



National Broadcasting and
Telecommunications Commission (NBTC)

NBTC

ANNUAL REPORT
2019





Long Live The King



Communication is an essential factor for national development, prosperity, stability and security, especially in the rapid change situations in the world. The prompt and up-to-date of the communications is highly important and all parties and agencies related to national communications should therefore provide cooperation to one another and share their achievements closely and harmoniously. Above of all, they should take a deep and wide study and research of the technical matter and modern technologies, and select a good and effective parts for being applied to their work wisely and proactively in the way that suits the country status and environment so that the national communications are fully developed and able to facilitate the economic and social development and truly support the stability of the nation.

Chitralada Villa
15 July 1983

(The Royal Proclamation was bestowed by
His Majesty the Late King Rama IX Maha Bhumibol Adulyadej the Great
on the Occasion of the Centennial of the Post and Telegraph Department
and the National Communications Day, 4 August 1983)

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ทศวรรษเสวย





Preface

The Act on Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E.2553 (2010) and its amendment (No.2) B.E.2560 (2017) Article 76 has stipulated that the National Broadcasting and Telecommunications Commission or NBTC shall prepare report on the spectrum management, broadcasting, television and telecommunications services as the case may be, and submit to the Cabinet and the National Assembly within 120 days as from the ending date of each accounting year as well as disclose to the public.

The NBTC Annual Report 2019 has been conducted to evaluate the crucial performance of the NBTC and the Office of the NBTC throughout the year 2019 in areas of Spectrum Management, Spectrum Refarming, Broadcasting, Television and Telecommunications Services Regulation, Protection of Public Rights from being exploited by Business Operators, the Actions as the Authorized Administration Unit of the State to Manage the National Communications Services with the International Telecommunication Union or the International Organizations, including work plans and results, and future work plans as well as related information such as quality of service and telecommunications services rates which are important to the people, market environment and competition, trend on broadcasting, television and telecommunications industries, problems and obstacles arising from the service operation. Details are as shown in the report.

The NBTC expects that this NBTC Annual Report 2019 will be useful for all stakeholders, sectors and interested people to acknowledge the NBTC performance in the previous year as stipulated by the laws, and be beneficial to related parties and the general public for their proper use.

The National Broadcasting and
Telecommunications Commission
March 2020

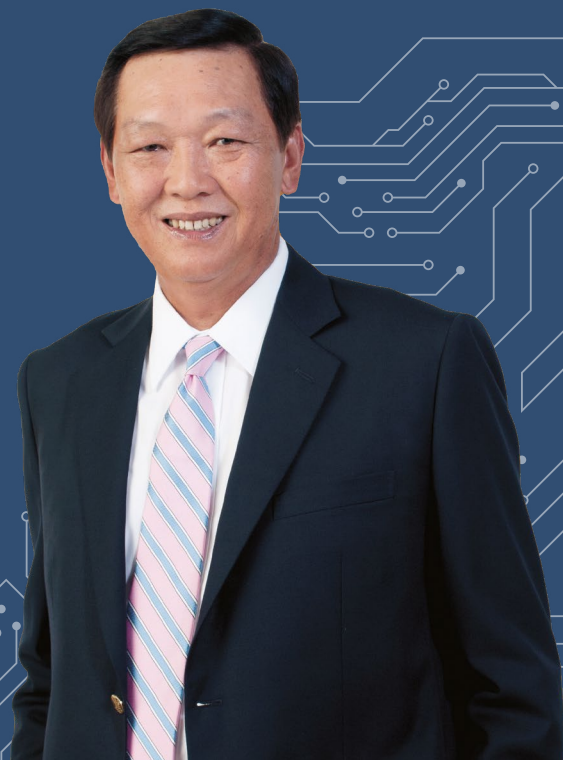
MESSAGE FROM the Chairman of the NBTC

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The NBTC will continue the mission of spectrum management, accelerating the allocation of frequencies to cover and pushing 5G technology to be effective as soon as possible in order to support the full range of applications for the development of the country's communications business to catch up with the digital economy. This includes the regulation of the Satellite, Broadcasting, Television and Telecommunications Services for the utmost benefits of the state, nation, and the people

General Sukit Khamasundara

NBTC Commissioner
Acting Chairman of the NBTC
Term of Office
(6 October 2017 – Present)



”

The year 2019 was the year that every country had encountered with the challenge of Disruptive Technology which had a severe impact on the world's economy, society and culture. The National Broadcasting and Telecommunications Commission (NBTC) has therefore focused on managing spectrum and regulating the business operations to be consistent and kept up with the rapid change of circumstances. Moreover, the NBTC has collaborated with all related sectors to help solve the Disruptive Technology by accelerating the spectrum allocation for driving the digital economy by 5G technology and to promote the development of digital innovation for the economic, social and national benefits of the country as well as supporting the government policy in driving the economy towards Thailand 4.0. The significant performance results are as follows:

1. Spectrum Management and Telecommunications Business Regulation

Having issued licensing criteria and procedure to use the frequencies for international mobile telecommunications service in the frequency band of 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz. The NBTC has prepared to hold the 5G spectrum auction in February 2020 in order to push forward the 5G technology in Thailand which will be an important part of driving the country's development on digital economy and society and generating the investment on the development of 5G telecommunications infrastructure and the digital investment to be comprehensive and modern and be able to create economic value added up to 177 billion baht.

2. Broadcasting and Television Business Regulation

Having resolved the problem of broadcasting and television business operation continuously from the previous year, by having exempted the license fees to use frequencies, supporting the rental fee of digital terrestrial television networks (MUX) throughout the remaining license period, supporting compensation for improvements or equipment changes of television network of the licensees to enable the exists of business operation without affecting the access and perceiving of information of the people, and providing a remedy for the affected employees, as well as building trust in the overall economy system of the country.

3. Consumer Protection

Having issued various measures and notifications related to consumers protection such as the regulation on the structure of domestic mobile phone service rates to be the same standard in all frequency bands in order to ensure that people are provided with fair service rate as well as to promote knowledge and understanding of the general public so that they will be able to use technology appropriately through the development of new applications, such as the “Prute-ti-maat Applications”, the “3 steps Application”, the “2 shots Application”, etc. Besides, the activities on awareness raising campaigns and the promoting participation of citizens and relevant sectors have been done continuously.

4. Universal Service and Social Service

Having implemented the project on the provision of broadband internet service in remote areas (Zone C) so that the people are able to be provided with universal telecommunications services. The services are such as public Wi-Fi in the 15,732 villages, USO Net, USO Wrap, broadband internet for schools and broadband internet for the Tambon Health Promoting Hospital (RPD).

5. Promotion and Support on Research and Development of Broadcasting, Television and Telecommunications Services for the Public Interest

Having reviewed and improved the Master Plan for Research and Development of Broadcasting, Television, and Telecommunications Services for the Public Interest to be in line with the national development directions, National Strategies, and Master Plan for Information and Communication in the ASEAN Community. In 2019, the NBTC has established important strategies for operations, including the promotion of broadcasting, television and telecommunication services, the support of research and development, human resource development, consumer protection, and the fund management to be efficient and secure, as well as driving full-grant funding through supporting mechanisms of two-type of fund for the benefit of the development of

broadcasting, television and telecommunications services and related industries to be well-prepared for entering the industrial revolution steadily and sustainably.

For the important direction of operation in the year 2020, the NBTC has prepared to accelerate the 5G spectrum auction to support the development of digital communication as well as regulate and push forward the operators to provide services for Thai people as the top first countries of Asia and ASEAN. Moreover, the NBTC will be a linchpin in pushing forward the investment and driving economy with 5G technology including the satellite service regulation as well as protecting consumers so that they are able to use the broadcasting, television and telecommunications services that meet international standards with fair prices.

I, on behalf of the National Broadcasting and Telecommunications Commission, would like to thank the executives, staff and employees of the Office of the National Broadcasting and Telecommunications Commission for their commitment to perform their duties to the best of their ability to support the mission of the NBTC in the regulation of the broadcasting, television and telecommunications services to be strong and sustainable, and provide their great contribution to push forward the growth national economy in an era of this fast changing technology.

General



(Sukit Khamasundara)

NBTC Commissioner
Acting Chairman of the NBTC

MESSAGE FROM

Secretary-General of the NBTC

“

Supporting the development of economy and digital society and the government's policy on driving the National 5G strategy with a stability, wealth and sustainability.

”

Mr. Takorn Tantasith

Secretary-General of the NBTC



The Office of the NBTC has carried out its tasks in regulating broadcasting, television and telecommunications services including satellite communications service continuously. In the year 2019, the Office of the NBTC had promoted the maximum spectrum utilization on the development of telecommunications infrastructure for the benefit of the people as a priority. Major performances are such as

1. Driving the implementation of the National 5G strategy to support policies and Thailand Digital Economy and Society Development Plan as follows:

Having established the 5-Year Spectrum Allocation Plan for International Mobile Telecommunications Service of Thailand B.E.2562 - 2566 (2019 - 2023) to be used as a guideline for the allocation of spectrum resources, promoting and supporting the development of telecommunications technology by allocating the spectrum for an auction to support 5G in 4 frequency bands of 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz, 56 licenses totally, with a value of 160,577 million baht by February 2020. It is expected that the revenue from the spectrum auction of 25 licenses will be 54,654 million baht, with a view to accelerating the 5G service so that Thailand will be the first country who are ready to provide the service and become a 5G leader in ASEAN.

- Having recalled the frequency band of 2600 MHz from 3 licensees, which are MCOT Public Company Limited, Signal Department Royal Thai Army, and Directorate of Joint Communications Royal Thai Armed Force Headquarters; and recalled the frequency band of 700 MHz from the licensee to use the spectrum for the provision of digital terrestrial

television service to allocate and utilize. Moreover, the Office of the NBTC has allocated the set of frequencies for telecommunications service in the frequency band of 700 MHz in 703-733/758-788 MHz to 3 licensee applicants, namely True Move H Universal Communication Co., Ltd., DTAC TriNet Company Limited, and Advance Wireless Network Co., Ltd.

- Raising awareness of people about the transition to 5G technology which is an infrastructure and significant technology to change the country's economy and industry dramatically, leading to an increase of competitiveness in technology and digital areas such as the use of digital technology in communication, production and business transactions, etc., which will help entrepreneurs develop new products to create value-added of the products and reduce costs in various processes as well as be beneficial to the people and the nation at large.

- Having supported the establishment of the 5G testing center through the mechanism of academic collaboration with educational institutions with the preparedness and advancement of personnel and digital technology, in 4 regions of Thailand, which are Chulalongkorn University, Chiang Mai University, Khon Kaen University, and Prince of Songkla University.

2. Having provided remedies to those who got affected by the spectrum refarming in the frequency band of 700 MHz according to the Order of the Head of the National Council for Peace and Order No.4/2019 regarding Measures to Solve Problems on Television and Telecommunications Business Operation on 19 June 2019 by exempting the license fees to use the frequency for the provision of digital television services in the 5th and 6th installments, and supporting the expenses for the rental of digital terrestrial television networks (MUX) for the remaining license period as well as providing compensation for the improvement or modification of the television network equipment of the licensees.

