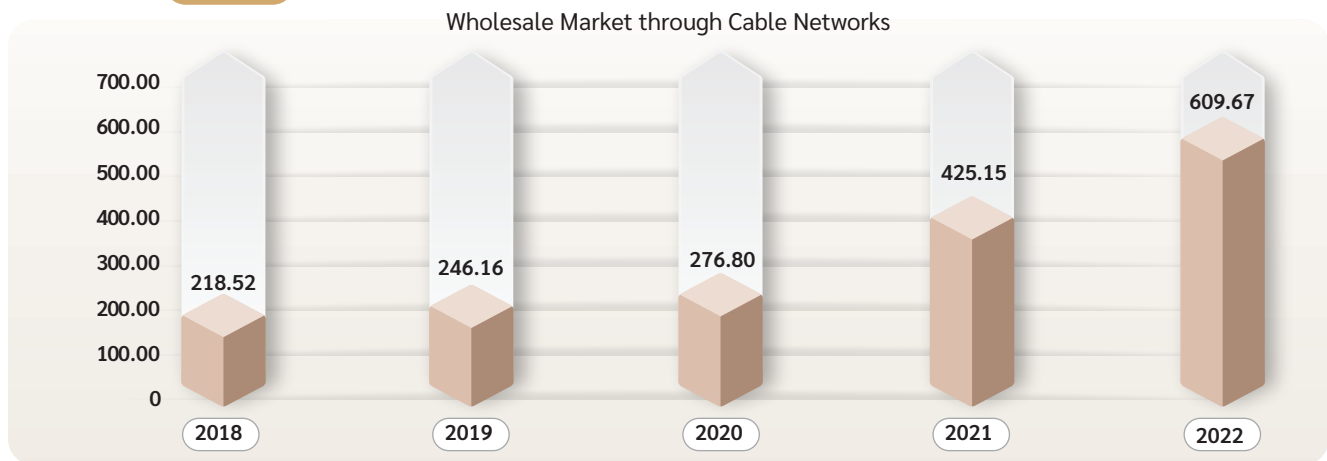


Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

²³ The revenue data for 2023 is based on statistical estimation methods because operators will submit their revenue information to pay their annual fees to the Broadcasting Tariffs Bureau, Office of the NBTC, in the middle of the following year.

Chart 42 : The Herfindahl - Hirschman Index (HHI) of Signal Transmission and Facility Service



Remark : Data as of December 31, 2023

Source : Broadcasting Competition Promotion and Self-Regulation Bureau, Office of the NBTC

2.2.3 Signal transmission and facility services wholesale market through satellite networks (Satellite Television).

Satellite television service, which does not use frequencies, involves licensed operators to Direct-to-Home (DTH) broadcast television signals through satellite networks to receivers, both in C-Band and KU-Band systems, covering service areas in Thailand. Currently, there are 3 types of signal transmission services through satellite networks, including signal multiplexing (MUX), Over-the-Air (OTA) programming, and signal transmission to satellite service (Uplink). Moreover, there are related services in the broadcasting and television businesses, specifically set-top box services. Providers organize channels and offer services through set-top boxes under their trademarks. They may or may not charge service fees (one-time purchase model).

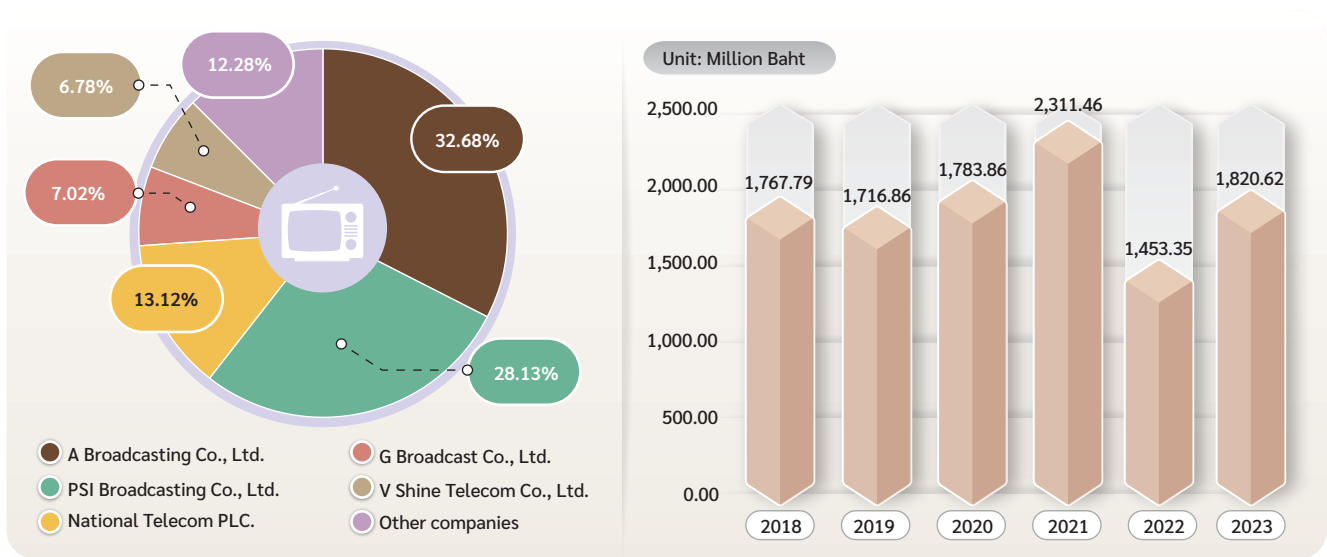
According to the licensing data of non-frequency-based businesses, as of December 31, 2023, there were 20 service providers in the satellite television service. Additionally, the valuation of the satellite television service market in 2023²⁴, based on business revenue, was a total of 1,820.62 million baht.

Considering the market share based on business revenue until 2022, it was found that A Broadcasting Company Limited had largest market share at 32.68 percent, followed by PSI Broadcasting Company Limited at 28.13 percent, National Telecom Public Company Limited at 13.12 percent, G Broadcast Company Limited at 7.02 percent, V Shine Telecom Company Limited at 6.78 percent, other companies totaling 12.28 percent respectively. Details are shown in Chart 43. In addition, based on the evaluation of competition levels using the Herfindahl-Hirschman Index (HHI), it stands at 2,142.27 points, which is above the 1,800 thresholds. This indicates a high level of concentration, which may represent that major service providers have significant market power. However, compared to 2018 and onwards, the market concentration index has shown a downward trend, indicating that competition has become more effective. Details are shown in Chart 44. The consideration of significantly dominant market players is currently under the process of gathering facts and analyzing relevant data by the Office of the NBTC, in order to establish appropriate regulatory guidelines for ensuring effective competition.

²⁴ The revenue data for 2023 is based on statistical estimation methods, because operators will submit their revenue information to pay their annual fees to the Broadcasting Tariffs Bureau, Office of the NBTC, in the middle of the following year.



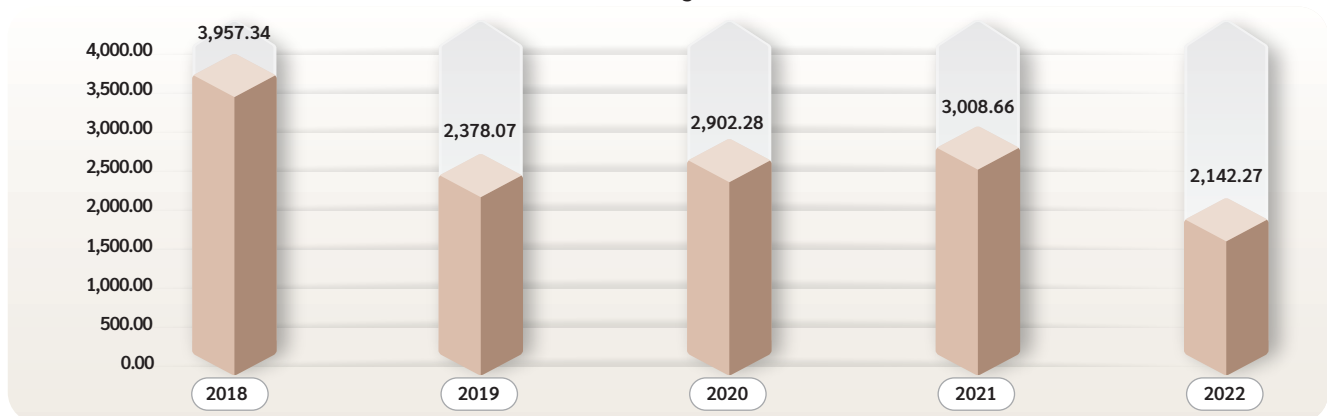
Chart 43 : The Market Value and Market Share of Signal Transmission and Facility Service Wholesale Market through Satellite Networks



Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

Chart 44 : The Herfindahl - Hirschman Index (HHI) of Signal Transmission and Facility Service Wholesale Market through Satellite Networks



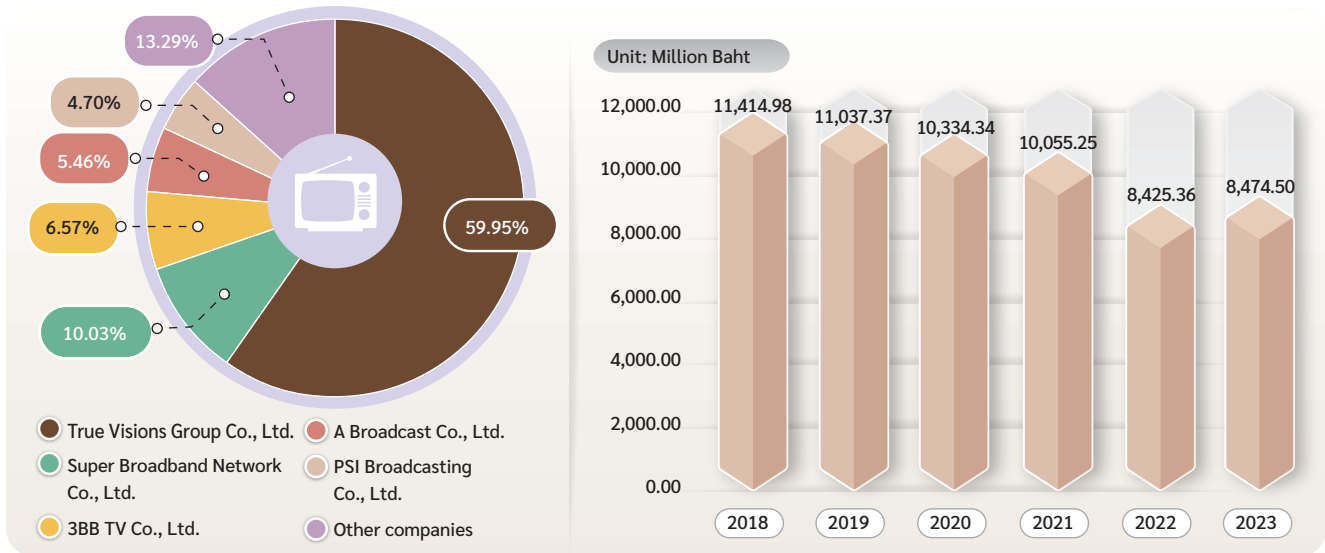
Remark : Data as of December 31, 2023

Source : Broadcasting Competition Promotion and Self-Regulation Bureau, Office of the NBTC

When collectively analyzing True Visions Group Company Limited, Super Broadband Network Company Limited, and 3BB TV Company Limited, it was found that the total value of the non-frequency-based network service market was 8,474.50 million baht. Considering the market share based on the top 5 highest business revenue, it was found that True Visions Group Company Limited had the largest market share at 59.95 percent, followed by Super Broadband Network Company Limited at 10.03 percent, 3BB TV Company Limited at 6.57 percent, A Broadcasting Company Limited at 5.46 percent, and PSI Broadcasting Company Limited at 4.7 percent respectively. Details are shown in Chart 45. In addition,

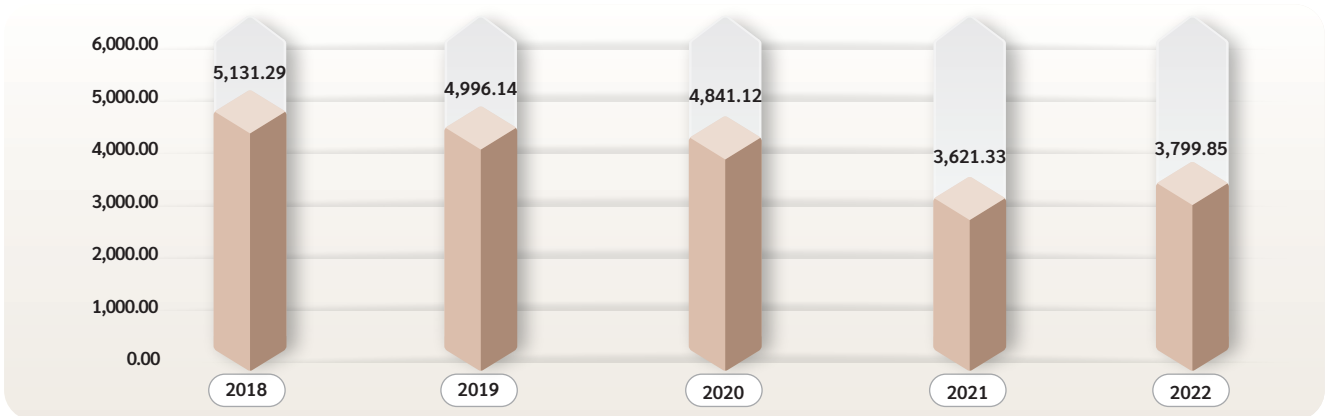
based on the evaluation of competition levels using the Herfindahl-Hirschman Index (HHI), it stands at 3,799.85, which is above the 1,800 thresholds. This indicates a high level of concentration and lack of competition. However, compared to 2018 and onwards, the market concentration index has shown a downward trend, indicating that competition has become more effective, due to the continuous decrease in the number of service providers. Details are shown in Chart 46. The consideration of significantly dominant market players is currently under the process of gathering facts and analyzing relevant data by the Office of the NBTC, in order to establish appropriate regulatory guidelines for ensuring effective competition.



Chart 45 : The Market Value and Market Share of Non-Frequency-Based Network Service Market

Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

Chart 46 : The Herfindahl - Hirschman Index (HHI) of Non-Frequency-Based Network Service Market

Remark : Data as of December 31, 2023

Source : Broadcasting Competition Promotion and Self-Regulation Bureau, Office of the NBTC

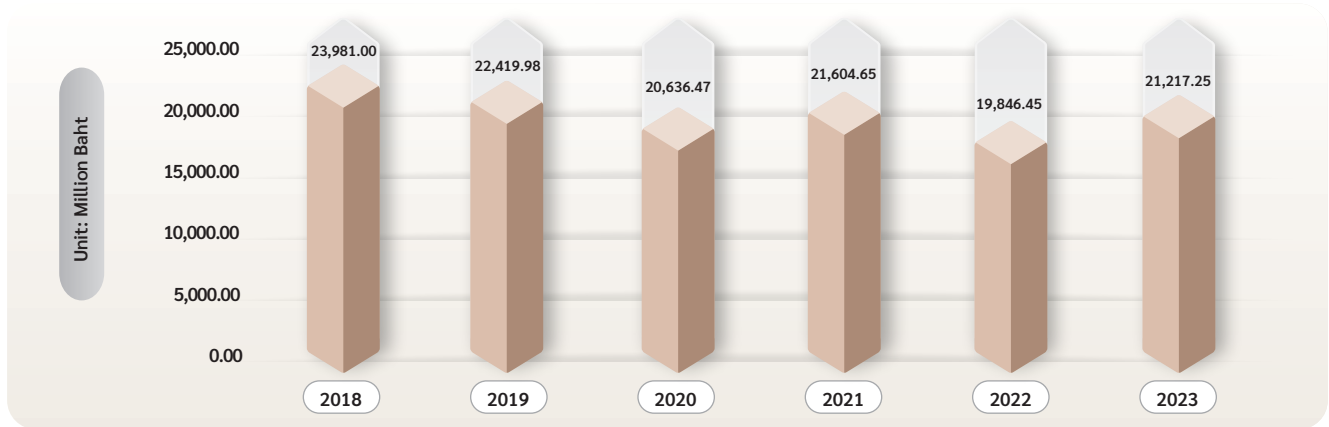
2.2.4 Program channel service in the television business (Channel Market)

Television channel services can be divided into 2 categories: channel services through frequency-based networks (digital terrestrial networks), and channel services through non-frequency-based networks. Service providers are responsible for gathering program content to create program schedules, forming channels according to the conditions set by the NBTC.

The sourcing of program content for creating program schedules can be divided as follows: (1) self-produced programs, (2) outsourced programs, (3) co-produced programs, (4) time-leased programs, and (5) acquired programs from others for broadcast. Based on the assessment of total revenue data for channel services in 2023, the total market value was 21,217.25 million baht. Details are shown in Chart 47.



Chart 47 : The Total Channel Market Value in Television Business



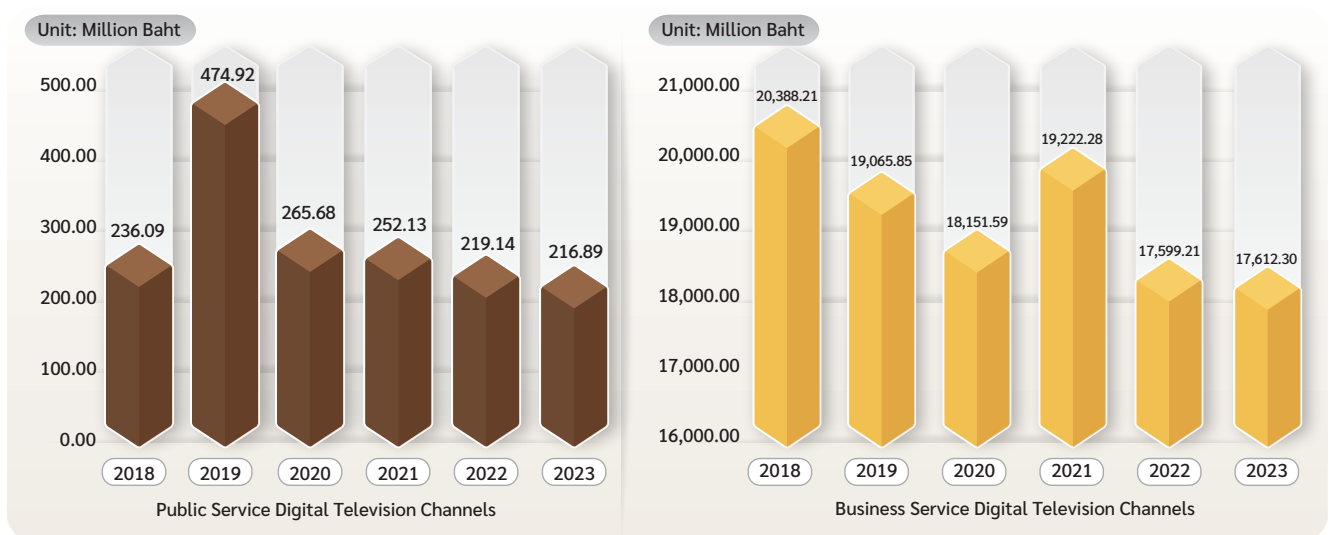
Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

1) Television channel services through frequency-based networks (digital television channels). Television channel service providers through frequency-based networks (digital television channels) can be divided into 2 types: business service providers,

totaling 15 channels, and public service providers, totaling 10 channels, categorized into 6 for national-level channels, and 4 for regional-level channels. Details are shown in Chart 48.

Chart 48 : The Revenue of Television Channel Services through Frequency-Based Networks



Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

When analyzing the market competition by considering only business service providers, and their market shares based on the top 5 highest business revenue data, it was found that BEC Multimedia Company Limited (Channel 3HD) had the largest market share at 19 percent, followed by Bangkok Broadcasting & T.V. Company Limited (Channel 7HD)

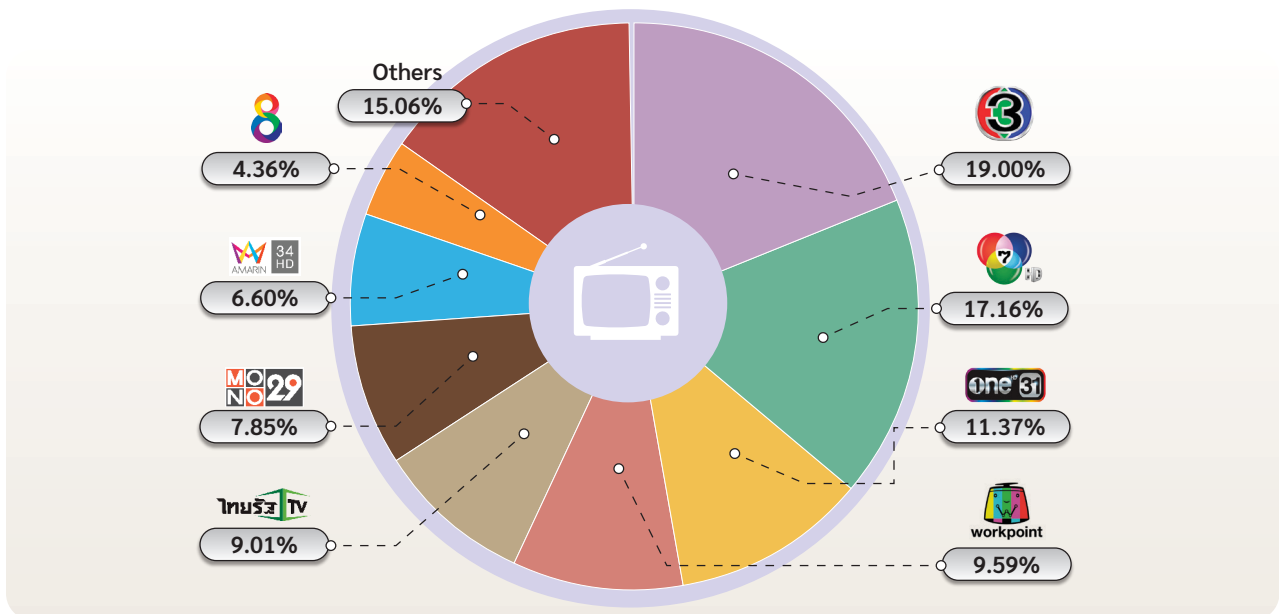
at 17.16 percent, One 31 Company Limited (One31) at 11.37 percent, Thai Broadcasting Company Limited (Workpoint) at 9.59 percent, and Triple V Broadcast Company Limited (Thairath TV) at 9.01 percent, respectively. Details are shown in Chart 49. In addition, based on the evaluation of competition levels using the Herfindahl-Hirschman Index (HHI),



it stands at 1,095.47. However, when compared to 2018, except for 2019, the market concentration index was only slightly above the 1,000 thresholds. Thus, it can be analyzed that the competition in the market for television channel services through frequency-based networks (digital television channels) is moderately concentrated (between 1,000 and 1,800). Details are shown in Chart 50. The total advertising value of television channels through frequency-based networks (digital television channels) has averaged approximately 63,000 million baht annually since the launch of digital terrestrial television services in 2014,

with the exception of 2015, that advertising value surged to 88,120 million baht. In 2023, the total advertising value was 60,447 million baht, which decreased by 1,365 million baht, or 2.20 percent, compared to 2022, which had a value of 61,812 million baht. This decline could be attributed to various factors affecting investment decisions in advertising by product and service manufacturers, such as regional conflicts in the Middle East impacting global and national economies, the COVID-19 pandemic, and the increasing presence of OTT services. Details are shown in Chart 51.

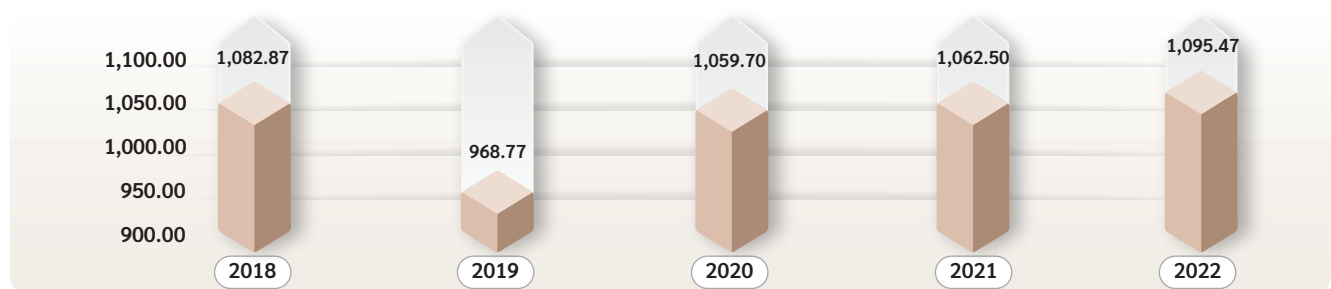
Chart 49 : Market Share of Television Channel Service Market through Frequency-Based Networks



Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

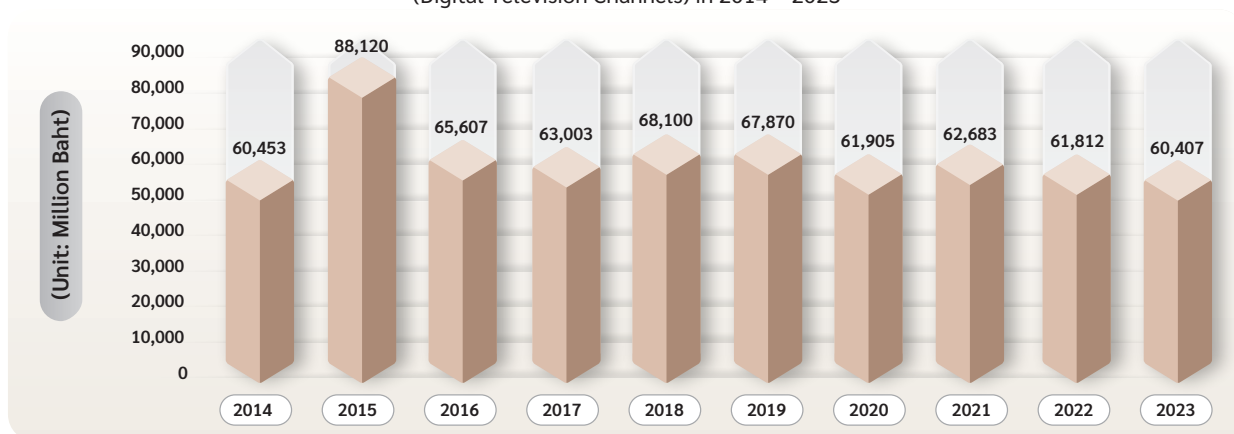
Chart 50 : The Herfindahl Hirschman Index (HHI) of Television Channel Service Market through Frequency-Based Networks



Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

Chart 51 : The Total Advertising Value of Television Channels through Frequency-Based Networks
(Digital Television Channels) in 2014 – 2023



Remark : Data as of December 31, 2023

Source : AGB Nielsen Media Research (Thailand) Company Limited

2) Television channel

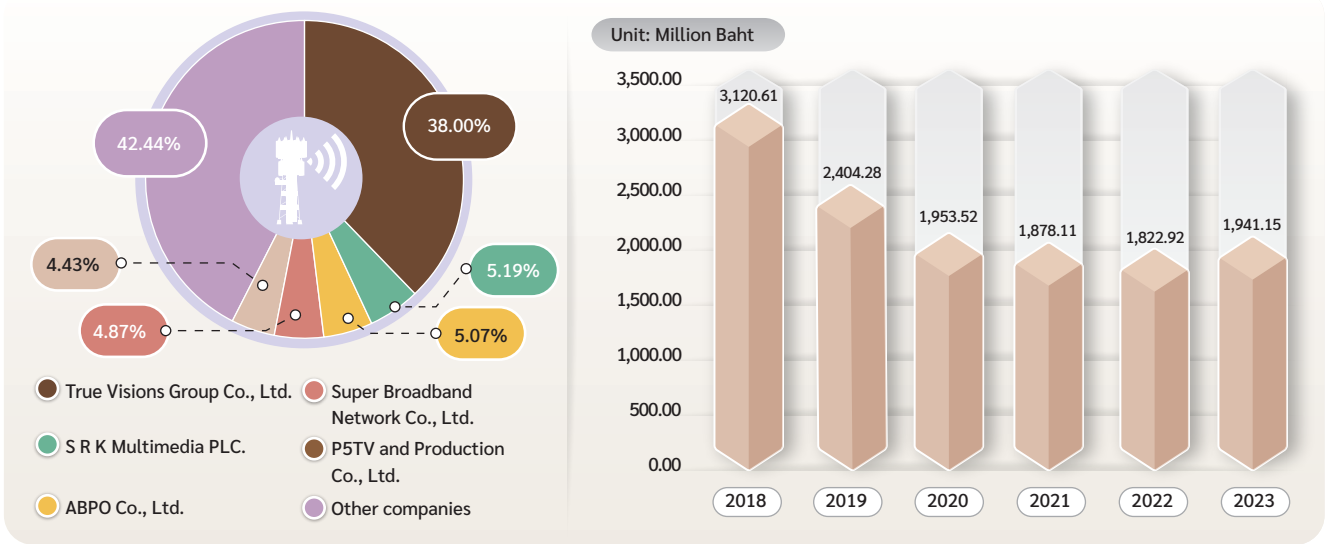
services through non-frequency-based networks.

According to the licensing data, as of December 31, 2023, there were 154 television channel service providers through non-frequency-based networks. The total market value was a total of 1,941.15 million baht. Additionally, when analyzing the market competition by considering the market share based on the top 5 highest business revenue data, it was found that True Visions Group Company Limited had the largest market share at 38.00 percent, followed by S R K Multimedia Public Company Limited at 5.19 percent, ABPO Company Limited at 5.07 percent, Super Broadband Network Company Limited at 4.87 percent, and P5TV and Production Company Limited at 4.43 respectively. Details are shown in Chart 52. In addition, based on the evaluation of competition levels using the Herfindahl-Hirschman Index (HHI), it stands at 1,640.57, which increased by 12.31 percent, compared to 2021, and above the 1,000 thresholds. Thus, it can be analyzed that the competition in the market for television channel services through non-frequency-based networks is moderately concentrated (between 1,000 and 1,800), due to a decrease in the number of service providers, which has led to less efficient

revenue distribution, and increased revenue for major service providers. Details are shown in Chart 53. In addition to considering market competition based on market share from business revenue, evaluating the financial status of licensed companies is crucial for business operations and driving competition. Financial statements provide insight into future business opportunities, and also indicate past errors that need to be addressed to avoid unfavorable situations in the future. However, the financial figures from a single company's financial statements may not be sufficient for a clear analysis of the business's operational capabilities. Therefore, various ratios need to be derived from financial statements, to analyze the financial status of the business. These ratios can be compared with historical data, competitor information, or overall market data to gain insights accurately.



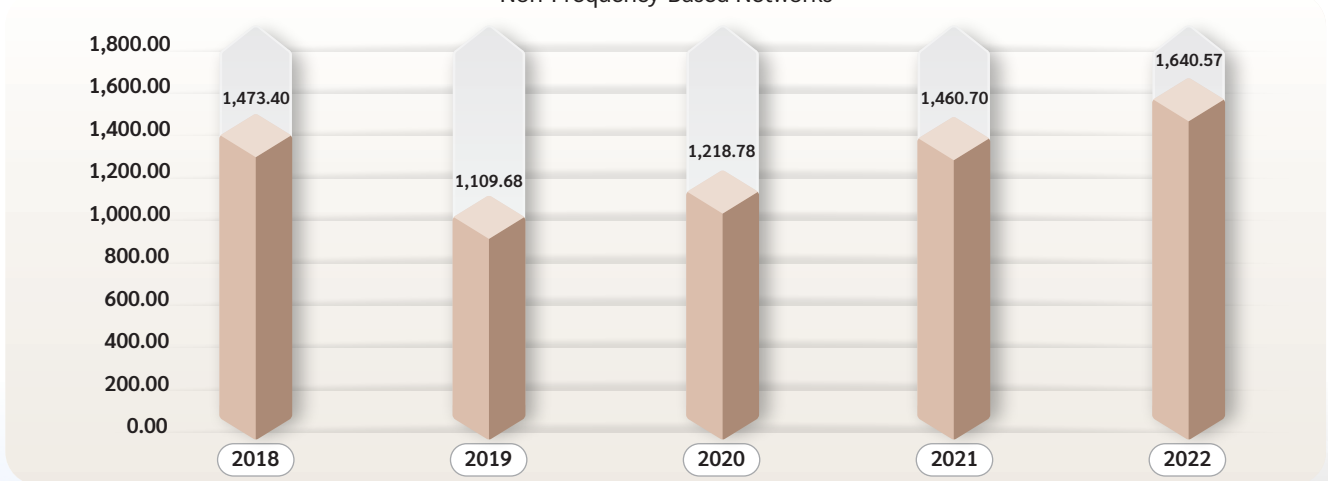
Chart 52 : Market Share of Television Channel Service Market through Non-Frequency-Based Networks



Remark : Data as of December 31, 2023

Source : Broadcasting Tariffs Bureau, Office of the NBTC

Chart 53: The Herfindahl Hirschman Index (HHI) of Television Channel Service Market through Non-Frequency-Based Networks



Remark : Data as of December 31, 2023

Source : Broadcasting Competition Promotion and Self-Regulation Bureau, Office of the NBTC



Market Situation and Competition in Telecommunications Business

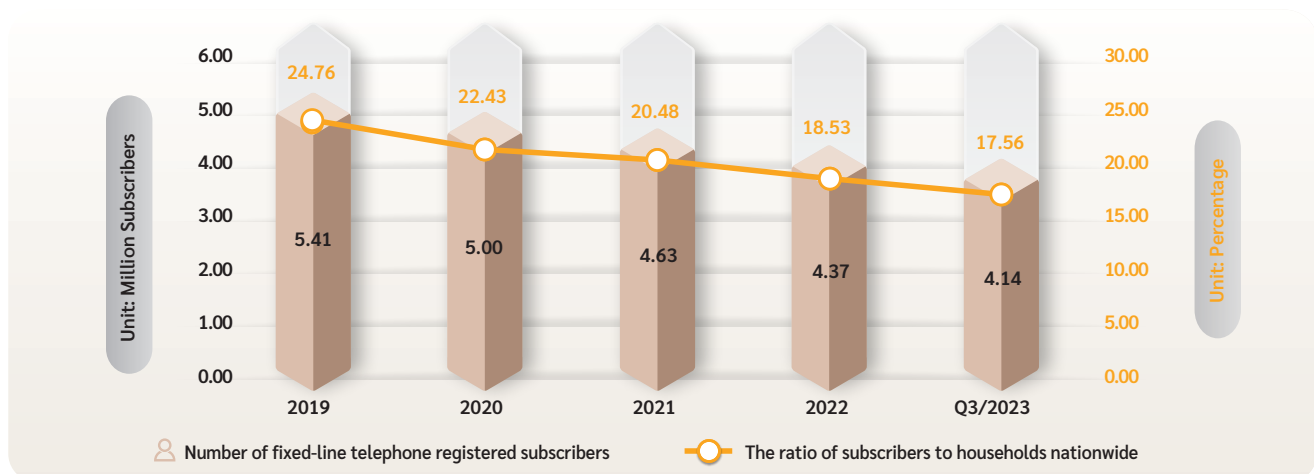
The significant telecommunications market can be divided into 3 categories, which are fixed-line telephone service, mobile phone service, and internet service, as follows:

1. Fixed-Line Telephone Service Market.

In Thailand's trend of fixed-line telephone service market, the number of users has been decreasing since 2019, due to changes in usage behavior, and substitution of traditional communication technology with mobile phones, offering a more convenient, higher quality, and accessible service. However, fixed-line telephones remain essential as a basic service for businesses and government agencies,

serving as a contact channel for the public. In quarter 3/2023, the number of fixed-line telephone subscribers was 4.14 million, a decrease of 5.26 percent, compared to 2022. Details are shown in Chart 54. The ratio of fixed-line telephone subscribers to households was 17.56 percent. According to the fixed-line telephone service market data in quarter 3/2023, National Telecom Public Company Limited (NT) had the market share at 65.62 percent, followed by True Internet Corporation Company Limited (TICC) at 28.77 percent, and Advanced Wireless Network Company Limited (AWN) at 3.07 percent respectively. Details are shown in Table 37.

Chart 54 : Number of Fixed-Line Telephone Subscribers from 2019 to Quarter 3/2023



Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

Table 37 : Market Share of the Fixed-Line Telephone Service, classified by Operators

Market Share of the Fixed-Line Telephone Service	2022 (Percentage)	Q3/2023 (Percentage)
National Telecom Public Company Limited (NT)	66.01	65.62
True Internet Corporation Company Limited (TICC)	28.81	28.77
Advanced Wireless Network Company Limited (AWN)	2.74	3.07
Triple T Broadband Public Company Limited (TTTBB)	2.05	2.12
Otaru World Corporation Company Limited (OTW)	0.30	0.31
dtac TriNet Company Limited (DTN)	0.10	0.10

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

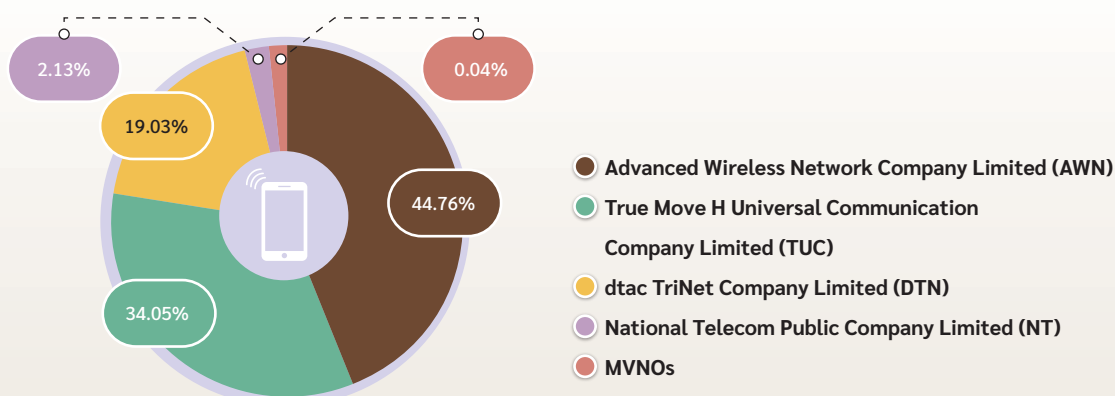


2. Mobile Phone Service Market.

In quarter 3/2023, the number of mobile phone subscribers was 117.95 million, a decrease of 6.69 percent, compared to 2022. When comparing the number of active mobile phone subscribers to the population, there were 172.40 numbers per 100 people. Considering the market share of mobile phone

service in quarter 3/2023, it was found that AWN had the largest market share at 44.76 percent, followed by TUC at 34.05 percent. Details are shown in Chart 55 and Table 38. The HHI in the mobile phone service market was 3,561 in 2022, and decreased to 3,529 in quarter 3/2023.

Chart 55 : Market Share of the Mobile Phone Service



Remark : Total Access Communication Public Company Limited merged with True Corporation Public Company Limited, on August 3, 2022. The resolution of the NBTC's meeting, on October 20, 2022, stipulated that TUC and DTN would continue to operate under separate brand names for a period of 3 years.

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

Table 38 : Market Share of the Mobile Phone Service, classified by Operators

Market Share of the Mobile Phone Service	2022 (Percentage)	Q3/2023 (Percentage)
Advanced Wireless Network Company Limited (AWN)	46.20	44.76
True Move H Universal Communication Company Limited (TUC)	32.63	34.05
dtac TriNet Company Limited (DTN)	18.90	19.03
National Telecom Public Company Limited (NT)	2.24	2.13

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC



3. Internet Service Market.

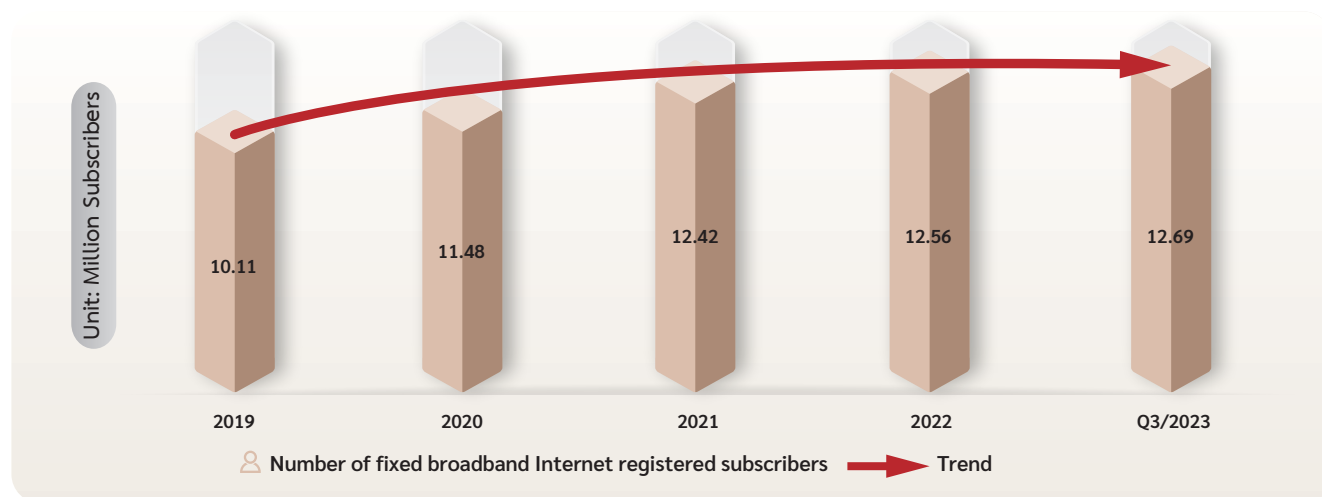
Nowadays, internet services in Thailand are available through various channels, and service providers continuously improve signal quality, service standards, and employ modern technologies to meet diverse needs and accommodate increasing usage. Most users access services through mobile broadband internet and fixed broadband internet services as follows:

3.1 Fixed broadband internet services.

Currently, fixed broadband internet services have transitioned to FTTP (Fiber to the Premises) technology, or fiber optic networks that run from the source directly to the end-users' homes and small businesses almost entirely. In quarter 3/2023, the number of fixed broadband internet subscribers was 12.69 million, or a slight increase of 1.02 percent, compared to 2022. However, considering the efficiency of the connection activities requiring high volume of bandwidth, such as streaming high-resolution content, or downloading

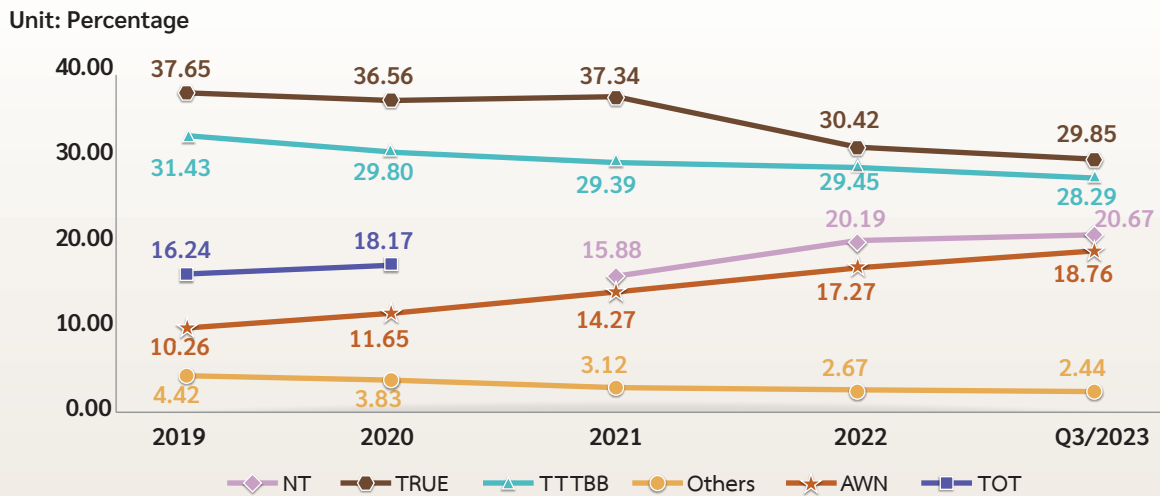
large files, or in areas where mobile phone signals are not fully-covered, it is still necessary to rely on fixed broadband internet services for internet connectivity. The trend of bandwidth usage is continuously increasing. Currently, there are approximately 23 million Megabits per second (Mbps) of connection. Details are shown in Chart 56. When considering access to fixed broadband internet, it was found that the proportion of users in quarter 3/2023 was 18.55 percent per 100 individuals, or 53.82 percent per 100 registered households using broadband internet services per household nationwide. According to the market share data of mobile phone service in quarter 3/2023, it was found that TRUE had the largest market share at 29.85 percent, followed by TTTBB at 28.29 percent. Details are shown in Chart 57. Additionally, compared to 2022, the HHI in quarter 3/2023 decreased from 2,506 to 2,476.