3. All overhead telecom and broadcast cables organized and installed underground by having organized the overhead telecom and broadcast cables for a total of 106 routes with a distance of 275.128 kilometers, which is a collaboration with the Metropolitan Electricity Authority, Provincial Electricity Authority, and the telecommunications operators. In the year 2020, the Office of the NBTC has planned to organize the overhead telecom and broadcast cables for 8 routes in Bangkok and its vicinities areas with a total distance of 37.7 kilometers, and in the regional areas of 74 provinces nationwide with a total distance of over 4,000 kilometers, with a view to ensuring of security of lives and property of the people and having beautiful scenery.

4. Having formulated the Master Plan of Spectrum Management B.E.2562 (2019) so that the spectrum management be in accordance with the Radio Regulations of the International Telecommunication Union, the spectrum can be managed efficiently and in line with the advancement of the changing technology. The Master Plan has already been published in the Royal Gazette.

5. Having prepared the plan and criteria for granting the rights to access satellite orbit by setting up the (draft) plan to manage the rights to access satellite orbit and the notification on criteria and licensing procedures to use the rights to access satellite orbit and the criteria and licensing procedures to access the foreign satellite signal channels in order

to ensure of the efficiency and transparency of the management of the rights to access to satellite orbit of Thailand for the utmost benefit of the nation and the people, which will lead to the market opening for free and fair competition according to international principles.

6. Having given the importance to perform duties with transparency and improving the results of the moral and transparency assessment of the operation of the Office of the NBTC. The Office of the NBTC has been assessed of morality and transparency in the operation of government agencies in the year 2019 by the Office of the National Commission on Prevention and Suppression of Corruption (NACC), and rated at the level of "A" which was ranked No.1 of the other government agencies group and ranked No.40 of the country from 8,299 government agencies participated with a high score of 94.71 percent. It is a significant first pace to lead the organization to become an organization of transparency. In the year 2020, the Office of the NBTC will continue focusing on performing its duties with transparency and improving the results of the moral and transparency assessment of the operation of the Office of the NBTC to the AA level.

At last, I would like to thank the NBTC Commissioners and all stakeholders for supporting the work of the Office of the NBTC. My thanks also extended to the executives, staff and employees of the Office of the NBTC who have contributed to the work with full capacity to fulfill the tasks in order to improve the quality of life of people and drive the policy and plan for digital economy and society development plan as the goals set.



(Mr. Takorn Tantasith)
Secretary-General of the NBTC

The National Broadcasting and Telecommunications Commission



General Sukit Khamasundara
NBTC Commissioner
Acting Chairman of the NBTC



Education

- Bachelor of Science Chulachomklao Royal Military Academy, Class 20
- M.A. in Political Science (Security Resources Management), Burapha University
- Joint Staff Course, Command and General Staff College
- Certificate, National Defence College of Thailand, Class 44
- Professional Engineer (Civil Engineering), the Board of Control of the Professional Engineering
- Certificate, Top Executive Program, Capital Market Academy, Class 15

Work Experience

- Chief of Army Engineering Battalion 1, Royal Guards
- Commander of the 1st Development Division
- Deputy Commander-in-Chief of the First Army Area
- Special Consultant to the Royal Thai Armed Forces Headquarters
- Special Royal Guard
- Judge to the Supreme Military Court
- Member of the Committee to Formulate the Policy for the Provision of Universal Basic Telecommunications Services and Social Services, National Telecommunications Commission
- Advisory Board of the Management of Doctoral Philosophy Program in Political Science, Burapha University
- Person in charge of “the Project of the Construction of Entrance and Services Pathways in Suvarnabhumi Airport”
- Director of the Royal Project Don Khun Huay, Phetchaburi Province
- Director of the Royal Initiative Project Huay Mae Prieng, Phetchaburi Province
- Director of the Queen Sirikit Forest Park Project, Ratchaburi Province
- Director of the Construction Project of Benjakiti Park, Bangkok
- Chief of the Secretariat on Psychological Operations and Public Relations, Royal Thai Army
- Chief of the Secretariat Office of the Internal Security Operations Command



Colonel Natee Sukonrat, Ph.D
Vice-Chairman of NBTC



Assoc. Prof. Prasert Silhiphat
NBTC Commissioner

Education

- Bachelor of Science in Electrical Engineering, Chulachomkiao Royal Military Academy (Gold Medal Award)
- Master of Science in Electrical and Telecommunication Engineering, University of South Florida, USA
- Ph.D. in Electrical and Telecommunication Engineering, University of South Florida, USA

Work Experience

- Senior Engineering Officer, Project on Globalstar Low Earth Orbit Satellite, San Diego, California, USA
- Consultant to the iPSTAR Satellite Project
- Chairman of the CDMA Project Steering Committee, CAT Telecom Public Company Limited
- Board of Directors, TOT Public Company Limited
- Acting CEO, TOT Public Company Limited
- Senior Engineering Officer, Armed Forces Telecommunications Office, Royal Thai Armed Forces Headquarters
- Chairman of the Working Group on Community Radio Service
- Sub-committee on Broadcasting and Television Services
- Chairman of the Committee for Drafting Spectrum Management Master Plan and National Table of Frequency Allocation
- Chairman of the Committee for Drafting Telecommunications Services Master Plan
- Chairman of the Committee for the Licensing of Broadband Wireless Access Service (BWA)
- Chairman of the Committee for the Licensing of International Mobile Telephony or 3G and beyond
- Commissioner, the National Telecommunications Commission (NTC)

Education

- Bachelor of Arts (Economics), Chiang Mai University
- M.A. (Economics) Middle Tennessee State University, USA
- Certificate, National Defence College of Thailand, Class 45
- Certificate, Advanced Course for Executives, Class 33
- Certificate, Advance Justice Administration Course for Executives, Class 3

Work Experience

- Professor, Faculty of Economics, Chulalongkorn University, 1975 - 2001
- Vice-Chancellor, Chulalongkorn University, 1997 - 2000
- Deputy Secretary-General of King Prajadhipok Institute, 2000 - 2006
- Special Expert in Economics, the Office of National Telecommunications Commission, 2007 - 2008
- Executive Manager, the Telecommunications Development Fund for the Public Interest, Office of the NTC, 2008 - 2010

Lt. Gen. Perapong Manakit, Ph.D
NBTC Commissioner



Education

- Bachelor of Science. Chulachomklao Royal Military Academy, 1978
- M.A. in Social Development (School of Social Development), National Institute of Development Administration (NIDA), 1987
- Ph. D. Sociology of Development, University of Bielefeld, Germany (Awarded by Germany Government, Thailand-German Student Exchange Program, 1992)

Work Experience

- Rifle Platoon Leader, Rifle Company, the 3rd Infantry Battalion, the 1st Infantry Regiment Chamberlain Guard, 1978
- Technical Officer, Strategic Research and Development Administration, Institute of Higher Army Studies, 1993
- Performing duties on special advisor group, Internal Security Operations Command, 1997 - 2001
- Director of Psychological Operation Division, Military Civil Affairs Department, 1999
- Secretary attached to the Standing Committee on the Military Affairs, the Senate, 2000 - 2005
- Director of Information Division, Directorate of Joint Civil Affairs, 2001
- Performing official duties to support the Counsellor to the Minister of Defence, 2001 - 2002
- Assistant Chief of Staff Officer to Deputy Supreme Commander, 2004
- Chief of Satellite Television Division, TV5, 2004
- Expert, the Supreme Command Headquarters, 2005
- Deputy Director, Center for Psychological Operations and Public Relations in the Southern Provinces, National Security Council, 2005 - 2006
- Producer of the Radio Program on “Ruk Mueng Thai” (Love Thailand), 2006 - 2010
- Consultant to the Office of National Security Council, 2006 - 2010
- Spokesman of Ministry of Defence, 2008
- Sub-Committee on Inspection and Investigation in the Committee on Inspection and Investigation for National Reconciliation and Study Research Sub-Committee in the Committee on Inspection and Investigation for National Reconciliation, 2008 - 2009
- Secretary Attached to the Committee for Study and Consideration of Capacity Building and Management of the Army under the Committee on the Military Affairs, House of Representatives, 2009 - 2011



Asst. Prof. Thawatchai Jittrapanun, Ph.D.
NBTC Commissioner



Mr. Prawit Leesatapornwongsa
NBTC Commissioner

Education

- Bachelor of Engineering (Mechanical Engineering), Chulalongkorn University
- Master of Business Administration (Finance), Georgia State University, USA
- Doctor of Philosophy in Business Administration (Ph.D.) (Finance), University of Alabama, USA

Work Experience

- Professor, Faculty of Economics, Chulalongkorn University
- Instructor of Doctoral Program of Finance (Finance Economics), NIDA
- Special Professor of Doctoral Program of Finance (Finance Economics) for the Joint Doctoral Program in Business Administration (JDBA), Chulalongkorn University, Thammasart University and NIDA
- Chairman of the B.A. program in Economics (International Program), Faculty of Economics, Chulalongkorn University
- Chairman of Labor and Management Development Center, Faculty of Economics, Chulalongkorn University
- Director of the Computer Centre, Faculty of Economics, Chulalongkorn University
- Scholarship Selection Committee of the Office of the NBTC
- Special Instructor in Finance, Business Administration Course in Public/Private Universities
- Advisor to the Committee on Finance, Treasury, Banking and Financial Institution, the Senate
- Advisor to the Committee on Budget Administration Follow-Up, House of Representatives
- Project Leader, the Index of Exports of the Thai National Shippers' Council

Education

- Bachelor of Medicine, Chulalongkorn University, 1987
- Bachelor of Political Sciences, Sukhothai Thammathirat University, 1992
- Diploma, Preventive Medicine (Public Health), the Medical Council of Thailand, 1992
- Master of Public Health, Institute of Tropical Medicine, Belgium, 1999
- Diploma, Family Medicine, the Medical Council of Thailand, 2004

Work Experience

- Director of Huay Tap Tan Community Hospital, Sri Sa Ket Province
- Director of Sri Rattana Community Hospital, Sri Sa Ket Province
- Director of Lad Bua Luang Community Hospital, Ayudhaya Province
- Director of Uthai Community Hospital, Ayudhaya Province
- Chairman of Rural Doctors Society
- Secretary-General of the Coordinating Committee of Thai NGOs for Primary Health Care
- Secretary-General of Foundation for Consumer
- Member of the 2nd National Economics and Social Advisory Council
- Chairman of Working Group Consumer Protection, National Economics and Social Advisory Council
- Executive Director of the Telecommunications Consumer Protection Institute (TCI)
- Sub-Committee of the Human Rights, the National Human Rights Commission of Thailand

Executive Summary



Executive Summary

The changes by leaps and bounds in innovation and digital technology are likely to increase sharply and it is considered a challenge of the NBTC on performing duties in regulating the broadcasting, television and telecommunications services including satellite service in order to develop such innovations and digital technology to be useful for economic, social, cultural and environmental benefits. However, the NBTC is ready to be a backlash to help drive the country's economy by continuing to accelerate the organization of the 5G spectrum auction to support the development of communication business in digital system as well as regulating business operators to provide services to the Thai people so that they will be the first to use the service in the Asian region and to transform Thailand into a technology leader in ASEAN in the future. This includes the collaboration with relevant agencies to encourage the use 5G technology to bridge the digital divide in society, people are able to create jobs and careers, opportunities and incomes which lead to a sustainable national development. It is expected that Thailand will have the revenue from the spectrum auction at approximately 100,000 million baht, and there will be more investment of more than 400,000 million baht in telecommunications networks and 5G technology expansion in the year 2020 - 2023. In the year 2019, the major performances of the NBTC are as follows:

1. Setting up a policy on spectrum management to be sufficient for the efficient use and the operation concerning satellite service to be in line with the advancement of technology

Having formulated the Spectrum Management Master Plan B.E.2562 (2019) to be used as a preliminary criteria and conditions for licensing and proceeding all services related to the use of spectrum management for the efficiency and being in accordance with the advancement of the changing technology. Also, the NBTC has prepared the plan and criteria for granting

the rights to access satellite orbit related to be used as a guideline framework for the operation concerning the management of the rights to access satellite orbit, and to set up the licensing criteria and procedures for the use of foreign satellite signal channels in providing domestic service so that consumers in Thailand have more choices to choose the services from foreign satellites.