Chart 56 : Number of Fixed Broadband Internet Subscribers
between 2019 and Q3/2023



Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

Chart 57 : Market Share of the Fixed Broadband Internet Services
between 2019 and Q3/2023



Remark : TOT Public Company Limited merged with CAT Telecom Public Company Limited into the National Telecom Public Company Limited in 2021.

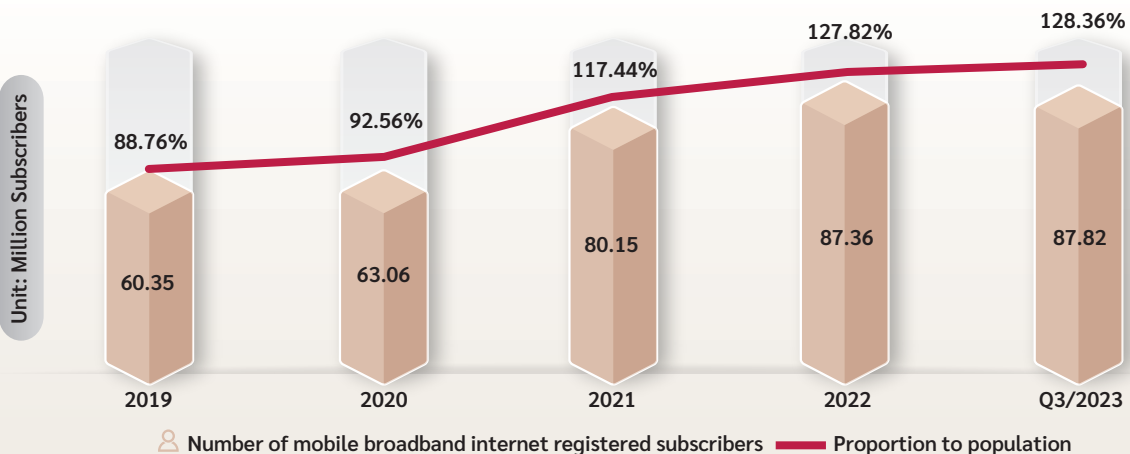
Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

3.2 Mobile broadband internet services.

In quarter 3/2023, the number of mobile broadband internet subscribers was 87.82 million, or an increase of 0.53 percent, compared to 2022. Details are shown in Chart 58. The slight increase in the number of subscribers in 2023 began in 2022, with the number of mobile broadband Internet users growing gradually. This slow growth is likely due to economic factors that have not fully recovered. Although the government has provided economic support, it has

mainly targeted businesses rather than fully supporting households. Consequently, people have been cautious with their spending. The access rate was 128.36 percent. Additionally, when considering the market share data of quarter 3/2023, it was found that TUC had the largest market share at 40.49 percent, followed by AWN at 38.60 percent, and DTN at 18.01 percent. Details are shown in Chart 59. Compared to 2022, the HHI in quarter 3/2023 slightly increased from 3,455 to 3,458.

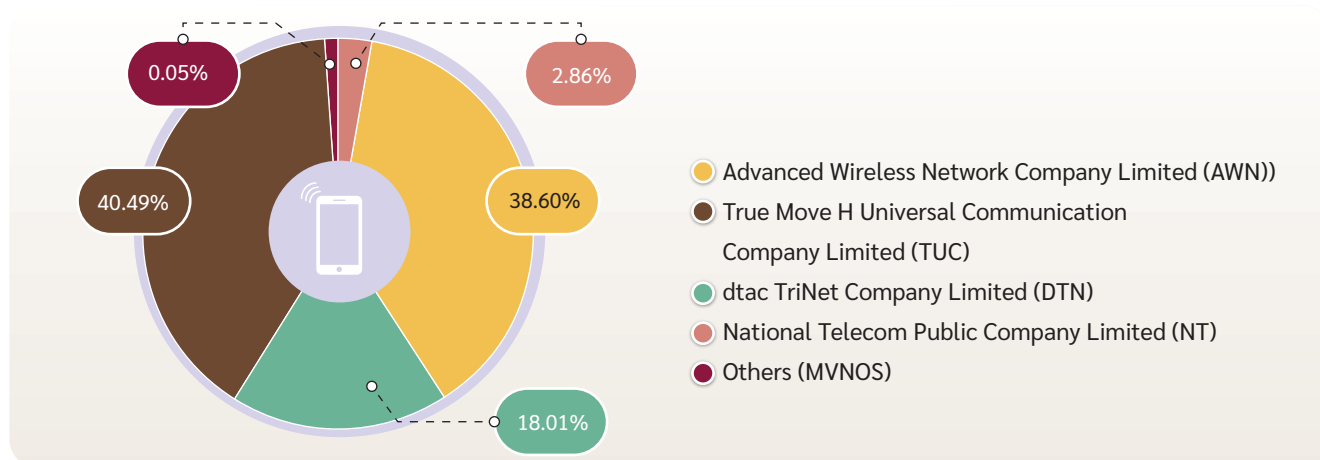
Chart 58 : Number of Mobile Broadband Internet Subscribers
between 2019 and Q3/2023



Source: Telecommunications Policy and Resources Management Bureau, Office of the NBTC



Chart 59 : Market Share of the Mobile Broadband Internet Services in Q3/2023



Remark : Total Access Communication Public Company Limited merged with True Corporation Public Company Limited, on August 3, 2022. The resolution of the NBTC's meeting, on October 20, 2022, stipulated that TUC and DTN would continue to operate under separate brand names for a period of 3 years.

Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

Satellite Industry Market

Satellite Industry Market

Market segmentation in the satellite industry can be done in various ways, each with its distinct characteristics and importance, as follows:

1. Service Type Segmentation.

1) Satellite Services include services directly related to satellites, such as data transmission, or satellite communication.

2) Ground Equipment includes equipment and technologies used for communication with satellites, or controlling satellites from Earth.

3) Satellite Manufacture refers to the design and manufacturing of satellites.

4) Satellite Launch covers the process of preparation and launching satellites into orbit.

2. Satellite Orbit Segmentation.

1) Geostationary Earth Orbit (GEO) is a circular geosynchronous orbit approximately 35,000 kilometers in altitude above Earth's equator. It is commonly used for communication satellites and television signal distribution.

2) Medium Earth Orbit (MEO) is an orbit with an altitude between 2,000 and 35,000 kilometers. It is commonly used for navigation satellites.

3) Low Earth Orbit (LEO) is an orbit with an altitude below 2,000 kilometers. It is commonly used for earth observation satellites, imaging satellites, and scientific and research satellites.

3. Satellite Type Segmentation.

1) Communications Satellites are used for data transmission and communication. They are commonly used for telecommunications and television services.

2) Earth Observation Satellites are used for observation and collecting geographical and environmental data.

3) Navigation Satellites are used for navigation systems.

4) Technology Development and Education Satellites are used for technological research and development.



4. Satellite's User Segmentation.

1) Military agencies commonly use satellites for purposes of communications, surveillance, and other military missions.

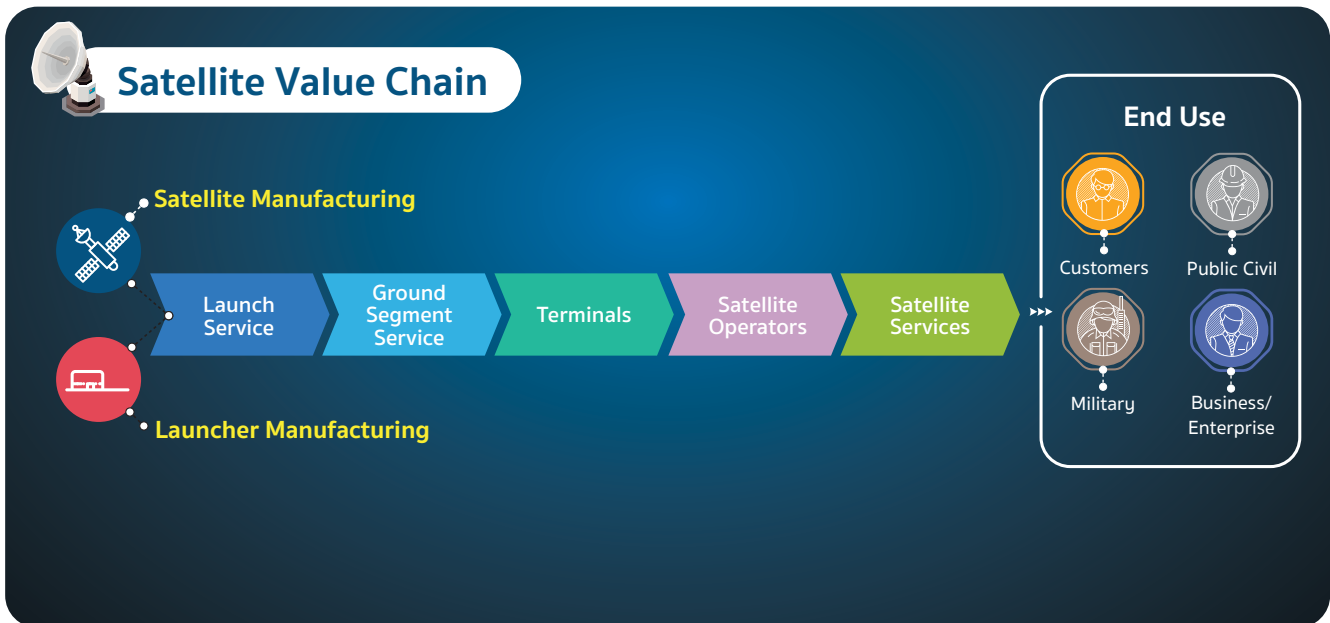
2) Governments commonly use satellites for purposes of communications, resource exploration, and domestic public administration.

3) Private sectors commonly use satellites for purposes of business communications, signal distribution, and communication technology development.

4) Business sectors commonly use satellites for purposes of commerce and various services, such as

television signal distribution, telecommunications and internet service provision, etc.

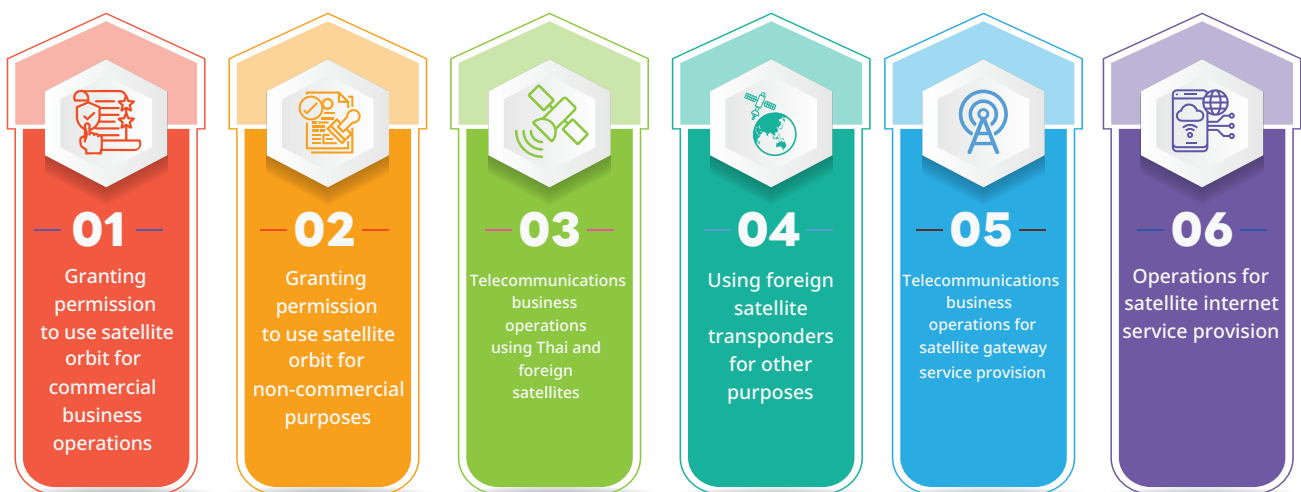
Understanding the methods of market segmentation in each category helps analyze the competitive landscape in the satellite industry more effectively. The satellite value chain from upstream to downstream includes satellite manufacturing, satellite launch, ground services, base station services by satellite operators with their own satellites, satellite management services, and leasing satellite transponders for satellite services, as well as the end-users. Details are shown in the chart below.



Source : Satellite and Orbit Management Bureau, Office of the NBTC

However, satellite market condition based on satellite value chain needs to consider facts from industrial stakeholders in each country, by adopting various methods that are consistent with the market conditions at that time as the main criteria for defining the satellite industry. Furthermore, the current satellite industry situation in Thailand involves the utilization of access rights to satellite orbital slots (satellite networks), frequency usage for satellite operations, satellite transponder usage, satellite management, Land Earth Station services, and provision of satellite imagery and data services. Currently, there are satellite operators with their own satellites in Thailand, both private sectors and government agencies, as well as leasing satellite transponder operators, satellite observation data and satellite imagery service providers, and fixed and mobile satellite internet service providers. Additionally, satellite users include commercial service providers, general users for television or telecommunications businesses, or users in public, private, and business sectors, as well as military agencies using satellite services for security and communication purposes. The types of satellites providing services in Thailand are Communications Satellites (commercial services) and Earth Observation Satellites.

According to Section 4, Section 27 (14/1) and Section 27 (14/2) of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment, along with the Telecommunications Business Act B.E. 2544 (2001) and its amendment, these stipulate that the NBTC has the authorities and duties to obtain and maintain the rights to access the satellite orbit, and regulate commercial communication satellite operations, by granting permission to use satellite orbit and foreign satellite transponders. In case of using foreign satellite transponders, according to the Notification of the NBTC on Criteria and Procedures to license Foreign Satellite to Provide Domestic Services, it requires the establishment of satellite gateways in Thailand. In addition, the criteria also allow the usage of foreign satellite transponders for non-commercial purposes. Regarding the permission to use satellite orbit, there are license requests and licenses granted for commercial use as well as for non-commercial purposes. Therefore, the satellite market structure in Thailand can be divided as follows:



As the NBTC has the responsibility for managing the rights to access satellite orbital slots, licensing and regulating the authorization process for using satellite orbital slots, and permitting the use of foreign satellite transponders, the NBTC granted permission to use foreign satellite transponders according to the Notification of the NBTC on Criteria and Procedures to license Foreign Satellite to Provide Domestic Services, as well as granting permission to use Thai Satellite orbit. This led to the entrance of new players into the satellite orbital slot market's competition landscape. Previously, there was only Thaicom Public Company Limited, providing services under contractual agreements for domestic satellite communication services (concession contract). Currently, there are National Telecom Public Company Limited, and Space Tech Innovation Company Limited, providing the services. However, in the foreign satellite transponder service provision sector, there are two operators which are National Telecom Public Company Limited, and TC Broadcasting Company Limited. Therefore, the NBTC needs to implement appropriate regulatory measures for the future. In addition, the global satellite service market continues to grow steadily, with the cost of satellite launches decreasing significantly, especially for Low Earth Orbit (LEO) launches. Previously, in 1982, the cost of launching a payload into space was 65,000 USD per kilogram. By 2020, this cost had dropped dramatically to 1,500 USD per kilogram, representing

a 43-fold decrease. The key factor that contributed significantly to the cost reduction was the investment by the United States government in the satellite industry, and the opportunities opened up for private companies in the United States to invest in government initiatives. According to the report from Space Angels, the investment in the space industry has been significant, with the United States government investing over 7,200 million USD since 2000, primarily in the National Aeronautics and Space Administration (NASA) and military ventures. This investment has been a crucial milestone for the US and global space industries, serving as the foundation for Space Exploration Technologies Company Limited, or SpaceX, to emerge as a market leader in satellite launches. Moreover, it is not only American companies, but also many leading countries worldwide have recognized the importance of the space industry, and have injected funds into developing their own satellite industries over the past two decades. In the current landscape, the development of space technology, whether the satellite development, ground station signal systems, or electronic devices, tends to focus on response to specific customer needs or niche applications, especially in non-geostationary satellite orbit and geostationary satellite orbit markets. Therefore, the NBTC needs to gather relevant data, especially service providers, service types, and the number of users, to further analyze the competitive landscape of the satellite market.





Trends in Broadcasting, Television, and Telecommunications Industries in 2024

1. Broadcasting and Television Industries

Trends in 2024. In 2023, according to the market conditions of the broadcasting and television industries in Thailand, consumer behavior has shifted towards consuming content through online platforms. This change is driven by the flexibility offered by these platforms, allowing viewers to watch content at anytime, anywhere, and on any device. Consequently, online platforms have become a popular choice, as they cater to diverse content preferences and can meet individual needs more effectively. Online media platforms offer various formats, such as 1) SVOD (Subscription Video on Demand) involves video streaming providers that charge monthly and yearly subscription fees, allowing subscribers to access unlimited content throughout their subscription period, 2) AVOD (Advertising-Based Video on Demand) involves video streaming providers that do not charge users for services, but will charge product's owners or advertising agencies, and 3) TVOD (Transaction Video on Demand) involves video streaming providers that offer pay-per-view services, where users are charged based on the specific content they watch or for access during a particular time frame.

In 2024, the direction and trends of broadcasting and television services indicate that traditional broadcasting and television operators will face significant challenges in their business operations. These challenges stem from the global and domestic economic recession, as well as consumer behavior that has shifted towards consuming content through online platforms. Therefore, it is challenging for the traditional broadcasting and television operators to elevate their service quality in areas of content, program presentation, and response to needs and behavior of all consumer groups.

2. Telecommunications Industry Trends

in 2024. In 2023, according to the market conditions in the telecommunications industry in Thailand, the fixed-line telephone service market has been experiencing a continuous decline in the number of users since 2019. For the mobile phone service market, although there was an increase in the number of users from the end of 2021 until quarter 3/2022, the number of users has gradually declined since 2023, similar to the trend seen in the fixed-line telephone services. For the overall internet service market from 2019 until 2023, whether the mobile broadband internet service, or the fixed broadband internet service, the number of internet users has continuously increased. For 2024, it is expected that government support measures for economic recovery across various industries will lead to a revival of the tourism sector, further investment expansion in both the private and public sectors, and the promotion of new innovations and digital technologies. These developments will drive economic growth and facilitate business operations and daily life, such as Open AI, or ChatGPT for the general public trials, as well as other Open Sources, available for free usage and revision. Additionally, the Generative AI (Gen-AI) has been developed to be able to regenerate from existing data sets, using versatile algorithms, or the integration of Cloud technology into industries, or Industry Cloud Platforms (ICPs). The Industry Cloud Platforms manage business outcomes by integrating fundamental SaaS, PaaS, and IaaS services on a unified database system. They allow for the customization of Cloud to suit specific industries, and meet the unique needs of each organization. Considering the telecommunications industry trends for 2024 in the fixed-line telephone service market, service providers are expected to continue efforts to retain their



customer base of individual or general customers using the services at home or work. This will involve leveraging the Fixed Mobile Convergence (FMC) marketing concept, which combines basic telephone (fixed-line telephone) and mobile network services, including internet protocol telephony, or IP Phone. Users can communicate using only a mobile phone, regardless of whether it is an incoming call to fixed-line phone at home or office. The FMC service users can receive calls on their mobile phones at any time. Additionally, services are aimed at business organization segment by utilizing the Session Initiation Protocol (SIP) Trunk technology, which allows personnel within the same organization to communicate between phone receivers within the same networks as if they were internal numbers. This eliminates per-call charges, instead opting for a flat fee per connected device. The SIP Trunk technology is the technology that replaces traditional analog and ISDN (Integrated Service Digital Network) phones. However, using fixed-line telephone service for international calls via VoIP (Voice over Internet Protocol) technology remain necessary for business operations of corporate segment.

For the direction of mobile phone services in 2024, even though the number of users is expected to decline, the provision of 5G mobile phone services still presents growth opportunities. Service providers focus on expanding network coverage to encompass the population, and target the industrial sector, which uses broadband internet to connect with IoTs (Internet of Things) devices and robots in manufacturing and logistics lines. The expansion of 5G services is occurring in two main areas: increasing the number of signal points in densely populated communities, and enhancing the capacity of existing signal points to support the growing number of devices that may be connected in the future. Regarding the

investment trend in new cell sites, the focus will be on small cell sites but in greater numbers. This approach requires less investment and maintenance compared to tall cell sites. Additionally, the frequency bands used in 5G services have shorter wavelengths, which facilitates faster data transmission, and larger data volumes. In addition, mobile phone service providers offer devices connecting with the Fixed Wireless Access technology. These devices can receive mobile internet signals and broadcast them as Wi-Fi within buildings or user areas. This is particularly beneficial for users in areas where fiber optic cables have not yet reached. In terms of internet services in 2024, it is expected that fixed internet services will continue to focus on bundled products, consisting of four components (Quad-play): fixed internet, mobile internet, telephone services (fixed and mobile), and digital content via television sets or set-top boxes in various systems. This approach aims to facilitate easy access to content of interest to users, and ensure seamless integration with various devices within the service ecosystem provided by the same operator. Furthermore, for the internet service technology trends in the future, it is expected the emerging small-sized Non-Geostationary Satellite Orbit (NGSO) satellites, involving Low Earth Orbit (LEO), and Medium Earth Orbit (MEO), having shorter distance between satellites and the Earth's surface, or closer to the Earth, compared to large-sized Geostationary Satellite Orbit (GSO) satellites. The non-geostationary satellites will indeed play a crucial role in future internet service provision, including broadband internet, Wi-Fi on Board services, and IoTs, as well as other emerging services. These services are expected to help develop and play a significant role in communications in remote areas, and eliminate internet accessibility limitations. They are also another viable option for service selection in the future.



The Observation on the Dominance Nature in Action of Broadcasting, Television, and Telecommunications Businesses Affecting the Benefits of the State and People

1. The Observation on the Dominance Nature in Action of Broadcasting and Television Businesses Affecting the Benefits of the State and People.

The Office of the NBTC has proposed amendments and the repeal of the Notification of the NBTC on the Determination of Characteristics and Regulatory Measures for Merger, Cross-holding, and Dominance in Broadcasting and Television Businesses. The objective is to loosen the regulations and streamline the procedures for compliance with the Notification. Thus, the Notification of the NBTC on Measures to Regulate Merger in the Broadcasting and Television Businesses was developed and published in the Royal Gazette on August 20, 2018. Regarding the dominance in broadcasting and television operations, in Section 2 – “Business Dominance by Individuals with Shared Interests”, it is stipulated that if actions are taken that directly or indirectly dominate a business by individuals with shared interests, which may lead to monopolization, reduction, or limitation of competition, specific orders may be issued to prevent monopolistic practices or unfair competition. In 2023, there were no instances of licensees in the broadcasting and television businesses engaging in actions or behaviors that could be classified as business dominance potentially leading to monopolization, reduction, or limitation of competition in the broadcasting and television businesses.

2. The Observation on the Dominance Nature in Action of Telecommunications Business Affecting the Benefits of the State and People.

The telecommunications business requires huge investment, particularly in building

telecommunications infrastructure or investing in telecommunications resources. For example, as the frequency bands are limited, the telecommunications market becomes monopolistic or oligopolistic. Existing telecommunications operators with monopoly power in the telecommunications market may use their market dominance to restrict or hinder competition, such as exploitative abuses, and exclusionary abuses, by conducting predatory pricing, margin squeezing, or refuse to deal methods. These actions result in unfair competition in the telecommunications market. Therefore, to prevent market-dominant entities from using their power to restrict or hinder competition, and prevent mergers between telecommunications operators from resulting in market domination, the NBTC implemented regulations to oversee the dominant entities and the business mergers in the telecommunications market. In 2023, there was a business consolidation case between Advanced Wireless Network Company Limited (AWN) and Triple T Broadband Public Company Limited (TTTBB). On November 22, 2022, AWN submitted a formal notification of the business merger, and provided a merger report to the Secretary-General of the NBTC. Subsequently, the NBTC, in the 12th/2023 Special Meeting, on November 10, 2023, considered the merger report between AWN and TTTBB. The majority in the meeting voted to approve the business merger and established specific measures according to the aforementioned Notification. They also agreed upon the conditions or specific measures for AWN and TTTBB to implement.

Telecommunications Service Quality and Service Rates, which are Significant to People

The NBTC has regulated telecommunications business operations, and prescribed criteria and standards for telecommunications service quality and service rates, to ensure that users receive quality services that meet standards, and are offered at fair prices. In 2023, the significant performances and achievements are as follows:

1. Regulating Service Quality.

In 2023, the Office of the NBTC has continuously monitored and inspected the telecommunications quality of service provision, according to the Notification of the NBTC on Quality of Service Standards for Telecommunications Services. The Notification requires licensees to provide telecommunications services in accordance with the quality of service standards specified in the appendix attached to the Notification²⁵. They must measure service quality indicators and submit quarterly reports to the Office of the NBTC. Moreover, the Office of the NBTC has also conducted annual reinspection in cases where the telecommunications service provision did not comply with the quality of service standards.

Additionally, inspections were carried out upon receiving consumer complaints. The Office of the NBTC also collaborated with operators to address issues as reported. The summary of the quality of service monitoring is as follows:

1.1 Quality inspection for telecommunications services from the quality of service reports submitted by the operators.

1.1.1 Quality of telecommunications service provision through fixed telecommunications networks include fixed-line telephony and public telephone services. According to the quality of service reports submitted to the Office of the NBTC, there was a total of 49 fixed telecommunications licensees²⁶. It was found that all service providers met the quality of service indicators as specified in related Notifications of the NBTC. This demonstrates efficiency in service provision across various aspects, including the telecommunications network, service activation, repairs, and the accuracy and promptness of customer interactions. Details are shown in Table 39.

²⁵ The service quality indicators as appeared in the appendix attached to the Notification of the NBTC on Quality of Service Standards for Telecommunications Services, published in the Royal Gazette on October 25, 2019, Volume 136 Special Part 265 Ngor, consist of

- 1) Telecommunications services through fixed telecommunications networks mean the service provision through fixed telecommunications networks such as copper wire network, fiber optic network, or both. The services include fixed-line telephony, public telephone, and data services. The service quality indicators include (1) general service quality indicators, (2) voice service quality indicators, and (3) data service quality indicators.
- 2) Telecommunications services through mobile telecommunications networks mean the service provision through mobile telecommunications networks for Land Mobile Service. The service quality indicators include (1) general service quality indicators, (2) voice service quality indicators, and (3) data service quality indicators.

²⁶ Data as of Quarter 3/2023.



Table 39 : Results of Quality of Service Report of Fixed Telecommunications Licensees for the Year 2023

Clause ²⁷	Quality of Service Indicators	Target	Quality of Service Indicators		
			Minimum	Average	Maximum
General Service Quality Indicators					
1.1.1	Supply time for initial connection	No longer than 10 business days	1 day	2.35 days	10 days
1.1.2	Percentage of service installation completed on or before the date confirmed	Not less than 90 percent	90	94.28	100
1.1.3	Number of reported faults per 100 subscribers	Not more than 5 times per 100 users	0	1.56	5
1.1.4	Fault repair time	No longer than 24 hrs.	1 hr.	7.67 hrs.	24 hrs.
1.1.5	Billing inaccuracy	Not more than 0.3 percent	0	0.03	0.21
1.1.6	Response time for accessing customer-service call center	No longer than 60 seconds	3 seconds	35.20 seconds	60 seconds
1.1.7	Payphone Service Availability	Not less than 90 percent in Bangkok and the vicinity	96.41	98.19	99.24
		Not less than 85 percent in other provinces	99.90	99.96	99.99
Voice Service Quality Indicators					
1.2.1	Successful Call Ratio (within network)	Not less than 90 percent	93.33	96.80	99.00
1.2.2	Successful Call Ratio (across different network)	Not less than 85 percent	88.33	95.85	99.00
Data Service Quality Indicators					
1.3.1	Network Unavailability : cumulative Last Mile Node outage time in a month ratio	Not more than 1 percent	0	0.17	1

Remark : Data as of Quarter 3/2023

Source : Telecommunications Technology and Standard Bureau, Office of the NBTC

²⁷ Clause hereby means the clause of indicators specified in the Notification of the NBTC on Quality of Service Standards for Telecommunications Services.



1.1.2 Quality of telecommunications service provision through mobile telecommunications networks.

According to the results of quality of service reports of telecommunications service operators through mobile telecommunications networks submitted to the Office of the NBTC in

the 1st – 3rd quarter of 2023, there was a total of 9 licensees²⁸, including mobile networks operators (MNOs), and mobile virtual network operators (MVNOs). It was found that all service providers met the quality of service indicators as specified in related Notifications of the NBTC. Details are shown in Table 40 and Table 41.

Table 40 : Results of Quality of Service Report of Telecommunications Service Operators Through Mobile Telecommunications Networks for the Year 2023

Clause	Quality of Service Indicators	Target	Quality of Service Indicators		
			Minimum	Average	Maximum
General Service Quality Indicators					
2.1.1	Supply time for initial connection	Pre-paid: No longer than 3 hrs. for 90 percent of service activation	99.08	99.59	99.97
		Post-paid: No longer than 5 hrs. for 90 percent of service activation	98.43	99.31	99.91
2.1.2	Billing inaccuracy	Not more than 0.3 percent	0	0.003	0.01
2.1.3	Response time for accessing customer - service call center	No longer than 60 seconds	30 seconds	49 seconds	58 seconds
2.1.4	Network Unavailability : Number of cell outages continuously over 4 hours in a month	Not more than 10 times per 100 cells/month	3.46 times	6.78 times	9.23 times
2.1.5	Network Unavailability : Number of cell outages continuously over 24 hours in a month	Not more than 3 percent	0.54	0.66	0.78
2.1.6	Network Unavailability : Cumulative cell outage time in a month	Not more than 1 percent	0.12	0.29	0.53

²⁸ 1) The 3 mobile network operators (MNOs) include (1) National Telecom Public Company Limited (NT), (2) Advanced Wireless Network Company Limited (AWN), and (3) True Move H Universal Communication Company Limited (TUC).

2) The 6 mobile virtual network operators (MVNOs) include (1) Loxley Public Company Limited, (2) Loxley Mobile Company Limited, (3) The White Space Company Limited, (4) Feels Telecom Corporation Company Limited, (5) redONE Network (Thailand) Company Limited, and (6) Bangkok Pay Company Limited.



Clause	Quality of Service Indicators	Target		Quality of Service Indicators		
				Minimum	Average	Maximum
Voice Service Quality Indicators						
2.2.1	Successful Call Ratio (within network)	Not less than 90 percent during 10.00 – 13.00 hrs. in every 3 months		95.88	97.66	99.40
		Not less than 90 percent during 16.00 – 19.00 hrs. in every 3 months		96.31	97.76	98.90
2.2.2	Successful Call Ratio (across different network)	Not less than 90 percent during 10.00 – 13.00 hrs. in every 3 months		96.08	97.35	98.37
		Not less than 90 percent during 16.00 – 19.00 hrs. in every 3 months		96.85	97.68	98.18
2.	Drop Call Rate	Not more than 2 percent during 10.00 – 13.00 hrs. in every 3 months		0.06	0.11	0.20
		Not more than 2 percent during 16.00 – 19.00 hrs. in every 3 months		0.08	0.13	0.21
2.2.4	Mean Opinion Score (MOS)	Not less than 2.5 (90 percent of measured score must not less than this score)	North	97.50	98.96	100
			South	99.08	99.77	100
			Central	97.73	99.43	100
			Northeast	95.56	98.26	100

Remark : Data as of Quarter 3/2023

Source : Telecommunications Technology and Standard Bureau, Office of the NBTC

Table 41 : Results of Quality of Service Report of Telecommunications Service Operators

Quality Indicators for Data Telecommunications Services through Mobile Telecommunications Networks in 2023

Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators		
					Minimum	Average	Maximum
Data service Quality Indicators							
2.3.1	Round Trip Time (RTT)	For 3G technology, not more than 500 ms, target indicator not less than 80 percent	Regional (Central/ East)	Main routes and minor routes	97.60	98.23	98.89
				Community area	97.65	98.23	98.89
			Bangkok and vicinity	Main routes and minor routes	97.01	97.86	99.58
				Surveillance area	97.65	98.23	98.79



Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators				
					Minimum	Average	Maximum		
		For 4G technology, not more than 150 ms, target indicator not less than 80 percent	Regional (Central/East)	Main routes and minor routes	98.91	99.56	99.71		
				Community area	99.38	99.56	99.71		
			Bangkok and vicinity	Main routes and minor routes	99.58	80.90	99.71		
				Surveillance area	99.54	99.56	100		
		For 5G technology (NSA and SA, not using 2600 MHz), not more than 150 ms, target indicator not less than 80 percent	Regional (Central/East)	EEC	97.31	98.66	100		
				Bangkok	92.58	93.26	93.94		
		For 5G technology (SA using 2600 MHz), not more than 110 ms, target indicator not less than 80 percent	Regional (Central/East)	EEC	99.21	99.61	100		
				Bangkok	98.88	98.96	99.04		
		2.3.2	FTP Success Ratio	3G Download: Not less than 80 percent	Regional (Central/East)	Main routes and minor routes	95.72	98.00	99.63
						Community area	96.11	98.00	96.71
Bangkok and vicinity	Main routes and minor routes				95.33	97.58	99.86		
	Surveillance area				94.91	98.00	98.60		
4G Download: Not less than 80 percent	Regional (Central/East)			Main routes and minor routes	95.51	98.62	98.83		
				Community area	96.76	98.62	97.55		
	Bangkok and vicinity			Main routes and minor routes	96.65	97.67	99.86		
				Surveillance area	95.84	98.62	99.79		
5G Download (not using 2600 MHz): Not less than 80 percent	Central/East			EEC	97.73	98.87	100		
				Bangkok	96.09	97.79	99.48		



Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators		
					Minimum	Average	Maximum
		5G Download (using 2600 MHz): Not less than 80 percent	Central/ East	EEC	97.79	98.77	99.74
				Bangkok	90.20	93.65	97.09
		3G Upload: Not less than 70 percent	Regional (Central/East)	Main routes and minor routes	96.53	98.43	99.86
				Community area	97.20	98.43	97.93
			Bangkok and vicinity	Main routes and minor routes	96.50	98.85	99.72
				Surveillance area	99.41	98.43	100
		4G Upload: Not less than 70 percent	Regional (Central)	Main routes and minor routes	98.02	99.11	99.86
				Community area	98.70	99.11	99.70
			Bangkok and vicinity	Main routes and minor routes	98.83	99.32	99.72
				Surveillance area	99.20	99.11	100
		5G Upload (not using 2600 MHz): Not less than 70 percent	Central/East	EEC	95.76	97.60	99.44
				Bangkok	86.86	92.91	98.96
		5G Upload (using 2600 MHz): Not less than 70 percent	Central/East	EEC	98.46	99.23	100
				Bangkok	97.87	98.69	99.51
2.3.3	FTP ratio subjected to specified data rate	3G Download: less than 750 Kbps for 75 percent of FTP successful transmission within the specified time	Regional (Central/East)	Main routes and minor routes	95.72	98.59	99.72
				Community area	97.23	98.59	97.19
			Bangkok and vicinity	Main routes and minor routes	96.22	97.71	99.48
				Surveillance area	95.15	98.59	100



Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators		
					Minimum	Average	Maximum
		4G Download: Not less than 2.5 Mbps for 75 percent of FTP successful transmission within the specified time	Regional (Central/East)	Main routes and minor routes	96.53	98.38	99.30
				Community area	97.38	98.38	97.63
			Bangkok and vicinity	Main routes and minor routes	95.91	97.61	99.72
				Surveillance area	98.47	98.38	100
		5G Download (not using 2600 MHz): Not less than 2.5 Mbps for 75 percent of FTP successful transmission within the specified time	Central/East	EEC	97.73	97.84	97.94
				Bangkok	86.09	96.49	96.89
		5G Download (using 2600 MHz): Not less than 5 Mbps for 75 percent of FTP successful transmission within the specified time	Central/East	EEC	97.79	98.63	99.47
				Bangkok	90.20	94.10	97.99
		3G Upload: Not less than 300 Kbps for 75 percent of FTP successful transmission within the specified time	Regional (Central/East)	Main routes and minor routes	95.51	97.51	99.48
				Community area	95.87	97.51	97.55
			Bangkok and vicinity	Main routes and minor routes	94.74	97.26	99.30
				Surveillance area	95.84	97.51	99.58
		4G Upload: Not less than 500 Kbps for 75 percent of FTP successful transmission within the specified time	Regional (Central/East)	Main routes and minor routes	96.61	99.11	99.72
				Community area	98.57	99.11	99.40
			Bangkok and vicinity	Main routes and minor routes	98.83	99.32	99.72
				Surveillance area	99.20	99.11	100



Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators		
					Minimum	Average	Maximum
2.3.4	HTTP Success Ratio	5G Upload (not using 2600 MHz): Not less than 500 Kbps for 75 percent of FTP successful transmission within the specified time	Central/East	EEC	95.76	97.88	100
				Bangkok	86.86	92.91	98.96
		5G Upload (using 2600 MHz): Not less than 1.25 Mbps for 75 percent of FTP successful transmission within the specified time	Central/East	EEC	98.46	99.10	99.74
				Bangkok	98.69	99.10	99.51
		For 3G, not less than 90 percent, with the specified time not exceeding 3 minutes	Regional (Central/East)	Main routes and minor routes	94.40	98.72	100
				Community area	96.89	98.72	98.44
			Bangkok and vicinity	Main routes and minor routes	93.71	97.38	100
				Surveillance area	93.66	98.72	100
2.3.4	HTTP Success Ratio	For 4G and above, not less than 90 percent, with the specified time not exceeding 1 minute	Regional (Central/East)	Main routes and minor routes	97.78	99.21	100
				Community area	98.63	99.21	100
			Bangkok and vicinity	Main routes and minor routes	98.48	95.52	100
				Surveillance area	99.07	99.21	100
		For 5G (NSA and SA not using 2600 MHz), not less than 90 percent, with the specified time being 1 minute	Central/East	EEC	99.95	99.98	100
				Bangkok	100	100	100
		For 5G (SA using 2600 MHz), not less than 90 percent, with the specified time being 25 seconds	Central/East	EEC	99.22	99.61	100
				Bangkok	100	100	100



Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators		
					Minimum	Average	Maximum
2.3.5	Streaming Service Accessibility	For 3G (Resolution 360p), not less than 80 percent	Regional (Central/East)	Main routes and minor routes	-	-	-
				Community area	98.16	98.75	99.35
			Bangkok and vicinity	Main routes and minor routes	88.08	95.79	99.69
				Surveillance area	-	-	-
		For 4G and above (Resolution 720p), not less than 85 percent	Regional (Central/East)	Main routes and minor routes	-	-	-
				Community area	98.71	99.29	100
			Bangkok and vicinity	Main routes and minor routes	85.32	94.97	100
				Surveillance area	-	-	-
		For 5G (NSA and SA not using 2600 MHz, Resolution 720p), not less than 85 percent	Central/East	EEC	98.45	99.23	100
				Bangkok	99.32	99.63	99.93
		For 5G (SA using 2600 MHz, Resolution 1080p), not less than 90 percent	Central/East	EEC	100	100	100
				Bangkok	99.05	99.53	100
2.3.6	Streaming Reproduction Success Ratio	For 3G (Resolution 360p), not less than 80 percent	Regional (Central/East)	Main routes and minor routes	-	-	-
				Community area	93.90	95.07	96.11
			Bangkok and vicinity	Main routes and minor routes	87.30	93.47	99.59
				Surveillance area	-	-	-
		For 4G and above (Resolution 720p), not less than 85 percent	Regional (Central/East)	Main routes and minor routes	-	-	-
				Community area	96.26	97.48	98.34



Clause	Quality of Service Indicators	Target	Area	Measurement Location	Quality of Service Indicators		
					Minimum	Average	Maximum
			Bangkok and vicinity	Main routes and minor routes	85.08	93.44	98.78
				Surveillance area	-	-	-
		For 5G (NSA and SA not using 2600 MHz, Resolution 720p), not less than 85 percent	Central/East	EEC	93.90	95.56	97.21
				Bangkok	93.51	96.42	99.32
		For 5G (SA using 2600 MHz, Resolution 1080p), not less than 90 percent	Central/East	EEC	97.84	98.92	100
				Bangkok	96.46	97.76	99.05
2.3.7	Average FTP Bitrate	5G Download (using 2600 MHz): Not less than 20 Mbps	Central/East	EEC	62.37 Mbps	111.13 Mbps	159.88 Mbps
				Bangkok	87.30 Mbps	128.91 Mbps	170.52 Mbps
		5G Upload (using 2600 MHz): Not less than 5 Mbps	Central/East	EEC	9.66 Mbps	17.12 Mbps	24.58 Mbps
				Bangkok	26.54 Mbps	26.77 Mbps	27.00 Mbps

Remark : Data as of Quarter 3/2023

Source : Telecommunications Technology and Standard Bureau, Office of the NBTC

For the measurement result dissemination of service quality indicators, it must adhere to the Notification of the NBTC on Quality of Service Standards for Telecommunications Services, and the Notification of the Office of the NBTC on Guidelines for Measuring Service Quality Indicators and Surveillance Areas, which specifies report format and measurement result dissemination, service quality indicators & service quality indicator levels for result dissemination, and service quality indicators for

telecommunications services through fixed telecommunications networks, as well as defining guidelines for measuring service quality indicators and surveillance areas for mobile telecommunications networks (mobile phone). As of quarter 3/2023, the surveillance areas for telecommunications services through mobile telecommunications networks were defined for licensees to measure data service quality indicators (RTT, FTP, HTTP) in the areas. Details are shown in Table 42.



Table 42 : Surveillance Areas for Telecommunications Services through Mobile Telecommunications Networks in 2023

Area	Measurement Location (As of Q1/2023)	Measurement Location (As of Q2/2023)	Measurement Location (As of Q3/2023)
Regional surveillance areas	Measure in the Northeastern region - Main routes and minor routes in regional areas - Routes in community areas	Measure in the Southern region - Main routes and minor routes in regional areas - Routes in community areas	Measure in the Central and Eastern regions - Main routes and minor routes in regional areas - Routes in community areas
Surveillance areas in Bangkok metropolis and vicinity	Main routes in Bangkok metropolis and vicinity	Main routes in Bangkok metropolis and vicinity	Main routes in Bangkok metropolis and vicinity
	Special routes in Bangkok metropolis and vicinity - Chalerms Maha Nakhon Expressway - Si Rat Expressway	Surveillance areas 1. Krung Thep Aphiwat Central Terminal 2. Bangkok Bus Terminal (Chatuchak) 3. Bangkok Bus Terminal (Ekkamai) 4. Bangkok Bus Terminal (Borommaratchachonnani) 5. Suvarnabhumi Airport 6. Don Mueang Airport	Community areas 1. Chulalongkorn University 2. Rajamangala University of Technology Thanyaburi 3. Chatuchak Park 4. Lumpini Park

Source : Telecommunications Enforcement Bureau, Office of the NBTC

1.2 Service quality inspection conducted by the Office of the NBTC according standard requirements.

1.2.1 Stationary Test. The Office of the NBTC installed the equipment for testing mobile phone service quality at the regional offices and sub-region offices of the NBTC. The monthly testing is conducted to monitor the mobile phone networks, to ensure that the service provision comply with the standards and service quality specified by the NBTC. The results can be summarized as follows:

(1) According to the results of voice service quality inspection in quarter 3/2023, in cases of on-net calls for both Successful Call Ratio and Drop Call Rate, it was found that the voice service provision of all service operators met the specified standards, with the Successful Call Ratio accounting for 99.89 percent, which was higher than the specified target (not less than 90 percent), and the Drop Call Rate accounting for 0.06 percent, higher than the specified target (not more than 2 percent). Details are shown in Table 43.

Table 43 : The Test Results of On-Net Calls in 2023

Quality-of-Service Indicators	Target	Test Results of Voice Service of On-Net Calls		
		Quarter 1	Quarter 2	Quarter 3
Successful Call Ratio	Not less than 90 percent	99.94	99.95	99.89
Drop Call Rate	Not more than 2 percent	0.01	0.02	0.06

Remark : The tests were conducted in 26 areas, including the Office of the NBTC Headoffice (Sailom), the Offices of the NBTC region 1 - 4, the NBTC sub-region office 11 - 16, the NBTC sub-region office 21 - 25, the NBTC sub-region office 31 - 35, and the NBTC sub-region office 41 - 45.

Source : Telecommunications Enforcement Bureau, Office of the NBTC

(2) According to the results of voice service quality inspection in quarter 3/2023, in cases of off-net calls for both Successful Call Ratio and Drop Call Rate, it was found that the voice service provision of all service operators met the specified standards, with the Successful Call Ratio accounting

for 99.86 percent, which was higher than the specified target (not less than 90 percent), and the Drop Call Rate accounting for 0.02 percent, higher than the specified target (not more than 2 percent). Details are shown in Table 44.