2. Refarming the unused or unworthy used frequencies in order to be more worthy utilized.

Having recalled the spectrum in the frequency band of 2500 - 2690 MHz from 3 licensees; which are, MCOT Public Company Limited, Signal Department Royal Thai Army, and the Directorate of Joint Communications Royal Thai Armed Forces Headquarters, as well as recalling all frequencies from the licensees, including the unlicensed frequencies, for totally 190 MHz in order to re-allocate for international mobile telecommunications service. In addition, a Sub - committee for considering compensation, reimbursement or remuneration for the recall of the spectrum in the frequency band of 2500 - 2690 MHz has been appointed in order to consider and provide opinions regarding the determination of methods and conditions of compensation, reimbursement or remuneration in a reasonable and fair manner for those who have been recalled of the frequencies in case that the lost opportunity cost occurred from being recalled of the frequencies.

3. Driving 5G technology of the country to support digital economy and society development plan and policy

(1) Having prepared the 5-year Plan of Spectrum Allocation for International Mobile Telecommunications Service of Thailand B.E.2562 - 2566 (2019 - 2023) to be used as a guideline for the allocation of spectrum resources, promoting and supporting the development of telecommunications technology including issuing the NBTC Notification

on Licensing Criteria and Procedures to Use the Spectrum for International Mobile Telecommunications in the Frequency Band of 1800 MHz, 2600 MHz, and 26 GHz in order to encourage operators to be able to strategically manage the business planning and select a suitable frequency band for the 4G and 5G service models, which will benefit the development of the country's telecommunications industry to be modern and consistent with the rapid change of the world of technology as well as supporting the development of digital economy and society of the country.

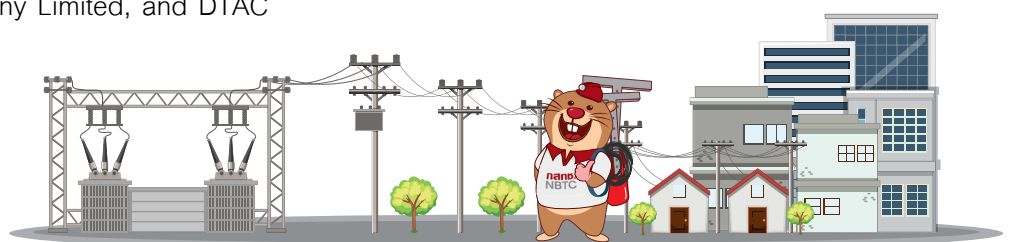
(2) Having expanded the cooperation with other entities on the establishment of the 5G test/trial center and conducted 5G testing experiments by having opened the 5G AI/IoT Innovation Center in the year 2019 at Chulalongkorn University on 4 February 2019, and signed the memorandum of understanding with additional 3 leading national universities consisting of Chiang Mai University, Khon Kaen University and Prince of Songkla University. Under the said cooperation, the 5G testing/trial center will be established in all 4 universities in order to build a strong foundation and support changes in the transition to 5G technology through building cooperation mechanism. For the testing/trial operation, the NBTC has issued the NBTC Notification on Criteria for Granting the License to Use the Spectrum for the Development and Testing of Innovations in a Regulatory Sandbox to support testing activities, research and development of telecommunication innovations which have been temporary used for a period until the equipments are ready for the production process for further general use or commercial use. In year 2019, the NBTC had granted 8 licenses to use the spectrum for the 5G testing/trial to 4 telecommunications operators; which are, Advanced Wireless Network Company Limited, True Move H Universal Communication Company Limited, TOT Public Company Limited, and DTAC TriNet Company Limited.

4. Spectrum Allocation in the Frequency Band of 700 MHz

Having assigned the spectrum recalled from the other licensees to use the spectrum for the provision of digital terrestrial television service in the frequency band of 700 MHz in the range of 694-790 MHz in addition to the licensee to use the spectrum for the provision of digital terrestrial television services who wishes to return the license by having allocated 3 sets of frequencies at the total price of the license to use the spectrum including VAT of 56,444 million baht. There were 3 applicants having the rights to be granted of the license to use the frequency spectrum; which are, True Move H Universal Communication Company Limited, DTAC TriNet Company Limited, and Advanced Wireless Network Company Limited. The initial period of the license shall begin from 1 October 2020 or until the NBTC shall specify otherwise.

5. All overhead telecom and broadcast cables organized and installed underground

Having organized the overhead telecom and broadcast cables and installed underground for totally 106 routes with the distances of 275.128 kilometers, which can be divided into the routes in Bangkok for 24 routes with the distances of 27.21 kilometers and the routes in 4 regions across the country for 82 routes with the distances of 247.918 kilometers, in order to improve the messy laying of telecom and broadcast cables on electricity poles and increase the safety of life and property of people. The operation have been done in cooperation with the Metropolitan Electricity Authority (MEA), the Provincial Electricity Authority (PEA), Bangkok Metropolitan Administration, Royal Thai Police, the Telecommunications Association of Thailand under the Royal Patronage, telecommunications operators and broadcasting and television operators.



6. Regulation on telecommunications service rates

Having regulated the telecommunications service rates, defining the structure of service rate to be fair for service users, and regulating the mobile phone service rates in the frequency band of 2.1 GHz, 1800 MHz, and 900 MHz to be in accordance with the licensing conditions as well as having reviewed the rate of telecommunications business license fees to be proper with the market condition and encourage service users to be served with a lower rate of mobile services as follows:

(1) Regulation on telecommunication service rate

Having monitored and regulated the rates of mobile phone service in the frequency band of 2.1 GHz to be in accordance with the conditions attached to the telecommunications business license type 3 for the international mobile telecommunication service (IMT), in which the service rates shall not exceed the service rate regulated. Also, the NBTC has monitored and regulated the rates of mobile phone service in the frequency band of 1800 MHz to be in line with the NBTC Notification on Criteria and Procedures for Granting License to Use the Spectrum for Telecommunications Services in the Frequency Band of 1800 MHz and the NBTC Notification on Criteria and Procedures for Granting License to Use the Spectrum for Telecommunications Services in the Frequency Band of 295 - 915 MHz/940 - 960 MHz, in which the service rates under the licensing conditions must be lower than the reference rates.

(2) Defining the structure of domestic mobile phone service rates

Having issued the NBTC Notification on Definition and Regulation of Structure of Domestic Mobile Phone Service Rate on 22 November 2019 to regulate the structure of domestic mobile phone service rate to be the same standard in all frequency bands, and to encourage consumers to use mobile phone services at fair service rates by requiring that the licensee shall determine the service rates according to

the rights to use of all promotional programs or offered service promotion, in which the average service rates must be in accordance with the service rates specified by the NBTC. The Notification will be effective from 1 January 2020 onwards.

7. Returning of the spectrum in the frequency band of 700 MHz by the licensee to use the spectrum for the provision of digital terrestrial television service which the NBTC has proceeded according to the Order of the National Council for Peace and Order No. 4/2019 regarding Measures to Solve Problems of Television and Telecommunications Business Operation as follows:

(1) Having considered the recall of spectrum in the frequency band of 700 MHz in the range of 694 - 790 MHz from the licensees to use the spectrum for the provision of digital terrestrial television services in order to re-allocate for telecommunications service. The process to recall the spectrum in the frequency band of 700 MHz from the digital terrestrial television operators are as follows:

- Issuance of the NBTC Notification on the Radio Frequency Plan for Digital Terrestrial Television Service to support the recall of the spectrum in the frequency band of 700 MHz, which has been published in the Royal Gazette on 25 November 2019.
- Setting up the plan for digital terrestrial television network improvement to support the recall of the spectrum in the frequency band of 700 MHz, which has been scheduled for completion by 30 September 2020.

(2) Having established measures for compensation, reimbursement or remuneration for those who got affected by the recall of the spectrum in the frequency band of 700 MHz as follows:

- Providing an exempt of the license fee to use the spectrum for the provision of digital television services in the 5th and 6th installments for the licensees who got affected by the recall of the spectrum in the frequency band of 700 MHz at the amount of 13,622.40 million baht.

- Rental fees for digital television networks in the type of using the frequency for digital terrestrial television service (MUX) in the remaining licensing period, from June 2020 onwards, according to the actual amount agreed by the contract parties at the amount of 16,454.60 million baht.

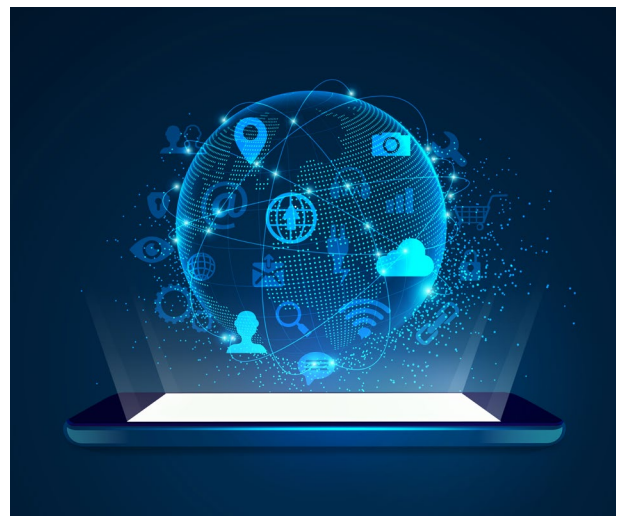
- Setting up the rate of compensation, reimbursement or remuneration for the improvement or changes of television network equipment of the licensees to provide network service and the licensees to provide facilities service for the provision of digital television service by having issued the Office of the NBTC Notification on Criteria, Procedures and Conditions for the Compensation, Reimbursement or Remuneration to Those Who Got Affected by the Recall of the Spectrum in the Frequency Band of 700 MHz for the case of network service licensee and facility service licensee for providing digital terrestrial television service on 18 September 2019. The Office of the NBTC by the Sub-committee to determine compensation, reimbursement or remuneration for the improvement or changes of television network equipment of the licensees to provide network service and the licensees to provide facilities service for the provision of digital television service of 5 networks (4 licensees) at the actual costs but not exceed the budget framework of 761.42 million baht which consisted of the procurement expenses for equipment modifications, expenses on personnel of the licensees and other expenses.