Table 44 : The Test Results of Off-Net Calls in 2023

Quality-of-Service Indicators	Target	Test Results of Voice Service of Off-Net Calls		
		Quarter 1	Quarter 2	Quarter 3
Successful Call Ratio	Not less than 90 percent	99.78	99.93	99.86
Drop Call Rate	Not more than 2 percent	0.01	0.02	0.02

Remark : The tests were conducted in 26 areas, including the Office of the NBTC Headoffice (Sailom), the Offices of the NBTC region 1 - 4, the NBTC sub-region office 11 - 16, the NBTC sub-region office 21 - 25, the NBTC sub-region office 31 - 35, and the NBTC sub-region office 41 - 45.

Source : Telecommunications Enforcement Bureau, Office of the NBTC

(3) According to the results of data service quality inspection for FTP Ratio subjected to specified criteria, FTP Success Ratio, and HTTP Ratio subjected to specified time duration,

it was found that the data service provision of all service operators met the specified standards. Details are shown in Table 45 and Table 46.

Table 45 : Test Results of Telecommunications Services for Data Services on 3G Technology in 2023

Quality of Service Indicators		Target	Test Results of Service with 3G Technology		
			Quarter 1	Quarter 2	Quarter 3
FTP Download	FTP Ratio subjected to specified criteria	Not less than 0.750 Mbps	7.03	5.69	4.63
	FTP Success Ratio	Not less than 80 percent	99.58	99.25	98.86
FTP Upload	FTP Ratio subjected to specified criteria	Not less than 0.300 Mbps	1.92	2.01	2.02
	FTP Success Ratio	Not less than 70 percent	99.49	99.29	97.85
HTTP	HTTP Ratio subjected to specified time duration	Not less than 80 percent	99.35	99.43	98.91

Remark : The tests were conducted in 26 areas, including the Office of the NBTC Headoffice (Sailom), the Offices of the NBTC region 1 - 4, the NBTC sub-region office 11 - 16, the NBTC sub-region office 21 - 25, the NBTC sub-region office 31 - 35, and the NBTC sub-region office 41 - 45.

Source : Telecommunications Enforcement Bureau, Office of the NBTC

Table 46 : The Test Results of Telecommunications Services for Data Services on 4G Technology in 2023

Quality of Service Indicator		Target	Test Results of Service with 4G Technology		
			Quarter 1	Quarter 2	Quarter 3
FTP Download	FTP Ratio subjected to specified criteria	Not less than 2.5 Mbps	35.23	38.42	28.91
	FTP Success Ratio	Not less than 80 percent	99.10	99.49	98.67
FTP Upload	FTP Ratio subjected to specified criteria	Not less than 0.5 Mbps	8.43	8.28	7.02
	FTP Success Ratio	Not less than 70 percent	99.41	99.56	99.76
HTTP	HTTP Ratio subjected to specified time duration	Not less than 90 percent	99.39	99.76	99.00

Remark: The tests were conducted in 26 areas, including the Office of the NBTC Headoffice (Sailom), the Offices of the NBTC region 1 - 4, the NBTC sub-region office 11 - 16, the NBTC sub-region office 21 - 25, the NBTC sub-region office 31 - 35, and the NBTC sub-region office 41 - 45.

Source : Telecommunications Enforcement Bureau, Office of the NBTC

1.2.2 Mobility Test. The Office of the NBTC has mandated quarterly inspections based on various usage patterns, and specified 4 types of test area formats, including (1) main routes and minor routes of state highways, (2) main routes in Bangkok metropolis and vicinity, (3) special routes in Bangkok metropolis and vicinity/ surveillance areas/community areas, and (4) randomly selected routes in community areas for testing quality of mobile phone services to comply with specified standards.

(1) According to the results of voice service quality inspection in quarter 3/2023, in cases of on-net calls for both Successful Call Ratio and Drop Call Rate, it was found that the voice service provision of all service operators met the specified standards, with the Successful Call Ratio higher than the specified target (not less than 90 percent), and the Drop Call Rate higher than the specified target (not more than 2 percent) in all inspected areas. Details are shown in Table 47.

Table 47 : The Mobility Test Results of On-Net Calls in 2023

Quality-of-Service Indicators	Target	Test Area	Test Results of On-Net Calls		
			Quarter 1	Quarter 2	Quarter 3
Successful Call Ratio	Not less than 90 percent	A	98.33	99.20	99.70
		B	99.84	99.34	99.21
		C	98.75	99.97	99.89
		D	97.88	99.61	99.21
Drop Call Rate	Not more than 2 percent	A	0.15	0.40	0.22
		B	0.22	0.16	0.29
		C	0.16	0.19	0.22
		D	0.15	0.16	0.23

Remark : 1. Area A includes major and minor highways. Area B includes main routes in Bangkok metropolis and the vicinity. Area C includes special routes in Bangkok metropolis and vicinity/surveillance areas/community areas. And Area D includes routes in community areas.

2. Data as of Quarter 3/2023

Source : Telecommunications Enforcement Bureau, Office of the NBTC



(2) According to the results of data service quality inspection with the mobility test for FTP Ratio subjected to specified criteria, FTP Success Ratio, and HTTP Ratio subjected to

specified time duration, it was found that the data service provision of all service operators met the specified standards. Details are shown in Table 48.

Table 48 : The Mobility Test Results of Telecommunications Services for Data Services on 4G Technology in 2023

Quality of Service Indicators		Target (4G)	Test Area	Test Results of 4G Service
FTP Download	FTP Ratio subjected to specified criteria	Not less than 2.5 Mbps	A	50.91
			B	52.40
			C	68.09
			D	50.56
	FTP Success Ratio	Not less than 80 percent	A	99.34
			B	299.00
			C	100.00
			D	99.48
FTP Upload	FTP Ratio subjected to specified criteria	Not less than 0.5 Mbps	A	15.49
			B	19.75
			C	20.92
			D	13.83
	FTP Success Ratio	Not less than 70 percent	A	99.62
			B	99.91
			C	99.84
			D	99.64
HTTP	HTTP Ratio subjected to specified time duration	Not less than 90 percent	A	100.00
			B	100.00
			C	100.00
			D	100.00

Remark : 1. Area A includes major and minor highways. Area B includes main routes in Bangkok metropolis and the vicinity. Area C includes special routes in Bangkok metropolis and vicinity/surveillance areas/community areas. And Area D includes routes in community areas.

2. Data as of Quarter 3/2023

Source : Telecommunications Enforcement Bureau, Office of the NBTC

In addition, the Office of the NBTC has carried out the quality testing for mobile phone services based on user's usage patterns, to acquire service network capacity data for incorporating in the consideration of mobile phone service provision standards. The tests were conducted in a total of 434 clusters, in 74 provinces.

Additionally, the Office of the NBTC also carried out the test operations to support the Office's duty regarding complaints in mobile phone service quality, totaling 57 cases, and has the reports on the quality test for mobile phone service based on user's usage patterns with 5G NSA/SA technologies, for more than 434 cases.





2. Regulating Telecommunications Service Rates.

In 2023, the NBTC has regulated the telecommunications service rates to ensure that users can access telephone services at fair rates while receiving quality services at lower prices. This also aims to ensure fairness for both users and service providers, with a primary focus on public interest, as follows:

2.1 Regulating Fixed-line Telephone Service Rates. Currently, there are 7 fixed-line telephone service providers with active users, including Amnex Company Limited (AMX), Advanced Wireless Network Company Limited (AWN), Triple T Broadband Public Company Limited (TTTBB), Dtac TriNet Company Limited (DTN), Otar World Corporation Company Limited (OTW), True Internet Corporation Company Limited (TICC), and National Telecom Public Company Limited (NT) which provides two networks: CAT Telcom network and TOT network. In quarter 1/2023, the number of allocated fixed-line telephone numbers were 17,357,000. The active fixed-line telephone

numbers were a total of 4,322,408, a decrease of 1.05 percent from the number of active fixed-line telephone numbers in quarter 4/2022. In quarter 3/2023, NT held the largest market share at 85.11 percent. Details are shown in Table 49. However, the number of fixed-line telephone subscribers has been continuously decreasing, due to the changing behavior of users. This resulted in users canceling their fixed-line telephone services, leaving only those who still see the importance of using fixed-lined telephones for business operations, having a backup phone at home, or for emergency calls, etc. Regarding promotional packages for fixed-line telephone services, NT continues to offer separate promotional packages under the TOT and CAT brands. Additionally, most providers offer fixed-line telephone services as supplementary services bundled with other types of services, such as fixed broadband internet, and TV set-top boxes. Moreover, some providers do not offer fixed-line telephone services on their websites, requiring users to contact the fixed-line telephone service providers directly for inquiries.

Table 49 : The Number of Active Fixed-Line Telephone Numbers

Service Providers	Accumulated Allocated Numbers
National Telecom Public Company Limited (NT)	14,772,000
True Internet Corporation Company Limited (TICC)	1,965,000
Advanced Wireless Network Company Limited (AWN)	323,000
Triple T Broadband Public Company Limited (TTTBB)	188,000
Dtac TriNet Company Limited (DTN) *	69,000
Otar World Corporation Company Limited (OTW)	20,000
Amnex Company Limited (AMX)	20,000
Total	17,357,000

Remark : 1. *Dtac TriNet Company Limited merged with True Move H Universal Communication Company Limited, on August 3, 2023.
2. Data as of Quarter 3/2023

Source : Numbering Management Bureau, Office of the NBTC



2.2 Regulating Mobile Phone Service

Rates. Currently, mobile service operators in Thailand are divided into mobile network operators (MNOs) and mobile virtual network operators (MVNOs). There are 4 MNOs, including AWN, DTN, TUC, and NT, the service provider, which is a state enterprise owned by the Ministry of Finance. Also, there are 4 MVNOs, which are service providers that do not have licenses to use frequencies, nor do they possess their own necessary infrastructure and/or network for providing mobile phone services. Those include Loxley Public Company Limited (Loxley), the White Space Company Limited (WSP), Feels Telecom Corporation Company Limited, and redONE Network (Thailand) Company Limited. In addition, there are 2 sub-brands operated under AWN and DTN, which are GOMO by AIS, and FINN Mobile respectively.

In regulating the tariff structure of mobile phone service providers, including AWN, TUC, DTN, and NT, these providers are required to comply

with Section 1 of the Notification of the NBTC on Establishing and Regulating the Tariff Structure for Domestic Mobile Phone Services (“Notification on Tariff Structure”), and the Notification of the NBTC on Establishing and Regulating the Maximum Rates for Domestic Mobile Phone Services Beyond the Usage Limits of the Main Promotional Packages (“Notification on Rates Beyond Usage Limits”). For the overall average service rates in 2023, the average rate for voice service was 0.45 baht per minute, SMS service was 0.62 baht per message, MMS service was 1.50 baht per message, and mobile internet service was 0.10 baht per Megabyte. From all mobile service providers’ data on average service rates for each type of service in 2023, it was found that the average rates did not exceed the limits specified by the Notification of the NBTC on Establishing and Regulating the Tariff Structure for Domestic Mobile Phone Services. Details are shown in Table 50.

Table 50 : The Average Rates for Mobile Phone Services of Q3/2023

Service Rate ²⁹	Voice (Baht/Min)	SMS (Baht/SMS)	MMS (Baht/MMS)	Internet (Baht/MB)
Reference rate according to the Notification of the NBTC on Establishing and Regulating the Tariff Structure for Domestic Mobile Phone Services	0.60	0.89	2.33	0.16
Average Service Rate in 2022 ³⁰	0.50	0.78	1.73	0.10
Average Service Rate in 2023 ³¹	0.45	0.62	1.50	0.10

Source : Telecommunications Tariffs Bureau, Office of the NBTC

²⁹ To calculate the average service rate, the method is to average all promotional packages offered or provided in this quarter, derived from the average service rate per unit of each promotional package, by weighting main promotional packages in a proportion of 80 percent or 0.8, with the add-on promotional packages in a proportion of 20 percent or 0.2, based on Section 9 of the Notification of the NBTC on Establishing and Regulating the Tariff Structure for Domestic Mobile Phone Services.

³⁰ Weighted average service rates based on the number of promotional packages of the operators as of Q3/2022

³¹ Weighted average service rates based on the number of promotional packages of the operators as of Q3/2023

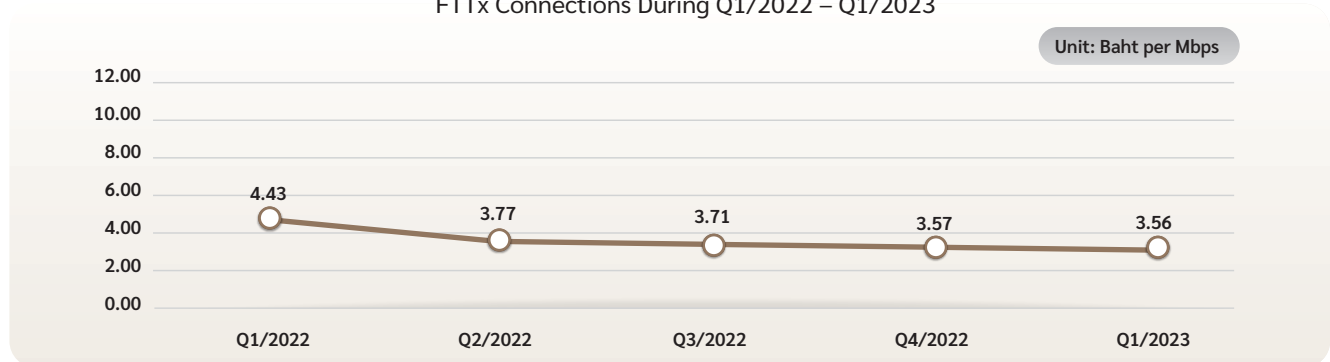


2.3 Regulating Fixed Broadband Internet

Service Rates. In 2023, the average rates for fixed broadband internet services using FTTx connections was 3.56 baht per Mbps, a decrease of 0.28 percent from the previous quarter, and a decrease of 19.67 percent from quarter 1/2022, due to the competition in the fixed broadband internet market, and the

increased readiness of advanced technology. This has led service providers to reduce rates to attract users, or enhance the quality of their services and privileges through their promotional packages. Additionally, the trend of average rates for fixed broadband internet services using FTTx connections, has steadily decreased over the past several years. Details are shown in Chart 60.

Chart 60 : The Average Rates for Fixed Broadband Internet Service using FTTx Connections During Q1/2022 – Q1/2023



Source : Telecommunications Tariffs Bureau, Office of the NBTC

2.4 Regulating International Telephone

Service Rates. Nowadays, providers of fixed-line and mobile phone services also play a role as international telephone service providers. The technology and service models for international telephone services can be categorized into 2 types as follows: (1) the International Direct Dialing (IDD) system allows users to make international calls directly from their mobile phones by dialing the number or pressing '+' as a prefix for making calls, similar to making calls from a fixed-line phone without operator assistance, and (2) the Economical Direct Dialing system enables users to make international calls at economy pricing. In 2023, there were a total of 6 service providers in the international telephone service market, including NT, AWN, DTN, TUC, AIN GlobalComm Company Limited (AIN), and Otar World Corporation Company Limited (OTARO). These service providers offer services through dialing

a prefix number, enabling international calls through the IDD system using 9 different prefix numbers. Moreover, DTN and AWN reported the additional international telephone service offerings through pressing '+', followed by telephone numbers for making international calls through the IDD system. Additionally, NT offered the Voice over Internet Protocol (VoIP) service for making international calls under the brand 'Link', allowing users to make calls via the mobile phone application. Furthermore, OTARO offered international telephone services through 2 channels, OTARO Standard, and OTARO Premium. In addition, since quarter 2/2022, NT has provided international telephone services through dialing prefix numbers for making calls abroad through the IDD system for mobile phone customers on NT networks, with lower service rates when using the '009 for NT Mobile' service. Details are shown in Table 51.

Table 51 : International Telephone Service Providers in 2023

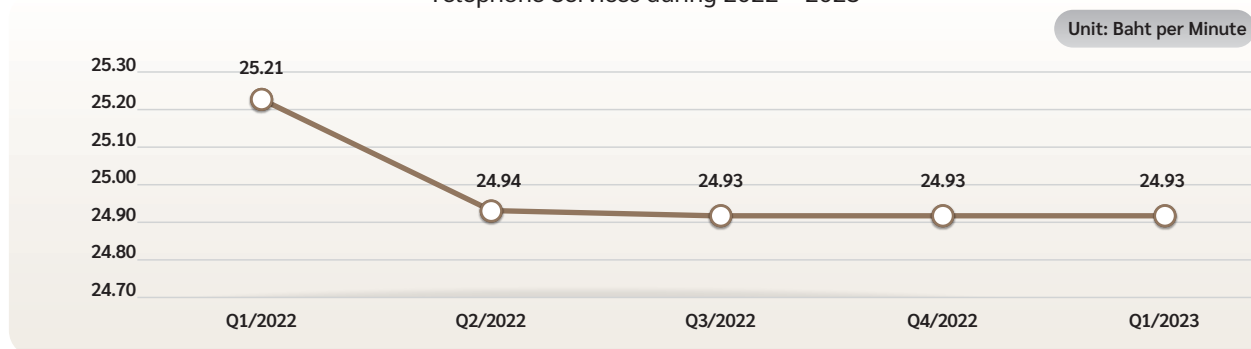
No.	Service Providers	Active Numbers	
		IDD	Economical IDD
1.	National Telecom Public Company Limited (NT)	001, 009 009 for NT Mobile	Link
2.	Dtac TriNet Company Limited (DTN)	+, 004	00400
3.	Advanced Wireless Network Company Limited (AWN)	+, 003	
4.	AIN GlobalComm Company Limited (AIN)	005	00500
5.	True Move H Universal Communication Company Limited (TUC)	006	00600
6.	Otar World Corporation Company Limited (OTARO)	Premium	Standard

Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

Considering the average rates for international telephone service of all regions in 2023, it was found that the average rate was 24.93 baht per minute, a slight increase of 0.02 percent from the previous quarter. This resulted from DTN adjusting its service rates by increasing them from 3 baht per minute to 9 baht per minute for calls to Cambodia, and from 4 baht per minute to 10 baht per minute for calls to Myanmar. This led to an increase in the average service rate for the ASEAN group from 9.02 baht per minute in quarter 4/2022 to 9.11 baht per minute. However, in other regions, the service rates remained unchanged, compared to the previous quarter.

In addition, when considering the service rates of each region, it was found that calling to destination countries in ASEAN had the lowest service rate, averaging 9.11 baht per minute, followed by calling to destinations in Asia³², at 18.35 baht per minute, Europe at 18.77 baht per minute, and the Middle East at 20.17 baht per minute respectively. However, the region with the highest service rate was Africa, with an average rate as high as 32.12 baht per minute, followed by South America at 31.31 baht per minute, North America at 28.32 baht per minute, and Oceania³³ at 27.75 baht per minute respectively. Details are shown in Chart 61 and 62.

Chart 61 : The Average Service Rate for International Telephone Services during 2022 – 2023

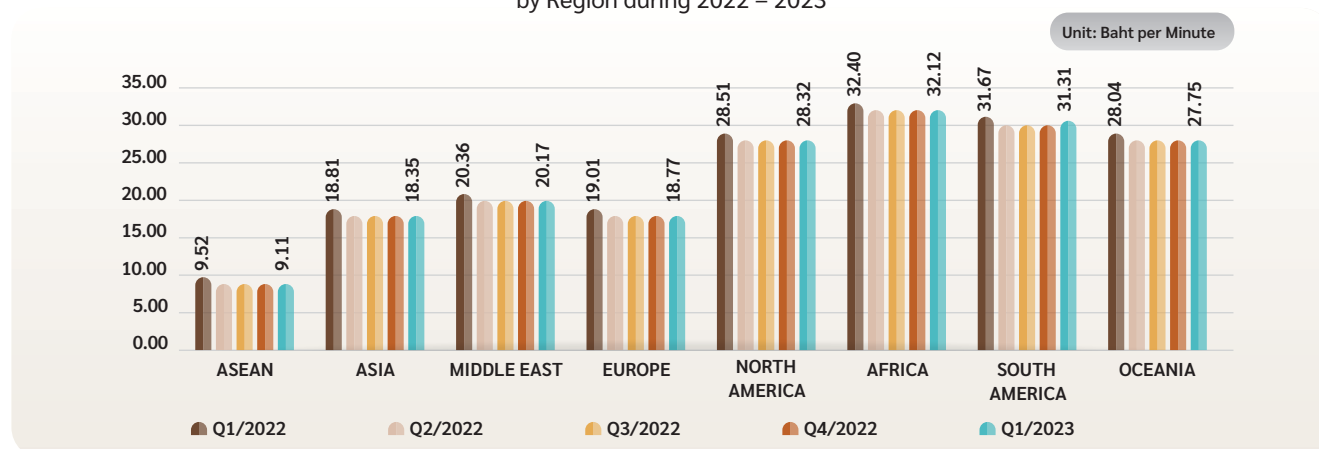
Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

³² The service rates for Asia do not include the Middle East and ASEAN countries.

³³ The service rates for Oceania countries include the service rates of Australia and New Zealand.

Chart 62 : The Average Rates for International Telephone Services
by Region during 2022 – 2023



Remark : 1. In Quarter 1/2022, the method for calculating the average service rate per minute was changed. Previously, the average service rate was calculated by averaging the rates of each number without weighting the number of countries served. The new method averages the service rates of each country for each number altogether.

2. Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

2.5 Regulating International Mobile

Roaming Service Rates. At present, the international mobile roaming services can be categorized into 3 types, which are Pay per Use, Flat Rate, and Travel Sim. The provision of each type of service has varying charges based on different factors, such as the destination country, usage volume, data service speed, and the duration of the service. The international mobile roaming service providers are 4 primary mobile phone service operators, including AWN, TUC, DTN, and NT, providing the following services:

1) Pay per Use. The international mobile roaming service rates can be classified into 6 services, including domestic call, call to Thailand, call to third country, receiving call, SMS, and data roaming services.

Using domestic call services will incur charges when the user makes a call to local numbers in the country where they are residing abroad. In quarter 1/2023, it was found that the domestic call service rates ranged between 14.97 – 177.50 baht per minute.

ASEAN was the region that had the lowest average rate for domestic call service at 17.94 baht per minute, while North America was the region that had the highest average rate for domestic call service at 46.47 baht per minute. Compared with the service rate in quarter 4/2022, the average rate for domestic call service in Africa increased by 0.34 baht per minute, accounting for 0.91 percent, while the average rates in other regions decreased by 0.04 – 2.74 percent.

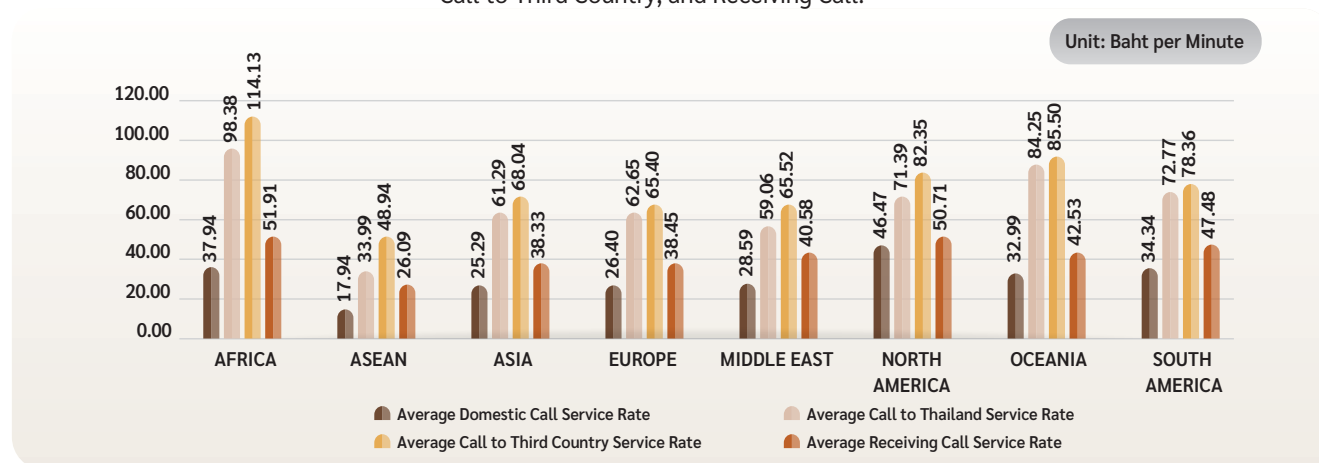
Using call to Thailand services will incur charges when the user is residing abroad. The service rates ranged between 18.76 – 280.00 baht per minute. ASEAN was the region that had the lowest average rate for call to Thailand service at 33.99 baht per minute, while Africa was the region that had the highest average rate for call to Thailand service at 98.38 baht per minute. Such average services rates increased by 0.55 baht per minute, compared to the previous quarter, accounting for 0.56 percent. However, the average rate for call to Thailand service in other regions decreased by 0.05 – 1.37 percent.



Using call to third country services will incur charges when the user makes a call to a number in a country (other than their own or the country they are currently residing in). The service rates ranged between 27.26 – 315.00 baht per minute. ASEAN was the region that had the lowest average rate for call to third country service at 48.94 baht per minute, while Africa was the region that had the highest average rate for call to third country service at 114.13 baht per minute. In quarter 1/2023, the average rates of call to third country service in all regions decreased by 0.03 – 1.27 percent.

Using receiving call services will incur charges when the user receives a call when they are residing abroad. The service rates ranged between 17.75 – 85.00 baht per minute. ASEAN was the region that had the lowest average rate for receiving call service at 26.09 baht per minute, while Africa was the region that had the highest average rate for receiving call service at 51.91 baht per minute. In quarter 1/2023, the average rates of receiving call service in all regions decreased by 0.01 – 1.74 percent. Details are shown in Chart 63.

Chart 63 : The Average Service Rates for Domestic Call, Call to Thailand, Call to Third Country, and Receiving Call.



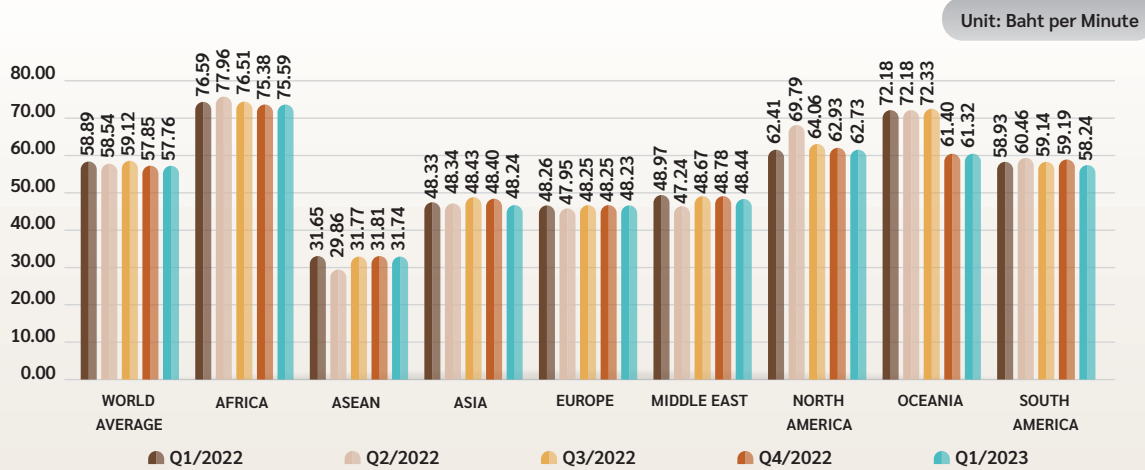
Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

The average service charge for data roaming applies when the user makes a call in 4 types, including domestic call, call to Thailand, call to third country, and call receiving. Overall, the average international mobile roaming call service rates have shown a decreasing trend since quarter 4/2022. This results from the average international mobile roaming call service rates in Africa increased by 0.28 percent, while the average international mobile roaming call service rates in other regions decreased, especially in

South America, having a decrease of 1.62 percent. As a result, in quarter 1/2023, the overall average international mobile roaming call service rates decreased to 57.76 baht per minute, accounting for 0.17 percent. When comparing the service rates of each region, it was found that ASEAN had the lowest average international mobile roaming call service rate at 31.74 baht per minute, while Africa had the highest average international mobile roaming call service rate at 75.59 baht per minute. Details are shown in Chart 64.

Chart 64 : The Average International Mobile Roaming Call Service Rates during Q1/2022 – Q1/2023



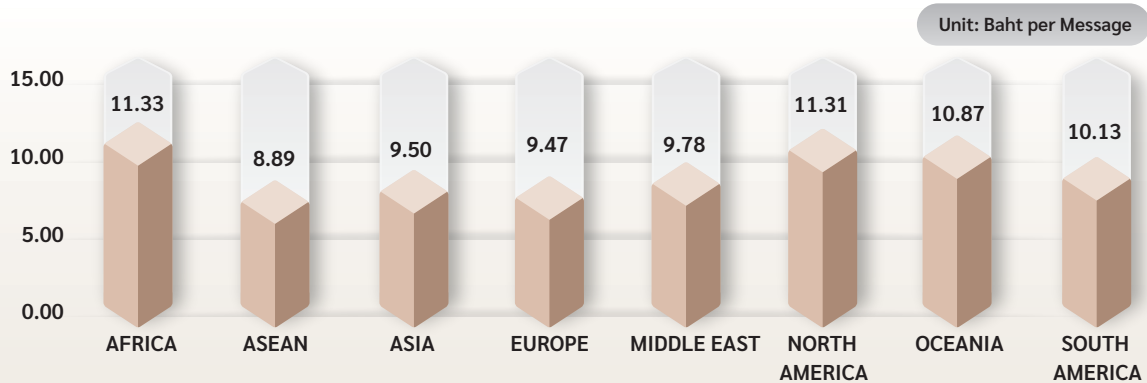
Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

The average service charge for sending short message service (SMS) applies when the user sends SMS when they are residing abroad. In quarter 1/2023, it was found that ASEAN had the lowest average SMS service rate at 8.89 baht per message, followed by Europe and Asia, at 9.47 baht

per message and 9.50 baht per message respectively. However, Africa had the highest average SMS service rate at 11.33 baht per message. Additionally, the lowest – highest service rates in various regions ranged between 6.95 – 28.00 baht per message. Details are shown in Chart 65.

Chart 65 : The Average SMS Service Rates in 2023



Remark : Data as of Quarter 1/2023

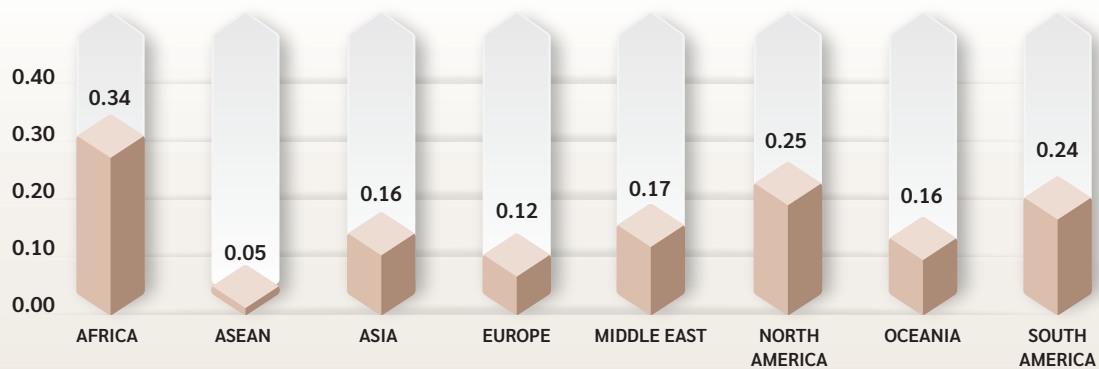
Source : Telecommunications Tariffs Bureau, Office of the NBTC

The average service rates for data roaming comprise 3G and 4G services in various regions. In quarter 1/2023, it was found that ASEAN had the lowest average data roaming service rate at 0.05 baht per KB, followed by Europe, Asia, and Oceania at 0.12 baht per KB, 0.16 baht per KB, and 0.16 baht per KB respectively. However, Africa had the highest average data roaming service rate at 0.34 baht per KB. Additionally, the lowest – highest service rates in various regions ranged between 0.02 – 0.60 baht per KB. Currently, the increasing popularity of smartphones among users has led to a rising demand for broadband services via mobile

phones. Overall, the average data roaming service rates have shown a decreasing trend, due to a reduction in the average data roaming service rates in South America from quarter 4/2022, while the average data roaming service rates in other regions have remained unchanged. As a result, in quarter 1/2023, the overall average data roaming service rates decreased by 0.44 percent to 0.20 baht per KB. However, the data roaming services are only available in certain countries, due to limitations in infrastructure that support broadband services via mobile phones. Details are shown in Chart 66 and Chart 67.

Chart 66 : The Average Data Roaming Service Rates in 2023

Unit: Baht per KB

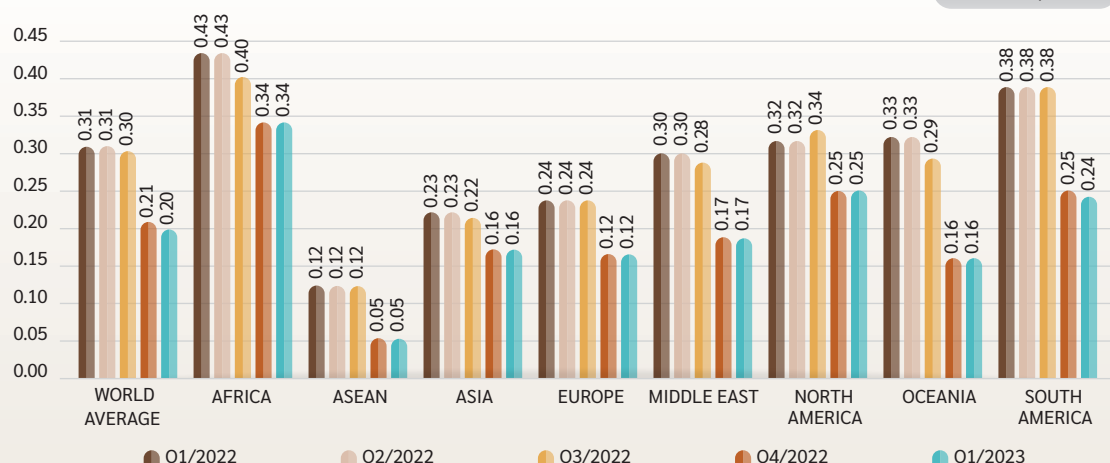


Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

Chart 67 : The Average Data Roaming Service Rates during Q1/2022 – Q1/2023

Unit: Baht per KB



Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC



2) Flat Rate. In 2023, there were 3 providers offering flat-rate international roaming services, including AWN, DTN, and TUC. AWN offers the most extensive flat-rate international roaming service, covering 180 areas across 8 regions, including ASEAN countries, Asia, Middle East countries, Europe, North America, Africa, South America, and Oceania. The service can be categorized into voice service, data service, and voice & data service. The usage model allows users to use their existing phone number without needing to change their SIM card.

The flat-rate international roaming service rates ranged between 93 – 9,500 baht. The service rate comprises (1) service rate for voice-only,

the lowest service rate was 350 baht for 7 days of usage, while the highest service rate was 2,200 baht for 30 days of usage. It is noted that DTN offers a 7-day usage period with prices ranging from 350 – 1,200 baht, depending on the volume of calling usage (minute), (2) service rate for data-only, the lowest service rate was 93 baht in ASEAN countries, while the highest rate was 9,500 baht. All 3 providers offer the service, with service periods ranging from 1 – 365 days, and (3) service rate for voice and data, the lowest service rate was 990 baht, while the highest rate was 3,490 baht, with service periods ranging from 2 - 20 days. Only AWN offers this type of service. Details are shown in Table 52.

Table 52 : The Range of Flat-Rate International Roaming Service

Region	Voice-Only	Data-Only	Voice and Data
AFRICA	350 - 2,200 Baht	280 - 9,500 Baht	998 - 3,490 Baht
ASEAN	350 - 2,200 Baht	93 - 9,500 Baht	990 - 3,490 Baht
ASIA	350 - 2,200 Baht	141 - 9,500 Baht	990 - 3,490 Baht
EUROPE	350 - 2,200 Baht	186 - 9,500 Baht	998 - 3,490 Baht
MIDDLE EAST	350 - 2,200 Baht	141 - 9,500 Baht	990 - 3,490 Baht
NORTH AMERICA	350 - 2,200 Baht	186 - 9,500 Baht	998 - 3,490 Baht
OCEANIA	350 - 2,200 Baht	141 - 9,500 Baht	990 - 3,490 Baht
SOUTH AMERICA	350 - 2,200 Baht	280 - 9,500 Baht	1,690 - 3,490 Baht

Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

However, the competition among providers in the international roaming market is limited, resulting in fewer options for users. Therefore, to provide users more choices for using services abroad via international roaming, alternative services like OTT can be used instead for calling and messaging without incurring charges, replacing traditional international roaming services.

In 2023, there were 3 providers offering Travel SIM services, including AWN, DTN, and TUC, covering 8 regions, which are ASEAN countries, Asia, Middle East countries, Europe, North America, Africa, South America, and Oceania. The Travel SIM services

offer both flat-rate plans that provide data services only, and pay-per-use plans that offer voice call services only. These SIM cards require users to switch their SIM cards, and the service rates vary based on the duration of service and the countries where the SIM card can be used. According to quarter 1/2023 data, the lowest package price remained at 93 baht, while the highest package price was 2,616 baht. The minimum data volume was at 1 GB, and the maximum volume at 15 GB. For duration flexibility, users can choose durations ranging from 2 – 365 days, with the shortest duration at 2 days, and the longest at 365 days. Details are shown in Table 53.

Table 53 : The Flat-Rate Packages for Travel SIM in 2023

Region	Package Price	Data Volume	Usage Duration
AFRICA	280 - 2,616 Baht	1 – 15 GB	3 – 365 days
ASEAN	93 - 2,616 Baht	1 – 15 GB	2 – 365 days
ASIA	112 - 2,616 Baht	1 – 15 GB	2 – 365 days
EUROPE	112 - 2,616 Baht	1 – 15 GB	2 – 365 days
MIDDLE EAST	112 - 2,616 Baht	1 – 15 GB	2 – 365 days
NORTH AMERICA	270 - 2,616 Baht	1 – 15 GB	3 – 365 days
OCEANIA	112 - 2,616 Baht	1 – 15 GB	2 – 365 days
SOUTH AMERICA	280 - 2,616 Baht	1 – 15 GB	3 – 365 days

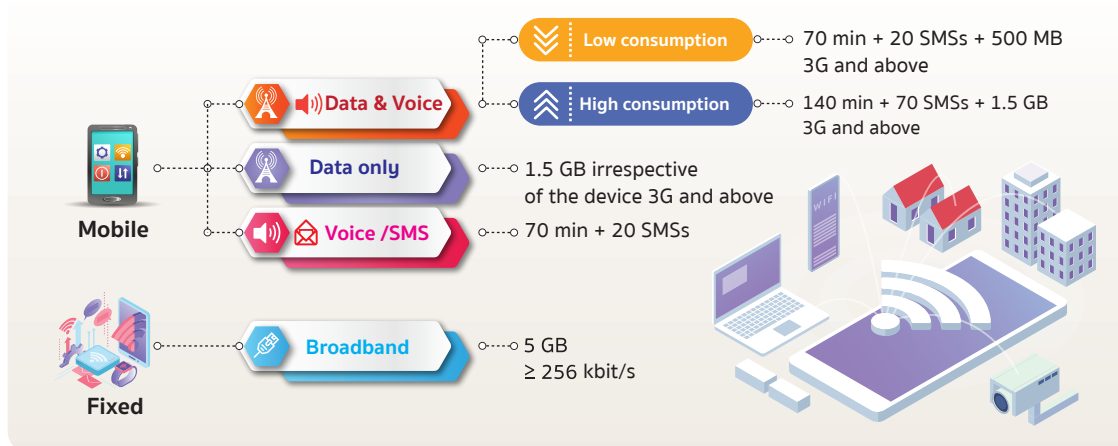
Remark : Data as of Quarter 1/2023

Source : Telecommunications Tariffs Bureau, Office of the NBTC

2.6 Comparison of Telecommunications Service Rates in Thailand and Other Countries.

The Office of the NBTC conducted a comparison of telecommunications service rates in Thailand and other countries by utilizing data from the International Telecommunication Union (ITU),

annually gathering mobile phone and fixed broadband internet service rates of the member states in the form of Price Basket. It determines the service usage rights of the promotional packages, which will be used to compare service rates between different countries, as follows:



The International Telecommunication Union (ITU) calculated the service rate by comparing with Gross National Income per capita (ratio to GNI per capita). The Office of the NBTC has utilized the service rate data from 2018 - 2022 (which is the latest data from ITU) of ASEAN countries, comparing it with Gross National Income per capita (ratio to GNI per capita), to consider both service types, comprising mobile phone service rates, and fixed broadband internet service rates, as follows:

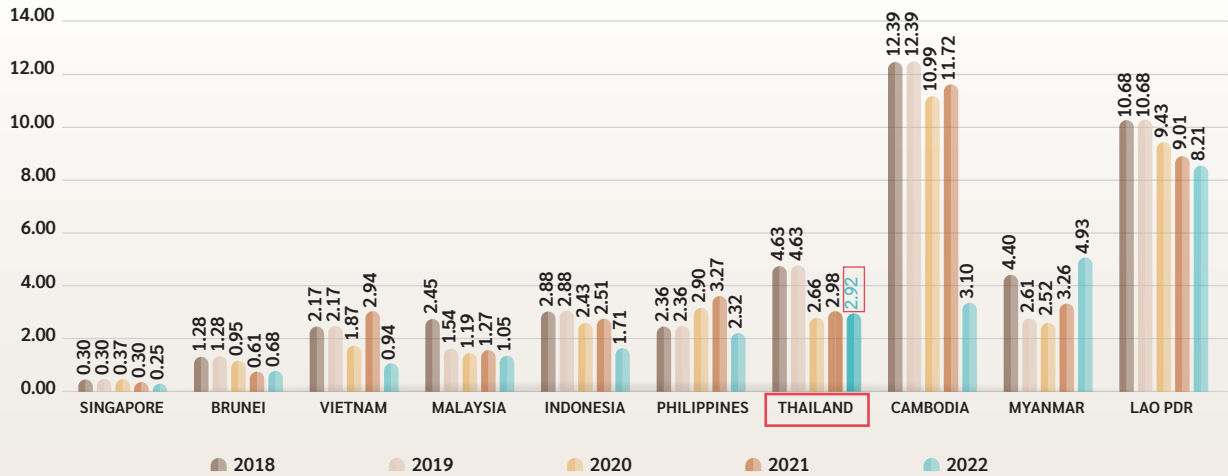
2.6.1 Mobile phone service rates.

When considering the mobile phone service rates by comparing with Price/GNI per capita, which reflects the ability to use the services in comparison to the gross national income per capita, it was found that the service rates in 2022 slightly decreased in all types of promotional packages, according to ITU's price basket. The packages include data-only mobile broadband service, or mobile data & voice service, offering high and low usage volume, as well as voice & SMS service.

It shows that Thai people have the ability to access mobile phone service at a moderate level, compared with other ASEAN countries. The comparison results

of service rates among ASEAN countries were demonstrated in the form of ratio to GNI per capita. Details are shown in Chart 68 - 71.