(3) Having returned 7 licenses (7 Channels) for the use of frequency to provide digital terrestrial television services along with the payment of compensation to the licensees who requested to return the licenses; which are, Spring 26 Company Limited, Spring News Television Company Limited, Bright TV Company Limited, Voice TV Company Limited, MCOT Public Company Limited, BEC-Multimedia Company Limited (Channel 3SD), and BEC-Multimedia Company Limited (Channel 3 Family). The total compensation was 2,932.68 million baht.

8. The operation according to the measures to support the digital terrestrial television service operators

(1) Having supported the expenses for television signal transmission (general service) via satellite according to the Must Carry Notification for 3 years through the BTFP Fund. As of 31 December 2019 the NBTC has already supported the expenses for the amount of 1,332.796 million baht which is in accordance with the NBTC Notification regarding the Criteria on Dissemination of Television Service (General Service) in order to ensure that the people have received basic television services thoroughly and fairly.

(2) Having supported the central organization on the survey of the TV ratings to support the digital television industry which is in accordance with the Office of the NBTC Notification on Criteria, Procedures, and Conditions for Money Allocation for the Survey of TV Ratings to Support the Digital Television Industry (No.2) which requires that the central organization requesting for financial support shall notify the request in writing to the Office of the NBTC within 1 year starting from the effective date of the Notification. The Office of the NBTC has determined the budget framework for supporting the survey of TV ratings at the amount of not exceeding 431.00 million baht.



9. Protecting the benefit of consumers in the broadcasting, television, and telecommunications services

The NBTC has given importance to the protection of the consumers' benefit in the broadcasting, television, and telecommunications services continuously. In year 2019, there are important actions to protect consumers such as

(1) Monitoring the content of illegal advertisements against the food and drug law related to broadcasting and television services by having the cooperation with relevant organizations such as the Food and Drug Administration (FDA), Ministry of Public Health, to continuously follow-up, monitor, and watch up the broadcasting of illegal advertising programs against food and drugs law that may be considered the action to exploit consumers.

(2) Raising awareness of consumers and developing a strong consumers network by organizing various activities including workshops with relevant sectors, such as

- Enhancing knowledge about the impact of electromagnetic radiation from mobile phone base stations on health in regional areas, in which the activities have continuously been conducted.
- Enhancing the capacity of the citizen network in district level on consumer protection in telecommunications service and increasing knowledge and understanding of new issues relating to the use of telecommunications services, as well as establishing collaboration with the leader of citizen network so that they understand the rights of consumers correctly.
- Strengthening consumers and enhancing the capability of people of media literacy through organizing workshops in collaboration with educational institution networks to promote the media literacy of radio-television in higher education institutions covering all 4 regions, as well as to promote the consumers' rights and radio-television media of citizen network in the educational institutions in the area, etc.
- Organizing activities for the consumers protection and establishing consumer networks in

the broadcasting and television services, such as the development of consumer networks for watching up and reporting/filing complaints by coordinating with the agencies of the consumers network, radio-television media and related regulators of the broadcasting and television services continuously, organizing forums on consumer protection in the broadcasting and television services and increasing various channels for communication.

10. The allocation of the Broadcasting and Telecommunications Research and Development Fund for the Public Interest (BTFP)

In year 2019, the NBTC had approved the allocation of the Fund in accordance with the fund's objectives as proposed by the Fund Management Committee; that is, the Type 1 Grant (the projects arising from the eligible person who apply for being promoted and financial supported by the Fund in accordance with the Fund's objectives under Section 52 (1) (2) (3) 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) for 24 projects at the amount of 143.00 million baht, and the Type 2 Grant (the achievement-based projects according to the Fund Management Committee's policies), which are defined in form of Term of Reference at the amount of 326.75 million baht, having supported the Type 2 Grant (in the case of arranging agreements with government agencies) at the amount of 88.97 million baht, having approved the additional budget framework of 200.00 million baht in August 2019, and having approved the allocation of the Fund to the Safe and Creative Media Development Fund in the year 2019 at the amount of 530.00 million baht.

In addition, the NBTC has committed to the development of the potential of personnel to have high performance so that they become important forces in driving the mission of the NBTC and the Office of the NBTC as well as the development of the Office of the NBTC into the digital office through the proceeding as follows:

(1) **Upgrading the Office of the NBTC to the digital office** which is a continuation of the operation from the previous year. In 2019, the NBTC has appointed the Working Group to drive the development of the Office of the NBTC to the digital office so that it will move forward to be a concrete and effective digital office in improvement of work processes, improvement of laws and regulations concerned, changing and developing the way of thinking of personnel in order to become the digital office and conforming to the government's policy in driving Thailand towards the digital economy era.

(2) **Developing the organization to be the organization with good management, transparency and accountability.** In 2019, the Office of the NBTC had participated in the integrity and transparency assessment (ITA) of the operation of government agencies and received the high score of assessment of 94.71 percent which ranked the 1st among other government agencies and the 40th of the country from 8,299 government agencies participated in the assessment. This is a crucial step in bringing the organization to become an organization of transparency with a great success arising from the commitment of the personnel of the Office of the NBTC.

(3) **Managing budget in the year 2019 of the Office of the NBTC.** The NBTC has prepared a surplus budget with the revenue collected in the amount of 8,943.570 million baht. The budget expenditure in year 2019 was prepared for totally 5,549.837 million baht. The result of the budget expenditure of the operation of the Office of the NBTC was 5,019.246 million baht and the NBTC had already submitted money to the Digital Economy and Society Development Fund of Office of the National Digital Economy and Society according to Section 24 (4) of the Digital Development for Economic and Social Act B.E.2560 (2017) based on cash basic accounting in the amount of 1,329.651 million baht. It is expected that the Office of the NBTC will submit more money as state revenue for totally 2,594.674 million baht.





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General Information



NBTC and the Office of the NBTC

on 7 October 2011, the **National Broadcasting and Telecommunications Commission** or “NBTC” has been appointed by the Royal Proclamation according to Section 17 of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (the Act on the Organization) B.E.2553 (2010) consisting of Chairman of the NBTC, Vice Chairman of the NBTC, and NBTC Commissioners. Section 35, Section 37, Section 38 and Section 40 of the Act has stipulated that the NBTC shall appoint the Broadcasting Commission, called in short “BC” and the Telecommunications Commission, called in short “TC” to have the power to act on behalf of the NBTC in regulating the broadcasting, television and telecommunications services by taking into account the utmost benefits of the public at national and local levels in education, culture, state security and other public interests, free and fair competition, determining criteria and procedures on the network access interconnection in broadcasting, television and telecommunications services, and determining criteria for broadcasting, television and telecommunications business operation, including the protection of consumers’ rights and freedom to access and utilize frequencies in the broadcasting, television and telecommunications as well as the encouragement of the public participation in the public media operation. The NBTC also performs other tasks in accordance with the provisions of relevant laws. The NBTC Commissioners shall hold office for a term of six years as from the date of being appointed by the King and shall serve for only one term.

The NBTC has continued performing its mission under the powers and duties prescribing by the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E.2553 (2010) and on 22 June 2017, the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No.2) B.E.2560 (2017) has been published in the Royal Gazette. The Act has abolished Section 35, Section 37, Section 39 and

Section 40 of the Act on the Organization B.E.2553 (2010) and stipulated that the NBTC shall consist of seven commissioners with an expertise in broadcasting and television services, telecommunications service, engineering, laws, economic, and consumer protection or people’s right and freedom promotion. In addition, the Transitory Provisions has stipulated that “the commissioners who still hold the office on the effective date of this Act shall remain in office to continue performing their duties until the expiration of the term or vacation of office upon other causes. In the case where there is a vacation of office, no matter of what causes, it shall be deemed that the NBTC consists of the existing commissioners unless the remaining commissioners consists of less than four persons where all the commissioners shall vacate office upon the cause of expiration of term, and the NBTC commissioners shall be appointed according to the Act on the Organization B.E.2553 (2010), which is additional amended by this Act. While the new NBTC commissioners have not yet been appointed, the existing NBTC commissioners shall continue perform duties until the new commissioners appointing by the Act on the Organization B.E.2553 (2010), which is additional amended by this Act, take the office. In the case where the Chairman vacates office, the existing commissioners shall elect one among themselves to be the Chairman to continue perform the duties”. In the meantime, the Office of the Secretary-General of the Senate has begun the selection and selection process for the appointment of person to be the commissioners of the National Broadcasting and Telecommunications Commission. Later on, the Head of National Council for Peace and Order had the Order No.7/2018 dated 24 April 2018, regarding Cancellation and Suspension of the Nomination and Selection Process for the Appointment of Commissioners of the National Broadcasting and Telecommunications Commission, Article (1) The nomination and selection process for the appointment of commissioners of the NBTC which has been carried out on the day before the date this Order comes into force shall be cancelled,

Article (2), the commissioners who still hold the office on the effective date of this Order shall remain in office to continue performing their duties as necessary as prescribed by Section 42 of the Act on the Organization (No.2) B.E.2560 (2017). In the meantime, in the case where there is a vacation of office, no matter of what causes, it shall be deemed that the NBTC consists of the existing commissioners unless the remaining commissioners until the Head of National Council for Peace and Order will provide another Order, and Article (3) the relevant organizations shall consider the solutions for solving problems related to the nomination and selection process to be appointed as the NBTC in accordance with the spirit of the law that requires those who have been selected shall eligible with knowledge, ability and experiences that are beneficial to perform duties, and carrying out the nomination and selection process for the appointment as soon as possible. On 16 April 2019, the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services (No.3) B.E.2562 has been published with the view to amending the Act on the Organization to Assign Radio frequency and to Regulate the Broadcasting and Telecommunications Services to be more suitable and in accordance with the provisions of the constitution.

However, later on, the Head of the National Council for Peace and Order had considered that the performance of the NBTC shall be further continuously, and, therefore, the Order No. 8/2019 dated 8 July 2019 regarding Measures to Solve the Problems of Continuity of the Commissioners of the NBTC has been issued.

The Order also includes the expansion of telecommunication services for national security and public interest as follows: Article (1) To suspend the nomination and selection process for the appointment of commissioners of the NBTC until the Act on the Organization which has the additional amendment in the part concerning the nomination and selection process for the appointment of commissioners of the NBTC has been put into force or until the Prime Minister, with the approval of the Council of Ministers, issues another Order; Article (2) in the case where a commissioner vacates office upon having attained the age of seventy years, the commissioner shall remain in office to continue perform duties until the new NBTC commissioner be appointed according to the additional amended Act, as stipulated in Article (1) and take the office, or until vacate the office due to other causes. Besides, according to Article (3) in the case where a commissioner vacates office upon having attained the age of seventy years as stipulated in Article (2), the remaining commissioners shall continue to perform duties.

At present, the NBTC Commissioners has continued to perform their duties according to the Order of the Head of the National Council for Peace and Order No. 8/2019 with the composition as follows:

- | | |
|---------------------------------|--|
| 1. General Sukit Khamasundara | Commissioner
Acting Chairman
of the NBTC |
| 2. Colonel Natee Sukonrat | Vice-Chairman |
| 3. Lt. General Perapong Manakit | Commissioner |
| 4. Mr. Prasert Silphiphat | Commissioner |
| 5. Mr. Thawatchai Jittrapanun | Commissioner |
| 6. Mr. Prawit Leesatapornwongsa | Commissioner |



The NBTC and its power and duties

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 (No.2) B.E.2560 (2017), and (No.3) B.E.2562 (2019) Section 27, the NBTC shall have the powers and duties as follows:

1. To formulate a Frequency Management Master Plan, Table of National Frequency Allocations, Broadcasting Master Plan, Telecommunications Master Plan, Radio Frequency Plan, Rights to Access Satellite Orbit Management Plan, and Telecommunications Numbering Plan and proceed according to the Plans. However, such Plans must comply with 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 prescribe characteristics and categories of broadcasting, television, telecommunications and radiocommunications services

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

5. To prescribe criteria for the efficient use of radio frequency without causing interference to the same type of business and other type of business.

6. To license and regulate the operation of broadcasting, television, and telecommunications business operation to ensure that service users have been provided of services with quality, efficiency, timeliness, reliability and fairness; and prescribe licensing criteria and procedures, conditions, or licensing fees.

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

8. To prescribe criteria and procedures for Interconnection, and criteria and procedures, for setting access charges or interconnection charges to be applied to the undertaking of broadcasting, television, and telecommunications services, both for the same type of business and other type of business, which shall be fair to service users, service providers and investors, or between the telecommunications service providers with due regard to public interest.

9. To set tariff structure and price structure for the broadcasting, television and telecommunications services which shall be fair to service users and service providers with due regard to public interest.

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

11. To prescribe measure for the prevention of anti-competitive conduct or unfair competition in broadcasting, television and telecommunications services.

12. To prescribe measure for the provisions of telecommunications services universally and equally in accordance with Section 50.

(12/1) To reform the frequencies which is unused or unworthy used or to make it more worth as specified in the Plan, which shall be determined in accordance with (1), from those who have been authorized to re-allocate in accordance with the criteria, procedures and conditions prescribed by the NBTC. However, such conditions must define the method of compensation, disbursement, or remuneration for those whose frequencies have been reformed by taking into account the rights of those affected by the frequency reforming in each case.

13. To protect right and liberty of the people from being exploited by the operators; protect individual right of privacy and freedom to communicate by means of telecommunications; promote right, freedom and equality of the people in the access to, and use of

frequencies in the sound broadcasting, television, and telecommunications services.

14. To act as a governmental administrative agency who has an authority in international communication service management with the International Telecommunication Union or international organizations, governments and international agencies either being within the duties and powers of the NBTC or being assigned by the government including support the public affairs in order to have satellites or obtain the rights to access to satellite orbit in order to be in accordance with the Plans to be determined under (1) and the National Digital Economy and Society Development Plan and Policy.

(14/1) To proceed for obtaining and maintaining the rights to access the satellite orbit which is a national treasure and exercising the rights to maximize benefits for the country and the people in case that the protection of the rights has created a burden on the state beyond its benefits to be received, the NBTC may waive the said rights as stipulated in the management plan for the rights to access satellite orbit and report to the Cabinet as well as having announced a detailed reasons to the public. In exercising the rights to access the said satellite orbit, the NBTC shall have the power to prescribe criteria, procedures and licensing conditions, fees and exemption of licensing fees including other expenses on relevant operation that the licensing applicant or the licensee, as the case may be, will have to bear the burden. The license fee, after deducting the cost of the licensing, shall be remitted as state revenue.

(14/2) To license and regulate the business operated under this Act by using foreign satellite channels and prescribe licensing criteria and procedures concerning licensing, conditions and licensing fees.

15. To determine and resolve issues relating to interference of frequencies.

16. To monitor and provide advice on the undertaking of broadcasting, television and telecommunications services.

17. To set forth regulation on merger, cross ownership-holding or frequency-used broadcasting market dominance amongst mass media business

or by any other person, which has the effect of impeding the liberty of the public in perceiving information or of obstructing public access to a diversity of information.

18. To promote a formation of licensees, broadcasters, and mass media professionals in the radio and television businesses into diverse forms of organizations which will have the mandate to set forth ethical standards and self-regulation pertaining to the occupation or profession under the ethical standards.

19. To issue regulations or notifications with respect to general administration, personnel administration, budget, finance and property and other businesses of the Office of the NBTC according to Section 58.

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

21. To determine and approve financial allocation for 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 relating to spectrum management, broadcasting, television, telecommunications services, or other related services.

(22/1) To provide information relating to the performance of the NBTC and operators having been authorized by the NBTC, in respect of digital as requested by Office of the National Digital Economy and Society Commission for the use of analyzing and formulating the National Digital Economy and Society Development Plan and Policy.

23. To give advice to the Cabinet for an issuance of, or amendment to, legislation related with frequency allocation and other matters relating to frequencies, broadcasting, television, and telecommunications services.

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

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

The Office of the NBTC and its powers and duties

Section 56 and Section 60 of the Act on the Organization B.E.2553 (2010) and its amendment stipulates that the Office of the National Broadcasting and Telecommunications Commission, or called in short “the Office of the NBTC” which is a juristic person, having a status of state agency and shall not be subject to the government agency under the law on public administration, or state enterprise under the law on budgetary procedure or other laws, and directly report to the Chairman of the NBTC. The Office of the NBTC shall have a Secretary-General of the NBTC who shall be responsible for the work performance of the Office of the NBTC and shall be the superior of officials and employees of the Office of the NBTC, and coupled with Section 57 has prescribed the powers and duties of the Office of the NBTC as follows:

1. Be responsible for the Office of the NBTC’s revenues and expenditures.

2. Prepare the Office of the NBTC’s annual budget expenditure and submit to the NBTC for endorsement. The said annual budget expenditure shall include any budget with respect to the conduct of official duties of the NBTC, the Performance Follow-up and Evaluation Committee and Office of the NBTC. Such annual budget expenditure shall be prepared with consideration of worthiness, cost effectiveness and efficiency. In case that any item or project is already been allocated of the budget but has not paid or created debt obligations within the fiscal year, the item or project shall be cancelled and the Office of the NBTC shall submit the budget for such item or project as state revenue.

3. Monitor and follow up spectrum utilization.

4. Receive and consider complaints with regard to the use of spectrum, the operations of broadcasting, television and telecommunications services in order to examine and solve the problems or propose recommendations to the NBTC for consideration in accordance with the criteria prescribed by the NBTC.

5. Study, compile and analyze information related to the spectrum, the use of spectrum, the broadcasting, television and telecommunications business operation.

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

7. Perform other acts as entrusted by the NBTC.

Preparation of Annual Budget Expenditure of the Office of the NBTC

In the preparation of the annual budget expenditure under Section 57 (2), before the Office of the NBTC proposes the draft annual budget expenditure to the NBTC for approval, it has to propose the draft budget to the National Digital Economy and Society Commission for consideration and comments, and the Office of the NBTC shall improve the draft budget expenditure according to the comments, except the annual budget expenditure of the Performance Follow-up and Evaluation Committee, the Office of the NBTC shall propose to the Performance Follow-up and Evaluation Committee for further improvement. In case that the Office of the NBTC or the Performance Follow-up and Evaluation Committee, as the case may be, disagrees with the comments of the National Digital Economy and Society Commission, the Office of the NBTC shall propose the said draft annual budget expenditure together with the comments of the National Digital Economy and Society Commission to the NBTC for further consideration. After the NBTC has approved the Office of the NBTC’s annual budget expenditure, the Office of the NBTC shall disclose that annual budget expenditure, together with items or projects that have been approved, to the public via the information network or other methods that are easily accessible. In addition, the Office of the NBTC must propose the annual budget expenditure 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 comments not less than thirty days prior to the beginning of the fiscal year. After receiving the comments or after the said period, the Office of the NBTC shall propose the draft annual budget expenditure to the NBTC for further action.

Revenues of the Office of the NBTC

Section 65 of the Act on the Organization B.E.2553 (2010) and its amendment prescribes that the Office of the NBTC's revenues shall consist of licensing fees and licensing fees to use spectrum according to Section 44/2 paragraph one, licensing fees and business licensing fees according to Section 45 paragraph one, and license transfer fee to use spectrum according to Section 44/3, revenues or benefits accrued from the conduct of duties of the NBTC and the Office of the NBTC, revenues derived from the Office of the NBTC's property, money and property donated to the Office of the NBTC in accordance with the regulation set forth by the NBTC for the work of the Office, and subsidies from the government. Revenues from the licensing fees, licensing fees to use spectrum, business licensing fees and license transfer fee to use spectrum and revenues or benefits accrued from the operation under the powers and duties of the NBTC and the Office of the NBTC after deducting by expenditures for efficient conduct of the Office of the NBTC, necessary burden costs, and money allocated for the Fund under Section 52 and the Technology Development for Education Fund under the law on national education, and the Digital Economy and Society Development Fund under the law regarding the Digital Development for Economy and Society, shall be remitted to the state treasury. In the case where the Office of the NBTC revenues are not sufficient for efficient conduct of the Office of the NBTC, including necessary burden costs, and other sources are not 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 the Public Interest.

Section 52 of the Act on the Organization B.E.2553 (2010) and its amendment stipulates that the Broadcasting, and Telecommunications Research and Development Fund for the Public Interest shall be established with the objectives to ensure that the people have been provided with the broadcasting, television and telecommunications services universally; promote community services and support community service operators; promote and support communication resources development, research and development in the broadcasting and telecommunications sector, as well as to increase people's capabilities in keeping pace with the media's technology in the aspect of spectrum utilization, information technology, facilities for the disabled, elderly, or underprivileged as well as telecommunications industries and related industries; promote and support human resource development in the broadcasting, television and telecommunications services, information technology, as well as the operation of the organizations who is responsible for setting ethical standards of the occupations or professions under the law on broadcasting and television business operation; support, promote and protect consumers in the broadcasting, television and telecommunications services; support the operation under the Thai Media Fund Act, BE. 2558 (2015) by allocating money to the Thai Media Fund; encourage the most efficient use of frequencies, the spectrum refarming in order to reallocate, and support the substitution, compensation or remuneration for the refarmed frequencies for the maximum efficiency in the use of frequencies.