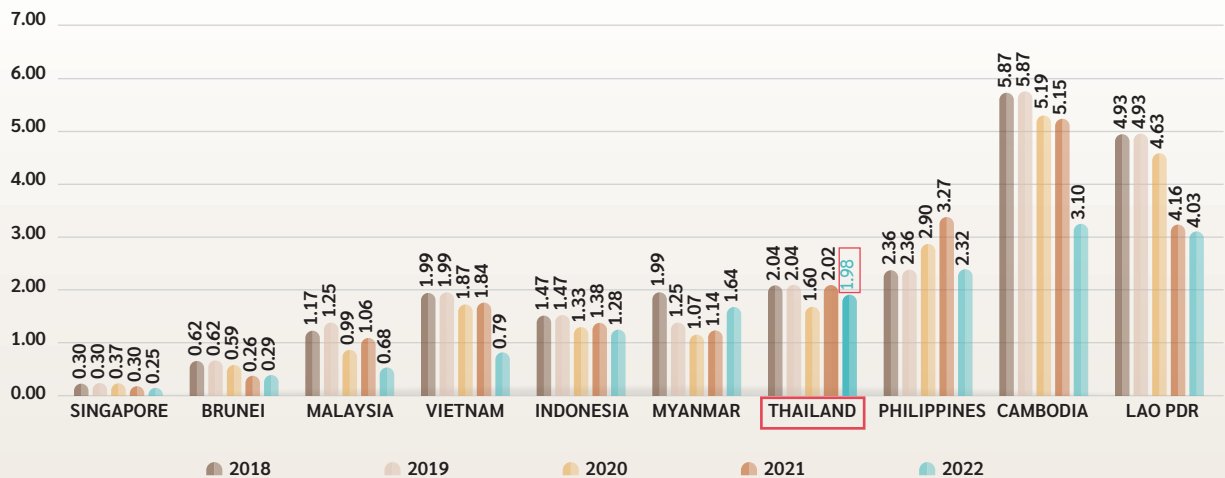
Chart 68 : Comparison of the Proportion of Mobile Phone Service Rates to Gross National Income per Capita (High Usage Volume)



Remark : Data as of 2022

Source : <https://www.itu.int/en/ITU-D/Statistics/>

Chart 69 : Comparison of the Proportion of Mobile Phone Service Rates to Gross National Income per Capita, Voice & Data Services (Low Usage Volume)

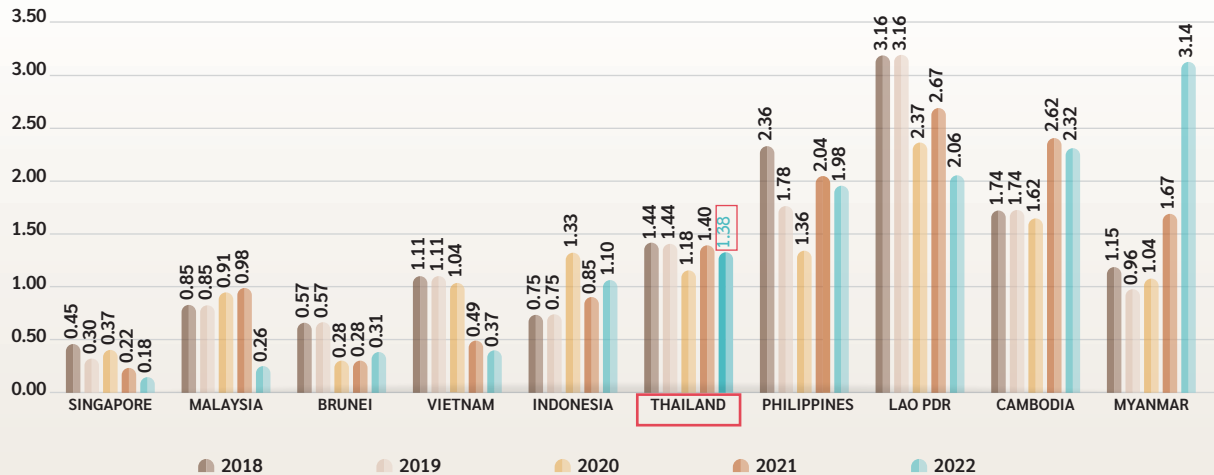


Remark : Data as of 2022

Source : <https://www.itu.int/en/ITU-D/Statistics/>



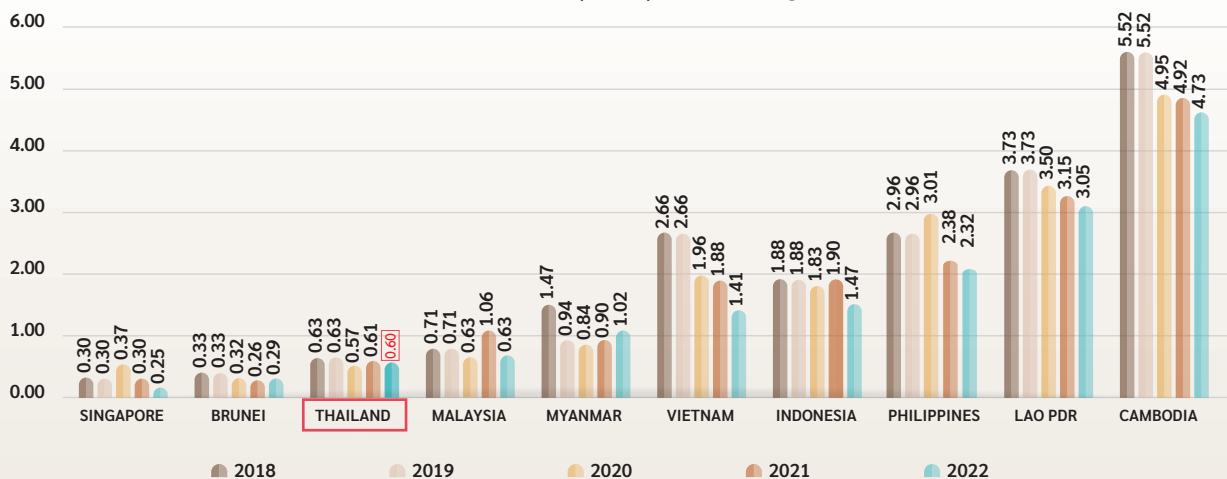
Chart 70 : Comparison of the Proportion of Mobile Broadband Internet Service Rates to Gross National Income per Capita



Remark : Data as of 2022

Source : <https://www.itu.int/en/ITU-D/Statistics/>

Chart 71 : Comparison of the Proportion of Mobile Phone Service Rates to Gross National Income per Capita (Low Usage Volume)



Remark : Data as of 2022

Source : <https://www.itu.int/en/ITU-D/Statistics/>

2.6.2 Fixed broadband internet service rates. When considering the fixed broadband internet service rates by comparing with Price/GNI per capita, which reflects the ability to use the services in comparison to gross national income per capita, it shows that Thai people have the ability to access fixed broadband internet services at a moderate level, compared with other ASEAN countries. If we consider the proportion of service rate to the gross national

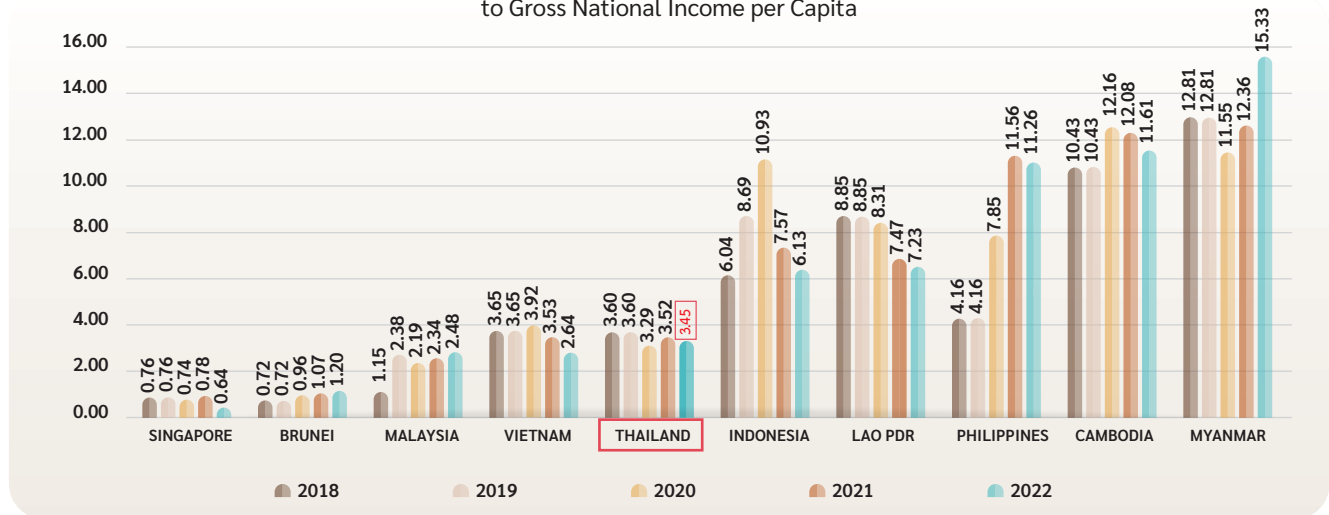
income per capita, it does not change significantly. This results from Thailand's fixed broadband internet promotional packages typically offering unlimited data service. The service fees do not change significantly, but there is a continuous increase in service speed instead. When compared to mobile phone services, specifically mobile broadband internet services, it was found that Thailand has a higher access rate for the data-only mobile broadband price basket



than for fixed broadband internet services. The price/GNI per capita ratio for the data-only mobile broadband service was 1.38 percent, while the ratio for fixed broadband internet service was 3.95 percent, a difference of 2.5 times. This aligns with the fact that Thailand has a high access rate for mobile broadband internet services, predominantly using 3G and 4G technologies. The number of mobile broadband internet subscribers at the end of quarter

4/2022 was 87,357,124, representing 131.18 percent of the total population of Thailand in 2022. Additionally, the number of fixed broadband internet subscribers at the end of quarter 4/2022 was 13,229,199. The fixed internet service penetration rate per household was 58.472 percent. The comparison results of service rates among ASEAN countries, based on the comparison with gross national income per capita, are shown in Chart 72.

Chart 72 : Comparison of the Proportion of Fixed Broadband Internet Service Rates to Gross National Income per Capita



Remark : Data as of 2022

Source : <https://www.itu.int/en/ITU-D/Statistics/>

2.7 Telecommunications Service Rate Regulation Procedures.

Approach to Implementing Top-Up Fees for Users to Reduce the Burden on Low-Income Individuals. The NBTC has considered the approach to implementing top-up fees for users to reduce the burden on low-income individuals by gathering facts on top-up practices from all mobile phone service providers that charge prepaid fees in the form of top-up service, and holding discussions with mobile phone service providers to gather information for proposing policies related to the regulation of mobile phone service rates. The topics for finding and inquiring about top-up information include: 1) all current top-up channels for prepaid services, 2) the minimum and

incremental amounts for top-ups, and 3) the top-up fees for each channel. Additionally, the appropriate methods and strategies to reduce the top-up fees burden for low-income users were discussed. The main targets are students, individuals who cannot access online channels or applications, or those daily wage earners with low incomes who prefer to top-up their mobile credit on a daily basis, etc. In addition, discussions were held regarding the submission of additional mobile phone service rate information. This data will be used for the Office of the NBTC's regulatory oversight of service rates, and to support the preparation of a new telecommunications service rate report. Based on the data, the proportion of total top-ups made through top-up machines that charge a fee, compared to the

total amount of top-ups across all available methods of all mobile phone service providers in 2022, was approximately 10 percent of the total amount of top-ups. This proportion has been steadily decreasing since 2020, where it previously exceeded 20 percent. Moreover, the Office of the NBTC has explored the top-up practices made through top-up machines that charge a fee, it was found that each top-up service provider through top-up machines charge top-up fees at a different rate. In this regard, the Office of the NBTC specified the approach to implementing top-up fees for users to reduce the burden on low-income individuals as follows:

1) Promoting other alternatives for top-ups without fees, such as top-ups via various online channels, or through mobile phone service provider units, starting at only 10 baht. The Office of the NBTC recommended that all mobile phone service providers should support and promote these alternatives top-up channels more actively. Additionally, for top-up services through the service provider units, it should be promoted to cover all areas, possibly involving teachers, local officers, direct sales staff, delivery personnel, or postal workers, etc.

2) The channel for topping up via top-up machines is a business model where the service provider is not a telecommunications licensee. They incur service costs and share revenue with the top-up machine owners, including those who operate them. Since these costs may not cover the entire service provision, fees are collected from users for topping up. Currently, there is a continuous downward trend in topping up via top-up machines. Therefore, service providers, and top-up machine owners may be allowed to engage in non-telecommunications business operations under ongoing market mechanisms. However, for the issue of fees for topping up mobile credit for students with low income who need mobile services for education, the Office of the NBTC considered that there should be a policy framework, or a request for cooperation through telecommunications licensees under the regulation of the NBTC. This is to ensure specific support or resolution of the aforementioned issues by prescribing specific conditions.



PART 4

Budget Management in 2023

Performance and Budget Expenditure of the Office of the NBTC in 2023

1. Budget Expenditure of the Office of the NBTC for the Year 2023.

The NBTC approved the expenditure budget for the Office of the NBTC for the year 2023 in a total of 6,130.430 million baht, consisting of 1) operating expenses of the NBTC and the Office of the NBTC, totaling 4,132.709 million baht, 2) project expenses, totaling 890.256 million baht, 3) operating expenses of the Performance Follow-up and Evaluation Committee, totaling 97.465 million baht, and 4) the allocated budget to the fund as required by law, totaling 1,010.000 million baht, (excluding the central budget expenditure of 140.820 million baht). As of December 31, 2023, the budget expenditure of the Office of the NBTC for the year 2023 amounted to

5,660.648 million baht, accounting for 92.34 percent of the total allocated budget, divided into the expenditure for the missions of the NBTC and the Office of the NBTC (routine work) for 3,904.391 million baht, accounting for 94.48 percent, the project expenses for 652.595 million baht, accounting for 73.30 percent, the operating expenses of the Performance Follow-up and Evaluation Committee for 93.662 million baht, accounting for 96.10 percent, and the allocated budget to the fund as required by law for 1,010.000 million baht, accounting for 100.00 percent. Details are shown in Table 54. Additionally, the comparison of the Office of the NBTC's budget expenditure plans-results for the years 2023 and 2022 are shown in Table 55 and Chart 73.

Table 54 : The Operational Plan-Result and the Expenditure Budget for the Year 2023

Unit: Million Baht

No.	Item	Fiscal Year 2023		
		Plan	Result	Percentage
1	Expenditure Budget of the Office of the NBTC	5,120.430	4,650.648	90.83
1.1	Operating Expenses of the NBTC and the Office of the NBTC	4,132.709	3,904.391	94.48
1.2	Project Expenses	890.256	652.595	73.30
1.3	Operating Expenses of the Performance Follow-up and Evaluation Committee	97.465	93.662	96.10
2	Allocated Budget to the Fund as Required by Law	1,010.000	1,010.000	100.00
Total (No. 1 – 2)		6,130.430	5,660.648	92.34
3	Central Budget*	140.820	26.972	19.15
Total (No. 1 – 3)		6,271.250	5,687.620	90.69

Remark : *Central budget is the reserved budget of advance payment in case of emergency and necessity and other expenses as specified by the NBTC, totaling 140.820 million baht.

Source : Strategic and Budget Bureau, Office of the NBTC

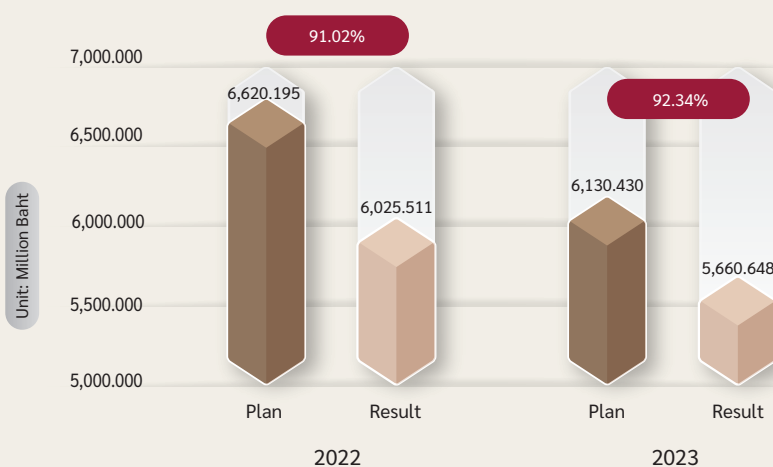
Table 55 : Comparison of the Operational Plans-Results and the Expenditure Budget for the Years 2022 and 2023

No.	Item	Fiscal Year 2022			Fiscal Year 2023		
		Plan	Result	Percentage	Plan	Result	Percentage
1	Expenditure Budget of the Office of the NBTC	5,610.195	5,015.511	89.40	5,120.430	4,650.648	90.83
1.1	Operating Expenses of the NBTC and the Office of the NBTC	4,126.234	3,848.625	93.27	4,132.709	3,904.391	94.48
1.2	Project Expenses	1,390.998	1,087.645	78.19	890.256	652.595	73.30
1.3	Operating Expenses of the Performance Follow-up and Evaluation Committee	92.963	79.241	85.24	97.465	93.662	96.10
2	Allocated Budget to the Fund as Required by Law	1,010.000	1,010.000	100.00	1,010.000	1,010.000	100.00
Total (No. 1 – 2)		6,620.195	6,025.511	91.02	6,130.430	5,660.648	92.34
3	Central Budget*	145.587	27.158	18.65	140.820	26.972	19.15
Total (No. 1 – 3)		6,765.781	6,052.670	89.46	6,271.250	5,687.620	90.69

Remark : *Central budget is the reserved budget of advance payment in case of emergency and necessity and other expenses as specified by the NBTC, totaling 145.587 million baht for 2022, and 140.820 million baht for 2023.

Source : Strategic and Budget Bureau, Office of the NBTC

Chart 73 : Comparison of the Operational Plans-Results and the Expenditure Budget for the Years 2022 and 2023*



Remark : * Excluding the central budget

Source : Strategic and Budget Bureau, Office of the NBTC

Overview of the NBTC's Performance of the Previous Year Compared to the Significant Workplan

Implementation of the Significant Policies and Workplan for the Year 2023

13 Policies

Key Achievements

1

Licensing and regulating the use of spectrum bands in a consolidated manner for the public interest.

- Preparing the draft Notification of the NBTC on Spectrum Management Master Plan B.E. 2562 (2019) (Revised Edition, B.E. ...) for managing spectrum with efficiency and cost effectiveness.
- Studying feasibility and preparing guidelines for utilizing the 3300 – 3400 MHz spectrum bands for international mobile telecommunications (IMT).
- Operations regarding spectrum allocation for international mobile telecommunications (IMT) on the 3500 MHz.

2

Allocating spectrum and prescribing licenses for broadcasting and television services according to the legal framework, and promoting diversity in content creation at all levels, to align with the evolving social context, and respond to the civil development directions in a democratic system, as well as enhancing the quality of life for the people.

- Operations regarding FM broadcasting business by revising and improving 7 regulatory criteria related to radio broadcasting business.
- Preparing for digital radio broadcasting business to provide an alternative for existing FM radio broadcasters whose trial broadcasts will be ended on December 31, 2024.

3

Enhancing the standards of broadcasting and television services, in terms of increasing competitiveness locally and internationally, promoting the production of high-quality and societal beneficial programs, and promoting the integration of licensees, program producers, and media professionals associated with broadcasting and television services, to formulate ethical standards of the profession, and regulate professional conduct or self-regulation under ethical standards.

- Revising the Broadcasting Master Plan, No. 2, B.E. 2563 – 2568 (2020 – 2025), for elevating the broadcasting and television businesses to international standards.
- Updating various rules and regulations to be more modern with a focus on light touch regulation, to align with the current state of the television industry, as well as promoting and supporting the television business.
- Creating collaboration with industrial sectors to study and strive towards the development of digital platforms as a channel for access the terrestrial television services, and defining the characteristics and types of digital platform services under the NBTC's supervision.

4

Uplifting Thailand's radio broadcasting service to international standards to foster a creative society and sustainable economy.

- Preparing the draft Notification of the NBTC on Criteria for Promoting Well-Prepared Communities and Supporting Quality Community Service Providers.
- Preparing the draft Notification of the NBTC on Criteria for Supporting the Production of Socially Beneficial Programs in the Broadcasting and Television Businesses.
- Developing personnel in the broadcasting and television businesses, and enhancing knowledge and understanding of broadcasting and television businesses.

5

Promoting and supporting the establishment of mechanisms to monitor content that impacts people, viewers, or listeners, as well as content that violates the law in broadcasting and television services, by procuring equipment and tools for content verification, and fostering engagement through networks of viewers and listeners from various communities or organizations across all regions, academics, and individuals with valuable knowledge and expertise that contributes to the development of broadcasting and television businesses.

- Preparing the draft Notification of the NBTC on Measures for Promoting the Formation of Groups Among Licensees, Program Producers, and Media Professionals Involved in Broadcasting and Television Businesses, B.E. ...
- Creating awareness of morals and ethics for broadcasting and television business operators.

13 Policies

Key Achievements

6

Restructuring the Office of the NBTC towards full-fledged digital integration and becoming a fully digital organization.

- ↳ The draft proposal on the Office of the NBTC's organizational structure has been completed. Currently, it is in the process of proposing to the NBTC meeting.
- ↳ To achieve the aforementioned goals, the Office of the NBTC's organizational structure has been revised, by adding the academic cluster to support the missions efficiently.

7

Driving the academic cluster and cultivating knowledge among the Office of the NBTC's personnel to enhance their expertise at an advanced level, elevating the Office of the NBTC to international standards, to position the organization as a leading international organization in regulating competition, and actively participating in international arenas.

- ↳ Preparing the academic recommendations for prescribing regulatory policies for broadcasting, television, telecommunications, and satellite businesses.
- ↳ Conducting a study and analysis on economic impacts for utilizing as information for policy decision-making by the NBTC.
- ↳ Building academic networks with international agencies, and exchanging knowledge through international academic symposiums.

8

Managing rights to access satellite orbital slots utilizing foreign satellite transponders, and regulating satellite service for the benefit of the nation and its citizens.

- ↳ Preparing the draft Notification of the NBTC on the Satellite Orbital Rights Management Plan (No. 2), B.E., to update details on Thailand's satellite orbital slot access rights, and offer opportunities for alternative approaches to allocate satellite orbital slot access rights.
- ↳ Organizing the auction for satellite orbital slot packages for the orbital position 78.5 degrees East, the orbital position 119.5 and 120 degrees East, and the orbital position 126 degrees East, resulting in a total of 806.502 million baht raised to public revenue.
- ↳ Granting permission to use satellite orbit/ foreign satellites.

9

Enhancing consumer protection to keep pace with challenges in the digital society, and develop efficient and up-to-date mechanisms for resolving complaints.

- ↳ Empowering consumers and enhancing people's capabilities in media literacy, as well as developing public networks in consumer's rights protection.
- ↳ Resolving the Call Center scams and SMS frauds.
- ↳ Regulating the actions considered as consumer exploitation in broadcasting, television, and telecommunications businesses.
- ↳ Promoting and protecting the rights of people with disabilities and the underprivileged to access, or acknowledge, and utilize programs in the broadcasting and television services.

10

Enhancing the capabilities of the telecommunications network by expanding the coverage of fiber network, and achieving high-speed connectivity to the gigabit level, and promoting efficient utilization of the telecommunications network for maximum benefits.

- ↳ Supporting the provision of 5G networks and deployment continuously, which can create economic value added in various industries, and elevate the quality of life for the public.
- ↳ Studying guidelines for regulatory preparation regarding 5G deployment as private 5G network.

11

Providing universal service supply for basic broadcasting, television, and telecommunications services, including services for persons with disabilities, individuals with diverse needs, and underprivileged people.

- ↳ Implementing the Universal Basic Telecommunications Services and Social service Obligation Action Plan, and the Notification of the NBTC on the Universal Services Obligation Plan No. 4 B.E. 2566 (2023).
- ↳ Preparing the draft Universal Services Obligation Plan B.E. 2566 – 2568 (2023 – 2025), to be used as a direction and goal for promoting and supporting the services for all groups of people, as well as people with disabilities, and the underprivileged.
- ↳ The project to provide mobile phone signal and broadband internet service in border areas (Zone C+), and the project to provide broadband internet service in remote areas (Zone C).
- ↳ Supporting the Cell Broadcasting System/Mobile Alert System.

12

Accelerating the communication lines arrangement, and implementing underground cabling in priority areas.

- ↳ Continuing the organization of communication lines from 2022 on routes that have not yet been completed, and implementing the Communication line Organizing Plan B.E. 2566 – 2567 (2023 – 2024), by including additional 10 districts in Bangkok to address communication line congestion in densely populated areas.
- ↳ Preparing and establishing criteria for drafting the Notification of the NBTC on Providing Last-Mile Network Service.

13

Maintaining standards of the Integrity and Transparency Assessment in the operations of the Office of the NBTC in an AA-level and striving for sustainable development.

- ↳ Receiving the score of 98.48 for the Integrity and Transparency Assessment (ITA) for the year 2023, ranking the first among other government agencies in the evaluation category, as well as receiving a prestigious ITA Award 2023 for achieving the highest ITA evaluation score among other government agencies for the fiscal year 2023.



In 2023, there were 58 projects according to the strategies, with a total budget of 890.256 million baht, classified as follows:

Strategy 1 : Elevate the good governance development and becoming a high-capacity organization in the digital era, with 11 supporting projects, totaling 480.035 million baht.

Strategy 2 : Upskill workforce for regulatory excellence and preparedness for the digital economy and society era, with 7 supporting projects, totaling 37.199 million baht.

Strategy 3 : Enhance capability in managing spectrum and satellite services for the utmost benefit of the nation and people, and elevate the potential of the NBTC regional offices for governance and public service, with 18 supporting projects, totaling 176.881 million baht.

Strategy 4 : Develop regulatory capabilities and promote broadcasting, television, and telecommunication services to comply with the changing context, with 22 supporting projects, totaling 196.141 million baht.

Overall, in 2023, 25 projects have been completed, 26 projects are currently ongoing, and 7 projects have been canceled. There are projects that are not proceeding as planned due to issues and obstacles encountered during implementation, such as: 1) In cases where there were no bidders or only one bidder in the procurement process, necessitating a new procurement process or

causing appeal, resulting in insufficient time for the organization to conduct a new procurement process in a timely manner, 2) In cases there were issues with the qualifications of bidders during the procurement process, where they did not meet the specified conditions within the defined terms of reference (TOR), it necessitated initiating the procurement process again to comply with the regulations outlined by the Ministry of Finance regarding procurement, resulting in the delay in the project contract signing process, and obstructing the project from proceeding according to the planned schedule, 3) In the case where the project for the construct of a new Office building of the Office of the NBTC has been delayed beyond the project plan, causing delays in other interconnected projects, such as infrastructure systems, information technology, and building support systems associated with the new office building, 4) In cases where regional construction-related projects were delayed due to subsequent findings that the construction design was unmatched with the actual construction site, requiring adjustments to the design before proceeding further.

When comparing the operational plan - results and the expenditure budget for the year 2023, it was found that overall, the Office of the NBTC achieved a progress rate of 68.01 percent in project execution. The total expenditure for projects amounted to 652.595 million baht, accounting for 73.30 percent. Details are shown in Table 56.

Table 56 : Summary of the Project Operational Results Compared to the Specified Operational Plan

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
Strategy 1: Elevate the good governance development and become a high-capacity organization in the digital era, 11 projects								
1	The Project on the Financial Analytic and Management System, and the Operation Monitoring System of the Research and Development Fund Bureau <u>Objective:</u> To increase efficiency of the management system of the Broadcasting and Telecommunications Research and Development Fund for Public Interest (BTFP), Office of the NBTC. Total Budget 23.178 Proposed Budget 2023 9.271 Commitment Budget 2024 13.907	9.271	Jun 1, 2023/ May 25, 2024	The project is in progress. Once completed, it will enable the Office of the NBTC to manage the Research and Development Fund Bureau’s finances, and monitor its tasks efficiently.	100.00	55.00	9.271	100.00
2	The Data-Driven Organization Preparation Project <u>Objectives:</u> To enhance the process of evaluating data management based on government data governance, and to develop an effective data management system within the Office of the NBTC, aiming to transform into a data-driven organization. Total Budget 10.434 Received Budget 2022 5.818 Proposed Budget 2023 4.616	4.616	Oct 1, 2022/ Jun 30, 2023	The project was completed according to the plan, resulting in the Office of the NBTC having the data management system for managing reports in the system, aiming towards a data-driven organization with equipment, such as the ASTRO Big Data Platform for importing, linking, and exchanging data, the Power BI Premium for creating data analysis reports, and reports for decision-making with interactive dashboard, and the KNIME for evaluating the data quality and reporting the results of data quality inspection of the Office of the NBTC.	100.00	100.00	4.420	95.75



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
3	The Project on Enhancing the Efficiency of the Office of the NBTC's One-Stop Service System <u>Objectives:</u> To develop and improve the efficiency of the information system for providing one-stop services, to support the operations of the departments that organize training session and examinations for all types of certificates in radiocommunications business, enabling them to provide information promptly and efficiently to the public and personnel within the Office of the NBTC. Total Budget 4.472 Proposed Budget 2023 4.472	4.472	Mar 28, 2023/ Dec 22, 2023	The system efficiency was completely improved. However, to run the system efficiently upon its objectives, it is necessary to consider the technical details of the software and test the system's functionality thoroughly. This resulted in the project's progress not adhering to the plan. Upon completion of the project, the office of the NBTC will be able to efficiently manage the data related to training and certification examinations for amateur radio operators, ship radio operators, and the use of frequency synthesizer radios. Additionally, it will facilitate the public in applying for training and certification examinations for all types of certificates offered by the Office of the NBTC effectively.	100.00	90.00	4.430	99.07
4	The Project on Cyber Security of the Office of the NBTC's websites <u>Objective:</u> To increase the efficiency protecting the Office of the NBTC's in website against malicious attacks. Total Budget 17.827 Received Budget 2020 2.827 Received Budget 2021 4.601 Received Budget 2022 6.000 Proposed Budget 2023 4.399	4.399	Aug 25, 2020/ Dec 22, 2023	The project was completed according to the plan. As a result, the Office of the NBTC is able to prevent cyberattacks, and reduce the volume of malicious incoming traffic directed towards its website at the network level. This also contributes to providing the public and users with security in the Office of the NBTC's information system. According to the statistics gathered after the project completion (data as from December 12, 2023 to January 12, 2024), it was found that it can protect the Office of the NBTC's website against cyberattacks at the network level, accounting for 98.33 percent.	100.00	100.00	4.399	100.00

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
5	The Single Sign-On Management System Development Project <u>Objective:</u> To develop the system for logging in the Office of the NBTC's internal work systems through the single sign-on and two-factor authentication for safe convenient operations. Total Budget 33.676 Received Budget 2022 21.889 Proposed Budget 2023 11.787	11.787	Oct 1, 2022/ Oct 30, 2023	The project was completed according to the plan. As a result, the Office of the NBTC has the Single Sign-On system, developed for facilitating users with convenience and security. Users can log-in to the system with username and password just one time, together with two-factor authentication with OTP or QR-Code (Username-Password and OTP/QR-Code Scan).	100.00	100.00	11.721	99.44
6	The Project on ERP System Improvement to Support Operations According to the New Organizational Structure <u>Objective:</u> To improve the financial management system, accounting system, budget planning system, revenue management system, and asset & inventory management system (ERP system), the organizational structure system, and their integration with the HRSS system and related parts, to ensure accurate and swift operation, according to the Office of the NBTC's new organizational structure. Total Budget 7.254 Proposed Budget 2023 7.254	7.254	-	The project was canceled.	100.00	-	-	-



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
7	The Project on Improving and Enhancing the Office of the NBTC's Human Resource Management System, and HRSS system <u>Objectives:</u> To improve and modernize the HRSS system to be faster, and more secure in terms of information security, and to develop the system to set conditions for salary increments, conferment of royal decorations, disbursement of death benefits, and employee retirement funds accurately and comprehensively. Total Budget 11.900 Proposed Budget 2023 9.520 Commitment Budget 2024 2.380	9.520	-	The project was canceled.	100.00	-	-	-
8	The Project on Information Infrastructure System and the Building Support System of the New NBTC Office buildings <u>Objective:</u> To provide infrastructure equipment, and the building support system of the Office of the NBTC's new buildings, to support new technologies. Total Budget 582.705 Proposed Budget 2023 145.676 Commitment Budget 2024 437.029	145.676	-	The project was canceled.	100.00	-	-	-

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
9	The Project for the Construction of new Office building of the Office of the NBTC Objective: To construct the new Office building of the NBTC Headoffice. Total Budget 2,743.000 Received Budget 2019 685.750 Received Budget 2020 534.133 Received Budget 2021 681.324 Received Budget 2022 420.851 Proposed Budget 2023 267.361 Commitment Budget 2024 - Commitment Budget 2025 153.581	267.361	Jan 23, 2019/ Jan 6, 2022	The project is in progress. The operational results are divided into 3 parts: 1. The construction and interior decoration of the building have progressed by 74.76 percent. 2. The project supervisor hiring are divided into 2 phases: the first phase covers the entire construction period of 33 months, and the second phase covers the 2-year warranty period for construction defects. An amendment to the contract was made to extend the construction supervision period by 4 months, and to revise the details of the supervision fee payments. The 37th payment installment was disbursed, and the overall operational progress was 94.57 percent. 3. The additional design work has been completed, inspected, and delivered. 100 percent of the payments have been disbursed.	100.00	89.77	266.495	99.68



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
10	The Project on Equipment Procurement for Detecting and Tracking the Movement of Assets under the Asset Administration System Development Project with RFID Technology (Phase 3) <u>Objective:</u> To increase efficiency of detecting and tracking the movement of the Office of the NBTC’s assets, to be accurate, fast, and comprehensive, covering both the Office of the NBTC Headoffice, and regional offices. Total Budget 5.344 Proposed Budget 2023 5.344	5.344	Mar 15, 2023/ Nov 9, 2023	The project was completed according to the plan, by installing the equipment to detect and track the movement of related assets, in order to interoperate with the Office of the NBTC’s existing Asset Management System using RFID Technology. Additionally, all related equipment has been tested, resulting in the enhanced efficiency of detecting and tracking the movement of the Office of the NBTC’s assets, to be accurate, fast, and comprehensive, covering both the Office of the NBTC Headoffice, and regional offices, to ensure that the asset registry is more accurate, complete, and comprehensive.	100.00	100.00	5.100	95.44
11	The NBTC Employee Portal Development Project <u>Objective:</u> To develop the NBTC Employee Portal, serving as tools to facilitate employees in designing and developing application programs by themselves (Citizen Developer). Total Budget 14.765 Received Budget 2022 4.430 Proposed Budget 2023 10.335	10.335	Sep 16, 2022/ Sep 15, 2023	The project was completed according to the plan, by initiating the NBTC Employee Portal, resulting in the Office of the NBTC has an overall structure that connects work processes and information systems of the Office of the NBTC, linking 4 work groups and systems, using Low-Code technology. This enhances the operational efficiency and speed, and also creates an ecosystem that leads to a digital working culture within the Office of the NBTC. Additionally, the information obtained can be used to design the office’s various operational processes, to be more streamlined and flexible.	100.00	100.00	10.296	99.62

No.	Details		Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
Strategy 2: Upskill workforce for regulatory excellence and preparedness for the digital economy and society era, 7 projects									
12	The NBTC E-learning System Development Project	Development	3.500	-	The project was canceled.	100.00	-	-	-
	<u>Objectives:</u> To create the e-learning system of the Office of the NBTC, and to train essential staff of the Office of the NBTC to perform their duties efficiently.								
	Total Budget	3.500							
	Proposed Budget 2023	3.500							
13	The project on NBTC Scholarship Program 2022 for NBTC officials (Overseas Master Degree)	Program	0.200	Jan 1, 2022/ Dec 31, 2024	The project was completed according to the plan, resulting in the Office of the NBTC having qualified personnel in fields relevant to its needs, as well as enhancing the capacity of the Office of the NBTC's personnel to excel in regulation. However, in 2022, two employees have requested scholarships. Only one employee qualified and was approved for the scholarship, leading to fewer scholarship recipients than initially planned. This discrepancy affected the budget expenditures in 2024, not aligning with the budget plan set forth.	100.00	100.00	0.00	0.00
	<u>Objective:</u> To enhance the capacity of the Office of the NBTC's personnel to excel in regulation, to be ready for transitioning to the digital economy and society.								
	Total Budget	3.300							
	Received Budget 2022	3.000							
	Proposed Budget 2023	0.200							
	Commitment Budget 2024	0.100							



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
14	The Project on NBTC Scholarship Program 2023 for NBTC officials (Overseas Master Degree) <u>Objective:</u> To develop the Office of the NBTC's personnel to be highly competent, to drive the Office of the NBTC's mission more efficiently. Total Budget 5,000 Proposed Budget 2023 3,800 Commitment Budget 2024 0.900 Commitment Budget 2025 0.300	3,800	Jan 1, 2023/ Dec 31, 2025	The project is in progress. In 2023, one person was announced as eligible for the scholarship. Currently, the scholarship recipient is pursuing their Master's degree in relevant fields, as per the prescribed course duration. This aims at enhancing the staff's capabilities to perform effectively in the Office of the NBTC, particularly in areas where expertise is needed.	100.00	50.00	2,414	63.52
15	The Omni-Channel Contact Center System Project <u>Objectives:</u> To streamline public or external agencies' communications from various channels into one unified system, through the Call Center 1200 system, as well as to enhance service efficiency, information searching, responsiveness, and complaint follow-up, aiming to create satisfaction, and deliver positive experience to the public. Total Budget 17,030 Received Budget 2022 6,812 Proposed Budget 2023 10,218	10,218	Nov 1, 2022/ Oct 31, 2023	The project was completed according to the plan. As a result, the Office of the NBTC has the management system for Omni-Channel Contact Center, to serve the public or external agencies from various channels in one unified system, to enhance the performance efficiency of the Call Center 1200. Additionally, the Office of the NBTC can perform its duties in receiving complaints and inquiries more efficiently. The system serves as a center for handling inquiries, and receiving complaints from the public and other related agencies, regarding the businesses regulated by the NBTC.	100.00	100.00	10,088	98.73

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
16	The Study Project on Computable General Equilibrium Model for Macro-economic Impact Assessment (Under the MOU between the Office of the NBTC and Victoria University, Australia) <u>Objectives:</u> To develop a CGE model for analyzing the policy impacts on economic system, and to provide the Office's personnel with the model to analyze quantitative data. Total Budget 4.250 Proposed Budget 2023 4.250	4.250	May 22, 2023/ Nov 18, 2023	The project was completed according to the plan, resulting in the Office having the CGE model for analyzing the policy impacts on the broad economic system. The model can adjust variables, and modify equations, as well as update the initial database. As a result, the Office of the NBTC can utilize the newly developed CGE model to assess the economic impacts on the NBTC's policies for the future, and utilize the data to support policy decision-making.	100.00	100.00	4.122	96.98
17	The Strategic Database System (SDS) Development Project for the Academic Cluster <u>Objectives:</u> To develop the system to be a tool for essential academic data management, enabling accurate and prompt access to academic information. To develop the website of the NBTC Research Hub, to be the center of knowledge exchange among researchers, and disseminate the academic information to facilitate the integration of essential data for academic research from both the Office of the NBTC's internal and external sources. Total Budget 8.618 Proposed Budget 2023 8.618	8.618	Jun 1, 2023/ Feb 25, 2024	It is in the system development process, aiming to be a tool for academic data management, and website development of the NBTC Research Hub as a knowledge exchange hub among researchers, and disseminate the academic information to facilitate the integration of essential data for academic research from both the Office of the NBTC's internal and external sources. However, the Office of the NBTC has reduced the project's budget to comply with established regulations and criteria, resulting in the delay in the procurement process, and contract signing. Consequently, the project implementation has not proceeded as planned.	100.00	80.00	7.228	83.87



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan			
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Percentage)
18	The Project to Survey Usage Behavior, Access to Thai Radio, Television and Telecommunications Media <u>Objective:</u> To create a database on the usage behavior and access to various types of media by the public, in order to facilitate relevant sectors to utilize this information for future benefits. Total Budget 6.613 Proposed Budget 2023 6.613	6.613	Mar 8, 2023/ Dec 31, 2023	The project was completed according to the plan, resulting in the Office having the database on the usage behavior and access to media by the public. Additionally, the Office of the NBTC can utilize the information for developing the price index in the television business, market definition analysis, market conditions & usage behavior and access to telecommunications services, and behavior data on radio and television media access. Also, the information can be utilized as the database for facilitating the analysis of other work for future benefits.	100.00	100.00	99.68
Strategy 3: Enhance Capability in managing spectrum and the satellite services for the utmost benefit of the nation and people, and elevate the potential of the NBTC regional offices for governance and public service, 18 projects							
19	The project to procure and develop a mobile licensing vehicle for the regional office of NBTC <u>Objective:</u> To procure a vehicle, and design, modify, and develop it to issue mobile licenses, and disseminate knowledge on broadcasting, television, and telecommunications businesses, as well as to create a prototype vehicle for the regional office of NBTC, to provide mobile licensing services to the public. Total Budget 14.705 Received Budget 2021 - Received Budget 2022 12.750 Proposed Budget 2023 1.955	1.955	Jul 28, 2022/ May 23, 2023	The project was completed according to the plan, resulting in greater convenience for the public and license applicants, no need to travel to the Office of the NBTC (Headquarters). It also helps save on travel expenses and time required to contact the Office of the NBTC	100.00	100.00	100.00

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
20	The project to collect and integrate the frequency/inspection station remote monitoring and control system <u>Objectives:</u> To develop, modify equipment, and the system to collect and integrate the frequency inspection station remote monitoring and control system. To maintain the inspection equipment, and enable preventive checks to ensure efficient operation. Total Budget 8.925 Received Budget 2021 - Received Budget 2022 7.586 Proposed Budget 2023 1.339	1.339	Sep 3, 2022/ Jun 29, 2023	The project was completed according to the plan, resulting in having the inspection station set for inspecting the use of stationary radio frequency, and remote-control systems, to serve as a centralized database for linking information, by integrating all sensor equipment to monitor the station readiness across designated areas of responsibility. In addition, the monitoring system was developed to notify system administrators the operational status, for further maintenance and data verification. As a result, the Office of the NBTC has the systems for inspection data collecting, and inspection station remote controlling, that facilitate efficient operations.	100.00	100.00	1.313	98.09
21	The Project on Frequency Scanners and Transmission Station Location Searching Devices Provision for 4 sets <u>Objective:</u> To procure frequency scanners, and signal transmission station locating devices, together with equipment, to ensure efficiency and alignment of the monitoring operations of the regional offices and sub-region offices of the NBTC. Total Budget 28.000 Received Budget 2021 - Received Budget 2022 21.000 Proposed Budget 2023 7.000	7.000	Oct 1, 2022/ Apr 28, 2023	The project was completed according to the plan, resulting in having the frequency scanners, and signal transmission station locating devices, together with equipment, for the office of the NBTC, Region 1 – 4 and the NBTC sub-region offices. The devices help search geolocations of the 2G – 5G base stations, scan signal channels automatically within the specified frequency range, and display the results in the form of spectrum, while scanning mobile phone networks. GPS systems, both Include GPS, or Exclude GPS, are utilized to specify locations. As a result, the regional/sub-region offices of the NBTC are well-prepared with tools and equipment for frequency monitoring, supporting current and future technologies.	100.00	100.00	6.688	95.54



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
22	The Prototype Development Project on Radio Frequency Monitoring and Management System of the National Spectrum Monitoring Center <u>Objective:</u> To develop the system prototype for radio frequency management, and spectrum inspection of the National Spectrum Monitoring Center. Total Budget 9.461 Received Budget 2022 4.257 Proposed Budget 2023 5.204	5.204	Dec 30, 2022/ Oct 25, 2023	The project is in progress. The final phase of work inspection and handover was completed on December 22, 2023, resulting in the project not being completed as scheduled, due to the need to thoroughly review the technical details of the software, and conduct comprehensive testing of the system's operations. Once the project is completed, the Office of the NBTC will have the system prototype to integrate monitoring data from all units of the Office of the NBTC, through the monitoring process, facilitated with modern equipment, that integrates the monitoring results with related information systems. This can be utilized for supporting decision-making, and establishing the nation's spectrum management policies sustainably.	100.00	90.00	5.160	99.15
23	The project on Radio Broadcast Analyzing and Transcription System Development <u>Objective:</u> To develop the radio broadcast analyzing and transcription system. Total Budget 9.502 Received Budget 2022 4.276 Proposed Budget 2023 5.226	5.226	Dec 30, 2022/ Sep 25, 2023	The project is in progress. The final phase of work inspection and handover was completed in December 2023, resulting in the project not being completed as scheduled, due to the need to review the technical details, and conduct comprehensive testing of the system's operations. Once the project is completed, the Office of the NBTC will have the system to facilitate transcription and analysis of voice data used, from the on-air radio broadcasting record. This also elevates the operational efficiency of staff, to monitor radio program contents and advertisements, conveniently, promptly, and automatically.	100.00	90.00	5.162	98.77