Vision

Being a leading organization in the ASEAN
regulating and developing communications business
for sustainable national development

Mission

To support the NBTC concerning spectrum management
as well as licensing and regulating the broadcasting,
television, radiocommunications, and telecommunications
business operations with efficiency, transparency
and good reputation in ASEAN

Core Value

N

Navigating to
International

B

Building
Innovation

T

Teamwork
& Transparency

C

Consistent
Professionalism

Strategic Issues of the Office of the NBTC and the connection with the Government's Policies, National Strategy, Master Plan under the National Strategy, and National Reform Plan

The NBTC had reviewed and set up the Spectrum Management Plan, Telecommunications Master Plan and (draft) Broadcasting Master Plan by taking into account the connection to the National Strategy, National Reform Plan and National Digital Economy and Society Development Plan and Policy, as well as aligned the strategies of the Master Plans to the Strategic Plan of the Office of the NBTC to be used as the operational framework and guideline for driving missions of the NBTC.



Organizational Plan

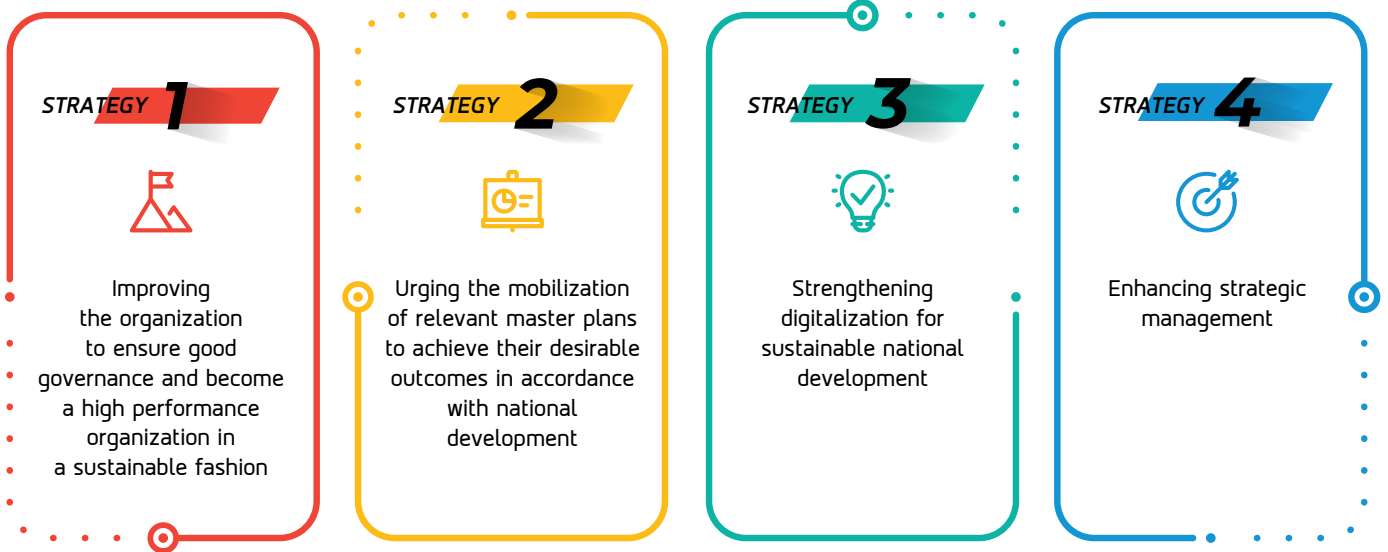


The Strategic Plan of the Office of the NBTC No.2 B.E.2561 – 2564 (2018 – 2021)



The Office of the NBTC has developed and implemented the Strategic Plan of the Office of the NBTC No.2 B.E.2561 - 2564 (2018 - 2021) to drive the missions under the NBTC's Plans into an action for the concrete results which will benefit the nation and the people such as the efficient spectrum management, the broadcasting, television and telecommunications business licensing, provision of universal service obligation, consumer protection in

broadcasting, television and telecommunications services, as well as the organization of 5G spectrum auction which is an urgent task of the Office of the NBTC that must be accomplished as soon as possible in order to promote Thailand towards the development through innovation and technology, that is in line with the Thailand 4.0 policy. The strategic issues are as follows:



The High-Level Executives Of the Office of the NBTC



Mr. Takorn Tantasith
Secretary-General of the NBTC



Mr. Trairat Viriyasirikul
Deputy Secretary-General of
Strategic and Internal Affairs Cluster



Air Marshal
Dr. Thanapant Raicharoen
Deputy Secretary-General of
Regional Affairs Cluster



Mr. Korkij Danchaivichit
Deputy Secretary-General of
Telecommunications Cluster

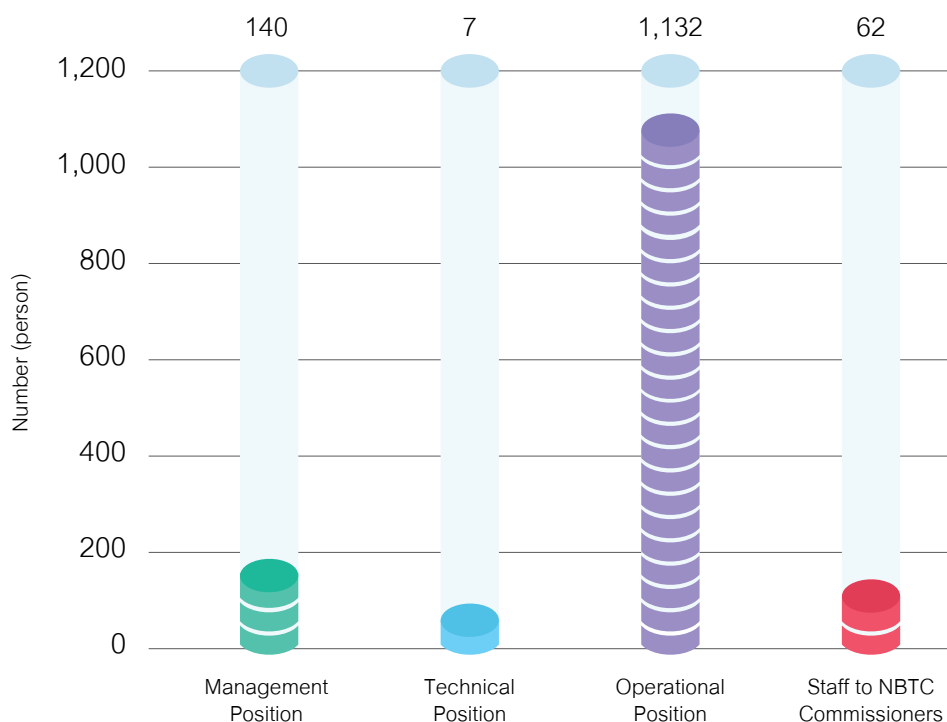


Asst. Prof. Dr. Pakdee Manaves
Deputy Secretary-General of
Broadcasting Cluster

Organization Structure and Manpower of the Office of the NBTC

Manpower of the Office of the NBTC

In 2019, the manpower of the Office of the NBTC was totally 1,341 persons, as shown below:



Management Position

High-level executives (Secretary-General, Deputy Secretary-General)	5	persons
Middle-level executives (Executive Director)	35	persons
Junior executives (Division Director)	100	persons

Technical Position

Principle Experts/Senior Experts/Experts 7 persons

Operational Position

Senior Officers	548	persons
Middle-level Officers	375	persons
Junior Officers	151	persons
Employees	58	persons

Staff to NBTC Commissioners

Advisors	16	persons
Secretary	6	persons
Secretary Assistant	9	persons
Staff	27	persons
Drivers	4	persons

Remarks : Data as of 31 December 2019

Source : Human Resource Management Bureau, Office of the NBTC



Organization Structure of the Office of the NBTC

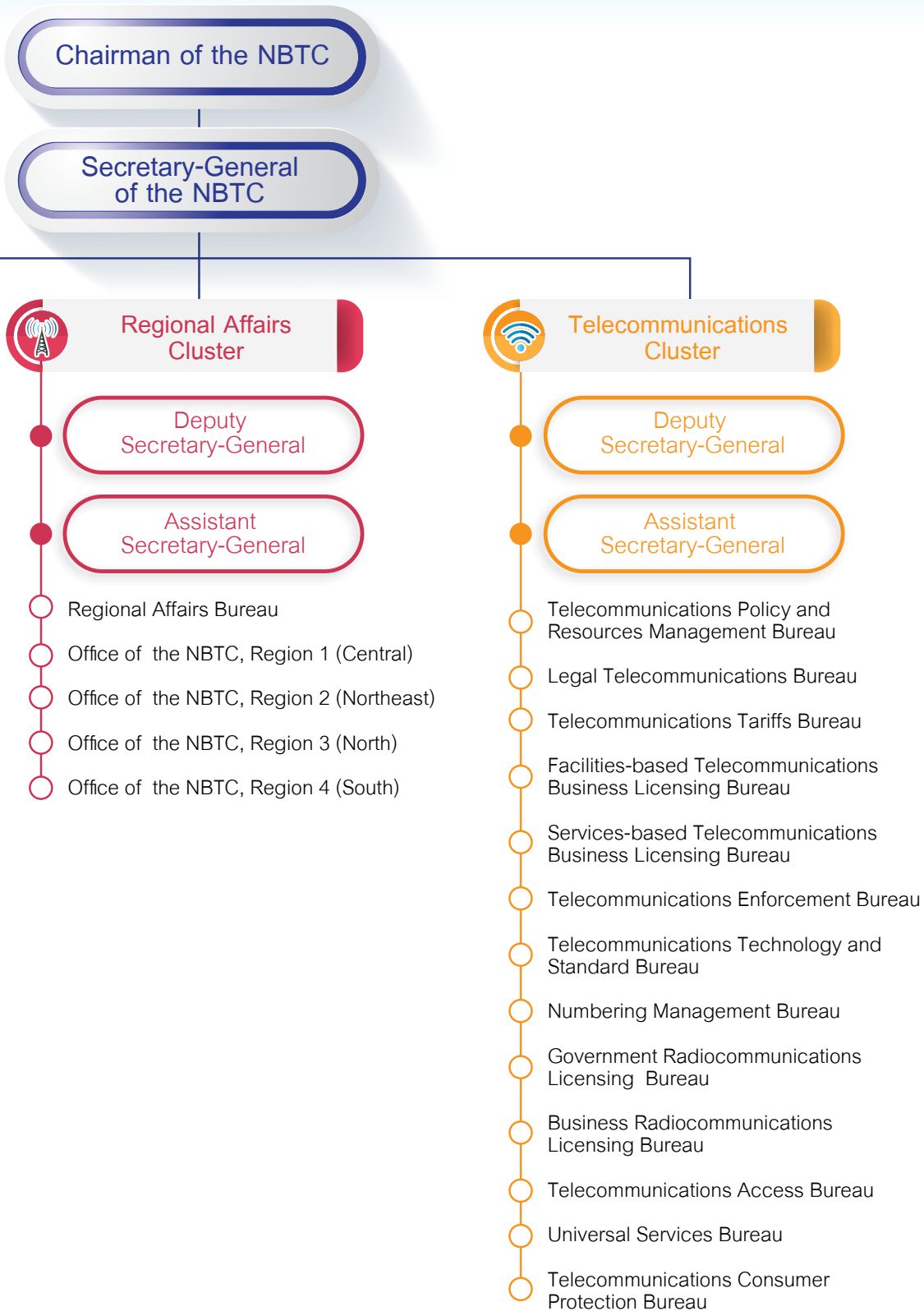
In the year 2019, the NBTC had restructured the organization of the Office of the NBTC so that its operation be in line with the power and duties stipulating in the Act on the Organization to Assign the Frequency and to Regulate the Broadcasting and Telecommunications Services B.E.2553 (2010) and its amendment (No.2) B.E.2560 (2017) and (No.3) B.E.2562 (2019) which have been amended in accordance with the provisions of the Constitution of the Kingdom of Thailand and Digital Economy and Social Development Plan. In the year 2019 the Office of the NBTC's organization had therefore been restructured in accordance with the NBTC's Regulations regarding Internal Structure Division of the Office of the NBTC B.E.2562 (2019) in accordance with the current laws and conditions by supporting the Office of the NBTC to be able to perform its duties in support