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
24	The Procurement of Remote-Controlled Radio Frequency Monitoring Station, for 5 Station Project <u>Objective:</u> To enhance efficiency of frequency inspection to cover areas nationwide. Total Budget 59.375 Proposed Budget 2023 8.907 Commitment Budget 2024 50.468	8.907	Sep 1, 2023/ Sep 1, 2024	The project is in progress. During the procurement process with e-bidding, however, there were concerns raised about the qualifications of the bidder, submitted to the Government Procurement Problem Diagnosis Committee. The Comptroller General's Department, resulting in the delay in the procurement process, and the project implementation has not proceeded as planned.	100.00	0.00	0.00	0.00
25	The Procurement of Handheld Real-Time Bandwidth Radio Frequency Diagnostic Device for 10 MHz - 42 GHz Frequency Bands for 22 Sets Project <u>Objective:</u> To procure 22 sets of portable Real-Time Bandwidth radio frequency analyzers for 10 MHz – 42 GHz Frequency Bands. Total Budget 53.900 Proposed Budget 2023 13.475 Commitment Budget 2024 40.425	13.475	Jul 1, 2023/ Mar 1, 2024	The project is in progress. However, during the procurement process with e-bidding, there were 2 bidders, but only one qualified the conditions specified in the bidding documents. Therefore, a new tender process had to be initiated, to comply with the Ministry of Finance's regulations on procurement. As a result, the project implementation has not proceeded as planned. However, once the project is completed, the Office of the NBTC will have the highly efficient radio frequency analyzers to support modern technologies, and to be used in the field work as a standard.	100.00	0.00	0.00	0.00



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
26	The Project on Enhancing Spectrum Tracking and Reporting System and Spectrum Regulating with Video Streaming Technology <u>Objective:</u> To procure equipment for monitoring and reporting frequency usage inspection and regulation with video streaming technology. Total Budget 6.247 Proposed Budget 2023 0.937 Commitment Budget 2024 5.310	0.937	Jul 25, 2023/ May 19, 2024	The project is in progress. However, due to the delay in the procurement process, the project implementation has not completed as planned. Once the project is completed, the Office of the NBTC will have the frequency usage inspection and regulation report with video streaming technology, enabling more flexible and faster mission operations for inspection and offender arrest.	100.00	50.00	0.912	97.32
27	The Procurement of Data Storage Equipment for Radio Broadcasting Stations, for 48 Sets Project <u>Objective:</u> To procure 48 sets of data storage equipment for radio broadcasting stations. Total Budget 22.455 Proposed Budget 2023 3.368 Commitment Budget 2024 19.087	3.368	Dec 1, 2023/ Dec 1, 2024	The project is in progress. Due to the necessity of reviewing the draft Terms of Reference, to clarify the equipment installation locations, it is important to consider the area coverage, and to have a process for surveying and coordinating with agencies, to obtain initial installation permissions with clear details. Additionally, as the equipment used is specialized, it needs the data study to ensure that the estimated price follows the Comptroller General's Department's guidelines. In the procurement process with e-bidding, there were 2 bidders, but only one qualified the conditions specified in the bidding documents. Therefore, a new tender process had to be initiated, to comply with the Ministry of Finance's regulations on procurement. As a result, the project implementation has not proceeded as planned.	100.00	0.00	0.00	0.00

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
28	The Project on R&S Control Center Nester BSM for Fix Station Monitoring (5 sensors) of the office of the NBTC, Region 1 <u>Objective:</u> To procure tools to monitor both fixed and mobile cellular-technology radio frequency usage, to enhance the efficiency of monitoring and regulating the frequency usage of communication operators from various agencies that utilize cellular technology. Total Budget 30,452 Received Budget 2021 - Received Budget 2022 7,672 Proposed Budget 2023 22,780	22,780	Dec 30, 2022/ Jun 27, 2023	The project was completed according to the plan, resulting in the Office of the NBTC having highly-efficient tools for detecting irregularities and communication interference during royal ceremonies. These tools can automatically pinpoint the locations of both licensed and unlicensed mobile phone base stations in real-time, allowing the collected data to be utilized for rapid operational decision-making.	100.00	100.00	22,727	99.77
29	The Project on Prototype Development of NBTC Spectrum Monitoring Regional Center <u>Objective:</u> To procure the video wall system, and the system to monitor and analyze the radio frequency usage data, for developing the spectrum monitoring center in the Office of the NBTC, Region 1 (Prototype). Total Budget 9,732 Received Budget 2022 6,326 Proposed Budget 2023 3,406	3,406	Dec 29, 2022/ Jun 26, 2023	The project was completed according to the plan, resulting in having the systems for the spectrum monitoring center prototype in the Office of the NBTC, Region 1, and the Sub-region under its responsibility. The systems are used to monitor, collect, and analyze data regarding frequency management in designated areas. In addition, the equipment for displaying the frequency usage monitoring results has been developed, to support the National Spectrum Monitoring Center establishment of the Office of the NBTC. Also, the collected data can be used for operational decision-making more efficiently, promptly, and in a timely manner.	100.00	100.00	3,304	97.01



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
30	The Construction and Building Assembly Project of the NBTC Sub-region Office (Roi-et)	48.319	Dec 29, 2023/ Aug 19, 2025	The project is in progress. As the contract of the office building construction project for the NBTC Sub-region Office (Roi-et), with assembly buildings, was signed on December 28, 2023, the project implementation has not proceeded as planned.	100.00	10.00	44.842	92.80
	<u>Objective:</u> To serve as an administration center for regulating broadcasting, television, and telecommunications businesses in the areas of responsibility, accommodating internal departments adequately, ensuring convenience, and facilitating efficient operations for staff and users.							
	Total Budget	69.027						
	Received Budget 2022	-						
	Proposed Budget 2023	48.319						
	Commitment Budget 2024	-						
31	Commitment Budget 2025	20.708		The project was canceled.	100.00	-	-	-
	The Security System Integration Project of the Office of the NBTC, Region 2	1.991	-					
	<u>Objective:</u> To integrate the security system of the Office of the NBTC, Region 2, with modern technology, ensuring the safety of the Office's assets, staff, as well as people as users.							
	Total Budget	6.636						
	Received Budget 2022	4.645						
	Proposed Budget 2023	1.991						

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
32	The Employee Accommodation Construction Project of the Office of the NBTC, Region 2 <u>Objective:</u> To construct employee housing of the Office of the NBTC, Region 2 (construction pending parts), for 5 buildings (9 units). Total Budget 12.102 Proposed Budget 2023 12.102	12.102	Dec 29, 2023/ Aug 24, 2024	The project is in progress. However, during the procurement process with e-bidding, there was only one bidder submitting the proposal. Therefore, a new tender process had to be initiated, to comply with the Ministry of Finance's regulations on procurement. In addition, the Comptroller General's Department announced the adjusted loan interest rates, used as a basis for calculating the standard construction cost, and the adjustment of the new Factor F table. It became necessary to review and set a new estimated price, and seek approval again. Consequently, the project implementation has not proceeded as planned.	100.00	10.00	10.990	90.81
33	The Project on Landscape Architecture Construction with Building Assembly of the NBTC Sub Region office (Chiang Rai) <u>Objective:</u> To ensure that the landscape architecture of the NBTC Sub Region office (Chiang Rai) is aesthetically pleasing, safe for life and property, and provides a suitable working environment to support the Office's missions. Total Budget 30.500 Received Budget 2021 - Received Budget 2022 20.740 Proposed Budget 2023 9.760	9.760	Nov 1, 2022/ Oct 26, 2023	The project is in progress. However, due to many construction design conflicts, the construction is pending, leading to approval seeking for construction timeframe extension, and contract amendment. As a result, the project implementation has not proceeded as planned.	100.00	30.00	7.060	72.34



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
34	The Project on Spectrum Propagation Monitoring Station for the Regulation of the Office of the NBTC, Region 4 <u>Objective:</u> To establish the monitoring station for electromagnetic wave propagation at all-time, such as hospitals, primary schools, as well as monitoring signal interference with medical devices, which may affect patient treatment, and impact electromagnetic waves in the area of the Office of the NBTC, Region 4. Total Budget 9,940 Received Budget 2022 4,500 Proposed Budget 2023 5,440	5,440	Dec 16, 2022/ Dec 10, 2023	The project is in progress. The final work was accepted, and the project payment was approved on December 28, 2023. Once the project is completed, the Office of the NBTC will have 3 all-time monitoring stations for electromagnetic wave propagation in the susceptible to interference from signal disturbances, affecting equipment or tools that are sensitive to frequency waves, and effect on health. This aims to improve the electromagnetic wave propagation monitoring and inspection, to cover more frequency ranges, as well as to build trust among the public in the Office of the NBTC's regulation in wave propagation.	100.00	90.00	5,430	99.81
35	The Office Building Construction Project for the NBTC Sub-Region Office (Chiang Rai) <u>Objective:</u> To construct the office building for the Office of the NBTC, Region 3 providing a workplace for the Office of the NBTC's staff, and supporting the NBTC Sub-Region office (Chiang Rai)'s mission. Total Budget 14,414 Proposed Budget 2023 14,414	14,414	Aug 29, 2019/ Nov 27, 2023	The project is in progress. However, due to approval seeking for contract amendment, to adjust the design, and change some materials and cost of work, the procurement acceptance committee could not complete the inspection and acceptance for all 4 stages of the aforementioned delivery. Therefore, the chairman of the committee sent the letter to the contractor, on December 6, 2023, explaining that they will be able to inspect and accept the work once the employer approves the amendments to the construction contract. Currently, it is in the process of requesting additional amendments to the contract for approval, resulting in the project implementation not proceeding as planned.	100.00	80.00	14,414	100.00

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
36	The Office Building Construction Project for the Office of the NBTC, Region 3 <u>Objective:</u> To construct the office building for the Office of the NBTC, Region 3, as the Office of the NBTC's staff workplace, and supporting the Office of the NBTC, Region 3's mission. Total Budget 11.258 Proposed Budget 2023 11.258	11.258	Oct 28, 2020/ Jul 7, 2023	The project is in progress. However, there was approval seeking for contract amendment according to the measures to assist businesses during the COVID-19 pandemic, as well as the Committee for Adjudication of Procurement and Public Procurement Management criteria and conditions. In addition, there were some unclear and incomplete design aspects related to certain parts of the roofing structure and drainage system, which required joint decisions with the architect. The architect's adjustments have impacted some completed work, and hindered progress on other parts of the project. As a result, the project implementation has not proceeded as planned.	100.00	75.00	11.258	100.00
Strategy 4: Develop regulatory capabilities and promote broadcasting, television, and telecommunication services to comply with the changing context, 22 projects								
37	The Project on Enhancing Online Data Monitoring System Efficiency <u>Objective:</u> To enhance the efficiency in collecting, analyzing, and storing data on websites and social networks, keeping in pace with technology dynamic, and supporting the increased data storage requirements from various agencies, and ensuring sufficient user licenses, to meet the usage demands. Total Budget 19.890 Received Budget 2022 10.000 Proposed Budget 2023 9.890	9.890	Jul 1, 2022/ Feb 25, 2023	The project was completed according to the plan, resulting in having the online data monitoring and analysis system, increasing the system user licenses to collect, analyze, and store data on websites and social networks efficiently, as well as integrating the enhanced system with the existing systems to operate smoothly, with increased number of user licenses. As a result, the Office of the NBTC, and other related agencies, can search, monitor, and analyze data on the internet, communication systems, and online social media more effectively, resulting in mission accomplishment of each agency.	100.00	100.00	9.890	100.00



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
38	The Project to study Guidelines for Thailand's Television Broadcasting Regulation Development to Match the Changing Ecosystem of the Industry <u>Objective:</u> To study regulatory criteria for the television business in every aspect, collect feedback from related sectors to develop guidelines for regulating Thailand's television business, as well as to prepare the draft criteria for regulating audiovisual broadcasting services provided via networks other than broadcast or television networks. Total Budget 4.832 Received Budget 2022 3.835 Proposed Budget 2023 0.997	0.997	Apr 29, 2022/ Apr 23, 2023	The project was completed according to the plan, having recommendations for developing or revising regulatory criteria of Thailand's television business, to align with the evolving ecosystem of the industry, together with the significant summary of research work under the project as published in the book "The Ecosystem of Thai Television and Regulatory Approaches in the Streaming Era". This leads to the Office of the NBTC having the recommendation report that can be utilized to develop suitable regulations for Thailand's television business.	100.00	100.00	0.997	100.00
39	The Project on Social Dimensional Output Monitoring and Evaluation with CIPP Model for Broadcasting Cluster <u>Objective:</u> To study, analyze, monitor and evaluate the project outcomes in the social aspect of the broadcasting cluster, to propose the results to the policymakers. Total Budget 4.400 Received Budget 2022 3.750 Proposed Budget 2023 0.650	0.650	Apr 29, 2022/ Apr 28, 2023	The project was completed according to the plan, resulting in having the recommendation report for developing the Office of the NBTC's projects in overall social aspect, which can be used to support decision-making in advancing social impact work.	100.00	100.00	0.650	100.00

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
40	The Project on Enhanced Database Development with Data Visualization for Broadcasting Cluster <u>Objective:</u> To develop the database of the broadcasting cluster, to disseminate data via the online data center, and to enhance the cluster's data into data visualization format. Total Budget 3.500 Proposed Budget 2023 3.500	3.500	-	The project was canceled.	100.00	-	-	-
41	The Project on Live Broadcasting and Sport Competition and Thailand Important Event News Reporting Center <u>Objective:</u> To fully improve and modernize the live broadcasting and news reporting center for sports competitions and important events of Thailand, supporting 4K technology, and preparing for live broadcasting and reporting on the Asian Games 2022. Total Budget 76.097 Received Budget 2022 38.049 Proposed Budget 2023 38.048	38.048	Dec 30, 2022/ Dec 24, 2023	The project was completed, aiming to enhance the efficiency and operational preparedness of the live broadcasting center. In addition, the center can be utilized to enhance learning literacy for various systems continuously. Furthermore, in 2023, there were live broadcasts of the Asian Games competitions, held in Hangzhou, People's Republic of China, during September 23, 2023 to October 8, 2023. Also, all systems were completely tested, and will be utilized for further live broadcasting and news reporting for sports competitions and important events of Thailand.	100.00	100.00	37.591	98.80



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
42	The Project on System Development to Support Transition in Broadcasting and Television Businesses Licensing <u>Objective:</u> To develop the system to support transition in broadcasting and television licensing, according to legal permission to use frequency and operate broadcasting and television services, as well as licensing and regulation in broadcasting and television businesses, moving towards digitalization. Total Budget 9.737 Received Budget 2022 7.000 Proposed Budget 2023 2.737	2.737	Apr 29, 2022/ Jul 22, 2023	The project was completed according to the plan, resulting in having the system to accommodate trial radio broadcasting licensees, television business operators, and new operators, to access the licensing system through the internet system conveniently, accurately, and efficiently. As a result, the Office of the NBTC, and other related agencies, can operate the new system with the existing systems efficiently, facilitating work operations, which leads to accountable, faster, and more efficient regulation in the broadcasting and television businesses, as well as maximizing benefits to the public.	100.00	100.00	2.737	100.00
43	The Program Content Monitoring and Analytical System Development Project <u>Objective:</u> To develop the system to analyze and monitor food and drugs product advertising contents, and to provide tools for monitoring and regulating licensees who provide audiovisual services, to comply with laws, notifications, criteria, and licensing conditions regarding food and drugs product advertisement. Currently, the project progress is in the 3rd phase of developing the study report of the analysis system, and auditing program content. Total Budget 15.727 Proposed Budget 2023 12.582 Commitment Budget 2024 3.145	12.582	May 11, 2023/ May 4, 2024	The project is in the system development process, to create tools for monitoring and regulating licensees, or authorized entities, who provide audiovisual services, to comply with laws, notifications, criteria, and licensing conditions regarding food and drugs product advertisement. Currently, the project progress is in the 3rd phase of developing the study report of the analysis system, and auditing program content.	100.00	75.00	12.582	100.00

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
44	The Collaborative Project for Producing the Court Circular, and Live Broadcasting Royal and State Ceremonies, for Broadcasting or Television Service Provision <u>Objective:</u> To ensure that authorized entities, or broadcasting or television business licensees disseminate the Court Circular with the same content and format appropriately, in accordance with the NBTC Notifications, as well as to establish an appropriate agency to efficiently produce the Court Circular that can be widely disseminated. Total Budget 15.000 Proposed Budget 2023 15.000	15.000	Jan 1 2023/ Dec 31, 2023	The project was completed according to the plan. The Office of the NBTC, and the Office of Television Pool of Thailand, by Royal Thai Army Radio and Television, have collaborated in producing the Court Circular, and live broadcasting royal and state ceremonies, for broadcasting and television service provision. As a result, the broadcasting or television business licensees can disseminate the Court Circular with the same content and format appropriately, and the public receive news and information comprehensively regarding His Majesty the King, and all members of the Royal Family.	100.00	100.00	15.000	100.00
45	The Project on Behavior Survey and Thailand Radio Listener Popularity Data Analysis <u>Objective:</u> To survey behavior and analyze popularity data of radio listeners in Thailand, listening through various channels, such as online radio, and analyze the collected data of radio listeners in Thailand. Total Budget 6.678 Proposed Budget 2023 6.678	6.678	Jul 22, 2023/ Jan 17, 2024	The project is in progress. However, the procurement process has changed from the previous selection method to the e-bidding method. The working group for reviewing the draft terms of reference (TOR) considered that the survey process was not complicated. Therefore, they recommended revising the draft TOR to use e-bidding criteria, resulting in the contract signing not proceeding according to the planned schedule.	100.00	70.00	4.420	66.19



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
46	The Management System Development Project for Technical Standard Inspection of Radio Transmitter Devices <u>Objective:</u> To develop the system to link data from radio broadcasting stations, according to the FM Radio Broadcasting Frequency Plan, radio broadcasting stations, according to the Low-Power FM Radio Broadcasting Frequency Plan, and authorized trial radio broadcasting stations, under criteria, with the existing broadcasting and television database system of the Office of the NBTC. Total Budget 5.300 Proposed Budget 2023 5.300	5.300	Aug 11, 2023/ Mar 7, 2024	The project is in the process of system development, to connect with the existing broadcasting and television database system of the Office of the NBTC. However, in 2023, the NBTC prescribed a policy to amend 7 NBTC Notifications, including the Notification of the NBTC on the Technical Standard Testing of Low-Power FM Radio Transmitters. Such notification amendments may result in not needing to use the system; thus, the implementation has been postponed. Subsequently, it was found that the notification amendment did not affect the system usage, so it is advisable to initiate the process. As a result, the operations have not proceeded as planned.	100.00	80.00	4.280	80.75
47	The project on Illegal Content Detection System for Regional Radio and Television Broadcasting-Phase 2 <u>Objective:</u> To develop tools to facilitate illegal advertising content monitoring from broadcasting via radio or television stations. Total Budget 130.000 Received Budget 2022 65.000 Proposed Budget 2023 20.000 Commitment Budget 2024 45.000	20.000	-	The project was canceled.	100.00	-	-	-

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
48	The Project on Telecommunications Service Database and Analytical Report System Development for telecommunications data management <u>Objective:</u> To develop the regulatory database, and the analytical report system for integrating the telecommunications business monitoring and regulating systems, used to send recommendations for enhancing capacity of mobile phone service provision appropriately. Total Budget 10.000 Received Budget 2022 7.000 Proposed Budget 2023 3.000	3.000	Dec 29, 2022/ Oct 24, 2023	The project was completed according to the plan, resulting in having the telecommunications database, developed by integrating databases from various systems, as well as having analytical reports for managing the Telecommunications Cluster's data from reliable sources. As a result, the Office of the NBTC has sufficient information for various policy decision-making from the analytical reports for telecommunications data management.	100.00	100.00	1.860	62.00



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
49	The Project on Mobile Service Consumer Behavior Survey via Online Application (3rd Year) Objective: To study and survey consumer behavior on mobile phone usage, and utilize the data to analyze and compare the continuous changes in consumer behavior, for enhancing capacity of mobile phone service provision appropriately, and for prescribing plans and policies, and regulatory measures efficiently. Total Budget 8,813 Received Budget 2022 3,966 Proposed Budget 2023 4,847	4,847	Dec 16, 2022/ Dec 15, 2023	The project is in progress. The data was collected from sample groups and survey results, necessary for studying usage behavior from collected data in the 'NetCare' application of the Office of the NBTC, by linking via API or View Table, and collecting the data in the database. This aims to display the outcomes along with the analysis of data from the application. The application was designed and improved to support the new version development in the future, and to connect to the Office of the NBTC's applications or website. However, since the data linkage from the NetCare application needs the impact assessments, to comply with the personal data protection laws, it needs to conduct the assessments for data usage objectives, impact on personal data protection, as well as carefully protecting personal data before data linkage. Consequently, the operations have not proceeded as planned. However, once the project is completed, it will result in the public understanding of mobile phone service usage behavior, leading to fostering sustainable national telecommunications business promotion and development, based on evidenced facts, including survey results used to incorporate future policy-making.	100.00	60.00	4,622	95.36

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
50	The Bangkok's Communication Lines Survey and Database Project <u>Objective:</u> To explore and organize communication lines on electric poles, or routes in the areas, in order to prioritize routes that are important, or necessary for installing underground communication systems, or organizing communication lines. Total Budget 20.477 Received Budget 2022 - Proposed Budget 2023 10.239 Commitment Budget 2024 10.23	10.239	Sep 16, 2023/ Sep 9, 2024	The project is in progress. However, during the e-bidding process, there were bidders whose offers did not meet the specified criteria. Therefore, a new tender process had to be initiated, to comply with the Ministry of Finance's regulations on procurement. As a result, the project implementation has not proceeded as planned. However, once the project is completed, the Office of the NBTC will have the geographic information system, and the application that can access communication line route information in Bangkok, analyze routes with excessive communication lines that cannot be approved for installation, and identify routes where installation is permissible. This information aids in appropriate planning routes for organizing communication lines, or bringing them underground.	100.00	60.00	8.423	82.27
51	The Communication Lines Management System Project for People's Safety (P-safe) <u>Objective:</u> To develop a system for submitting public complaints to operators, and responding to the complainants about the corrective actions, through the electronic management system in a timely manner, aligning with the digital organization development policy. Total Budget 4.607 Received Budget 2022 - Proposed Budget 2023 2.534 Commitment Budget 2024 2.073	2.534	Mar 18, 2023/ Dec 12, 2023	The project was completed, resulting in having the management system to rectify communication lines for public safety. The system aids the Office of the NBTC to resolve complaints, and monitor operators' corrective actions promptly. This reduces the risk of danger to the public, and ensures that such complaints are resolved quickly through electronic channels.	100.00	100.00	2.534	100.00



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan			
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)
52	The Searching and Arresting System Development Project <u>Objective:</u> To improve management, and to develop a database system for legal search and arrest, for supporting consideration of the Office of the NBTC's executives, as well as to link the data with the Office of the NBTC's related systems, both at the cluster and organization levels. Total Budget 18,997 Received Budget 2022 5,699 Proposed Budget 2023 13,298	13,298	Sep 1, 2022/ Aug 26, 2023	The project was completed according to the plan, resulting in the Office of the NBTC's authorized officials or license issuers applying the system to search and check radiocommunication device licenses, and all types of related licenses, more conveniently and quickly, reducing work process. Moreover, it can search for all types of radiocommunication devices deemed illegal, according to laws regarding radiocommunications, from various online platforms, by linking data of illegal devices from any platform. This results in efficient telecommunications regulation, and active law enforcement, which lead to reducing offenses in radiocommunication device usage, according to the Radiocommunications Act B.E. 2498(1955), and its amendment.	100.00	100.00	12,851
							96.64

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
53	The Consultant-Hiring Project for Telecom wholesale Roadmap Preparation <u>Objective:</u> To develop the Telecom Wholesale Roadmap. Total Budget 8.863 Proposed Budget 2023 2.659 Commitment Budget 2024 6.204	2.659	Aug 19, 2023/ Jun 13, 2024	The project is in progress. However, during the procurement process, a company that was not selected with the highest score has submitted an appeal regarding the procurement results, requesting details on the selection process. On June 21, 2023, the Office of the NBTC submitted a letter with its opinion on the procurement appeal to the appellant. Subsequently, the appellant submitted a letter to withdraw the appeal for the project, on July 21, 2023, leading to the project implementation not proceeding as planned. Currently, the Office is awaiting policy direction from the Office of the NBTC's management, and developing policy recommendations for telecommunications wholesale regulation that suit the country's ecosystem. Additionally, a focus group meeting with licensees will be held to improve the policy recommendations.	100.00	52.00	2.650	99.66

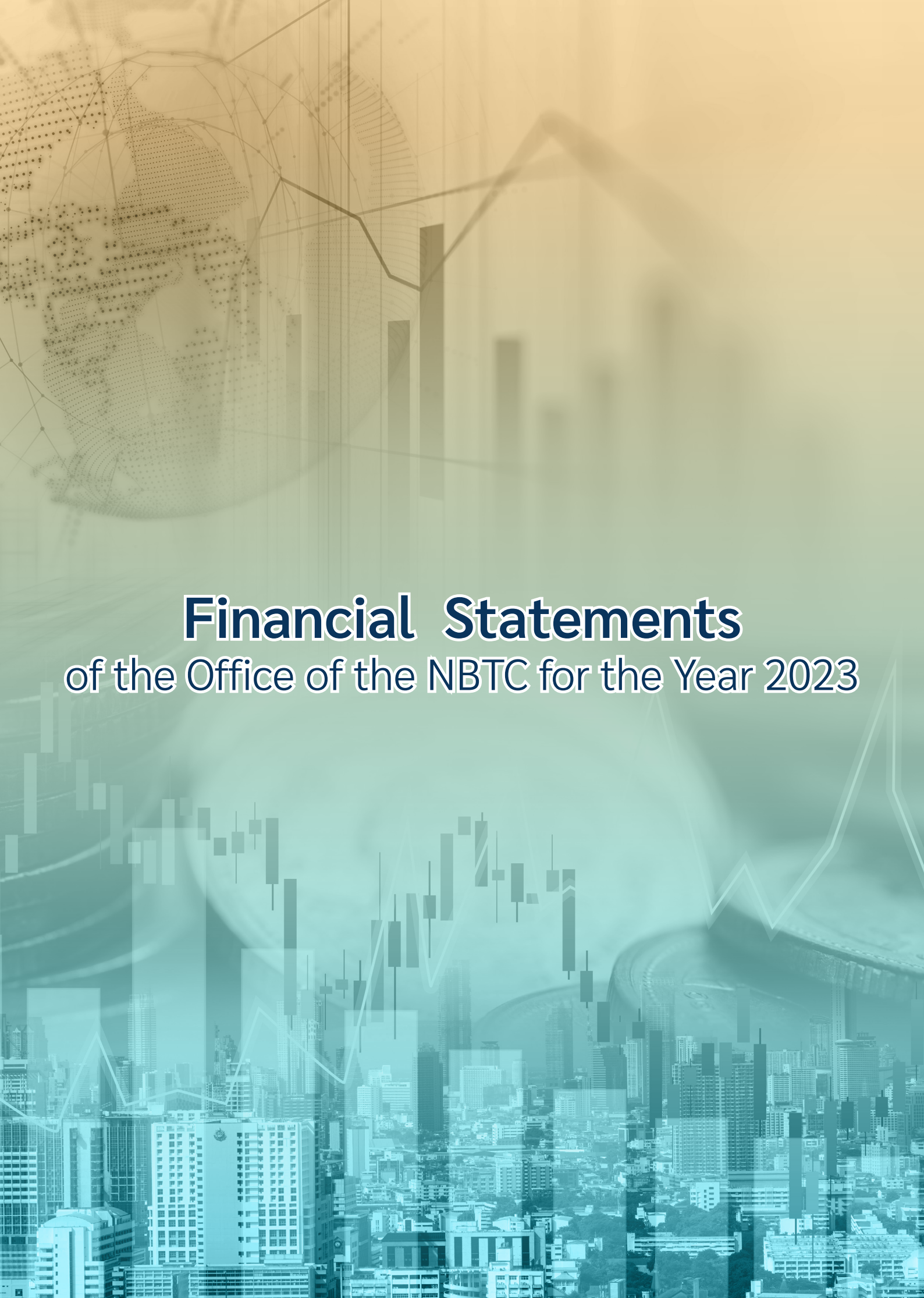


No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
54	The project on Supporting the Provision of Universal Basic Telecommunication Services and Social Service <u>Objective:</u> To support the Office of the NBTC's operations in preparing details for the action plan under the Universal Basic Telecommunication Services and Social Service Plan. Total Budget 144,630 Received Budget 2022 4,339 Proposed Budget 2023 21,694 Commitment Budget 2024 24,587 Commitment Budget 2026 28,926 Commitment Budget 2027 31,819 Commitment Budget 2027 33,265	21,694	Dec 1, 2022/ Jan 31, 2028	The project is in progress to support the Office of the NBTC's operations in preparing details for the action plan under the Universal Basic Telecommunication Services and Social Service Plan, as well as to give advice or recommendations regarding regulation and plan/project management under the Universal Basic Telecommunication Services and Social Service Plan.	100.00	10.00	21,694	100.00
55	The project on Advertising Film Production and Publicity on Mission Under USO Plan for the Year 2023 <u>Objective:</u> To hire production of advertising films with content related to missions and projects under the USO provision plan, aiming to promote awareness, understanding, and positive perception of the Office of the NBTC to the public through online publicity channels. Total Budget 8,000 Proposed Budget 2023 8,000	8,000	Nov 1, 2023/ Jul 27, 2024	The project is in progress. However, in the e-bidding process, there was only one bidder, therefore, the tender process was revoked. A new tender process had to be initiated (2 nd round), to comply with the Ministry of Finance's regulations on procurement, resulting in the project implementation not proceeding as planned. However, once the project is completed, the public, government and private agencies will be aware of, and understand the missions under the USO provision plan.	100.00	10.00	7,576	94.70

No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan				
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)	Budget Expenditure 2023 (Percentage)
56	The Co-Project with Telecommunications Business Licensees on Improving and Enhancing Complaints Resolution Tracking Channel Regarding Telecommunications Business <u>Objective:</u> To improve and develop the complaint resolution tracking channel in the telecommunications sector, in collaboration with telecommunications licensees, by providing the web portal channel for submitting complaints with related documents and evidence, notifying licensees, and reporting the status and progress of complaint resolution to the Office of the NBTC. Total Budget 0.651 Proposed Budget 2023 0.651	0.651	Oct 31, 2023/ Dec 29, 2023	The project is currently in the process of inspecting and accepting the delivery of the 2nd installment (final installment), with completion expected by January 15, 2024. However, in the e-bidding process, there was only one bidder, therefore, a new tender process had to be initiated, to comply with the Ministry of Finance's regulations on procurement. This resulted in the project implementation not proceeding as planned. However, once the project is completed, the Office of the NBTC will have a complaint resolution tracking system in the telecommunications sector, in collaboration with telecommunications licensees, in the web application format. Thus, the complainants experiencing issues with telecommunication services will have their complaints resolved more quickly.	100.00	80.00	0.642	98.63
57	The IT System Development Project for Improving work efficiency of the "Any Registration" System <u>Objective:</u> To develop a work system related to additional radiocommunication license issuance, and to enhance work efficiency online through the internet network system, as well as promoting and supporting government agencies to develop or improve their services, to enable the public to receive services conveniently, quickly, and efficiently, from a single service point, focusing on people-centric. Total Budget 8.880 Received Budget 2022 1.332 Proposed Budget 2023 7.548	7.548	Dec 23, 2022/ Dec 17, 2023	The project was completed according to the plan, resulting in having the 'Any Registration' system that was efficiency enhanced. The project also aids in developing the work system related to additional radiocommunication license issuance, and enhancing work efficiency online through the internet network system, as well as promoting and supporting government agencies to develop or improve their services, to enable the public to receive services conveniently, quickly, and efficiently, from a single service point, focusing on people-centric. As a result, the public receive licensing services conveniently and quickly from the Office of the NBTC.	100.00	100.00	7.518	99.60



No.	Details	Budget 2023 (Million Baht)	Operational Period Start/End	Operational Results Compared to the Plan			
				Operational Status As of December 31, 2023	Plan (Percentage)	Results (Percentage)	Budget Expenditure 2023 (Million Baht)
58	The Project on Telecommunications Network usage and Interconnection Database System Development <u>Objective:</u> To develop the telecommunications network usage and interconnection database system that can connect data with various systems of related bureaus of the Office of the NBTC, in the cluster and organization levels, and to provide a channel for coordination and regulation between the Office of the NBTC and telecommunications operators, to comply with related laws and NBTC notifications. Total Budget 9.200 Received Budget 202 2.910 Proposed Budget 2023 6.290	6.290	Jul 1, 2022/ Jun 25, 2023	The project was completed according to the plan, resulting in having a system for reviewing and verifying proposals and contracts for the usage and interconnection of telecommunication networks, recording data on dispute resolution regarding network usage and interconnection, and regulating telecommunications business, as well as storing the telecommunications network usage and interconnection data received from telecommunications licensees accurately, completely, and precisely. This data can be processed in various formats to efficiently support the preparation of reports, for submitting to the NBTC, in alignment with the policy to fully transition the Office of the NBTC into the digital office.	100.00	100.00	6.290
							100.00

The background of the cover is a composite image. The top half features a light orange and yellow gradient with faint, semi-transparent overlays of a world map, a line graph, and a bar chart. The bottom half shows a blue-tinted city skyline with various skyscrapers and buildings. Overlaid on the city skyline are several financial charts, including a candlestick chart and a line graph with a downward trend.

Financial Statements

of the Office of the NBTC for the Year 2023

Financial Statements

Office of the NBTC for the Year 2023*

Office of the National Broadcasting and Telecommunications Commission

Statement of Financial Position

As of December 31, 2023

Notes

(Unit: Baht)

		2023	2022
Assets			
Current Assets			
Cash and Cash Equivalents	6	9,395,610,490.00	16,406,470,505.35
Short-Term Investments	7	391,094.09	389,632.97
Fee Receivables	8	18,825,572.35	13,025,782.90
Current Portion of Accrued Revenue	9	36,103,356,362.88	36,088,405,626.38
Supplies Inventory	10	5,531,538.74	4,520,811.93
Prepaid Expenses	11	51,508,804.27	30,185,576.04
Other Current Assets	12	206,888,156.11	331,331,531.27
Total Current Assets		45,782,112,018.44	52,874,329,466.84
Non - Current Assets			
Bank Deposits with Obligations	13	510,186,860.87	512,247,117.45
Long-Term Investments	14	370,175,302.60	369,424,719.56
Accrued Revenue	9	132,207,009,051.09	162,912,742,999.14
Contributions to Ministry of Finance under Provisional Measures	27	603,806,875.00	603,806,875.00
Radiocommunications and Spectrum Lease Fee Receivables		26,583,652.25	26,583,652.25
Net Property and Equipment	15	2,517,419,935.80	2,251,203,077.50
Net Financial Lease Assets	16	150,404,201.12	163,098,920.23
Net Intangible Assets	17	425,253,843.21	402,693,085.50
Total Non - Current Assets		136,810,839,721.94	167,241,800,446.93
Total Assets		182,592,951,740.38	220,116,129,913.47

The accompanying notes are an integral part of this financial statement.

* The financial statements, as of December 31, 2023, are currently under review by the State Audit Office of the Kingdom of Thailand.

Office of the National Broadcasting and Telecommunications Commission
Statement of Financial Position
As of December 31, 2023



		Notes		(Unit: Baht)	
				2023	2022
Liabilities					
Current Liabilities					
Creditors and Notes Payable	18			413,353,387.56	721,032,106.48
Deferred Incomes	19			104,512,883.29	94,160,613.67
Current Provisions for Employee Benefits	20			50,668,511.00	50,021,864.00
Current Portion of Deferred Public Revenue to the Treasury	21			28,985,903,854.17	28,548,715,237.43
Current Portion of Deferred Output Tax on Spectrum Auction	22			2,109,442,299.83	2,108,920,943.25
Current Portion of Contributions to Digital Economy and Society Development Fund	23			1,043,017,935.32	1,011,322,008.78
Current Portion of Financial Lease Payable	24			72,292,307.23	75,558,662.99
Other Current Liabilities	25			982,809,078.18	933,576,556.47
Total Current Liabilities				33,762,000,256.58	33,543,307,993.07
Non - Current Liabilities					
Non - Current Liabilities for Employee Benefits	20			1,570,161,598.00	1,203,269,608.00
Deferred Public Revenue to the Treasury	21			86,064,303,340.54	112,196,202,955.54
Deferred Output Tax on Spectrum Auction	22			8,649,056,666.89	10,657,842,999.94
Contributions to Digital Economy and Society Development Fund	23			5,268,241,933.33	6,173,689,933.33
Deferred Revenue from Spectrum Refarming to BTFP	26			27,177,373,915.40	27,177,373,915.40
Net Long-Term Financial Lease Payable	24			84,825,262.23	87,772,413.24
Spectrum Auction Payment Guarantee Deposit				447,153.81	6,667,531,072.00
Receivable under Provisional Measure	27			603,806,875.00	603,806,875.00
Radiocommunications and Spectrum Lease Deposits				26,583,652.25	26,583,652.25
Other Non - Current Liabilities	28			67,628,217.68	93,594,814.95
Total Non - Current Liabilities				129,512,428,615.13	164,887,668,239.65
Total Liabilities				163,274,428,871.71	198,430,976,232.72
Net Asset/Equity					
Capital				198,325,867.44	198,325,867.44
Revenue greater than Accumulated Expenses				19,120,197,001.23	21,486,827,813.31
Net Asset/Equity				19,318,522,868.67	21,685,153,680.75
Total Liabilities and Net Assets/Equity				182,592,951,740.38	220,116,129,913.47

The accompanying notes are an integral part of this financial statement.



Office of the National Broadcasting and Telecommunications Commission

Financial Performance Statement

For the Year Ended December 31, 2023

		Notes	(Unit: Baht)	
			2023	2022
Revenue				
Revenue from Spectrum and Satellite Orbital Slot Auction	29		813,032,504.12	685,317,633.16
Revenue of State Enterprises under Section 84 Paragraph Three	30		-	1,594,286,210.87
Revenue from Licenses and Licensing Application	31		5,013,152,457.33	5,024,140,701.51
Revenue from Numbering Fee	32		3,176,368,796.39	3,238,820,869.65
Other Revenues	33		217,869,658.15	383,394,593.53
Total Revenue			9,220,423,415.99	10,925,960,008.72
Expenses				
Compensation, Restitution, or Remuneration for Television Operators	34		1,532,159,406.38	1,649,799,894.97
Remittance to the Treasury	35		889,436,720.73	2,203,162,794.81
Expenses on Auction and Spectrum Refarming	36		18,298,579.44	23,088,605.08
Digital Economy and Society Development Fund Contributions			1,228,428,188.06	1,342,222,735.67
Expenses by the Judgment of the Supreme Administrative Court	37		6,750,000.14	4,051,559.49
Human Resources Expenses	38		2,162,403,371.99	1,984,738,099.51
Pension	39		431,559,284.71	158,292,281.46
Remuneration	40		32,167,000.00	29,057,750.00
General and Administrative Expenses	41		1,268,799,767.47	1,224,358,868.03
Material Expenses	42		35,775,429.46	42,339,867.42
Utility Expenses	43		91,626,828.31	83,180,175.52
Depreciation and Amortization	44		614,789,852.43	635,046,865.89
Financial Support for Education, Research and Development	45		233,301,568.16	417,544,561.68
Contributions to BTFP			1,000,000,000.00	1,000,000,000.00
Contributions to Edtech Fund			10,000,000.00	10,000,000.00
Other Expenses	46		18,434,532.03	3,512,735.54
Total Expenses			9,573,930,529.31	10,810,396,795.07
Revenue greater (less) than Expense before Financial Cost			(353,507,113.32)	115,563,213.65
Financial Cost			8,859,386.71	9,424,183.94
Revenue greater (less) than Net Expense			(362,366,500.03)	106,139,029.71

The accompanying notes are an integral part of this financial statement.

Office of the National Broadcasting and Telecommunications Commission
Statement of Changes in Net Asset/Equity
For the Year Ended December 31, 2023

Notes

	Capital	Revenue greater (less) than Accumulated Expenses	Total Net Asset/Equity
Balance as of December 31, 2021			
Public Revenue remitted to the Treasury	198,325,867.44	22,994,770,539.38	23,193,96,406.82
Revenue less than Expenses of the Period	-	(1,614,081,755.78)	(1,614,081,755.78)
Closing Balance as of December 31, 2022			
	198,325,867.44	106,139,029.71	106,139,029.71
	198,325,867.44	21,486,827,813.31	21,685,153,680.75
Balance as of December 31, 2022			
Public Revenue remitted to the Treasury	198,325,867.44	21,486,827,813.31	21,685,153,680.75
Revenue greater than Expenses of the Period	-	(2,004,264,312.05)	(2,004,264,312.05)
Closing Balance as of December 31, 2023			
	-	(362,366,500.03)	(362,366,500.03)
	198,325,867.44	19,120,197,001.23	19,318,522,868.67

(Unit: Baht)

The accompanying notes are an integral part of this financial statement.



Office of the National Broadcasting and Telecommunications Commission

Notes to Financial Statement

For the Year Ended December 31, 2023

Notes	Table of Contents
1	General Information
2	Financial Reporting Criteria
3	The New Public Sector Accounting Standards & Policies, and the Revised Public Sector Accounting Standards & Policies
4	Significant Accounting Policy Summary
5	Financial Reporting of Non-Legal Entity Working Capital
6	Cash and Cash Equivalents
7	Short-Term Investments
8	Fee Receivables
9	Accrued Revenue
10	Supplies Inventory
11	Prepaid Expenses
12	Other Current Assets
13	Bank Deposits with Obligations
14	Long-Term Investments
15	Net Property and Equipment
16	Net Financial Lease Assets
17	Net Intangible Assets
18	Creditors and Notes Payable
19	Deferred Incomes
20	Provisions for Employee Benefits
21	Deferred Public Revenue to the Treasury
22	Deferred Output Tax on Spectrum Auction
23	Contributions to Digital Economy and Society Development Fund
24	Net Financial Lease Payable
25	Other Current Liabilities
26	Deferred Revenue from Spectrum Refarming to BTFP
27	Receivable under Provisional Measure
28	Other Non-Current Liabilities
29	Revenue from Spectrum and Satellite Orbital Slot Auction
30	Revenue of State Enterprises under Section 84, Paragraph Three

Office of the National Broadcasting and Telecommunications Commission
Notes to Financial Statement
For the Year Ended December 31, 2023



Notes	Table of Contents
31	Revenue from Licenses and Licensing
32	Revenue from Numbering Fee
33	Other Revenues
34	Compensation, Restitution, or Remuneration for Television Operators
35	Remittance to the Treasury
36	Expenses on Auction and Spectrum Refarming
37	Expenses by the Judgment of the Supreme Administrative Court
38	Human Resources Expenses
39	Pension
40	Remuneration
41	General and Administrative Expenses
42	Material Expenses
43	Utility Expenses
44	Depreciation and Amortization
45	Financial Support for Education, Research and Development in Broadcasting and Telecommunications Businesses
46	Other Expenses
47	Significant Disputes and Litigations
48	Obligations
49	Public Revenue Report

Office of the National Broadcasting and Telecommunications Commission

Notes to Financial Statement

For the Year Ended December 31, 2023

Note 1 – General Information

The Office of the National Broadcasting and Telecommunications Commission, or abbreviated as “the Office of the NBTC”, is a juristic person, having a status of state agency status, established by virtue of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendment (the Act on the Organization B.E. 2553 (2010) and its amendment), to regulate and develop broadcasting, television, and telecommunications businesses. The National Broadcasting and Telecommunications Commission, or abbreviated as “NBTC”, is responsible for prescribing criteria, procedures, conditions, fees, and regulations, relating to spectrum allocation, licensing and spectrum utilizing regulation, business operations in broadcasting, television, and telecommunications, telecommunication numbering utilization, telecommunications network access or interconnection, prevention of monopoly or unfair competition, and consumer protection, as well as providing comprehensive broadcasting, television, and telecommunications services. In this regard, the NBTC has set up the Office of the NBTC fund, called “the Broadcasting and Telecommunications Research and Development Fund for Public Interest”, or “BTFP”, managed by the Fund Management Committee, according to Section 54 and Section 55 of the Act on the Organization 2010 and its amendment.

The Office of the NBTC Headoffice is located at 87 Soi 8 (Sai Lom), Phaholyothin Road, Samsen Nai, Phaya Thai, Bangkok 10400.

The revenue of the Office of the NBTC shall be under Section 65 of the Act on the Organization B.E. 2553 (2010) and its amendment, described as follows:

- (1) Spectrum license fees and business license fees under Section 42, Paragraph Two, and Section 45, Paragraph Three
- (2) Revenues or benefits acquired from the NBTC and the Office of the NBTC’s authorities
- (3) Revenues derived from the Office of the NBTC’s assets
- (4) Money and assets donated to the Office of the NBTC under the NBTC’s regulations for supporting the operation of the Office of the NBTC
- (5) Subsidies from the government

The revenue of the Office of the NBTC under (1) and (2) after deducting the efficient operations expenses of the Office of the NBTC, necessary burden costs, fund contributions under Section 52, the Edtech Fund Under the law on national education, and the Digital Economy and Society Development Fund under the law on digital development for the economy and society, and the rest shall be remitted as public revenue.

Note 2 – Financial Reporting Criteria

These financial statements have been prepared according to the public sector accounting standards and policies, prescribed by the Ministry of Finance, as well as the public sector accounting principles, standards and policies, and accounting practices regarding to Financial Statement Preparation of Public Sector, as specified in the official letter of the Comptroller General’s Department, No. MF 0410.2/C.479 dated October 2, 2020.

Note 2 – Financial Reporting Criteria (Continued)

The financial statements have been conducted on a historical cost basis, unless disclosed otherwise in the accounting policy.

The financial statements of the Office of the NBTC include accounting transactions of headoffice and regional offices, which are obligated to submit the financial report according to the Public Accounting Standards.

Note 3 – The New Public Accounting Standards & Policies, and the Revised Public Accounting Standards & Policies

The Ministry of Finance has implemented the New Public Accounting Standards and Policies, described as follows:

The Public Accounting Standards and Policies, effective since the accounting period starting on or after October 1, 2021 onwards.

The Public Accounting Policy on Tax Card

The management believes that the above New Public Accounting Standards have no significant effect on implementation with the current period of the financial statement.

Note 4 – Significant Accounting Policy Summary

4.1 Cash and Cash Equivalents

Cash and Cash Equivalents consist of cash on hand, demand deposits, and non-obligation time deposits with less than 3-month maturities.

4.2 Short-Term Investments

Short-term investments refer to time deposits with maturities exceeding 3 months, but not exceeding 12 months from the acquisition date.

4.3 Fee Receivable

Fee receivable refers to net value to be received after deducting allowances for doubtful accounts, estimated from balance audit at the end of the accounting period.

Allowances for doubtful debts are considered from account receivables, that are likely to become uncollectible in the future, estimated from the remaining debt values as at the end of period based on payment history, current financial status of debtors, and legal proceedings against debtors, as well as considering the percentage of debt age and outstanding balance as at the end of the period. The doubtful debts are recognized as an integral part of other expenses in the financial performance statement.

Allowances for doubtful debts for the fee receivables are estimated in the following rates:

- The outstanding fee receivables not exceeding 180 days, estimating allowance for doubtful debts at a rate of 0 percent
- The outstanding fee receivables during 181 - 365 days, estimating allowance for doubtful debts at a rate of 25 percent
- The outstanding fee receivables during 366 - 730 days, estimating allowance for doubtful debts at a rate of 50 percent

Note 4 – Significant Accounting Policy Summary (Continued)

- The outstanding fee receivables overdue longer than 730 days, estimating allowance for doubtful debts at a rate of 75 percent

- The fee receivables under legal proceedings, estimating allowance for doubtful debts at a rate of 100 percent

4.4 Accrued Revenues

Accrued revenues refer to income from annual licensing fees, calculated from the licensee's operating revenues occurred in the accounting period, and annually paid within one hundred and fifty days since the accounting period end date, according to the Notification of the NBTC on License Fees for Operating Radio or Television Broadcasting Business B.E. 2555 (2012), and the Notification of the NBTC on Telecommunication Business Licensing Fee, as well as the revenues from spectrum auction, according to Section 42 and 45 of the Act on the Organization B.E. 2553 (2010) and its amendment, the Announcement of the National Council for Peace and Order (NCPO) No. 80/2014, the NCPO Order 76/2016, and the NCPO Order 9/2018.

4.5 Radiocommunications and Spectrum Lease Fee Receivables

Radiocommunications and spectrum leases fee receivables are the receivables collected from debtors that the Office of the NBTC dealt on behalf of the Ministry of Finance. The entry will be recorded in parallel with the 'radiocommunications and spectrum lease fee receivables' deposit account. When the debt is paid, the deposit account will be transferred to the deferred public revenue to the treasury account in the section of radiocommunications rental and violation fines.

4.6 Supplies Inventory

Supplies inventory refers to assets held by the agency for regular operations, generally of low value and not durable, such as office supplies. The agency will recognize the supplies inventory at cost, and value them by using the weighted average method.

4.7 Properties and Equipment

4.7.1 Buildings and structures, including building improvement, are shown by the net book value, derived from cost price deducted by accumulated depreciation. The buildings under construction are shown by the cost price.

4.7.2 Equipment, recognized by the entries with the minimum price per unit or set, starting from 10,000 Baht, except the acquired entries before 2020, is shown by the net book value, derived from cost price deducted by accumulated depreciation, as follows:

- The equipment acquired before 1997, is unrecognized in the account, but recognized in the Asset Control Register.

- The equipment acquired during 1997 – 2002, is recognized only by the entry with the value starting from 30,000 Baht, while the value less than 30,000 Baht is recognized as expense in the Undervalued Inventory Account.

- The equipment acquired during 2003 – 2007, is recognized only by the entry with the value starting from 5,000 Baht, while the value less than 5,000 Baht is recognized as expense in the Undervalued Inventory Account.

Note 4 – Significant Accounting Policy Summary (Continued)

- The equipment acquired during 2008 – 2018, is recognized only by the entry with the value starting from 10,000 Baht, while the value less than 10,000 Baht is recognized as expense in the Undervalued Inventory Account.

- The equipment acquired from 2019 onwards, is recognized as durable goods, typically having a long useful life, and not consumed, depleted, or altered in a short time period.

The cost price includes direct costs relating to asset acquisition to ensure the asset is available in a place where it can be used as required by the administrative section. The cost price of self-constructed assets consists of the material cost, direct labor cost, and other direct costs relating to asset acquisition.

The details of building and equipment entries with different types, service life, and significant costs, will be recognized separately.

The subsequent cost refers to the cost that occurs after the initial value recognition of the item, as an integral recognized part of the net book value of the building and equipment entries. When there is a high probability that the organization would gain future economic benefits or incremental service capacity from such entry, and it is possible to get measurable and reliable cost value, the replaced items are deducted from the account with the book value. Also, the cost from regular building maintenance and equipment will be recognized as an expense when occurred.

Depreciation is recognized as an expense in the financial performance statement, calculated with the straight-line method by the estimated useful life, according to the official letter of the Comptroller General's Department, No. MF 0410.3/C. 43, dated January 29, 2019, regarding to Public Accounting Manual for Lands, Buildings and Equipment, as follows:

Type of Asset	Useful Life
Buildings and their Improvements	3 – 20 years
Electric Appliances and Radios	5 – 15 years
Computer Supplies	3 years
Vehicles and Transports	8 years
Office Supplies and Others	2 – 8 years

4.8 Intangible Assets

Intangible assets include the direct cost of computer program development, systems, and website production costs, acquired by procurement process, and hiring for development. The Office of the NBTC has the rights to control utilization of such assets, and expect to gain economic benefits or service capacity from the asset for more than 1 year. The intangible asset entry is shown by the cost price deducted by accumulated amortization.

The intangible assets acquired since 2020, as recognized only by the entries with the minimum price per unit or set, starting from 10,000 Baht, except the entries acquired before 2020, are shown by the net book value, which derived from cost price deducted by accumulated amortization, as follows:

- The intangible asset acquired during 2010 – 2013 is recognized only by the entry with the value starting from 50,000 Baht, while the value less than 50,000 Baht is recognized as expense in the Undervalued Inventory Account.

Note 4 – Significant Accounting Policy Summary (Continued)

- The intangible asset acquired during 2014 – 2018 is recognized only with the entry with the value starting from 30,000 Baht, while the value less than 30,000 Baht is recognized as expense in the Undervalued Inventory Account.

- The intangible asset acquired in 2019 is recognized only by the entry with the value starting from 20,000 Baht, while the value less than 20,000 Baht is recognized as expense in the Undervalued Inventory Account.

Amortization of the intangible assets is recognized as expense in the financial performance statement, calculated with the straight-line method based on the estimated useful life, which are computer programs with 3-year useful life.

4.9 Financial Lease Payable

Financial lease payable is an asset lease, which the organization takes most risks and benefits from such leased asset possession. The rental is divided into a portion of financial expense, and a portion deducted from financial lease debt to justify the interest rate of each installment to be flat, compared to the balance debt. The financial expense is directly recorded as profit or loss. The acquired asset from the finance lease is categorized into the asset from the financial lease, recorded by fair value or current value of the minimum spending on the financial lease, whichever the lower deducted by the accumulated depreciation and loss on accumulated impairment.

4.10 Deferred Incomes

Deferred incomes from the spectrum auction revenues for digital television service provision are recognized by the actual expense of each installment, relating to the comprehensive digital television service provision to the public. The unrecognized incomes are shown as liability in the deferred income statement.

4.11 Provisions

Provisions are recognized when the Office of the NBTC has the liabilities by law that occurred presently or resulted from the past events, with a high probability that the economic benefits will be paid as the settlement, and the liabilities are estimated reliably. The provisions are considered by the discounted cash flow method to be paid in the future, based on the present discounted cash flows, in order to reflect the present value which varies by time and risk of debt. The incremental provision by time is recognized as a financial cost.

4.12 Remittance as Public Revenue to the Treasury

Revenue or benefits derive from the operations under the authorities of the NBTC and the Office of the NBTC, such as revenue received in a year after deducting the organization's efficient operating expenses, necessary burdens, the contributions to the fund according to Section 52, the Edtech Fund, according to the law on national education and the Digital Economy and Society Development Fund according to the law on digital development for economy and society. The surplus is remitted as public revenue. Furthermore, the Office of the NBTC shall remit the surplus from burden costs of the prior years, which could not be spent completely within 2 years, as public revenue, including any items or projects that the budget has been set up, but has not been spent, or incurred debt obligations within the fiscal year. Those items or projects will be canceled. Then, the Office of the NBTC shall remit the budget of such items or projects as public revenues.

4.13 Revenue from Spectrum Auction

Revenue from spectrum auction, after deducting the cost of the event organizing and the contribution to the Digital Economy and Society Development Fund, under the law on digital economy and society development, shall be remitted as public revenue, according to the Act on the Organization B.E. 2553 (2010) and its amendment.

4.14 Employee Benefits

The Office of the NBTC is not governed by the Labor Protection Law, the Labor Relations Law, the Social Security Law, and the Compensation Law. The Office of the NBTC has its regulations regarding the employee benefits, as follows:

4.14.1 Short-Term Employee Benefits

The provisions of short-term employee benefits are recognized as expenses in the financial performance statement, when the employees perform the tasks, without calculating Discounted Cash Flows. The liabilities are recognized by the amount expected to be paid for special remuneration and welfare, as short-term cash, or legal obligation, or constructive obligation to be paid as a result of the employee's work in the past, and this obligation can be reasonably estimated.

4.14.2 Employee Benefits after Retirement

1) Contributions Plan

The Office of the NBTC has set up the provident fund for employees, as a welfare and to promote employees' savings, by contributing to the fund according to organization's regulations on Employee Provident Fund of the Office of the National Telecommunications Commission B.E. 2549 (2006). The assets of the provident fund are separated from the organization's assets, and are managed by the external fund manager. Such provident fund consists of employees' saving money and contributions from the Office of the NBTC. Such contributions are recognized as expenses in the financial performance statement for such transaction periods.

2) Defined Benefit Plan

The Office of the NBTC is obligated to pay compensation to employees upon their retirement, according to the NBTC Regulation on Employee's Pension and Welfare after Retirement B.E. 2555 (2012), which is regarded as pension benefit.

The provisions of employee pension benefits are recognized in the statement of financial position with the present value of the obligations as at the end of the period. The obligations are annually calculated by the independent actuary, with the projected unit credit method.

The debts occurring in the transition period, derive from the difference of the benefit obligations and the liabilities in the financial position statement for the employee benefit plan, according to the existing accounting policy at the accounting policy changing date. The Office of the NBTC recognizes them by calculating the full amount of retained earnings with the retrospective adjustment method.

The full amount of historical service cost is recognized as profit or loss as soon as the plan is revised or scaled down, or when the Office of the NBTC recognizes the relevant restructuring costs.

Note 4 – Significant Accounting Policy Summary (Continued)

4.15 Revenue Recognition

The Office of the NBTC recognizes each type of revenues, as follows:

- Revenue from spectrum auction under Section 41, Paragraph Two and Section 45, Paragraph Two of the Act on the Organization B.E. 2553 (2010) and its amendment, is recognized on an accrual basis, based on related agreement contents.

- Revenue from radiocommunications frequency compensation is recognized on an accrual basis.
- Revenue from licensing fees based on the Radiocommunications Act is recognized upon license approval.
- Revenue from business licensing fees is recognized on an accrual basis.
- Revenue from the numbering fees is recognized monthly on an accrual basis.
- Revenue from spectrum transfer licensing fees is recognized upon license approval.
- Revenue from application fees is recognized by revenue type upon the application approval.
- Revenue from the 1 Por Nor radio station is recognized monthly on an accrual basis.
- Revenue from other fees is recognized upon the application approval.
- Revenue from interest earned is recognized on a time proportional basis.
- Other revenues apart from revenues mentioned above are recognized on an accrual basis.

4.16 Revenue of State Enterprise under Section 84, Paragraph Three

Revenue of state enterprise under Section 84, Paragraph Three of the Act on the Organization B.E. 2553 (2010) and its amendment, stipulates that, when the specified period of 3 years has elapsed since the effective date of the Act, the state enterprise revenue derived from the permission, concession, or contracts, according to Paragraph Two, under the law regarding private sector participation with the state undertakings, whether in whole or in part, shall be deducted by the business licensing fees, calculated from the income portion generated from the licensing, concession, or contracts, the expenses for supporting universal basic telecommunications services obligations and social services, under Section 50, only the income portion generated from and permission, concession, or contracts, the expenses incurred from operations under Permission, concession, or contracts, as prescribed by the Ministry of Finance. The surplus shall be remitted to the Office of the NBTC. Accordingly, the Office of the NBTC shall remit such revenue as public revenue.

4.17 Revenue from Service Provision on Behalf of the State

Revenue from service provision on behalf of the state is the revenue, under Section 7 of the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013).

During the protection period, the service providers shall act as the service fee payees on behalf of the state, by separating the receipt account specifically, and report the income and its profit, deducted by the network cost, the telecommunications numbering fees, the administrative cost, and other necessary operating costs. The Office of the NBTC shall audit the surplus prior to forwarding as the public revenue.

4.18 Foreign Currency Transactions

Foreign currency transactions are initially recorded in Thai Baht, by converting the foreign currency amounts at the exchange rates on the transaction dates. At the end of the reporting period, monetary items

Note 4 – Significant Accounting Policy Summary (Continued)

in foreign currencies are converted into Thai Baht, using the closing exchange rate. For non-monetary items in foreign currencies recorded at historical cost or fair value, the agency will report by using the exchange rates on the transaction date, or the exchange rate at the valuation date for fair rate determination.

4.19 Contributions to Support Education, Research and Development

Contributions to support education, research and development are recognized as expenses upon granting approval to the eligible persons. The remaining funds that are returned within the fiscal year, will be deducted from the contributions. If the funds are returned after the disbursement period, they will be recognized as returned revenue from contributions to support education, research and development, shown as other non-operating revenues. Such criteria shall apply to the similar items.

4.20 Operating Expenses of the BTFP

The operating expenses of the Broadcasting and Telecommunications Fund for Public Interest (BTFP) refer to assets for BTFP operations, human resources expenses, committee meeting allowance, public relations expenses, meeting administration expenses, operational supplies costs, utility costs, etc. They are disbursed by the Office of the NBTC, according to the BTFP regulations.

Note 5 – Financial Reporting of Non-Legal Entity Working Capital

The Office of the NBTC has working capital for 1 non-legal entity, which is the Broadcasting and Telecommunications Research and Development Fund for Public Interest (BTFP), established by virtue of the Act on the Organization B.E. 2553 (2010) and its amendment, with the following objectives:

- (1) To ensure that the public comprehensively access broadcasting, television, and telecommunications services, as well as to promote communities, and support community service operators.
- (2) To promote and support communication resources development, research and development regarding broadcasting, television, and telecommunications services, including technology media literacy regarding spectrum utilization, information technology, and assistive technologies for people with disabilities, the elderly and the underprivileged, as well as telecommunication industry and ongoing industry.
- (3) To promote and support personnel development in broadcasting, television, and telecommunications industries, and information technology, including the operations of organizations responsible for setting up professional ethics standards as per the law regarding broadcasting and television business operations.
- (4) To support, promote, and protect consumers in the broadcasting, television, and telecommunications businesses.
- (5) To ensure compliance with the law concerning Safe and Creative Media Development Fund through appropriation of the BTFP fund for the Safe and Creative Media Development Fund.
- (6) To support spectrum utilization for the maximum efficiency, and support spectrum refarming for reallocation, as well as supporting compensation, restitution and remuneration for such spectrum refarming, for the maximum efficiency of spectrum utilization.

The formulation of policies, regulation, and operations to achieve the objectives of the working capital, as well as the preparation of the BTFP's accounts and financial reports, are the responsibilities of the Broadcasting and Telecommunications Research and Development Fund for Public Interest Management

Note 5 – Financial Reporting of Non-Legal Entity Working Capital (Continued)

Committee (the fund management Committee). The fund management committee is also responsible for preparing accounts and financial reports in accordance with public sector accounting standards and policies, set by the Ministry of Finance, as well as the public sector accounting principles and policies, and presenting items in the financial statements according to the accounting practices regarding to Financial Statement Preparation of Public Sector, as specified in the official letter of the Comptroller General's Department, No. MF 0410.2/C.479 dated October 2, 2020.

The BTFP's financial statement that were not included in this financial statement, are described as follows:

5.1 The Statement of Financial Position as of December 31, 2023**(Unit: Million Baht)**

	2023	2022
Assets		
Current Assets		
Cash and Cash Equivalents	11,479.27	14,412.17
Accrued Contribution Income to the Broadcasting and Television Fund	138.07	137.62
Accrued Contribution Income to the Telecommunications Fund	8,194.39	7,515.57
Accrued Bank Deposit Interests	381.39	122.98
Office of the NBTC's Debtors	3.68	20.72
Short - Term Investments	45,240.91	42,500.91
Other Accrued Incomes	42.93	725.31
Other Current Assets	107.87	433.72
Total - Current Assets	65,588.51	65,869.00
Non – Current Assets		
Accrued Income from Spectrum Reallocation	27,174.01	27,174.01
Net Property and Equipment	3.84	0.02
Net Infrastructure Assets	4,521.77	6,337.97
Other Non - Current Assets	-	74.53
Total Non - Current Assets	31,699.62	33,586.53
Total Assets	97,288.13	99,455.53
Liabilities and Net Asset/Equity		
Liabilities		
Current Liabilities		
Short-term Creditors	5,758.78	5,114.47
Deferred Remittance to the Ministry of Finance	-	4,683.73
Other Current Liabilities	3.06	7.99
Total Current Liabilities	5,761.84	9,806.19

Note 5 – Financial Reporting of Non-Legal Entity Working Capital (Continued)

(Unit: Million Baht)

	2023	2022
Non - Current Liabilities		
Long-term Creditors	3,089.51	3,089.50
Deferred Contribution Income to the Fund	31,412.62	36,741.56
Long-term Deposits	23.40	51.13
Other Non - Current Liabilities	8.75	31.64
Total Non - Current Liabilities	34,534.28	39,913.83
Total Liabilities	40,296.12	49,720.02
Net Asset/Equity		
Capital	2,926.32	2,926.32
Revenue Greater than Accumulated Expenses	54,065.69	46,809.19
Total Net Asset/Equity	56,992.01	49,735.51
Total Liabilities and Net Asset/Equity	97,288.13	99,455.53

5.2 Financial Performance Statement For the Year Ended December 31, 2023

(Unit: Million Baht)

	2023	2022
Revenue		
Contributed Revenue Allocated from the Office of the NBTC	1,000.00	1,000.00
Contributed Revenue to the Broadcasting and Television Fund	138.57	137.90
Contributed Revenue to the Telecommunications Fund	13,545.54	16,096.24
Contributed Revenue to the Digital TV Spectrum Auction	-	1,000.11
Bank Deposit Interest Income	671.81	286.68
Administrative Fine Income	218.28	198.16
Other Revenue	46.35	107.57
Total Revenue	15,620.55	18,826.66
Expenses		
Expenses for Supporting and Promoting the Fund's Missions	1,068.70	1,790.83
Expenses from Contributions by Licensees to be Used According to the USO Plan	5,385.00	3,882.62
Other Expenses	72.35	1,211.03
Depreciation and Amortization	1,838.00	1,834.58
Total Expenses	8,364.05	8,719.06
Revenue Greater than Net Expense	7,256.50	10,107.60

**Note 5 – Financial Reporting of Non-Legal Entity Working Capital (Continued)****5.3 Statement of Changes in Net Asset/Equity for the Year Ended December 31, 2023**

(Unit: Million Baht)

	Capital	Revenue greater (less) than Accumulated Expenses	Total Net Asset/Equity
Balance as of December 31, 2021	2,926.32	41,385.32	44,311.64
Public Revenue remitted to the Treasury	-	(4,683.73)	(4,683.73)
Income Greater than Expenses of the Period	-	10,107.60	10,107.60
Closing Balance as at December 31, 2022	2,926.32	46,809.19	49,735.51
Balance as of December 31, 2022	2,926.32	46,809.19	49,735.51
Income Greater than Expenses of the Period	-	7,256.50	7,256.50
Closing Balance as of December 31, 2023	2,926.32	54,065.69	56,992.01

Note 6 – Cash and Cash Equivalents

(Unit: Million Baht)

	2023	2022
Cash	-	0.11
Petty Cash	0.50	0.50
Deferred Checks	0.23	0.12
Financial Institutions Deposits		
Current Account Deposits	222.44	234.33
Saving Account Deposits	8,537.41	16,144.86
Fixed Account Deposits with less than 3-month maturity	635.03	26.55
Total Cash and Cash Equivalents	9,395.61	16,406.47
Cash and Cash Equivalents consist of		
Cash and Cash Equivalents of income under Section 65 (1) - (2)	3,996.74	4,352.90
Cash and Cash Equivalents of income under Section 65 (3) - (5)	102.94	106.57
Cash and Cash Equivalents of Guarantee Deposits and Others	5,295.93	11,947.00
Total Cash and Cash Equivalents	9,395.61	16,406.47

Note 7 – Short-Term Investments

(Unit: Million Baht)

	2023	2022
Fixed Account Deposits with 3-12 months maturities	0.39	0.39
Total Short-Term Investments	0.39	0.39
Short-Term Investments consist of		
Short-Term Investment from Deposits	0.39	0.39
Total Short-Term Investments	0.39	0.39

Note 8 – Fee Receivables

(Unit: Million Baht)

	2023	2022
Radio Frequency Remuneration Receivables	11.77	3.53
Numbering Fee Receivables	806.63	806.47
Business Licensing Fee Receivables	84.67	85.11
Debtors	29.74	29.74
Total	932.81	924.85
<u>Subtract</u> Allowances for Doubtful Accounts	(913.98)	(911.82)
Total Fee Receivables	18.83	13.03

To analyze the accrued debt age, all types of the Office of the NBTC's fee receivables can be categorized by accrual debts, as follows:

(Unit: Million Baht)

	2023	2022
Outstanding Debt less than 180 days	12.09	4.79
Outstanding Debt more than 180 days but not exceeding 365 days	0.80	1.20
Outstanding Debt more than 365 days but not exceeding 730 days	1.54	2.18
Outstanding Debt more than 730 days	21.48	24.97
Having Legal Dispute	896.90	891.71
Total	932.81	924.85

The numbering fee receivables as of December 31, 2023 and 2022 were 806.63 and 806.47 million baht respectively. They included the numbering fee receivables of True Move Company Limited (TrueMove) during March 1, 2014 - December 31, 2015, for 647.29 million baht, and the extra money for 141.13 million baht, as a total of 788.42 million baht. TrueMove has not paid the numbering fees to the Office of the NBTC, by reasoning that

Note 8 – Fee Receivables (Continued)

it had to comply with the Notification of the NBTC on Provisional Measures for Consumer Protection, in case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013) (Provisional Measures for Consumer Protection). The measures restrict the company to exploit the inactive numbers, resulting in the telecommunications numbering fee burden for the company. However, as the numbering fee can be recognized as a cost to subtract from the service revenue, TrueMove requested the Office of the NBTC to exempt all telecommunications numbering fees as from September 16, 2013 (as from the termination of contract) onwards. The numbering fee amount during September 16, 2013 to February 28, 2014, in a total of 190.97 million baht, that had already been paid to the Office of the NBTC, was requested to be refunded to the company.

Subsequently, according to the resolution of the 12th/2014 National Telecommunications Commission (NTC) meeting, on May 7, 2014, the committee disapproved TrueMove's request for the numbering fee exemption. Also, according to the resolution of the 26th/2014 NTC meeting on October 14, 2014, the committee assigned the Office to comply with the legal procedures. Then, on August 31, 2015, the Office of the NBTC filed the lawsuit to the Administrative Court against TrueMove, as in the Undecided Case No. 490/2016, which has been in process of fact-finding end date specification by the Court. However, the Office of the NBTC was the defendant for the offense regarding claim for damages from the operations under the Provisional Measures for Consumer Protection, as the expenses were greater than the plaintiff's revenue, and for the refund of paid-up numbering fee, according to the Undecided Case No. 2013/2015, with the monetary value claim for 16,265.06 million baht, with 7.5 percent per annum interest rate. According to the Administrative Court's order, the following cases have been consolidated; Undecided Case No. 1712/2016, 2392/2018, 490/2016, and 1228/2016, having the Undecided Case No. 2013/2015 as the main case. Additionally, the Office of the NBTC filed an appeal on August 23, 2023.

Note 9 – Accrued Revenue

(Unit: Million Baht)

	2023	2022
Current Portion		
Accrued Revenue from 900 MHz Spectrum Auction	20,331.71	20,331.71
Accrued Revenue from Business Licensing Fee	4,620.96	4,606.01
Accrued Revenue from 700 MHz Spectrum Auction	11,150.69	11,150.69
Total Current Portion	36,103.36	36,088.41
Non - Current Portion		
Accrued Revenue from 900 MHz Spectrum Auction	28,477.41	48,809.12
Accrued Revenue from 700 MHz Spectrum Auction	66,904.10	78,054.78
Accrued Revenue from 2600 MHz Spectrum Auction	36,048.84	36,048.84
Accrued Revenue from Satellite Orbital Slot Usage	776.66	-
Total Non - Current Portion	132,207.01	162,912.74
Total Accrued Revenue	168,310.37	199,001.15

Note 9 – Accrued Revenue (Continued)

The accrued revenue from 900 MHz spectrum auction as of December 31, 2023 and 2022, were 48,809.12 and 69,140.83 million baht respectively. The accrued revenue from 700 MHz spectrum auction as of December 31, 2023 and 2022, were 78,054.79 and 89,205.47 million baht respectively. The accrued revenue from 2600 MHz spectrum auction as of December 31, 2023 and 2022, were 36,048.84 and 36,048.84 million Baht respectively. The licensees submitted the guarantee deposits on December 31, 2022, in a total of 6,666.67 million baht, together with the letters of guarantee from commercial banks, according to the Financial Institution Business Act B.E. 2551 (2008), to guarantee the payments for the whole remaining installments, recognized as the accrued revenue from the spectrum auction, according to the NBTC Notification. Nonetheless, according to the Order of the Head of the National Council for Peace and Order (NCPO) No. 4/2019 on the Solution for Television and Telecommunication Industries, dated April 11, 2019, Section 6, Paragraph Two, it stipulates the Office of the NBTC to consider the restructuring of the 900 MHz annual payment term to be 10 equal installments. The first installment shall start from the license granted year.

The accrued revenues from business licensing fees as of December 31, 2023 and 2022 were 4,620.96 and 4,606.01 million baht respectively. Such accrued revenue refers to the revenue collected from the operators, calculated by the progressive rate of the operating income of telecommunications businesses type 1 to 3, according to the Notification of the National Broadcasting and Telecommunications Commission on Telecommunications Business Licensing Fee, and the income from operations of broadcasting or television businesses, according to the Notification of the National Broadcasting and Telecommunications Commission on License Fees for Operating Radio or Television Broadcasting Business, which imposing the operators to pay the licensing fees within 150 days, as from the end of the accounting period.

Note 10 – Supplies Inventory

(Unit: Million Baht)

	2023	2022
Supplies Inventory	5.53	4.52
Total Supplies Inventory	5.53	4.52

Note 11 – Prepaid Expenses

(Unit: Million Baht)

	2023	2022
Prepaid Land Rental	16.92	16.65
Other Prepaid Expenses	34.59	13.54
Total Prepaid Expenses	51.51	30.19

**Note 12 – Other Current Assets**

(Unit: Million Baht)

	2023	2022
Pending Input Tax	20.95	41.18
Revenue Department Receivables	-	65.34
Advance Receivables	0.18	0.15
Accrued Interests	2.00	1.05
Advance Payment	172.21	212.49
Other Current Assets	11.55	11.12
Total Other Current Asset	206.89	331.33

(Unit: Million Baht)

Loan Receivable	Undue Balance	Overdue Balance not Exceeding 15 days	Overdue Balance Exceeding 15 days	Total
2023	0.18	-	-	0.18
2022	0.15	-	-	0.15

Note 13 – Bank Deposits with Obligations

(Unit: Million Baht)

	2023	2022
Special Savings Deposit	510.19	512.25
Total Bank Deposits with Obligations	510.19	512.25

The 500.00 million Baht bank deposit with obligations is the deposit account of a commercial bank, with the obligation to maintain the deposit for the employees' housing loans.

Note 14 – Long-Term Investments

(Unit: Million Baht)

	2023	2022
Fixed Account Deposits with tenure more than 12 months	370.18	369.42
Total Long-Term Investments	370.18	369.42

Note 15 – Net Building and Equipment

(Unit: Million Baht)

December 31, 2023

Item	Buildings and Improvement	Electric Appliances and Radios	Computers	Vehicles and Transports	Office Supplies and Others	Total
Cost Price						
Opening Balance	1,049.78	2,720.42	879.54	247.27	428.12	5,325.13
Increase During the Period	15.07	134.63	37.52	9.56	59.32	256.10
Decrease During the Period	(1.51)	(3.44)	(57.68)	-	(17.30)	(79.93)
Increase (Decrease) Reclassification Transfer	(2.38)	(0.05)	(0.20)	-	2.63	-
Closing Balance	1,060.96	2,851.56	859.18	256.83	472.77	5,501.30
Subtract Accumulated Depreciation						
Opening Balance	784.80	2,208.60	815.48	182.74	364.75	4,356.37
Increase During the Period	42.39	188.35	44.70	10.81	21.53	307.78
Decrease During the Period	(0.12)	(29.52)	(54.81)	-	(17.05)	(101.50)
Increase (Decrease) Reclassification Transfer	(1.88)	-	(0.01)	-	1.89	-
Closing Balance	825.19	2,367.43	805.36	193.55	371.12	4,562.65
Work in Progress						
Work in Progress at Closing Balance	1,577.92	-	0.85	-	-	1,578.77
Book Value						
As of December 31, 2022	1,539.92	514.32	67.98	64.53	64.45	2,251.20
As of December 31, 2023	1,813.69	484.13	54.67	63.28	101.65	2,517.42



Note 15 – Net Building and Equipment (Continued)

(Unit: Million Baht)

December 31, 2023

Item	Buildings and Improvement	Electric Appliances and Radios	Computers	Vehicles and Transports	Office Supplies and Others	Total
Cost Price						
Opening Balance	935.78	2,269.10	835.34	196.67	399.38	4,636.27
Increase During the Period	116.47	480.05	102.33	52.17	42.31	793.33
Decrease During the Period	(2.47)	(29.90)	(30.34)	(1.57)	(10.85)	(75.13)
Increase (Decrease) Reclassification Transfer	-	1.17	(27.79)	-	(2.72)	(29.34)
Closing Balance	1,049.78	2,720.42	879.54	247.27	428.12	5,325.13
Subtract Accumulated Depreciation						
Opening Balance	659.72	1,919.65	764.79	179.04	337.81	3,861.01
Increase During the Period	127.07	314.11	108.79	5.10	39.93	595.00
Decrease During the Period	(1.99)	(26.33)	(30.31)	(1.40)	(10.27)	(70.30)
Increase (Decrease) Reclassification Transfer	-	1.17	(27.79)	-	(2.72)	(29.34)
Closing Balance	784.80	2,208.60	815.48	182.74	364.75	4,356.37
Work in Progress						
Work in Progress at Closing Balance	1,274.94	2.50	3.92	-	1.08	1,285.44
Book Value						
As of December 31, 2021	1,120.17	349.45	74.05	17.63	75.57	1,636.87
As of December 31, 2022	1,539.92	514.32	67.98	64.53	64.45	2,251.20



December 31, 2023

	Computers	Vehicles and Transports	Total
Cost Price			
Opening Balance	230.39	121.37	351.76
Increase During the Period	39.63	42.24	81.87
Decrease During the Period	(0.58)	(25.94)	(26.52)
Closing Balance	269.44	137.67	407.11
<u>Subtract Accumulated Depreciation</u>			
Opening Balance	108.40	80.26	188.66
Increase During the Period	67.24	27.33	94.57
Decrease During the Period	(0.58)	(25.94)	(26.52)
Closing Balance	175.06	81.65	256.71
Book Value			
As of December 31, 2022	121.99	41.11	163.10
As of December 31, 2023	94.38	56.02	150.40

December 31, 2022

	Computers	Vehicles and Transports	Total
Cost Price			
Opening Balance	325.97	137.10	463.07
Increase During the Period	22.43	-	22.43
Decrease During the Period	(118.01)	(15.73)	(133.74)
Closing Balance	230.39	121.37	351.76
<u>Subtract Accumulated Depreciation</u>			
Opening Balance	155.79	68.58	224.37
Increase During the Period	70.58	27.26	97.84
Decrease During the Period	(117.97)	(15.58)	(133.55)
Closing Balance	108.40	80.26	188.66
Book Value			
As of December 31, 2021	170.18	68.52	238.70
As of December 31, 2022	121.99	41.11	163.10



**Note 17 – Net Intangible Assets**

(Unit: Million Baht)

Cost Price

Opening Balance	
Increase During the Period	
Decrease During the Period	
Increase (Decrease) Reclassification Transfer	
Closing Balance	

2023	2022
2,109.89	1,793.06
239.43	361.73
(44.90)	(74.24)
-	29.34
2,304.42	2,109.89
1,759.13	1,519.63
212.44	284.40
(40.24)	(74.24)
-	29.34
1,931.33	1,759.13
52.16	51.93
425.25	402.69

Subtract Accumulated Amortization

Opening Balance	
Increase During the Period	
Decrease During the Period	
Increase (Decrease) Reclassification Transfer	
Closing Balance	

Work in Progress

Work in Progress at Closing Balance	
-------------------------------------	--

Book Value**Note 18 – Creditors and Notes Payable**

(Unit: Million Baht)

Creditors	
Paychecks	
Total Creditors and Notes Payable	

2023	2022
230.43	514.96
182.92	206.07
413.35	721.03

Note 19 – Deferred Incomes

(Unit: Million Baht)

Deferred Radiocommunications Frequency Compensation	
Deferred Numbering Fees	
Others	
Total Deferred Income	

2023	2022
78.33	68.52
10.16	11.39
16.02	14.25
104.51	94.16

Note 20 – Provisions for Employee Benefits

Pension Benefit Plan

According to the NBTC Regulation on Employee's Pension and Welfare after Retirement B.E. 2555 (2012), the Office of the NBTC is obligated to pay compensation to retirees, or employees forced and mandatory leave without guilt, or died, who have been worked for the organization at least one year, as well as the resigning employees without guilt, who have been worked for the organization at least three years, and their resignations have been approved by the authorized appointing person, or the authorized person. Such employees shall receive the pension amounts by calculating the working period multiplied by the amount of the last salary.

In the case any employee is injured or becomes ill due to performing their duties, or is assaulted because of their duties, they are entitled to receive a special gratuity in addition to their regular pensions, which is 24 times the last monthly salary rate. If they die before receiving the special gratuity, they are entitled to receive the special gratuity at 30 times the last monthly salary rate.

The Office of the NBTC provides the pension fund account, as a budget source for employee's pension and support after retirement. The source of funds consists of the initial money allocated from the annual expenditure budget, allocated money from the annual expenditure budget, interests of the pension fund, and others. In case of insufficient pension funds to be paid to the entitled employees, the Office of the NBTC shall reimburse the employee pension from the Office of the NBTC's Central Budget for sufficient payment for the employee in that year.

The present value of the provisions for employee benefits to be paid is as follows:

(Unit: Million Baht)

	2023	2022
Current Provisions for Employee Benefits	50.67	50.02
Non - Current Provisions for Employee Benefits	1,570.16	1,203.27
Present Value of Provisions for Employee Benefits	1,620.83	1,253.29

Changes in the present value of the provisions for employee benefits as of December 31 are as follows:

(Unit: Million Baht)

	2023	2022
Opening Balance of Provisions for Employee Benefits	1,253.29	1,412.62
Current Service Cost	111.72	169.21
Historical Service Cost	-	(39.85)
Net Interest of Net Provisions for Employee Benefits	38.91	25.94
Total	150.64	155.30
Actuarial Gains	277.08	(251.57)
Total	1,681.01	1,316.35
Paid Employee Benefits	(60.18)	(63.06)
Closing Balance of Provisions for Employee Benefits	1,620.83	1,253.29

Note 20 – Provisions for Employee Benefits (Continued)

Actuarial Gains, for the year ended December 31, are as follows:

(Unit: Million Baht)

	2023	2022
Experience Changes	134.80	46.76
Financial Assumption Changes	142.28	(313.10)
Demographic Assumption Changes	-	14.77
Total	277.08	(251.57)

Main Assumptions for actuarial gains and losses are as follows:

Main Assumptions	Age Range	Percentage per Annum
1. Discount Rate		1.98 to 4.22
2. Inflation Rate		1.0 – 3.0
3. Salary Increase Rate	Less than 40 years	8.0
	From 40 years to less than 55 years	6.0
	From 55 years and above	4.0
4. Employee Turnover Rate	Less than 30 years	2.5
	From 30 years to less than 55 years	0.5
	From 55 years and above	0.0
5. Mortality Rate	The assumptions relating to the future mortality rate derive from Thai Mortality Ordinary Table 2017 (TMO 2017) with the rate revision at 3.0 percent per year.	

Sensitivity of Main Assumptions

Changes in each main assumption, relating to actuarial analysis, may occur reasonably at the end of the reporting period. The results of assumption sensitivity analysis, and the impact of the defined benefit plan obligations, as of December 31, are as follows:

Impact on the Defined Benefit Plan Obligations					
Changes in Assumption	Percentage	Increase in Assumptions		Decrease in Assumptions	
		Million Baht		Million Baht	
		2023	2022	2023	2022
Discount Rate	1.00	(189.91)	(137.91)	228.32	164.08
Expected Salary Increase Rate	1.00	220.18	159.64	(187.50)	(137.00)
Employee Turnover Rate	20.00	(2.95)	(0.84)	2.98	0.84
Revision of Mortality Rate	1.00	0.54	0.02	(0.60)	(0.00)

Note 20 – Provisions for Employee Benefits (Continued)

Risks involved in the benefit project, under the projected unit credit method, are the differences of the actual salary increase rate, the employee turnover rate, the mortality rate with the implemented assumptions, for example, the actual salary increase rate is higher than expected, while the employee turnover rate is less than expected, this may affect actuarial losses. Moreover, the current economic situation may affect the discount rate to be higher or lower, due to the rate used to measure the fair value of liabilities. However, this benefit project has no specific risk to the organization or investment risk, as the project does not involve fund establishment.

The analysis of employee benefit payment maturity without the discount rate since 2023 is shown below.

	Current Portion (not exceeding 1 year)	Non-Current Portion (more than 1 year, but not exceeding 3 years)	Long-Term Portion (exceeding 3 years)	Total
	Million Baht	Million Baht	Million Baht	Million Baht
As of December 31, 2023				
Provisions for Employee Benefits	50.67	111.46	7,664.87	7,827.00
Total	50.67	111.46	7,664.87	7,827.00

Note 21 – Deferred Public Revenue to the Treasury

(Unit: Million Baht)

	Opening Balance	Transactions during the Period		Closing Balance
	As of January 1, 2023	Accrued Remittance Increase (Decrease)	Remittance	As of December 31, 2023
Current Portion				
Fines	3.08	5.08	(3.08)	5.08
Revenue from 700 MHz Spectrum Auction	8,450.73	8,511.52	(8,450.73)	8,511.52
Revenue from 900 MHz Spectrum Auction	18,434.42	18,449.26	(18,434.42)	18,449.26
Revenue from 1800 MHz Spectrum Auction	1.10	0.31	(1.10)	0.31
Revenue from Digital TV Spectrum Auction	4.96	14.90	(4.96)	14.90
Revenue from 2600 MHz Spectrum Auction	6.10	0.01	(6.10)	0.01
Revenue from 26 GHz Spectrum Auction	32.17	0.06	(32.17)	0.06
Revenue from Satellite Orbital Slot Usage Fee	2.00	45.07	(46.78)	0.29
Revenue from Premium Number Auction	0.07	0.21	(0.07)	0.21
Revenue from the 1 Por Nor Radio Station	4.59	0.90	(4.59)	0.90
Remittance as Public Revenue 2022	1,609.49	2,003.36	(1,609.49)	2,003.36
Total Current Portion	28,548.71	29,030.68	(28,593.49)	28,985.90

Note 21 – Deferred Public Revenue to the Treasury (Continues)

(Unit: Million Baht)

	Opening Balance	Transactions during the Period		Closing Balance
	As of January 1, 2023	Accrued Remittance Increase (Decrease)	Remittance	As of December 31, 2023
Non - Current Portion				
Revenue from 700 MHz Spectrum Auction	60,089.58	(8,427.11)	-	51,662.47
Revenue from 900 MHz Spectrum Auction	46,567.60	(18,430.64)	-	28,136.96
Revenue from 2600 MHz Spectrum Auction	5,539.02	-	-	5,539.02
Revenue from Satellite Orbital Slot Usage Fee	-	725.85	-	725.85
Total Non - Current Portion	112,196.20	(26,131.90)	-	86,064.30
Total Deferred Public Revenue to the Treasury	140,744.91	2,898.78	(28,593.49)	115,050.20
Current Portion				
Fines	3.48	3.08	(3.48)	3.08
Revenue from 700 MHz Spectrum Auction	8,454.18	8,450.73	(8,454.18)	8,450.73
Revenue from 900 MHz Spectrum Auction	18,434.82	18,434.42	(18,434.82)	18,434.42
Revenue from 1800 MHz Spectrum Auction	5,321.92	1.10	(5,321.92)	1.10
Revenue from Digital TV Spectrum Auction	1.28	4.96	(1.28)	4.96
Revenue from 2600 MHz Spectrum Auction	5.33	0.77	-	6.10
Revenue from 26 GHz Spectrum Auction	27.98	4.19	-	32.17
Revenue from FM Frequency Auction	-	568.38	(568.38)	-
Revenue from Satellite Orbital Slot Usage Fee	-	2.00	-	2.00
Revenue from Premium Number Auction	0.05	0.07	(0.05)	0.07
Revenue remitted under Section 84	9,263.90	1,594.29	(10,858.19)	-
Revenue from the 1 Por Nor Radio Station	25.64	4.59	(25.64)	4.59
Remittance as Public Revenue 2021	895.15	-	(895.15)	-
Remittance as Public Revenue 2022	-	1,609.49	-	1,609.49
Total Current Portion	42,433.73	30,678.07	(44,563.09)	28,548.71
Non - Current Portion				
Revenue from 700 MHz Spectrum Auction	68,516.69	(8,427.11)	-	60,089.58
Revenue from 900 MHz Spectrum Auction	64,998.24	(18,430.64)	-	46,567.60
Revenue from 2600 MHz Spectrum Auction	5,539.02	-	-	5,539.02
Total Non - Current Portion	139,053.95	(26,857.75)	-	112,196.20
Total Deferred Public Revenue to the Treasury	181,487.68	3,820.32	(44,563.09)	140,744.91

Note 22 – Deferred Output Tax on Spectrum Auction

(Unit: Million Baht)

	2023	2022
Current Portion		
900 MHz Spectrum Auction	1,330.11	1,330.11
700 MHz Spectrum Auction	729.48	729.48
Accrued Revenue – Telecommunications	49.85	49.33
Total Current Portion	2,109.44	2,108.92
Non - Current Portion		
900 MHz Spectrum Auction	1,863.01	3,193.12
700 MHz Spectrum Auction	4,376.91	5,106.39
2600 MHz Spectrum Auction	2,358.33	2,358.33
Satellite Orbital Slot Usage Fees	50.81	-
Total Non - Current Portion	8,649.06	10,657.84
Total Deferred Output Tax on Spectrum Auction	10,758.50	12,766.76

Note 23 – Contributions to the Digital Economy and Society Development Fund

(Unit: Million Baht)

	Opening Balance	Transactions during the Period		Closing Balance
	As of January 1, 2023	Accrued Remittance Increase (Decrease)	Remittance	As of December 31, 2023
Revenue from Section 65	105.87	1,228.43	(1,196.73)	137.57
700 MHz Spectrum Auction	334.49	334.49	(334.49)	334.49
900 MHz Spectrum Auction	570.96	570.96	(570.96)	570.96
Total Current Portion	1,011.32	2,133.88	(2,102.18)	1,043.02
700 MHz Spectrum Auction	2,341.42	(334.49)	-	2,006.93
900 MHz Spectrum Auction	2,854.80	(570.96)	-	2,283.84
2600 MHz Spectrum Auction	977.47	-	-	977.47
Total Non - Current Portion	6,173.69	(905.45)	-	5,268.24
Total Contributions to Digital Economy and Society Development Fund	7,185.01	1,228.43	(2,102.18)	6,311.26

Note 23 – Contributions to the Digital Economy and Society Development Fund (Continued)

(Unit: Million Baht)

	Opening Balance	Transactions during the Period	Closing Balance
	As of January 1, 2023	Accrued Remittance Increase (Decrease)	As of December 31, 2023
Revenue from Section 65	153.31	1,239.74	(1,287.18)
700 MHz Spectrum Auction	334.49	334.49	(334.49)
900 MHz Spectrum Auction	570.97	570.96	(570.97)
1800 MHz Spectrum Auction	938.33	-	(938.33)
FM Frequency Auction	-	102.48	(102.48)
Total Current Portion	1,997.10	2,247.67	(3,233.45)
700 MHz Spectrum Auction	2,675.91	(334.49)	-
900 MHz Spectrum Auction	3,425.76	(570.96)	-
2600 MHz Spectrum Auction	977.47	-	-
Total Non - Current Portion	7,079.14	(905.45)	-
Total Contributions to Digital Economy and Society Development Fund	9,076.24	1,342.22	(3,233.45)
			7,185.01

In compliance with Section 24 of the Development of Digitality for Economy and Society Act, B.E. 2560 (2017), the contributions to the Digital Economy and Society Development Fund as of December 31, 2023 and 2022, were 6,311.26 and 7,185.01 million baht respectively. The Office of the NBTC has allocated the budget at a rate of 15 percent of the revenue from spectrum allocation, and the Office of the NBTC's revenue, as from January 25, 2017 onwards.