of the NBTC's activities more efficiently, as well as being more streamlined in regulating the broadcasting, television, and telecommunications services in the age of communications technology convergence and support the mission of the NBTC in regulating the satellite service, as well as to upgrade the regulatory standards and management of the organization to achieve the Office of the NBTC's vision of being "a leading organization in the ASEAN regulating and developing communications business for sustainable national development", including the development of the Office of the NBTC to become a digital office to support the policy of Thailand 4.0 in driving the country by applying technology to the work and facilitating the people. The organization structure of the Office of the NBTC consists of 5 Clusters, 43 Bureaus, 4 Office of the NBTC region and 1 Academy.

Organization Structure

The Office of the National Broadcasting and Telecommunications Commission





The Management Team of the Office of the NBTC

Secretary-General of the NBTC

Mr. Takorn Tantasith
 Tel: 0 2670 8888 ext. 1552, 1557
 Fax: 0 2271 4376

Deputy Secretary-General Strategic and Internal Affairs Cluster

Mr. Trairat Viriyasirikul
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Deputy Secretary-General Telecommunications Cluster

Mr. Korkij Danchaivichit
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Deputy Secretary-General Broadcasting Cluster

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Major Performance of the NBTC



In the year 2019, the NBTC had carried out the main mission in the spectrum management, the regulation on broadcasting, television and telecommunications services for the utmost benefit of the people, state security and public interest according to the spirit of the Constitution of the Kingdom of Thailand B.E.2560 (2017) and in accordance with the government policy that focuses on driving Thailand to become a developed country in the 21st century. In addition, the NBTC has committed to regulating and development of broadcasting, television and telecommunication services continuously so that there shall be a mechanism to help drive the national economy and investment through the development of telecommunications network in order to provide modern telecommunication services that can be applied and expanded to various fields such as manufacturing industry, agriculture, transportation, education, medicine and public health, tourism and services, etc. Major performances of the NBTC are as follows:

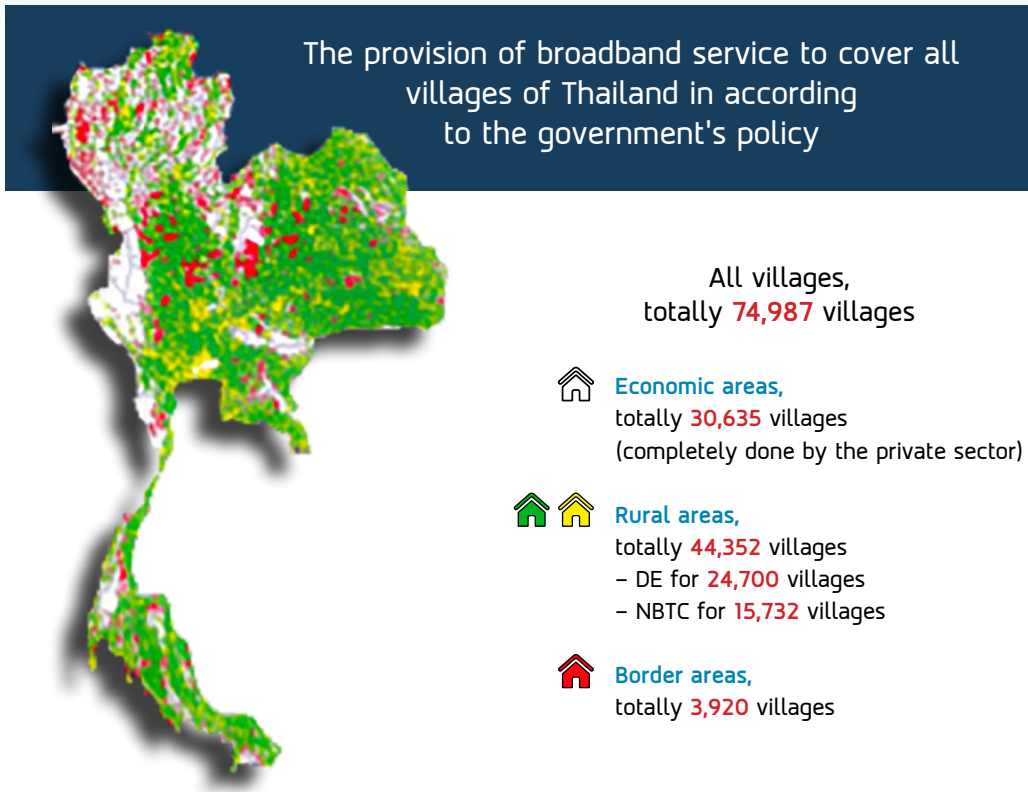
The operation to support the implementation of government policies

1. Having set up the management plan for the rights to access satellite orbit, established the criteria and procedures for granting the rights to access satellite orbit, and the criteria and procedures for licensing to use foreign satellite channels for the provision of domestic services to maintain the frequency and the rights to access satellite orbit which is the national property for the benefit of the nation and the people according to the government policy.

2. Having set up the Spectrum Allocation Plan for International Mobile Telecommunications Service of Thailand and improved the criteria for 5G spectrum auction to be suitable for the business model in the 5G era in order to support the rapid development of wireless communication technology in the 5G system and promote the development of digital infrastructure towards becoming a smart country.

3. Having implemented the project on the provision of broadband internet service and mobile phone signal to 3,920 villages in the border areas (Zone C+) and the provision of broadband internet service to 15,732 villages in the remote areas (Zone C) in order to expand the broadband internet network to cover all villages of the country which is in line with the Cabinet's resolution to upgrade the telecommunications infrastructure to drive the country's economy and will lead to increase of the country's competitiveness. The NBTC has also supported the cost of broadband internet connection in the border areas for the low-income households under the Public Welfare Registration Program to use the service at a speed of 30/10 Mbps for a period of 36 months to reduce disparity and expand opportunities for households with low-income in the project area, to be able to thoroughly and equally access and use broadband internet service, as well as various services provided by the government such as distance learning, telemedicine, etc.





4. Having set up a center of operational policing for Thailand Against Intellectual Property Violations and crimes on the Internet Suppression (COPTICS) since 2018, by collaborating with the Royal Thai Police to suppress the trade of copyright infringement and intellectual property products through online channels in order to manage false information through online media, as well as supporting national security and safety.

5. Having disseminated and cultivated correct understanding about the royal institution by producing a video presentation “The Voice from the Sky VR009” in honor of His Majesty the Late King Rama IX Maha Bhumibol Adulyadej the Great and disseminating the royal duties in cinemas.

6. Having established the good corporate governance policy of the Office of the NBTC and promoted the good governance of the Office of the NBTC to cultivate good values and culture in terms of morality, honest, ethics discipline, performing duties with transparency, accountability and being accepted by all relevant sectors.

7. Having developed the Office of the NBTC to become the digital office in order to support the national strategy by using digital potential; supported the efficient regulation to facilitate and upgrade quality of service provision in the same direction as the government which will benefit the economy and investment of the country, etc.

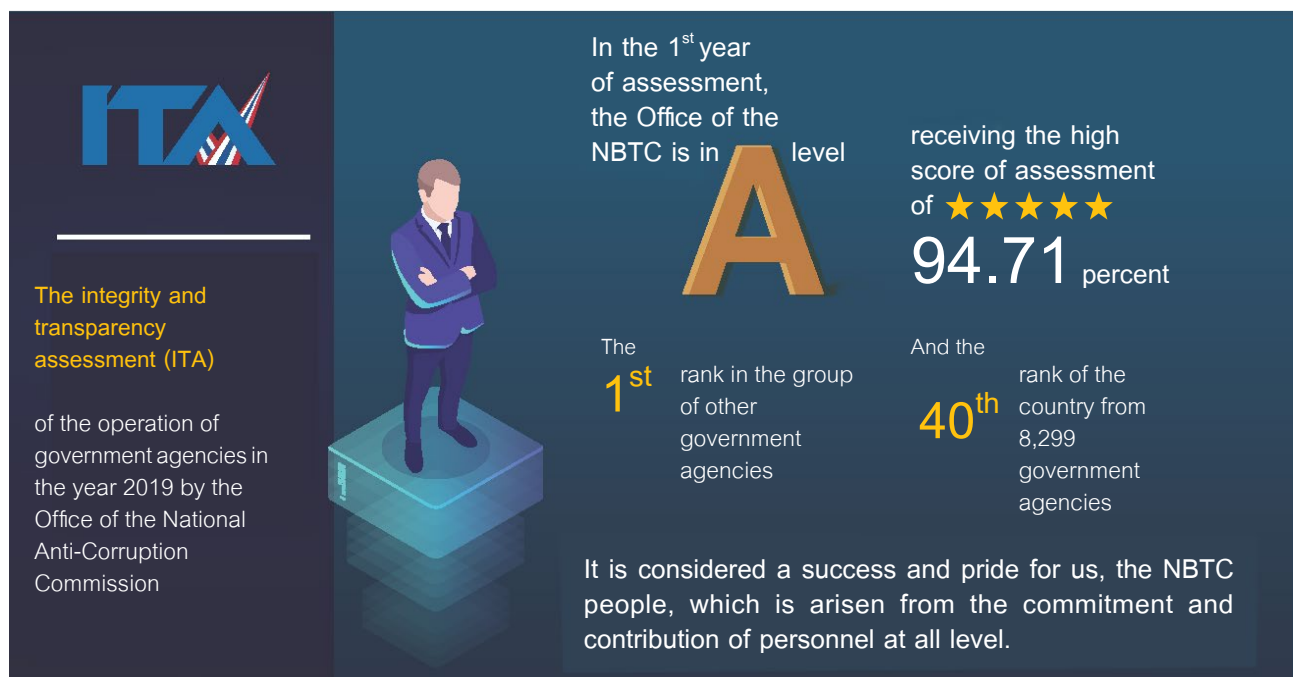
Strategic and Organization Management Affairs

The NBTC has set up policies and direction for continuously driving and developing the national communication business progressively towards digital era, and to achieve the goals according to the government's policies. In addition, the NBTC has assigned the Office of the NBTC to carry out its activities in accordance with the good corporate governance policy and good governance principle to become an organization with transparency and accountability that taking into account the public interest. The important performances in the year 2019 are as follows:

1. Participating in the integrity and transparency assessment (ITA) of the operation of government agencies in the year 2019 and receiving the high score of assessment of 94.71 percent which is the 1st rank in the group of other government agencies and the 40th rank of the country from 8,299 government agencies participated in the assessment. It is considered a crucial pace to lead the organization to become the organization of transparency and it is a success arisen from the commitment and contribution of personnel of the Office of the NBTC.