Note 24 – Net Financial Lease Payable

(Unit: Million Baht)

December 31, 2023

	Not exceeding 1 year	1 – 5 years	Total
Aggregate Amount of Minimum Lease Payments	77.87	89.25	167.12
Interest of Deferred Financial Lease	(5.58)	(4.42)	(10.00)
Present Value of Total Minimum Lease Payments	72.29	84.83	157.12

(Unit: Million Baht)

December 31, 2023

	Not exceeding 1 year	1 – 5 years	Total
Aggregate Amount of Minimum Lease Payments	82.07	92.46	174.53
Interest of Deferred Financial Lease	(6.51)	(4.69)	(11.20)
Present Value of Total Minimum Lease Payments	75.56	87.77	163.33

Note 24 – Net Financial Lease Payable (Continued)

Changes in financial lease liabilities for the year are as follows:

(Unit: Million Baht)

	2023	2022
Closing Balance as of January 1	163.33	230.38
Increase in Financial Lease Liabilities	89.54	26.02
Reimbursement of Financial Lease Liabilities	(96.94)	(98.91)
Changes in Deferred Interest of Financial Lease	1.19	5.84
Closing Balance	157.12	163.33

Note 25 – Other Current Liabilities

(Unit: Million Baht)

	2023	2022
Accrued Expenses	721.41	927.29
Accrued Withholding Tax	2.40	2.97
Revenue Department Payable	255.67	-
Other Current Liabilities	3.33	3.32
Total Other Current Liabilities	982.81	933.58

Note 26 – Deferred Revenue from Spectrum Refarming to the BTFP

The deferred revenue from spectrum refarming to the BTFP, as of December 31, 2023 and 2022, in a total of 27,177.37 and 27,177.37 million baht respectively, were the money to be remitted to the BTFP, according to the spectrum refarming ratio, in order to reallocate such spectrum according to the Notification of the NBTC on Criteria and Procedures for Spectrum Licensing for International Mobile Telecommunications Service in the Frequency Bands of 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz. The BTFP shall disburse the fund to those affected by spectrum refarming as compensation, restitution, or remuneration, according to the Act on the Organization B.E. 2553 (2010) and its amendment.

The Office of the NBTC has allocated the 2600 MHz spectrum band that was retrieved for reallocation, based on the ratio to be remitted to the BTFP for 30,174.34 million baht. The first installment was allocated to the BTFP in 2020 for 3,000.33 million baht. The remaining amount of 3.36 million baht from the frequency auction expenses will be allocated to the BTFP in 2023. For the 6 remaining installments for 27,174.01 million baht, the Office of the NBTC shall allocate to the BTFP when receiving payments from the spectrum licensees during 2025 – 2030.

Note 27 – Receivable under Provisional Measure

Receivable under the provisional measure as of December 31, 2023 and 2022 for 603.81 and 603.81 million baht respectively, were the revenue from service provision on behalf of the state in 2019, in a total of 603.81 million Baht, deriving from the minimum income remittance of mobile service provision on the

Note 27 – Receivable under Provisional Measure (Continued)

1800 MHz and 850 MHz spectrum bands during the consumer protection period, under the Notification of the NBTC on Provisional Measures for Consumer Protection, in case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013). According to Section 7 of the Notification, it assigns the service providers to be the payees of the service provision revenue, on behalf of the state during the protection period, by separating the receipt account specifically, and reporting the income amount and its profit, deducted by the interconnection cost, the telecommunication numbering fee, the administrative cost, and other necessary operating costs. Then, the surplus shall be submitted to the Office of the NBTC for auditing before forwarding as public revenue. In this regard, the service providers have refused the Office of the NBTC's order to submit such revenue. Currently, it is in the process of filing the lawsuit to the Administrative Court.

Such revenue from service provision on behalf of the state, in a total of 603.81 million baht, has already been remitted completely as public revenue in 2019, by the Office of the NBTC, shown as remittance to the Ministry of Finance under the provisional measure.

Note 28 – Other Non - Current Liabilities

(Unit: Million Baht)

	2023	2022
Contract Insurance Deposits	58.33	87.20
Performance Insurance	5.96	5.76
Damage Insurance	2.95	0.09
Deposit of the Monument Construction Costs	0.39	0.39
Other Deposits	-	0.15
Total Other Non - Current Liabilities	67.63	93.59

Note 29 – Revenue from Spectrum Auction and Satellite Orbital Slot Usage

(Unit: Million Baht)

	2023	2022
Revenue from FM Frequency Auction	-	683.32
Revenue from Satellite Orbital Slot Usage Fee	813.03	2.00
Total Revenue from Spectrum Auction and Satellite Orbital Slot Auction	813.03	685.32

Note 30 – Revenue of State Enterprises under Section 84, Paragraph Three

The Office of the NBTC had the revenue of state enterprises under Section 84, Paragraph Three for the year ended December 31, 2022, for 1,594.29 million baht, which was the revenue from legitimate spectrum licensees for telecommunications service provision under the Act on the Organization B.E. 2553 (2010) and its amendment. The Act stipulates that, when the specified period of three years has elapsed since the effective date of the Act, the state enterprises' operational revenues derived from the permission, concession, or contracts, according to Paragraph Two, under the law, regarding to private sector participation with, or operation in the state undertakings, whether in whole or in part, shall be deducted by the operating expenses. The surplus shall be remitted to the NBTC. Accordingly, the NBTC shall remit such surplus revenue as public revenue.

**Note 31 – Revenue from License Application and Licensing Fees**

(Unit: Million Baht)

	2023	2022
Revenue from Radiocommunications Frequency Compensation	280.57	310.40
Revenue from Telecommunications Business Licensing Fees	4,566.43	4,536.95
Revenue from Broadcasting Business Licensing Fees	0.36	0.84
Revenue from Television Business Licensing Fees	156.41	162.90
Revenue from Drone Business Licensing Fees	5.03	4.54
Revenue from Satellite Business Licensing Fees	0.02	3.55
Revenue from Licensing Fees under Section 70	2.85	3.87
Revenue from Other Fees – Broadcasting and Television Businesses	1.48	1.09
Total Revenue from License Application and Licensing Fees	5,013.15	5,024.14

Note 32 – Revenue from Numbering Fees

(Unit: Million Baht)

	2023	2022
Revenue from Numbering Fees	3,176.37	3,238.82
Total Revenue from Numbering Fees	3,176.37	3,238.82

Note 33 – Other Revenues

(Unit: Million Baht)

	2023	2022
Revenue from the 1 Por Nor Radio Station	-	4.01
Net Profit from Disposal of Assets	-	14.14
Interest Earned	113.61	58.83
Gains from Changes in Employee Benefit Assumptions	-	251.57
Other Revenues	104.26	54.84
Total Other Revenues	217.87	383.39

Note 34 – Compensation, Restitution, or Remuneration to the Television Operators

(Unit: Million Baht)

	2023	2022
MUX Compensation	1,532.16	1,649.80
Total Compensation, Restitution, or Remuneration to the Television Operators	1,532.16	1,649.80



**Note 35 – Remittance to the Treasury**

(Unit: Million Baht)

	2023	2022
Remittance from 900 MHz Spectrum Auction	18.62	3.78
Remittance from 1800 MHz Spectrum Auction	0.31	1.10
Remittance from Digital TV Spectrum Auction	14.90	4.96
Revenue of State Enterprise under Section 84, Paragraph Three	-	1,594.29
Remittance from Premium Number Auction	0.21	0.07
Remittance from 700 MHz Spectrum Auction	84.41	23.62
Remittance from 2600 MHz Spectrum Auction	0.01	0.77
Remittance from 26 GHz Spectrum Auction	0.06	4.19
Remittance from FM Frequency Auction	-	568.38
Remittance from Satellite Orbital Slot Usage Fee	770.92	2.00
Total Expenses of Remittance to the Treasury	889.44	2,203.16

Note 36 – Expenses on Auction and Spectrum Refarming

(Unit: Million Baht)

	2023	2022
Expenses Allocated to the BTFP from Auction of Refarmed Spectrum	-	3.36
FM Frequency Auction Operating Expenses	-	12.45
Satellite Auction Operating Expenses	18.30	7.28
Total Spectrum Auction and Refarming Expenses	18.30	23.09

Note 37 – Expenses by the Judgment of the Supreme Administrative Court

(Unit: Million Baht)

	2023	2022
Expenses by the Judgment of the Supreme Administrative Court	6.75	4.05
Total Expense by the Judgment of the Supreme Administrative Court	6.75	4.05

The expenses by the judgment of the Supreme Administrative Court as of December 31, 2022, for 4.05 million baht was the expense by the judgment of the Supreme Administrative Court for the Undecided Case No.894/2014, for 3.38 million baht, relating to violation by noncompliance with the mobile number portability provision, and the expense by the judgment of the Supreme Administrative Court for the Undecided Case No.159/2019, for 0.67 million baht, relating to subscription television business licenses.

The expenses by the judgment of the Supreme Administrative Court as of December 31, 2023, for 6.75 million baht was the expense by the judgment of the Supreme Administrative Court for the Undecided Case No.413/2015, the Decided Case No.1213/2022, for 6.75 million baht, relating to violation by noncompliance with the mobile number portability provision.

Note 38 – Human Resources Expenses

(Unit: Million Baht)

	2023	2022
Employee Payrolls	1,316.49	1,268.90
Special Remuneration	253.18	228.61
NBTC Remuneration	25.38	18.25
Monthly Remuneration	160.86	115.61
Medical Expenses	255.70	217.95
Welfares	31.86	29.39
Provident Fund	118.93	106.03
Total Human Resources Expenses	2,162.40	1,984.74

Note 39 – Pension

(Unit: Million Baht)

	2023	2022
Pension	427.72	155.30
Medical Expenses	3.84	2.99
Total Pension	431.56	158.29

Note 40 – Remuneration

(Unit: Million Baht)

	2023	2022
Meeting Allowances	32.17	29.06
Total Remuneration	32.17	29.06



**Note 41 – General and Administrative Expenses**

(Unit: Million Baht)

	2023	2022
Domestic Travel Expenses	44.02	29.52
Rental	144.79	144.46
Maintenance Fees	306.33	327.12
Service Fees	157.87	149.49
Entertainment Allowances	5.95	16.96
Formality Fees	4.60	4.39
Taxes and Charges	16.62	11.38
Training and Seminar Expenses	73.31	63.55
Public Relations Expenses	138.88	154.85
Meeting Administrative Expenses	63.74	38.83
Radiocommunications Calibration Expenses	4.89	9.23
Consultant Fees	212.78	199.37
Money for Donation and Charity	2.14	2.10
Miscellaneous	7.67	13.20
International Travel Expenses	85.21	59.91
Total General and Administrative Expenses	1,268.80	1,224.36

Note 42 – Material Expenses

(Unit: Million Baht)

	2023	2022
Material Costs	32.05	31.74
Equipment Costs below the Threshold	3.73	10.60
Total Material Expenses	35.78	42.34

Note 43 – Utility Expenses

(Unit: Million Baht)

	2023	2022
Electricity Charges	45.81	38.06
Water Supply Charges	1.30	1.12
Office Telephone Usage Charges	1.52	1.50
Mobile Phone Usage Charges	21.42	17.95
DSTV Cable TV Service Charges	0.07	0.07
Internet Service Charges	19.17	21.74
Postage Fees	2.34	2.74
Total Utility Expenses	91.63	83.18

Note 44 – Depreciation and Amortization

(Unit: Million Baht)

	2023	2022
Depreciation – Buildings and Improvements	42.39	32.60
Depreciation – Electric Appliances and Radios	188.35	199.57
Depreciation – Computers	44.70	47.82
Depreciation – Vehicles and Transports	10.81	5.00
Depreciation – Office Supplies and Others	94.57	23.78
Depreciation – Financial Lease	21.53	97.84
Total Depreciation	402.35	406.61
Amortization – Computer Programs	212.44	228.44
Total Amortization	212.44	228.44
Total Depreciation and Amortization	614.79	635.05

Note 45 – Financial Support for Education, Research and Development in Broadcasting, Television, and Telecommunications Businesses

(Unit: Million Baht)

	2023	2022
Financial Support for Education, Research and Development	230.10	413.80
Scholarship Support Expenses	3.20	3.74
Total Financial Support for Education, Research and Development in Broadcasting, Television, and Telecommunications Businesses	233.30	417.54

Note 46 – Other Expenses

(Unit: Million Baht)

	2023	2022
Losses from Assets Disposal	16.21	-
Losses from Termination of Financial Lease	-	0.19
Doubtful Debts	2.22	3.32
Total Other Expenses	18.43	3.51

Note 47 – Significant Disputes and Litigations

1. The significant disputes and litigations, having the Office of the NBTC as the plaintiff, with the total capital amount of 5,884.24 million baht, can be divided into 2 groups as follows:

1.1 The group of winning the cases, compensation must be paid to the plaintiff according to the ruling of the Supreme Administrative Court, with a capital amount of 273.95 million baht, consisting of the following:





Note 47 – Significant Disputes and Litigations (Continued)

1.1.1 The Office of the NBTC was the plaintiff for the breach of lease of the 98.5 MHz radio station, and claimed for compensation, according to the Undecided Case No.9278/2015 (the Undecided Case No.4800/2010, and the Decided Case No.4067/2011), with a capital amount of 43.74 million baht. Currently, it is in process of debtor's asset investigation for legal execution.

1.1.2 The Office of the NBTC was the plaintiff for the breach of lease of the 1 Por Nor radio station, and claimed compensation, according to the Undecided Case No.17794/2014 (the Undecided Case No.6024/2009, and the Decided Case No.1935/2011), with a capital amount of 74.70 million baht. The Supreme Court has sentenced the defendant to pay the compensation, as the debtor has no assets for compulsory performance.

1.1.3 The Office of the NBTC was the plaintiff in the case of the breach of radiocommunications devices rental contract, according to the Undecided Case No.2618/2006 (the Decided Case No.646/2007), with a capital amount of 8.18 million baht. Currently, it is in the process of asset investigation for integrating with the debtor's assets.

1.1.4 The Office of the NBTC was the plaintiff in the case of overdue payment for annual licensing fees, according to the Undecided Case No.2731/2019 (the Decided Case No.4952/2019), with a capital amount of 128.63 million baht. Currently, it is in the process of debtor's asset investigation for legal execution.

1.1.5 The Office of the NBTC was the plaintiff in the case requiring the payment of the broadcasting annual licensing fees, according to the Undecided Case No.4609/2023 (the Decided Case No.6364/2023), with a capital amount of 18.70 million baht. Currently, it is in the process of debtor's asset investigation for legal execution.

1.2 The group of winning the cases, money can be collected from the defendants, according to the ruling of the Supreme Administrative Court, with a capital amount of 5,610.29 million baht, consisting of the following:

1.2.1 The Office of the NBTC was the plaintiff in the case of remitting the revenue from mobile service provision on the 1800 MHz spectrum band, during the consumer protection period, as from the effective date of the Provisional Measures for Consumer Protection, in case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), until the end of mobile service period on the 1800 MHz band, according to the Undecided Case No.1228/2016, with a capital amount of 3,637.64 million baht, and the Undecided Case No.490/2016, with a capital amount of 878.38 million baht. Also, the Office of the NBTC was the defendant of the Undecided Case No.2013/2015, 1712/2016, and 2392/2018 with 490/2016, which have been consolidated by the Court's order, having the Undecided Case No.2013/2015 as the main case. The response to the appeal is currently being prepared, and must be submitted by January 15, 2024. Additionally, according to the Undecided Case No.1441/2016 with a capital amount of 950.56 million baht, and the Office of the NBTC was the defendant of the Undecided Case No.1997/2015 and 2399/2018, which have been consolidated by the Court's order, having the Undecided Case No.1997/2015 as a main case, which has already submitted a response to the appeal, on April 28, 2022. Subsequently, on January 5, 2023, the Office of the Supreme Administrative Court sent a copy of the plaintiff's response to the appeal, dated December 28, 2022, for acknowledgement.



Note 47 – Significant Disputes and Litigations (Continued)

1.2.2 The Office of the NBTC was the plaintiff in the dispute regarding the resolution made by the NBTC, in the 5th/2020, on March 25, 2020, agenda item 5.2.15, which approved the defendant to remit revenue from mobile service provision on the 850 MHz and 1800 MHz spectrum bands during the consumer protection period, as from the effective date of the Provisional Measures for Consumer Protection, according to the Undecided Case No.642/2021, with a capital amount of 143.71 million baht. On March 3, 2022, the public prosecutor submitted an objection to the testimony to the Central Administrative Court.

2. The significant disputes and litigations, having the Office of the NBTC as the defendant, with the total capital amount of 66,967.77 million baht, can be divided into 4 groups as follows:

2.1 The group of losing the cases, compensation must be paid to the plaintiff according to the ruling of the Supreme Administrative Court, with a capital amount of 34,050.68 million baht, consisting of the following:

2.1.1 The Office of the NBTC was the defendant in the administrative contract dispute, according to the Undecided Case No.701/2017 (the Undecided Case No.1370/2015, and the Decided Case No.1911/2017), with a capital amount of 9.32 million baht. The case is currently under consideration by the Supreme Administrative Court.

2.1.2 The Office of the NBTC was the defendant in the case involving a tort committed by an administrative agency or a state official, arising from the issuance of a regulation, in case of prescribing the Notification of the NBTC on Provisional Measures for Consumer Protection, in case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), and the Notification of the NBTC on Provisional Consumer Protection in Case of Termination of Permission, Concession, under the NCPO Order No.94/2014, on Suspension of Actions under the Laws Concerning the Organization for Spectrum Allocation and Regulation of Broadcasting, Television, and Telecommunications Businesses. There was a request for the defendants to jointly or severally pay 4,254.49 million baht plus interest to the plaintiff, according to the Undecided Case No.1203/2022 (the Undecided Case No.1651/2015 and the Decided Case No.729/2022). An appeal has been submitted to the Supreme Administrative Court, which was accepted on July 18, 2022. On February 2, 2023, a response to the appeal was filed with the Supreme Administrative Court.

2.1.3 The Office of the NBTC was the defendant in the case involving a claim for damage arising from actions taken under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), where the plaintiff's expenses exceeded their income, and a request for the refund of 190.97 million baht in the telecommunication numbering fees already paid by the plaintiff, according to the Undecided Case No.2013/2015, with a capital amount of 16,265.06 million baht plus a 7.5 percent per annum interest rate, and the Undecided Case No.1712/2016, with a capital amount of 709.65 million baht, plus interest as requested in the complaint. The Administrative Court rendered the order to consolidate the Undecided Case No.1712/2016, the Undecided Case No. 2392/2018, the Undecided Case No.490/2016, and the Undecided Case No.1228/2016, having the Undecided Case No.2013/2015 as the main case. The response to the appeal is currently being prepared, and must be submitted by January 15, 2024.



Note 47 – Significant Disputes and Litigations (Continued)

2.1.4 The Office of the NBTC was the defendant in the dispute over the revenue and expenses during the provisional consumer protection period, under the Notification of the NBTC on Provisional Measures for Consumer Protection, in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), and the Notification of the NBTC on Provisional Consumer Protection in Case of Termination of Permission, Concession under the NCPO Order No.94/2014, on Suspension of Actions under the Laws Concerning the Organization for Spectrum Allocation and Regulation of Broadcasting, Television, and Telecommunications Businesses, according to the Undecided Case No.741/2016, with a capital amount of 1,881.45 million baht plus a 7.5 percent per annum interest rate. The response to the appeal was submitted on June 30, 2023.

2.1.5 The Office of the NBTC was the defendant in the case involving compensation for the use of telecommunications equipment and networks, during the provisional consumer protection period, under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), according to the Undecided Case No.1229/2022 (the Undecided Case No.918/2015, and the Decided Case No.730/2022), with a capital amount of 5,365.84 million baht plus interest. The response to the appeal was submitted on December 20, 2022.

2.1.6 The Office of the NBTC was the defendant in the dispute over the resolution of the 20th/2018 NBTC meeting, on October 31, 2018, which approved the criteria and consideration results of network usage fee of the plaintiff for mobile phone service provision on the 900 MHz spectrum band, during the provisional consumer protection period, under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision, B.E. 2556 (2013), according to the Undecided Case No.1775/2019, with a capital amount of 5,564.87 million baht. The Administrative Court received the defendant's testimony on October 25, 2021.

2.2 The group of losing the cases, compensation must be paid by the BTFP to the plaintiff, according to the ruling of the Supreme Administrative Court, with a capital amount of 20,779.80 million baht, consisting of the following:

2.2.1 The Office of the NBTC was the defendant in the dispute over the resolution of the 10th/2020 NBTC meeting, on June 10, 2020, the agenda item 5.3.6 regarding the Consideration of the notification confirming the details and proportion of compensation or remuneration for the recall of the 2500 – 2690 MHz spectrum bands from MCOT Public Company Limited, which set the spectrum holding period for the plaintiff at approximately 6 years and 5 months, and determined the value of compensation, restitution, or remuneration to be paid in installments, corresponding to the payment schedule for the spectrum from the 2600 MHz spectrum band auction, was unlawful, inappropriate, and unfair, according to the Undecided Case No.2239/2020, with a capital amount of 3,235.84 million baht. The additional testimony was submitted to the Central Administrative Court, on July 19, 2022.

2.2.2 The Office of the NBTC was the defendant in the dispute over the resolution of the 10th/2020 NBTC meeting, on June 10, 2020, the agenda item 5.3.6 regarding the Consideration of the notification confirming the details and proportion of compensation or remuneration for the recall of the 2500 – 2690 MHz spectrum bands, according to the Undecided Case No.2229/2020, with a capital amount of 17,543.96 million baht, plus interest as requested in the complaint. The additional testimony was submitted on June 10, 2022.



Note 47 – Significant Disputes and Litigations (Continued)

2.3 The group of losing the cases, money must be refunded to the plaintiff, according to the ruling of the Supreme Administrative Court, with a capital amount of 69.59 million baht, consisting of the following:

2.3.1 The Office of the NBTC was the defendant in the case seeking to revoke the NBTC's meeting resolution that mandated the fee payment for renewing experimental radio operations, which was alleged to be unlawful due to the resolution requiring such payments, according to the Undecided Case No.195/2019, with a capital amount of 42.59 million baht. The additional testimony was submitted. Currently, it is in the trial process of the Central Administrative Court.

2.3.2 The Office of the NBTC was the defendant in the case involving unlawful order/regulation that determined the spectrum auction payment terms, and the return of letters of guarantee, according to the Undecided Case No.1942/2019, with a capital amount of 27.00 million baht. It is currently in the trial process of the Court.

2.4 The group of losing the cases, money cannot be collected from the plaintiffs, according to the ruling of the Supreme Administrative Court, with a capital amount of 12,067.70 million baht, consisting of the following:

2.4.1 The Office of the NBTC was the defendant in the case seeking to revoke the NBTC's meeting resolution, and the order to remit the revenue from service provision under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), according to the Undecided Case No.2392/2018, in the amount of 2,311.97 million baht, plus incurred interest. Additionally, the administrative order by the NBTC's meeting resolution should be revoked, and the decision of the working group reviewing the income, as well as the Office of the NBTC's review of the plaintiff's income and expenses from services provided under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), and the second amendment, should also be annulled. The Administrative Court rendered the order to consolidate the Undecided Case No.1712/2016, the Undecided Case No.2392/2018, the Undecided Case No.490/2016, and the Undecided Case No.1228/2016, having the Undecided Case No.2013/2015 as the main case. The response to the appeal is currently being prepared, and must be submitted by January 15, 2024.

2.4.2 The Office of the NBTC was the defendant in the case of imposing the order to remit the revenue from service provision under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), according to the Undecided Case No.749-751/2022 (the Undecided Case No.1997/2015, 1441/2016, and 2399/2018), (the Decided Case No.526-528/2022 in the Central Administrative Court), with a capital amount of 950.56 million baht, and the Undecided Case No.2399/2018, with a capital amount of 241.88 million baht. The response to the appeal was submitted on April 28, 2022. The Supreme Administrative Court is currently determining the end date for fact-finding.



Note 47 – Significant Disputes and Litigations (Continued)

2.4.3 The Office of the NBTC was the defendant for the request for remitting the revenue from mobile service provision on the 900 MHz spectrum band, during the consumer protection period, under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), and its amendment, according to the Undecided Case No.175-176/2020 (the Undecided Case No.661/2017, 336/2017, and the Decided Case No.802-803/2020), with a capital amount of 7,221.00 million baht plus interest as requested in the complaint. The plaintiff has already submitted the response to the appeal to the Supreme Administrative Court.

2.4.4 The Office of the NBTC was the defendant in the case of having the resolution and/or imposing the order to pay the administrative fine at the rate of 1,239,538.88 baht per day, due to violation or noncompliance with the Notification of the NTC on Criteria for Mobile Number Portability and the guidelines on the mobile operator transfer, according to the Undecided Case No.1995/2020 and the Undecided Case No.1361/2017, with a capital amount of 79.33 million baht. The Administrative Court rendered the order to consolidate with the Undecided Case No.1995/2020. On December 12, 2023, the Central Administrative Court issued an order allowing the merged company to assume the rights of the original plaintiff.

2.4.5 The Office of the NBTC was the defendant in the case of having the resolution and/or imposing the order to pay the administrative fine at the rate of 5,400,591.64 baht per day, due to violation or noncompliance with the Notification of the NTC Criteria for the Mobile Number Portability and the guidelines on the mobile operator transfer, according to the Undecided Case No.306/2020 (1283/2015) and the Undecided Case No.307/2020, with a capital amount of 221.42 million baht. The Supreme Administrative Court is currently determining the end date for fact-finding.

2.4.6 The Office of the NBTC was the defendant in the dispute involving the resolution of the 20th/2019 NBTC meeting, on November 26, 2019, which approved the criteria and results of the examination of public revenue from service provision during the consumer protection period, the method for calculating interest, and the remittance of revenue from mobile phone service provision, under the Notification of the NBTC on Provisional Measures for Consumer Protection in Case of Termination of Permission, Concession, or Contracts of Mobile Service Provision B.E. 2556 (2013), and the second amendment, as well as the resolution of the 5th/2020 NBTC meeting, on March 25, 2020, which amended to remit additional revenue from mobile service provision during the consumer protection period, under the aforementioned Notification, as well as the dispute resolution notice, and the amended dispute resolution notice, according to the Undecided Case No. 648/2020, with a capital amount of 132.80 million baht. The additional testimony was submitted on January 7, 2022.

2.4.7 The Office of the NBTC was the defendant in the dispute involving the NBTC having the resolution in the 5th/2020 NBTC meeting, on March 25, 2020, and the 9th/2020 NBTC meeting, on May 17, 2020, that adjudicated the appeal against the order determining the deadline for the administrative fine, in cases where the plaintiff did not comply with the Notification of the NTC on Criteria for Mobile Number Portability and the guidelines on the mobile operator transfer, according to the Notification of the NTC on Criteria for Mobile Number Portability, according to the Undecided Case No.2212/2020, with a capital amount of 604.87 million baht (the sum of the Undecided Case No.306/2020 (1283/2015), which the additional testimony was submitted on March 2, 2022,

Note 47 – Significant Disputes and Litigations (Continued)

and the Undecided Case No.307/2020 (1357/2017), with a capital amount of 221.42 million baht). The Supreme Administrative Court is currently determining the end date for fact-finding.

2.4.8 The Office of the NBTC was the defendant in the dispute involving the NBTC having the resolution in the 5th/2020 NBTC meeting, on March 25, 2020, the agenda item 5.2.15, approving the defendant to remit the revenue from mobile service provision on the 850 MHz and 1800 MHz spectrum bands, during the consumer protection period, as from the effective date of the Provisional Measures for Consumer Protection, according to the Undecided Case No.642/2021, with a capital amount of 143.71 million baht. On March 3, 2022, the public prosecutor submitted an objection to the testimony to the Central Administrative Court.

2.4.9 The Office of the NBTC was the defendant in the case of determining the administrative fine at the rate of 186,669 baht (one hundred eighty-six thousand, six hundred, sixty-nine baht), per day, as from May 16, 2014, due to noncompliance with the Notification of the NBTC on the Maximum Rate of Service Tariff for Domestic Mobile Voice Service B.E. 2555 (2012). Additionally, there were requests for 1) repealing the Administrative Act of the Secretary-General of the NBTC, according to the official letter No.5012/22962, dated July 17, 2014, 2) repealing the resolution of the agenda item 5.2.4 of the 15th/2020 NBTC meeting, on August 26, 2020, and 3) repealing the Administrative Act according to the official letter No.2402/29488, dated September 28, 2020, according to the Undecided Case No.2927/2020, with a capital amount of 86.56 million baht. The additional testimony was submitted on September 19, 2022.

2.4.10 The Office of the NBTC was the defendant in the case of determining the administrative fine at the rate of 157,947 baht (one hundred fifty-seven thousand, nine hundred, forty-seven baht), per day, as from May 16, 2014, due to noncompliance with the Notification of the NBTC on the Maximum Rate of Service Tariff for Domestic Mobile Voice Service B.E. 2555 (2012). Additionally, there were requests for 1) repealing the Administrative Act of the Secretary-General of the NBTC, according to the official letter No.5012/22961, dated July 17, 2014, 2) repealing the resolution of the agenda item 5.2.4 of the 15th/2020 NBTC meeting, on August 26, 2020, and 3) repealing the Administrative Act according to the official letter No.2402/29489, dated September 28, 2020, according to the Undecided Case No.2922/2020, with a capital amount of 73.60 million baht. The additional testimony was submitted on January 19, 2022.

Note 48 – Obligations

- Service Contract Obligations

The Office of the NBTC had the service contract obligations for public relations, and various maintenance services, in a total of 48.69 million baht (Year 2022 for 110.80 million baht).

- Capital Expenditure Obligations

(Unit: Million Baht)

	2023	2022
Non - accrued Contracts		
Land, Building and Structure	1,228.46	1,545.23
Equipment and Others	278.17	358.51
Total	1,506.63	1,903.74

Note 48 – Obligations (Continued)

- Procurement Contract and Other Services Obligations

The Office of the NBTC had the obligations from the procurement contracts and other services, as of December 31, 2023 and 2022, categorized by contract duration, as follows

(Unit: Million Baht)

	2023	2022
Not exceeding 1 year	140.67	615.12
Total	140.67	615.12

- Operational Lease Obligations

The Office of the NBTC had the minimum advance payment according to the noncancellable leases and service contracts, as of December 31, 2023 and 2022, as follows:

(Unit: Million Baht)

2023			
	Not exceeding 1 year	1 – 5 Years	Total
Leases			
Space Rental	17.98	-	17.98
Property Rental	45.87	54.07	99.94
Total Obligations	63.85	54.07	117.92

(Unit: Million Baht)

2022			
	Not exceeding 1 year	1 – 5 Years	Total
Leases			
Space Rental	15.27	0.81	16.08
Property Rental	288.16	-	288.16
Land Rental			
Service Contracts	0.37	-	0.37
Area Service Fee	0.76	-	0.76
Total Obligations	304.56	0.81	305.37

Note 49 – Public Revenue Report

The public revenue report is a separate report, accompanying the financial statement notes, regarded as an integral part of the financial statement notes.

Office of the National Broadcasting and Telecommunications Commission
Expenditure Budget Position Report
As of December 31, 2023

Expenditure Budget Position Report for the Fiscal Year 2023

(Unit: Million Baht)

Item	Net Budget after Transferred Change	Purchase Order/Contract	Disbursement	Balance
1. Expenditure Budget	5,261.25	758.18	3,919.44	583.63
1.1 Operating Expenses of the NBTC and the Office of the NBTC	4,132.71	308.96	3,595.43	228.32
1.2 Project Expenses	890.26	414.40	238.19	237.66
1.3 Central Budget	140.82	12.68	14.30	113.85
1.4 Operating Expenses of the Performance Follow-up and Evaluation Committee	97.47	22.14	71.52	3.80
2. Allocated Budget to the Fund	1,010.00	-	1,101.00	-
Total	6,271.25	758.18	4,929.44	583.63

Reserved Budget for Overlapping Disbursement Position Report (Before the Fiscal Year 2023)

(Unit: Million Baht)

Item	Reserved Budget for Overlapping Disbursement (Net)	Disbursement	Balance
1. Reserved Budget for Overlapping Disbursement 2021	782.42	492.22	290.20
1.1 Project Expenses	766.63	476.73	290.20
1.2 Central Budget	15.49	15.49	-
2. Reserved Budget for Overlapping Disbursement 2022	1,361.52	917.16	444.36
2.1 Operating Expenses of the NBTC and the Office of the NBTC	565.75	564.26	1.49
2.2 Project Expenses	736.27	293.52	442.75
2.3 Central Budget	6.06	5.93	0.12
2.4 Operating Expenses of the Performance Follow-up and Evaluation Committee	53.45	53.45	-
Total	2,143.95	1,409.38	734.57



Expenditure Budget Position Report for the Fiscal Year 2022

(Unit: Million Baht)

Item	Net Budget after Transferred Change	Purchase Order/Contract	Disbursement	Balance
1. Expenditure Budget	5,755.78	1,361.52	3,680.47	713.79
1.1 Operating Expenses of the NBTC and the Office of the NBTC	4,126.23	565.75	3,282.20	278.29
1.2 Project Expenses	1,391.00	736.27	351.38	303.35
1.3 Central Budget	145.59	6.06	21.10	118.43
1.4 Operating Expenses of the Performance Follow-up and Evaluation Committee	92.96	53.45	25.79	13.72
2. Allocated Budget to the Fund	1,010.00	-	1,010.00	-
Total	6,765.78	1,361.52	4,690.47	713.79

Reserved Budget for Overlapping Disbursement Position Report (Before the Fiscal Year 2022)

(Unit: Million Baht)

Item	Reserved Budget for Overlapping Disbursement (Net)	Disbursement	Balance
1. Reserved Budget for Overlapping Disbursement 2020	261.68	230.38	31.29
1.1 Project Expenses	261.68	230.38	31.29
2. Reserved Budget for Overlapping Disbursement 2021	1,515.78	725.97	789.81
2.1 Operating Expenses of the NBTC and the Office of the NBTC	398.72	392.85	5.87
2.2 Project Expenses	1,023.10	254.66	768.45
2.3 Central Budget	23.87	8.38	15.49
2.4 Operating Expenses of the Performance Follow-up and Evaluation Committee	70.09	70.09	-
Total	1,777.46	956.36	821.10

Office of the National Broadcasting and Telecommunications Commission

Public Revenue Report
As of December 31, 2023

(Unit: Million Baht)

	2023	2022
Collected Public Revenue		
Public Revenue – Non-Tax Revenue	2,898.78	3,820.32
Total Collected Public Revenue	2,898.78	3,820.32
<u>Subtract</u> Public Revenue Drawn Back from the Treasury	-	-
Public Revenue Allocated by Law	-	-
Net Collected Public Revenue	2,898.78	3,820.32
Deferred Public Revenue to the Treasury at the Beginning of the Period	140,744.91	181,487.68
Public Revenue Remitted to the Treasury	(28,593.49)	(44,563.09)
Deferred Public Revenue to the Treasury	115,050.20	140,744.91
<u>Adjusted</u> Deferred Public Revenue to the Treasury	-	-
Net Public Revenue Transaction	115,050.20	140,744.91

Public Revenue – Non-Tax Revenue

(Unit: Million Baht)

	2023	2022
Fines	5.08	3.08
Revenue from 900 MHz Spectrum Auction	18.62	3.78
Revenue from 1800 MHz Spectrum Auction	0.31	1.10
Revenue from Digital TV Spectrum Auction	14.90	4.96
Revenue from 700 MHz Spectrum Auction	84.41	23.62
Revenue from 2600 MHz Spectrum Auction	0.01	0.77
Revenue from 26 GHz Spectrum Auction	0.06	4.19
Revenue from FM Frequency Auction	-	568.38
Revenue from Satellite Orbital Slot Usage Fee	770.92	2.00
Revenue from Premium Number Auction	0.21	0.07
Revenue of State Enterprises under Section 84 Paragraph Three	-	1,594.29
Revenue from the 1 Por Nor Radio Station	0.90	4.59
Surplus remitted as Public Revenue of 2022	-	1,609.49
Surplus remitted as Public Revenue of 2023	2,003.36	-
Total Public Revenue – Non-Tax Revenue	2,898.78	3,820.32



Internal Audit Report of the Office of the NBTC for the Fiscal Year 2023

According to the Order of the National Broadcasting and Telecommunications Commission (NBTC) No. 2/2021, dated February 19, 2021, the Internal Audit Committee has been appointed, comprising 5 members as follows:

- | | |
|-----------------------------------|-----------------------------|
| (1) Admiral Jeerapat Pansakul | Chairman |
| (2) Miss Siluck Punnoom | Commissioner
*(resigned) |
| (3) Rear Admiral Wonsuree Boonmee | Commissioner |
| (4) Dr. Anada Pruettiangkura | Commissioner |
| (5) Mrs. Supa Yaimuang | Commissioner |

* Miss Siluck Punnoom, Internal Audit Commissioner, was approved by the Senate, on May 23, 2023, to hold the position of State Audit Commissioner, and resigned from the position of Internal Audit Commissioner of the Office of the NBTC, effective from June 1, 2023 onwards.

The Internal Audit Committee has performed its authority under Section 3 of the Regulation of the National Broadcasting and Telecommunications Commission, on Internal Audit B.E. 2554 (2011), with the rights to perform their duties without interference from the NBTC, the Office of the NBTC, and any organizations, as well as the Ministry of Finance's Criteria Regarding Internal Audit Standards and Practical Guidelines for Government Agencies B.E. 2561 (2018) and its amendment.

The Internal Audit Committee's performances under its authority for the year 2023 has focused on preventive monitoring, and recommendations for developing and improving the operation efficiency of the Office of the NBTC to promote a systematic work process based on Corporate Governance Code and preventing misconduct or corruption, as well as

emphasizing on monitoring issues concerning risks and effects on performances of the NBTC and the Office of the NBTC regularly. Accordingly, the Internal Audit Committee has organized 13 meetings to consider the significant issues, as follows:

1. Revising the charter of the Internal Audit Committee and the Internal Audit Committee Administration Department, in compliance with the Ministry of Finance's Criteria Regarding Internal Audit Standards and Practical Guidelines for Government Agencies B.E. 2561 (2018) and its amendment, to ensure the operational practices comply to the charter preparation framework specified by the Ministry of Finance, and fit with current organizational situation.

2. Examining validity and reliability of the financial report of the Office of the NBTC by verifying the accounting record and financial statement preparation. No evidence of incorrect financial statements against the essence of financial reporting standards have been found.

3. Verifying and evaluating the operations in finance, accounting, and inventory of the Office of the NBTC, and offering recommendations for improving and developing for more operation efficiency, as well as following up operations according to the recommendations given in the internal audit report for the past year.

4. Reviewing the efficiency and appropriateness of the risk and corruption risk management, which may affect the organization significantly, and conducting sufficiency assessment and following up operations under the risk management plan consistently, as well as offering risk management recommendations for more efficiency and effectiveness.

5. Verifying the internal control evaluation of the Office of the NBTC, including the performance efficiency and effectiveness evaluation of the Office of the NBTC's monitoring-related bureaus. No significant issues or faults have been found. The internal control has been conducted sufficiently and appropriately, in compliance with the Ministry of Finance's Criteria Regarding Internal Control Standards and Practical Guidelines for Government Agencies B.E. 2561 (2018).

6. Monitoring the operating systems under Corporate Governance Code, to comply with the NBTC regulations, orders, and operational standards, focusing on the target-oriented operations, according to the NBTC's policies with transparency.

7. Monitoring the operations and assessing the project expenditures of the Office of the NBTC to ensure the project undertakings have complied with the vision, mission, strategic plan, and strategies of the Office of the NBTC, as well as assessing the validity and worthiness of budget expenditure. According to the overall monitoring, no evidence of inappropriate conducts against the significance of the relevant rules, regulations, and agreements have been found. Additionally, the recommendations were provided to improve the project implementation, to effectively and efficiently achieve the organization's goals and outcomes.

From the operations mentioned above, the Internal Audit Committee concluded that the overall performance of the Office of the NBTC in 2023 has complied with Corporate Governance Code with transparency, efficiency and effectiveness, aligning with related laws, regulations, and criteria. Furthermore, the budget expenditure was cost-effective. The risk management and internal control were sufficiently performed. No significant observations have been found. Moreover, the financial statement preparation

has been carried out in compliance with the certified accounting standards appropriately, as well as the information disclosure in the financial statements has been conducted adequately and reliably.

For the year 2023, the Internal Audit Committee has conducted regulations, offered regulatory observations and recommendations to the operation and the management teams straightforwardly, by preparing the internal audit report and recommendations to the NBTC every 180 days. Moreover, the Committee has visited the regional offices of the NBTC to enhance mutual understanding regarding internal audit practices, and be informed about the problems and challenges to performing tasks of the Office of the NBTC, as well as offering guidance and useful recommendations for improving operational processes to be more efficient.

Besides, the Internal Audit Committee has focused on adopting digital technologies to continuously implement with management and coordination, aligning with the Office of the NBTC's significant policies which emphasize on organizational transformation to be the digital office. The Internal Audit Committee has utilized digital technologies to develop and enhance operations in every aspect to create integrated information as internal and external organization benefits.

Admiral



(Jeerapat Pansakul)

Chairman of the Internal Audit Committee

PART 5

Policy, Workplan and Expenditure Budget in 2024

Significant Policy and Workplan in 2024

- 1  Implement the Broadband Mapping in the GIS system.
- 2  Establish the Cell Broadcasting System/ Mobile Alert System in compliance with the government's urgent policies.
- 3  Drive the Office of the NBTC to become a fully digital office.
- 4  Promote policies aimed at achieving sustainable development goals.
- 5  Promote transparency in operational processes, and public participation through digital platforms.
- 6  Prevent cyber threats, and establish collaborative models with various agencies to combat and suppress all forms of technological crime.
- 7  Transition experimental FM radio stations to a fully licensing system.
- 8  Establish a concreat licensing system for digital radio broadcasting.
- 9  Promote program production, and program content broadcasting, to foster a creative society and benefit the public, as well as regulating broadcast contents covering both spatial and temporal aspects.
- 10  Prepare scenarios for the future of the television industry after the digital terrestrial television (DTT) licenses expire in 2029.
- 11  Implement measures according to the USO plan in the broadcasting, television, and telecommunications businesses.
- 12  Prepare to integrate service providers and streaming services into the NBTC's regulatory framework.
- 13  Drive the academic cluster to facilitate the Office of the NBTC to become an evidence-based regulator, with high-level academic competence, recognized internationally and actively participates in international forums.
- 14  Develop regulations and criteria to align with the dynamic digital landscape.
- 15  Support research and development in the application of 5G technology continuously, as well as 5G use cases, and 5G Private Network.
- 16  Manage the 3500 MHz spectrum band, and prepare the IMT spectrum allocation plan.
- 17  Promote competition in telecommunications business, and regulate it under post-merger measures, regulating last-mile services, and mobile internet service rates, as well as promoting MVNO service provision.
- 18  Accelerate the organization of communication lines, and install them underground.
- 19  Regulate the radiocommunications usage for vessel tracking and navigation aids.
- 20  Grant licenses for access rights to utilize satellite orbital slot package at the position 50.5, 51, and 142 degrees East.
- 21  Enhance consumer protection to address issues in the digital era, and develop modern and efficient mechanisms for resolving complaints.
- 22  Maintain the integrity and transparency assessment standards, and develop further for sustainability.



Significant Policy and Workplan in 2024

The NBTC and the Office of the NBTC have established significant policies and Workplan for the year 2024, to drive missions regarding regulation in the broadcasting, television, telecommunications, and satellite businesses, as follows:

1. Implement the Broadband Mapping in the GIS system, to serve as the nation's telecommunications infrastructure database, ensuring national security and efficient development of the nation.

2. Establish the Cell Broadcasting System/ Mobile Alert System in compliance with the government's urgent policies, specifically for wireless telecommunications operators, to facilitate directives from the responsible state agencies.

3. Drive the Office of the NBTC to become a fully digital office, by reducing paper usage, starting from the department level, including the research fund committee meetings, and integrating the Office of the NBTC's data with the database for the MIS system and the broadband mapping, leading to the Office of the NBTC's Single Window Information system, as well as improving the Office of the NBTC's website and channels to integrate information, and facilitate the public to access services easily.

4. Promote policies aimed at achieving sustainable development goals, such as calculating carbon footprints, reducing plastic waste, and decreasing office of the NBTC's energy consumption.

5. Promote transparency in operational processes, and public participation through digital platforms, as well as organizing various activities, including the Traffy Fondue system deployment in the Office of the NBTC's service provision, and cyber emergency notification.

6. Prevent cyber threats, and establish collaborative models with various agencies to combat and suppress all forms of technological crime,

respond and adapt swiftly, and promote the use of modern technology to build confidence, and ensure telecommunication service security of the nation, as well as collaborating with operators to support the use of tools for detecting, monitoring, and preventing cyber threats, specifically for telecommunications infrastructure, to protect against data theft, and the misuse of telecommunications systems for technological crimes.

7. Transition experimental FM radio stations to a fully licensing system.

8. Establish a concrete licensing system for digital radio broadcasting, to enhance broadcasting to align with the technology dynamic.

9. Promote program production, and program content broadcasting, to foster a creative society and benefit the public, as well as regulating broadcast contents covering both spatial and temporal aspects.

10. Prepare scenarios for the future of the television industry after the digital terrestrial television (DTT) licenses expire in 2029.

11. Implement measures according to the USO plan in the broadcasting, television, and telecommunications businesses.

12. Prepare to integrate service providers and streaming services (Video Sharing Platform and Video on Demand Services) into the NBTC's regulatory framework.

13. Drive the academic cluster to facilitate the Office of the NBTC to become an evidence-based regulator with high-level academic competence and to assess the impacts of various policies and measures, as well as elevate the office of the NBTC to universal standards, in order to be a leading organization in competition regulation that is recognized internationally and actively participates in international forums.





14. Develop regulations and criteria to align with the dynamic digital landscape.

15. Support research and development in the application of 5G technology continuously, as well as 5G use cases, and 5G Private Network, with the Broadcasting and Telecommunications Research and Development Fund for Public Interest.

16. Manage the 3500 MHz spectrum band efficiently, and prepare the IMT spectrum allocation plan to support telecommunications resource management.

17. Promote competition in telecommunications business, and regulate it under post-merger measures, by revising criteria and establishing measures to create an environment conducive to market entry and competition for telecommunications operators, and regulating last-mile services and mobile internet service rates, as well as promoting MVNO service provision.

18. Accelerate the organization of communication lines, and install them underground.

19. Regulate the radiocommunications usage for vessel tracking and navigation aids.

20. Grant licenses for access rights to utilize satellite orbital slot package at the position 50.5, 51, and 142 degrees East.

21. Enhance consumer protection in the broadcasting, television, and telecommunications businesses, to address issues in the digital era, and develop modern and efficient mechanisms for resolving complaints.

22. Maintain the integrity and transparency assessment standards of the Office of the NBTC's operations, ensuring an average score of no less than 95 percent, and develop further for sustainability.



Expenditure Budget Plan of the Office of the NBTC in 2024

According to the 23rd/2023 NBTC meeting, on December 25, 2023 (continuous), and on December 26, 2023 (continuous), the NBTC approved the expenditure budget for the year 2024 of the Office of the NBTC, in a total of 5,212.696 million baht, by considering the necessity and appropriateness in implementing the core missions of the organization, and aligning with the National Strategy plan, the National Digital

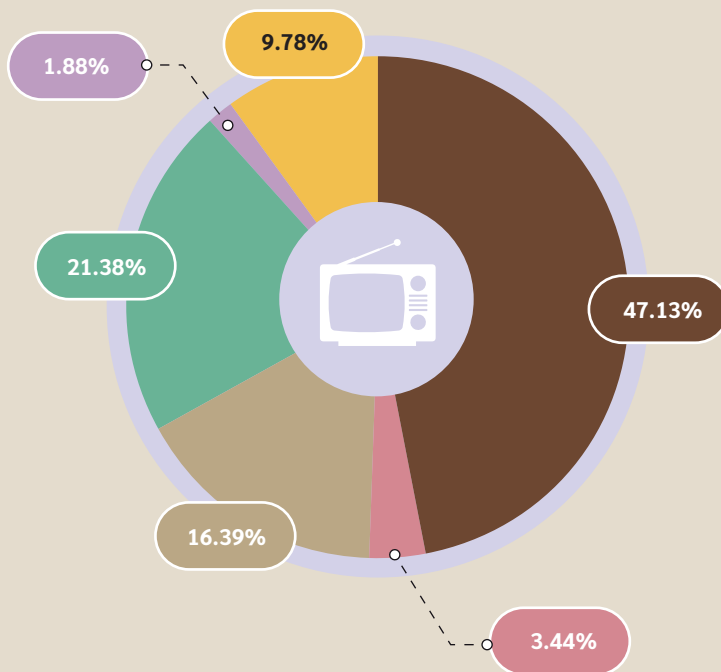
Economy and Society Development Plan and Policy, and relating plans at various levels, including 3 master plans of the organization, and the strategic plan of the Office of the NBTC, as well as carrying out important and urgent missions to drive the policies of the government and the NBTC, by considering efficiency and benefits to be gained. The details are shown in Table 57 – 58, and Chart 74.

Table 57 : Expenditure Budget Plan of the Office of the NBTC in 2024

No.	Item	Amount (Million Baht)
1.	Expenditure Budget of the Office of the NBTC	4,702.696
1.1	Operating Expenses of the NBTC and the Office of the NBTC	4,145.101
	Human Resources Expenses	2,343.800
	General and Administrative Expenses	1,342.134
	Expenses on Lands, Buildings and Equipment	94.950
	Other Expenses	364.217
1.2	Project Expenses	280.029
1.3	Central Budget	180.000
1.4	Operating Expenses of the Performance Follow-up and Evaluation Committee	97.566
2.	Allocated Budget to the Funds	510.000
2.1	Broadcasting and Telecommunications Research and Development Fund for Public Interest	500.000
2.2	Edtech Fund	10.000
Total (No. 1 – 2)		5,212.696

Source : Strategic and Budget Bureau, Office of the NBTC

Chart 74 : Expenditure Budget Plan for the Year 2024, categorized by Strategies



Strategy 1 : Elevate the good governance development and become a high capacity organization in the digital era, amounted to 2,456.989 million baht.

Strategy 2 : Upskill workforce for regulatory excellence and preparedness for the digital economy and society era, amounted to 179.359 million baht.

Strategy 3 : Enhance capabilities in managing Spectrum and satellite services for the utmost benefit of the nation and people, and elevate the potential of the NBTC regional offices for governance and public service, amounted to 854.448 million baht.

Strategy 4 : Develop regulatory capabilities and promote broadcasting, television and telecommunications services to comply with the changing context, amounted to 1,114.334 million baht.

Operating expenses of the Performance Follow-up and Evaluation Committee, amounted to 97.566 million baht

Allocated budget to the funds, amounted to 510.000 million baht



Strategy 1 : Elevate the good governance development and become a high capacity organization in the digital era, in a total of 2,456.989 million baht. This aims to elevate the Office of the NBTC's operations to be a sustainable, high-performance, and well-governed organization, advancing towards becoming a fully digital entity, and driving the administration workplan, strategic and internal affairs management workplan, amounted to 2,378.490 million baht, and the operational budget for 5 projects, amounted to 78.499 million baht.



Strategy 2 : Upskill workforce for regulatory excellence and preparedness for the digital economy and society era, in a total of 179.359 million baht. This aims to drive the personnel development workplan, to ensure that personnel excel in regulatory oversight, and are prepared for the digital economy and society era, while also building their academic capabilities and knowledge, to support becoming a leading regulatory entity with international standards, for personnel in the broadcasting, television, and telecommunications businesses, as well as the public to be ready for the digital economy and society era, amounted to 162.935 million baht, and the operational budget for 5 projects, amounted to 16.424 million baht.



Strategy 3 : Enhance capability in managing spectrum and satellite services for the utmost benefit of the nation and people, and elevate the potential of the NBTC regional offices for governance and public service, in a total of 854.448 million baht. This aims to drive missions of the nation's spectrum management and satellite business efficiently, aligning with related national plans and policies in the dynamic landscape, and developing international collaborative networks for spectrum management, and regulation of the broadcasting, television, telecommunications, and satellite businesses, as well as developing the capacity of the NBTC regional offices and enhancing the efficiency of spectrum monitoring and regulation, amounted to 734.761 million baht, and the operational budget for 6 projects, amounted to 119.687 million baht.



Strategy 4 : Develop regulatory capabilities and promote broadcasting, television and telecommunications services to comply with the changing context, in a total of 1,114.334 million baht. This aims to support the mission of driving the management workplan for broadcasting, television, and telecommunications operations in a free and fair manner, and to promote ethical standard for professionals in the broadcasting and television industries, as well as protecting consumers in the broadcasting, television and telecommunications businesses, amounted to 1,048.915 million baht, and the operational budget for 9 projects, amounted to 65.419 million baht.

Table 58 : Projects Categorized by Strategy for the Year 2024

Unit: Million Baht

No.	Details	Budget for 2024
Strategy 1 : Elevate the good governance development and become a high capacity organization in the digital era, for 5 projects		
1	The Project on the Financial Analytic and Management System, and the Operation Monitoring System of the Research and Development Fund Bureau Total Budget 22.727 Appropriation Budget for 2023 9.271 Proposed Budget for 2024 13.456	13.456
2	The Project for the construction of new office building of the office of the NBTC Total Budget 2,743.000 Appropriation Budget for 2019 685.750 Appropriation Budget for 2020 534.133 Appropriation Budget for 2021 681.324 Appropriation Budget for 2022 420.851 Appropriation Budget for 2023 267.361 Proposed Budget for 2024 - Committed Budget to 2025 153.581	-
3	The Project for Hiring Consultants to Study and Develop Organization Architecture of the Office of the NBTC Total Budget 9.043 Proposed Budget for 2024 9.043	9.043
4	The Sai Yai Sailom (Early Retirement) Project for the Fiscal Year 2024 Total Budget 55.000 Proposed Budget for 2024 55.000	55.000
5	The Project for Hiring to Improve the Revenue Collection System by Implementing an Automated Receipt Issuing Method Total Budget 1.000 Proposed Budget for 2024 1.000	1.000
Strategy 2: Upskill workforce for regulatory excellence and preparedness for the digital economy and society era, for 5 projects		
6	The Project on NBTC Scholarship Program 2023 for NBTC officials (Overseas Master Degree) Total Budget 5.000 Appropriation Budget for 2023 3.800 Proposed Budget for 2024 0.900 Committed Budget to 2025 0.300	0.900
7	The Project to Enhance Efficiency of the Office of the NBTC's e-Library System and Information Center, Phase 2 Total Budget 2.282 Proposed Budget for 2024 2.282	2.282
8	The Project on NBTC Scholarship Program 2024 for NBTC officials (Overseas Master Degree) Total Budget 9.000 Proposed Budget for 2024 3.600 Committed Budget to 2025 3.600 Committed Budget to 2026 1.800	3.600

No.	Details	Budget for 2024
9	The Project to Survey Usage Behavior, Access to Thai Radio, Television and Telecommunications Media Total Budget Proposed Budget for 2024	5.000 5.000 5.000
10	The Training Project on Economic Regulation, by the Public Utility Research Center (PURC), University of Florida, USA Total Budget Proposed Budget for 2024	4.642 4.642 4.642
Strategy 3: Enhance capability in managing spectrum and satellite services for the utmost benefit of the nation and people, and elevate the potential of the NBTC regional offices for governance and public service, for 6 projects		
11	The Procurement of Remote-Controlled Radio Frequency Monitoring Station, for 5 Stations Project Total Budget. Appropriation Budget for 2023 Proposed Budget for 2024	50.381 59.288 8.907 50.381
12	The Procurement of Handheld Real-Time Bandwidth Radio Frequency Diagnostic Device for 10 MHz – 42 GHz Frequency Bands for 22 Sets Project Total Budget Appropriation Budget for 2023 Proposed Budget for 2024	40.414 53.889 13.475 40.414
13	The Project on Enhancing Spectrum Tracking and Reporting System, and Spectrum Regulating with Video Streaming Technology Total Budget Appropriation Budget for 2023 Proposed Budget for 2024	5.259 6.196 0.937 5.259
14	The Procurement of Data Storage Equipment for Radio Broadcasting Stations, for 48 Sets Project Total Budget Appropriation Budget for 2023 Proposed Budget for 2024	19.087 22.455 3.368 19.087
15	The Construction and Building Assembly Project of the NBTC Sub-region office (Roi-Et) Total Budget Appropriation Budget for 2023 Proposed Budget for 2024 Committed Budget to 2025	- 69.027 48.319 - 20.708
16	The Security System Integration Project of the Office of the NBTC, Region 2 Total Budget Appropriation Budget for 2023 Proposed Budget for 2024	4.546 6.537 1.991 4.546
Strategy 4: Develop regulatory capabilities and promote broadcasting, television and telecommunications services to comply with the changing context, for 9 projects		
17	The Program Content Monitoring and Analytical System Development Project Total Budget Appropriation Budget for 2023 Proposed Budget for 2024	2.399 14.980 12.581 2.399



No.	Details	Budget for 2024
18	The Collaborative project for Producing the Court Circular, and Live Broadcasting Royal and State Ceremonies, for Broadcasting or Television Service Provision Total Budget 15.000 Proposed Budget for 2024 15.000	15.000
19	The Bangkok's Communication Lines Survey and Database Project Total Budget 20.266 Appropriation Budget for 2022 - Appropriation Budget for 2023 10.239 Proposed Budget for 2024 10.027	10.027
20	The Communications Lines Management System Project for People's Safety (P-Safe) Total Budget 4.580 Appropriation Budget for 2022 - Appropriation Budget for 2023 2.534 Proposed Budget for 2024 2.046	2.046
21	The Consultant-Hiring Project for Telecom Wholesale Roadmap Preparation Total Budget 8.168 Appropriation Budget for 2023 2.659 Proposed Budget for 2024 5.509	5.509
22	The Project on Supporting the Provision of Universal Basic Telecommunication Services and Social service Total Budget 136.300 Appropriation Budget for 2022 4.339 Appropriation Budget for 2023 21.694 Proposed Budget for 2024 15.538 Committed Budget to 2025 26.579 Committed Budget to 2026 28.623 Committed Budget to 2027 32.712 Committed Budget to 2028 6.815	15.538
23	The Project for Upgrading the Standard Digital Map Database Showing Population Density (Clustering or Dispersion) in 1x1 Kilometer Grid Size Total Budget 4.900 Proposed Budget for 2024 4.900	4.900
24	The Project for Developing and Managing the Online Auction System for Premium Phone Numbers of the Office of the NBTC Total Budget 2.000 Proposed Budget for 2024 2.000	2.000
25	The Project for Producing and Broadcasting Television Programs and Advertising Films on Missions under the Universal Service Obligation (USO) Plan for the Year 2024, through Television and Online Media Total Budget 8.000 Proposed Budget for 2024 8.000	8.000



PART

6

Problems & Obstacles of Broadcasting, Television, and Telecommunications Businesses, which are Significant to People and Recommendations/Solutions

1. Organizing Communication Lines and Bringing Communication Lines Underground.

Currently, the organization of communication lines has increased in Bangkok metropolis and vicinity, and other provinces, but the implementation of each step carries risks that could result in the communication line organization not being completed as planned. In summary, the issues and obstacles include limitations in obtaining permits for resting cables on electric poles, and difficulties in field operations. Additionally, there is a shortage of skilled and capable personnel to organize the communication lines on electric poles safely. Moreover, planning routes for inclusion in the Communication Line Organizing Plan B.E. 2566 – 2567 (2023 – 2024), requires gathering routes, and assessing readiness for organizing lines with the Metropolitan Electricity Authority, as well as coordinating with the Bangkok Metropolitan Administration for sidewalk improvements. This also involves integrating routes from related agencies that are necessary for year-round plan integration. Thus, it leads to delays in route collection and announcement of the Communication Line Organizing Plan B.E. 2566 – 2567 (2023 – 2024), making it difficult to adhere to the scheduled plan. The issues and obstacles of bringing communication line underground are as follows:

1) There are obstacles in accessing areas to install communication lines underground, particularly concerning the construction of conduits for communication lines, obtaining permission to access areas from local administrative organizations, and a lack of clarity on which operator is authorized to construct the conduits. For example, permissions are given to the Metropolitan Electricity Authority, and the Provincial Electricity Authority, to operate, but not given to communication agencies to operate, leading to the delay in conduit construction for communication systems in certain routes, and obstructing installing communication lines underground. Furthermore, the construction of communication conduits is facing issues related to the improvement of these conduits, which must be carried out after the Metropolitan Electricity

Authority, and the Provincial Electricity Authority, complete the construction of the power cable conduits. Therefore, if they delay the construction schedule for the power cable conduits, it will also cause delays in the telecommunications system work.

2) Regarding the conduit construction, the main agency responsible for the construction was TOT Public Company Limited, which merged with CAT Telecom Public Company Limited, to form the National Telecom Public Company Limited (NT). Some state agencies or local administrative organizations that own the land do not permit private entities to use space for construction, allowing only government agencies to do so. In the past, in Bangkok area, Krungthep Thanakom Company Limited (a telecommunications licensee, type three, from the NBTC) has been assigned to carry out the conduit construction. However, the Bangkok Metropolitan Administration has not allowed NT to access the construction area. Meanwhile, most operators who have their communication lines in the existing NT conduit require network interconnection with their networks in the existing conduit primarily. Thus, as NT is unable to proceed with the construction due to not being granted access to the area, it prevents communication operators from installing communication lines underground.

3) Due to the need to survey the demand for the service risers for the communication conduit construction, it was found during the actual site survey that many additional risers needed to be constructed, according to the demand of each conduit tenant. This causes delays in the implementation plan beyond the scheduled time, or exceeding the annual plan timeline for some routes. This resulted in difficulties in planning the communication conduit construction.

4) Damage from construction of the electrical system impacts the communication conduit system. Bringing the cables underground and dismantling power poles require the electrical system, which is the main system. Sometimes, there are some incidents where the construction of power cables conduits affects the communication conduits.



This necessitates maintenance of the communication conduits, leading to delays in bringing the communication line system underground, and not complying to the plan specified each year.

5) The closure of road surfaces by local government organizations for their landscape improvement planning requires closing the surfaces before installing communication systems underground. This sometimes results in delays for some operators who haven't yet completed, as they need to negotiate with the local government organizations to open manholes for communication system adjustments. Additionally, in some cases where the conduit construction has not completed, new permits for using the space must be obtained, due to the road closures already in place. This results in delays in bringing communication lines underground, and not complying to the specified plan.

Recommendations/Solutions

1) Meeting with the Metropolitan Electricity Authority, the Provincial Electricity Authority, and the telecommunications operators, to follow up operations under the communication line organization plan, by setting the meetings monthly to acknowledge issues and obstacles in operations, and to ensure efficient implementation of the communication line organization plan, aiming to resolve issues mutually, and achieve the plan.

2) Setting up the working group on organizing communication lines, in collaboration with the Bangkok Metropolitan Administration, the Metropolitan Electricity Authority, and the Provincial Electricity Authority, to drive the implementation of the Communication Line Organization and Underground Communication Line Deployment Plan to move in the same indirection, as well as coordinating efforts in various areas, such as providing remedy to those affected by accidents caused by communication lines, determining the number of service providers allowed to install communication lines into homes, to prevent excessive numbers of operators, causing the issue of tangled communication cables whenever there is a change in service providers, as well as considering license issuance for fiber-to-the-home services. This could involve opening bids for licenses to be responsible for operations in each region, or each area in Bangkok and other provinces, to provide small service operators with business opportunities. Currently, a feasibility study on this matter is being conducted.

2. Broadcasting Services through Internet Networks.

Currently, communication technology is transitioning into the digital era (Digital Disruption), particularly with broadcasting services through internet networks, which are rapidly and continuously gaining popularity worldwide, including

Thailand. This trend inevitably competes with the traditional television market. This shift has led major streaming platform providers, both domestic and international, as well as other online platform providers, to capture market share and revenue from traditional broadcast operators. There is also a growing trend towards convergent services, presenting a significant challenge for traditional broadcasters to adapt and compete with digital platform providers, by improving content quality to meet the consumer's changing behavior, in order to maintain the market share and revenue from business operations. Additionally, this is a challenge for the NBTC, as a regulatory entity, in business promotion, and regulation to align with the dynamic digital context.

Recommendations/Solutions

To respond to the challenges in regulating broadcasting and television businesses, it is necessary to revise the relevant laws related to regulation in broadcasting, television, and telecommunications operations, including the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications services, B.E. 2553 (2010), and its amendment, the Broadcasting Business Act B.E. 2551 (2008), the Telecommunications Business Act B.E. 2544 (2001), and the Radio Communications Act B.E. 2498 (1955) and its amendment, as well as subordinate legislation. These laws currently have limitations, and do not align with the evolving digital landscape. A light touch regulation should be emphasized to align with current conditions. In the past, the NBTC has implemented policies to elevate the broadcasting and television industries to international standards, aiming to create a sustainable society and economy, and to move towards a high-quality future, aligning with the digital context and societal shift. This has been implemented through various approaches, such as revising regulatory criteria related to broadcasting and television businesses, including the guideline improvement to maximize the utilization of unused channel numbers in non-frequency networks, preparation for defining characteristics and types of digital platform services under the NBTC's regulation, promoting content that benefits society, supporting community media, promoting the establishment of professional organizations and self-regulation under ethical standards, revising the relevant regulations to support the transition from experimental FM radio broadcasting to a licensing system, establishing digital radio services to provide more options for those wishing to operate broadcasting businesses, and offering users more choices. This includes ongoing efforts to support operators through training, knowledge dissemination, and personnel's skill development in various areas, aiming to enable high-quality content production, and enhance competitiveness in the evolving global media industry.

Appendix

The Management Team of the Office of the NBTC

Secretary-General of the NBTC

Mr. Trairat Viriyasirikul
(Acting Secretary-General of the NBTC)
Tel: 0 2670 8888 ext. 1688
Fax: 0 2290 5138

Deputy Secretary-General of Strategic and Internal Affairs Cluster

Mr. Trairat Viriyasirikul
Tel: 0 2670 8888 ext. 1688
Fax: 0 2290 5138

Deputy Secretary-General of Telecommunications Cluster

Mr. Sutisak Tantayotin
Tel: 0 2670 8888 ext. 1699

Deputy Secretary-General of Academic Cluster

Mr. Keerati Apaphant (Acting)
Tel: 0 2670 8888 ext. 5252, 1971

Deputy Secretary-General of Broadcasting Cluster

Assistant Professor Phumisit Mahavesiri
Tel: 0 2670 8888 ext. 5099

Deputy Secretary-General of Regional Affairs Cluster

Mr. Sombat Leelapata (Acting)
Tel: 0 2670 8888 ext. 5188

Principal Experts

Mr. Chanthaphat Khamkhokgruad
Tel: 0 2670 8888 ext. 1897

Mr. Saneh Saiwong
Tel: 0 2670 8888 ext. 1818

Mr. Sombat Leelapata
Tel: 0 2670 8888 ext. 5188

Mr. Keerati Apaphant
Tel: 0 2670 8888 ext. 5252, 1971

Assistant Secretary-General of the NBTC

Assistant Secretary-General, Academic Cluster

Mr. Chalermchai Kokkeadtikul
Tel: 0 2670 8888 ext. 2000

Assistant Secretary-General, Regional Affairs Cluster

Mr. Pichai Suwanakijboriharn
Tel: 0 2670 8888 ext. 7999, 7998

Assistant Secretary-General, Telecommunications Cluster

Ms. Pulsiri Ninkitsaranont (Acting)
Tel: 0 2670 8888 ext. 7099

Assistant Secretary-General, Broadcasting Cluster

Ms. Maneerat Kamjornkitjakarn
Tel: 0 2670 8888 ext. 5300

Assistant Secretary-General, Strategic and Internal Affairs Cluster

Mrs. Yupha Sapying (Acting)
Tel: 0 2670 8888 ext. 1878

Assistant Secretary-General, Administration Cluster

Ms. Orada Teppayayon (Acting)
Tel: 0 2670 8888 ext. 2455

Administration Cluster

Executive Director, Secretariat Office of the Chairman and Proceedings Bureau

Ms. Orada Teppayayon
Tel: 0 2670 8888 ext. 2455

Executive Director, Secretariat Office of the Commissioners and the Secretary-General Bureau

Mr. Kajornsak Tananont
Tel: 0 2670 8888 ext. 2022

Executive Director, General Administration Bureau

Ms. Chitlada Rhuvatana
Tel: 0 2670 8888 ext. 2133

Executive Director, Public Relations Bureau

Mr. Poompat Palakarn (Acting)
Tel: 0 2670 8888 ext. 5899

Executive Director, Internal Audit, Performance Appraisal and Anti-Corruption Bureau

Ms. Rujira Thammachat (Acting)
Tel: 0 2670 8888 ext. 3599

Executive Director, Research and Development Fund Bureau

Ms. Chananpat Vanikanukul (Acting)
Tel: 0 2670 8888 ext. 2519

Executive Director, Spectrum Management Bureau

Mrs. Puttachad Manmontri
Tel: 0 2670 8888 ext. 2622

Executive Director, Satellite and Orbit Management Bureau

Mr. Nattawut Ard-Paru
Tel: 0 2670 8888 ext. 2700

Executive Director, Data Operation Center Bureau

Mr. Dhienthawee Suddhinond
Tel: 0 2670 8888 ext. 2800

Executive Director, Information Technology Bureau

Mr. Suravee Private (Acting)
Tel: 0 2670 8888 ext. 2969

Strategic and Internal Affairs Cluster

Executive Director, Strategic and Budget Bureau

Mrs. Yupha Sapying
Tel: 0 2670 8888 ext. 3000

Executive Director, Human Resource Management Bureau

Mrs. Nartrudee Phuanudom
Tel: 0 2670 8888 ext. 3199, 1635

Executive Director, Legal Affairs and Case Management Bureau

Mr. Natchanon Siriphongsurapha (Acting)
Tel: 0 2670 8888 ext. 3258, 1639

Executive Director, Supply and Asset Management Bureau

Mr. Panthavis Prabsakun
Tel: 0 2670 8888 ext. 3359

Executive Director, Finance Bureau

Mr. Somphop Ratanathamwat
Tel: 0 2670 8888 ext. 3400

Executive Director, International Affairs Bureau

Mr. Notachard Chintakanond
Tel: 0 2670 8888 ext. 3500

Executive Director, Digital Organization Development Bureau

Mr. Withee Panichwong
Tel: 0 2670 8888 ext. 3654

Executive Director, NBTC Academy

Mr. Nippon Jongwichit
Tel: 0 2670 8888 ext. 3799



Regional Affairs Cluster

Executive Director, Regional Affairs Bureau

Mr. Suteera Puengtham

Tel: 0 2670 8888 ext. 4088

Executive Director, Office of the NBTC, region1 (Bangkok)

Mr. Somkid Nakapisut

Tel: 0 2670 8888 ext. 4111

Director, NBTC Sub-region Office (Samut Prakan)

Mr. Phongsakorn Kaewchannuae

Tel: 0 2670 8888 ext. 4164

Director, NBTC Sub-region Office (Suphan Buri)

Mr. Sutichai Laddangam

Tel: 0 2670 8888 ext. 4201

Director, NBTC Sub-region (Phra Nakhon Si Ayutthaya)

Mr. Chetsada Sukniyom

Tel: 0 2670 8888 ext. 4225

Executive Director, Office of the NBTC, region2 (Khon Kaen)

Mr. Sanya Krajangsri

Tel: 0 2670 8888 ext. 4321

Director, NBTC Sub-region Office (Roi Et)

Mr. Prawech Janchai

Tel: 0 2670 8888 ext. 4411

Director, NBTC Sub-region (Nakhon Ratchasima)

Mr. Pajid Poosioon

Tel: 0 2670 8888 ext. 4381

Director, NBTC Sub-region Office (Nakhon Phanom)

Mr. Chayapat Maman

Tel: 0 2670 8888 ext. 4344

Executive Director, Office of the NBTC, region3 (Chiang Mai)

Mr. Monchai Na Lamphun

Tel: 0 2670 8888 ext. 4600

Director, NBTC Sub-region Office (Lampang)

Mr. Panupong Chaisritip

Tel: 0 2670 8888 ext. 4575

Director, NBTC Sub-region Office (Phitsanulok)

Mr. Saksri Wongwai

Tel: 0 2670 8888 ext. 4361

Director, NBTC Sub-region Office (Nakhon Sawan)

Mr. Sanae Suanset

Tel: 0 2670 8888 ext. 4625

Director, NBTC Sub-region Office (Chanthaburi)

Mr. Niwet Yodming

Tel: 0 2670 8888 ext. 4299

Director, NBTC Sub-region Office (Prachin Buri)

Mr. Ubol Deeseang

Tel: 0 2670 8888 ext. 4144

Director, NBTC Sub-region Office (Ratchaburi)

Mr. Anirut Sewakanun

Tel: 0 2670 8888 ext. 4175

Director, NBTC Sub-region Office (Ubon Ratchathani)

Mr. Prasert Muenkid (Acting)

Tel: 0 2670 8888 ext. 4324

Director, NBTC Sub-region Office (Udon Thani)

Mr. Mongkon Chatwetin

Tel: 0 2670 8888 ext. 4341

Director, NBTC Sub-region Office (Lamphun)

Mr. Suphalak Roopsri

Tel: 0 2670 8888 ext. 4517

Director, NBTC Sub-region Office (Chiang Rai)

Mr. Vuttlerd Chanahan

Tel: 0 5317 7398, 0 2670 8888 ext. 4650

Executive Director, Office of the NBTC, region4 (Songkhla)

Mr. Wanna Setthaphong
Tel: 0 2670 8888 ext. 4700

Director, NBTC Sub-region Office (Yala)

Mr. Mahama Kajay
Tel: 0 2670 8888 ext. 4718

Director, NBTC Sub-region Office (Nakhon Si Thammarat)

Mr. Sutin Thongmark
Tel: 0 2670 8888 ext. 4955

Director, NBTC Sub-region Office (Chumphon)

Mr. Wasan Roengsamut
Tel: 0 2670 8888 ext. 4988

Director, NBTC Sub-region Office (Phuket)

Mr. Suwanrak Thongsai
Tel: 0 2670 8888 ext. 4920

Director, NBTC Sub-region Office (Surat Thani)

Mr. Charnnarong Prekparn
Tel: 0 2670 8888 ext. 4949

Broadcasting Cluster

Executive Director, Broadcasting Policy and Research Bureau

Ms. Korkanok Kijbanjai
Tel: 0 2670 8888 ext. 5811

Executive Director, Broadcasting Tariffs Bureau

Mr. Dhradheb Devakul Na Ayudhaya (Acting)
Tel: 0 2670 8888 ext. 1819

Executive Director, Broadcasting Network, Facilities and Equipment Business Licensing Bureau

Mr. Arkom Suwanraksa
Tel: 0 2670 8888 ext. 5401

Executive Director, Broadcasting Competition Promotion and Self-Regulation Bureau

Mrs. Ramida Leelapata
Tel: 0 2670 8888 ext. 5600

Executive Director, Professional Broadcasting Institution Development and Universal Service Bureau

Mr. Nattanon Leesattruphai
Tel: 0 2670 8888 ext. 5800

Executive Director, Broadcasting Engineering Standard Approval Bureau

Mr. Atiwat Aimdilokwong (Acting)
Tel: 0 2670 8888 ext. 6088, 5910

Executive Director, Legal Broadcasting Bureau

Ms. Somporn Amornchainoppakun
Tel: 0 2670 8888 ext. 5151

Executive Director, Broadcasting Business Licensing Bureau

Mr. Arkom Suwanraksa (Acting)
Tel: 0 2670 8888 ext. 5401

Executive Director, Broadcasting Enforcement Bureau

Mr. Phongsak Suppayakom
Tel: 0 2670 8888 ext. 5599

Executive Director, Content Regulation and Announcer Development Bureau

Mrs. Aroon Wongsiwawilas
Tel: 0 2670 8888 ext. 5700

Executive Director, Broadcasting Technology and Engineering Bureau

Mrs. Parita Wongchutinat
Tel: 0 2670 8888 ext. 5900

Executive Director, Broadcasting Consumer Protection Bureau

Mr. Tri Bunchua
Tel: 0 2670 8888 ext. 6144



Telecommunications Cluster

Executive Director, Telecommunications Policy and Resources Management Bureau

Ms. Pulsiri Ninkitsaranont
Tel: 0 2670 8888 ext. 7099

Executive Director, Telecommunications Tariffs Bureau

Ms. Supattra Kittayabarn
Tel: 0 2670 8888 ext. 7299

Executive Director, Service-Based Telecommunications Business Licensing Bureau

Ms. Theetanun Rattanasanyanuphab
Tel: 0 2670 8888 ext. 7499

Executive Director, Telecommunications Technology and Standard Bureau

Mr. Amporn Deelerdcharoen
Tel: 0 2670 8888 ext. 7633

Executive Director, Government Radiocommunications Licensing Bureau

Mr. Chairat Tongjub
Tel: 0 2670 8888 ext. 7899

Executive Director, Telecommunications Access Bureau

Mr. Rathdhi Rangsikamolwadhana (Acting)
Tel: 0 2670 8888 ext. 7049, 8099

Executive Director, Telecommunications Consumer Protection Bureau

Ms. Rungtawan Jindawan
Tel: 0 2670 8888 ext. 8299

Executive Director, Legal Telecommunications Bureau

Ms. Pornpak Sathitweroj
Tel: 0 2670 8888 ext. 7199

Executive Director, Facilities-Based Telecommunications Business Licensing Bureau

Mr. Natipong Talubnark
Tel: 0 2670 8888 ext. 7373

Executive Director, Telecommunications Enforcement Bureau

Mr. Chaturon Choksawat
Tel: 0 2670 8888 ext. 7599

Executive Director, Numbering Management Bureau

Ms. Onwaree Jarernporn
Tel: 0 2670 8888 ext. 7799

Executive Director, Business Radiocommunications Licensing Bureau

Mr. Worapong Nipakornphan (Acting)
Tel: 0 2670 8888 ext. 2399

Executive Director, Universal Services Bureau

Mr. Chanwut Aumnuysin
Tel: 0 2670 8888 ext. 8195

Academic Cluster

Executive Director, Policy Analysis Bureau

Mr. Pasu Srihirun
Tel: 0 2670 8888 ext. 1988

Executive Director, Digital Economy Data Analysis Bureau

Mr. Pasu Srihirun (Acting)
Tel: 0 2670 8888 ext. 1988

Executive Director, NBTC Research Hub

Mr. Pasu Srihirun (Acting)
Tel: 0 2670 8888 ext. 1988

Executive Director, Policy Assessment Bureau

Mr. Pratompong Srinuan (Acting)
Tel: 0 2670 8888 ext. 7039, 9799

Executive Director, International Issues and Engagement Bureau

Mr. Pasu Srihirun (Acting)
Tel: 0 2670 8888 ext. 1988

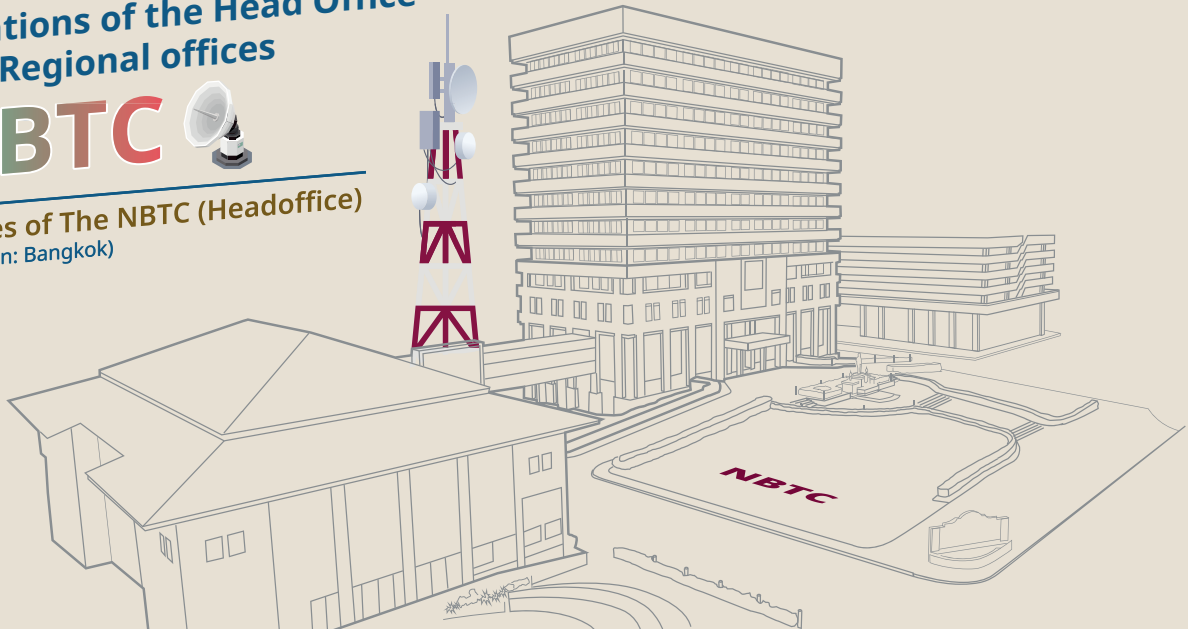
Remark : Data as of December 31, 2023

Locations of the Head Office and Regional offices

NBTC



Offices of The NBTC (Headoffice)
(Location: Bangkok)



4 Regional Offices of the NBTC Consist of

Region

1

Office of the NBTC, Region 1 (Location : Bangkok)
The areas of responsibility consist of the following:

Sub-region
11

NBTC Sub-region Office : Samut Prakan

Area of Responsibility : Samut Prakan, Bangkok, Nonthaburi, Pathum Thani

Sub-region
12

NBTC Sub-region Office : Chanthaburi

Area of Responsibility : Chanthaburi, Trat, Rayong, Chonburi

Sub-region
13

NBTC Sub-region Office : Suphan Buri

Area of Responsibility : Suphan Buri, Kanchanaburi, Chai Nat, Sing Buri

Sub-region
14

NBTC Sub-region Office : Prachin Buri

Area of Responsibility : Prachin Buri, Nakhon Nayok, Chachoengsao, Sa Kaeo

Sub-region
15

NBTC Sub-region Office : Phra Nakhon Si Ayutthaya

Area of Responsibility: Phra Nakhon Si Ayutthaya, Ang Thong, Lopburi, Saraburi

Sub-region
16

NBTC Sub-region Office : Ratchaburi

Area of Responsibility: Ratchaburi, Phetchaburi, Samut Sakhon, Samut Songkhram, Nakhon Pathom

Region

2

Office of the NBTC, Region 2 (Location : Khon Kaen)
The areas of responsibility consist of the following:

Sub-region
21

NBTC Sub-region Office : Roi Et

Area of Responsibility : Roi Et, Maha Sarakham, Khon Kaen, Kalasin

Sub-region
22

NBTC Sub-region Office : Ubon Ratchathani

Area of Responsibility: Ubon Ratchathani, Sisaket, Surin, Amnat Charoen, Yasothon

Sub-region
23

NBTC Sub-region Office : Nakhon Ratchasima

Area of Responsibility : Nakhon Ratchasima, Buriram, Chaiyaphum

Sub-region
24

NBTC Sub-region Office : RUDon Thani

Area of Responsibility : Udon Thani, Nong Khai, Nong Bua Lamphu, Loei

Sub-region
25

NBTC Sub-region Office : Nakhon Phanom

Area of Responsibility : Nakhon Phanom, Sakon Nakhon, Mukdahan, Bueng Kan

Region

3

Office of the NBTC, Region 3 (Location: Chiang Mai)
The areas of responsibility consist of the following:

Sub-region
31

NBTC Sub-region Office : Lampang

Area of Responsibility : Lampang, Phrae, Tak

Sub-region
32

NBTC Sub-region Office : Lamphun

Area of Responsibility : Lamphun, Chiang Mai, Mae Hong Son

Sub-region
33

NBTC Sub-region Office : Phitsanulok

Area of Responsibility : Phitsanulok, Phetchabun, Uttaradit, Sukhothai

Sub-region
34

NBTC Sub-region Office : Chiang Rai

Area of Responsibility : Chiang Rai, Nan, Phayao

Sub-region
35

NBTC Sub-region Office : Nakhon Sawan

Area of Responsibility : Nakhon Sawan, Kamphaeng Phet, Uthai Thani, Phichit

Region

4

Office of the NBTC, Region 4 (Location: Songkhla)
The areas of responsibility consist of the following:

Sub-region
41

NBTC Sub-region Office : Yala

Area of Responsibility : Yala, Pattani, Narathiwat, Songkhla, Satun

Sub-region
42

NBTC Sub-region Office : Phuket

Area of Responsibility : Phuket, Phang nga, Krabi

Sub-region
43

NBTC Sub-region Office : Nakhon Si Thammarat

Area of Responsibility : Nakhon Si Thammarat, Trang, Phatthalung

Sub-region
44

NBTC Sub-region Office : Surat Thani

Area of Responsibility : Surat Thani, Ranong

Sub-region
45

NBTC Sub-region Office : Chumphon

Area of Responsibility : Chumphon, Prachuap Khiri Khan

THE WORKING GROUP OF THE NBTC ANNUAL REPORT 2023



Secretary-General of the NBTC	Advisor
Deputy Secretary-General of Broadcasting Cluster	Advisor
Deputy Secretary-General of Telecommunications Cluster	Advisor
Deputy Secretary-General of Regional Affairs Cluster	Advisor
Deputy Secretary-General of Academic Cluster	Advisor
Deputy Secretary-General of Strategic and Internal Affairs Cluster	Head of Working Group
Assistant Secretary-General, Academic Cluster	Member
Assistant Secretary-General, Broadcasting Cluster	Member
Assistant Secretary-General, Strategic and Internal Affairs Cluster	Member
Executive Director, Secretariat Office of the Chairman and Proceedings Bureau	Member
Executive Director, Public Relations Bureau	Member
Executive Director, Internal Audit, Performance Appraisal and Anti-Corruption Bureau	Member
Executive Director, Research and Development Fund Bureau	Member
Executive Director, Spectrum Management Bureau	Member
Executive Director, Satellite and Orbit Management Bureau	Member
Executive Director, Finance Bureau	Member
Executive Director, Regional Affairs Bureau	Member
Executive Director, Broadcasting Policy and Research Bureau	Member
Executive Director, Telecommunications Policy and Resources Management Bureau	Member
Executive Director, Strategic and Budget Bureau	Member and Secretary
Division Director, Academic and Strategic Plan Development, Strategic and Budget Bureau	Member and Assistant Secretary
Officer of Strategic and Budget Bureau	Member and Assistant Secretary
Officer of Strategic and Budget Bureau	Member and Assistant Secretary

**Office of The National Broadcasting
and Telecommunications Commission**

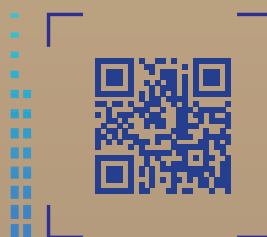
87 Phaholyothin 8 (Soi Sailom), Samsen Nai, Phayathai,
Bangkok 10400. (Head Office)



0 2670 8888



1200 (Press 2)



www.nbtc.go.th