2. Formulating policies for the development of working models and systems of the Office of the NBTC to become a digital office in order to support the reform of the public management system by applying digital technology to the provision of government services, adjusting the government's approval process that are important to the business operation and the way of people's life to the digital system, disclosure of government information to the public, and connecting information with each other. Also, four action plans have been formulated which consisting of (1) Public service portal development plan (2) Database synchronization plan (3) Digital signature plan and (4) Electronic document system development plan

3. The budget management in the year 2019 of the Office of the NBTC efficiently. The NBTC has prepared a surplus budget with the revenue collected in the amount of 8,943.570 million baht. The budget expenditure in the year 2019 was prepared for totally 5,549.837 million baht. The result of the budget expenditure of the operation of the Office of the NBTC



ITA

The integrity and transparency assessment (ITA) of the operation of government agencies in the year 2019 by the Office of the National Anti-Corruption Commission

In the 1st year of assessment, the Office of the NBTC is in **A** level receiving the high score of assessment of **94.71** percent

The **1st** rank in the group of other government agencies

And the **40th** rank of the country from 8,299 government agencies

It is considered a success and pride for us, the NBTC people, which is arisen from the commitment and contribution of personnel at all level.

was 5,019.246 million baht and the NBTC had already submitted money to the Digital Economy and Society Development Fund of Office of the National Digital Economy and Society according to Section 24 (4) of the Digital Development for Economic and Social Development Act B.E.2560 (2019) based on cash basic accounting in the amount of 1,329.651 million baht. It is expected that the Office of the NBTC will submit more money as state revenue for totally 2,594.674 million baht.

4. Having allocated the Broadcasting and Telecommunications Research and Development Fund for the Public Interest (BTFFP). In year 2019, the NBTC had approved the allocation of the Fund in accordance with the fund's objectives as proposed by the Fund Management Committee; that is, the Type 1 Grant (the projects arising from the eligible person who apply for being promoted and financial supported by the Fund in accordance with the Fund's objectives under Section 52 (1) (2) and (3) 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) for 24 projects at the amount of 143.00 million baht, and the Type 2 Grant (the achievement-based projects according to the Fund Management Committee's policies), which are defined in form of Term of Reference at the amount of 326.75 million baht, including supporting budget for the Type 2 Grant (in case of arranging agreements with government agencies) at the amount of 88.97 million baht, having approved the additional budget framework of 200.00 million baht in August 2019, and having approved the allocation of the Fund to the Thai Media Fund in the year 2019 at the amount of 530.00 million baht.



5. Conducting social service activities. The NBTC has embraced the royal wishes of His Majesty King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua to do community service and good deeds for society continuously by participating in public activities in cooperation with other relevant agencies for helping the society either in normal situation or disaster or emergencies as well as encouraging the executives, staff and employees of the Office of the NBTC to join the royal Thai volunteers project under the royal initiative and carry out various tasks with responsibility to society, people, and the environment such as

- Preparing the readiness on communications service for the coronation ceremony by requiring all mobile phone operators to take field operation to monitor and test the quality of mobile phone and Wi-Fi signals and enhance the capability of the service provision in the area along the route of proceeding in the royal coronation ceremony and nearby areas so that people are able to use the services efficiently and continuously. Also, the NBTC had established the administration center to coordinate the use of radio frequencies of government agencies in the royal coronation ceremony including having examined the frequency interference between government agencies at the Office of the NBTC.

- Establishing a Center for Spectrum Coordination for the coordination between government agencies and people in Nakhon Si Thammarat area in order to support disaster prevention and mitigation missions in case of emergencies and disasters (Pabuk storms) as well as to increase the efficiency in helping the victims of emergencies and disasters.

- Conducting the Volunteer Project on organizing communication lines in honor of His Majesty the King and dedicating the royal charity to King Rama V on the occasion of Chulalongkorn Day 2019 on 23 October 2019. The executives and staff of the Office of the NBTC have taken field operation to organize communication lines in the areas of Din Daeng Road, from Vibhavadi intersection to Mae Phra Fatima Church intersection with a total distance of 1.8 kilometers (2 sides).

- Conducting the International Volunteer Alliance Project in collaboration with the Radio Amateur Society of Thailand and the Volunteer Radio Association in honor His Majesty King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua on the auspicious occasion of the royal coronation ceremony B.E.2562 (2019), to exchange knowledge and experiences on international communications in the disaster situation among members of the International Amateur Radio Union and radio amateurs more than 11 countries, etc. This will be developing the radio amateurs in communications in the case of emergencies and disasters and the capability to cope with emergencies and disasters, as well as being a major force or supporting force who are ready to assist people when the disasters cases occur including establishing a database of the international radio amateurs volunteer alliances who are prepared to assist Thailand in cases of disasters which are useful in the case of disasters or emergencies in the future.

- Participating in volunteer activities to improve landscape on the banks of the Chao Phraya River in honour of dedicating the royal charity on the occasion of the Pass Away of His Majesty the Late King Rama IX Maha Bhumibol Adulyadej the Great and His Majesty King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua proceeded along the capital city by the grand royal barge procession on the occasion of the Royal Coronation Ceremony, B.E.2562 (2019).

- Participating in volunteer activities to improve canals and participating in the routes exploration for the restoration and development of the old canals and to develop sustainable environment and quality of people's life.

- Participating in volunteer activities to improve the environment and contribute to public interest on the occasion of the Royal Birthday Celebration of His Majesty the Late King Rama IX Maha Bhumibol Adulyadej the Great which is the National Day and the Father's Day.



Spectrum Management

In 2019, the NBTC had carried out important missions in the spectrum management, management of the rights to access satellite orbit, and the coordination concerning spectrum management in both domestic and international. The details are summarized as follows:

1. Having established the policy for efficient spectrum management to support the advancement of changing technology

1.1 Having formulated the Spectrum Management Master Plan B.E.2562 (2019) which has been published in the Royal Gazette on 11 September 2019 to be used as the criteria and preliminary conditions for granting license and all activities related to the use of spectrum for the benefit of efficient spectrum management and being in line with the advancement of the changing technology with regard to the use of spectrum for state security as necessary and driving Thailand to have sufficient spectrum to meet the needs.

1.2 Having participated in the World Radiocommunication Conference 2019 (WRC-19), the International Telecommunication Union or ITU during 28 October - 22 November 2019 in Sharm El Sheikh, Arab Republic of Egypt. The meeting will be held every 3-4 years to determine the appropriate spectrum for use in various services in the future as well as to update the Radio Regulations to be up to date and can support new technologies. In this meeting, the NBTC had determined the position of Thailand and the meeting results shown in the Final Act have been in line with the proposals of Thailand for a total of 28 proposals and a resolution of 16 proposals was adopted. The important issues are as follows:

(1) Determining additional spectrum for International Mobile Telecommunications (IMT) service including terms of use as follows:

- The frequency band of 26 GHz (24.25 - 27.5 GHz) globally.
- The frequency band of 40 GHz (37 - 43.5 GHz or any ranges) globally.
- The frequency band of 45 GHz (45.5 - 47 GHz) in some countries (excluded Thailand)
- The frequency band of 50 GHz (47.2 - 48.2 GHz) in some countries (excluded Thailand)
- The frequency band of 66 GHz (66 - 71 GHz) globally.

(2) Determining spectrum in the frequency band of 17.7 - 19.7 GHz (Space to Earth) and 27.5 - 29.5 GHz (Earth to Space) for the Earth Station In Motion (ESIM) including terms of use.

(3) Determining guidelines for the use of spectrum for communication in transport, consisting of rail transport, Intelligent Transportation System and maritime communications.

(4) Improving terms of spectrum usage for wireless access system including radio local area network (RLAN) in the frequency band of 5150 - 5250 MHz, by allowing the outdoor use and increasing usable sending power.

(5) Determining terms of spectrum usage in the frequency band of 137 - 138 MHz (Space to Earth) and 148 - 149.9 MHz (Earth to Space) (TT&C) for NGSO satellite service with short duration missions to promote the research and development of NGSO satellites.

2. Having formulated the policy and actions for satellite service

The NBTC has formulated a licensing plan and criteria for the right to access the satellite orbit related for three plans by having held the public hearings through various channels during 25 September - 25 October 2019 and held a meeting to discuss with government agencies on 4 October 2019 as well as a public hearing meeting on 21 October 2019 as follows:

2.1 The (Draft) NBTC Notification on Plans for Managing the Right to Access Satellite Orbit to define an operation framework related to the management of the right to access satellite orbit of the NBTC and the Office of the NBTC such as definition and details of the right to access satellite orbit of Thailand at present, the guideline for obtaining the rights, guideline for granting the rights, and guidelines for maintaining the rights, including guidelines for waiver if the maintenance of such rights creates a burden to the state in excess of the benefits to be received.

2.2 The (Draft) NBTC Notification on Criteria and Procedure for Granting the Rights to Access Satellite Orbit in order to determine the criteria and procedures for granting the rights to access satellite orbit in primary and final steps that the requests shall be submitted to the International Telecommunication Union (ITU) on behalf of Thailand after this Notification comes into force. The Notification has specified the applicant's qualifications, criteria for consideration, duties and rights of the applicant, fees and expenses that the applicant is required to pay, licensing conditions, as well as the transitory provisions related to the existing licenses, including the authorization in case of satellite concession agreement and dispute cases in order to ensure of the efficient exercise of the right to access satellite orbit of Thailand.

2.3 The (Draft) NBTC Notification on Criteria and Procedure for Licensing to Use the Foreign Satellite Signal Channel for Domestic Provision of Service to determine criteria and procedure for licensing to use the foreign satellite signal channel for domestic provision of service so that the consumers in Thailand have a variety of choices to choose the service from foreign satellite service. The Notification has specified the applicant's qualifications, criteria for consideration, licensing conditions, and licensing fees related, including the exemption in special cases which need not apply for license according to the Notification.

3. Maintaining the rights to access the satellite orbit

During to formulate a licensing plan and criteria for the right to access the satellite orbit, the NBTC has taken action to maintain the rights to access satellite orbit at the position of 120 degrees east and 126 degrees east for the time being, in which the NBTC Meeting No. 18/2019 on 22 October 2019 has its resolution to submit a new satellite network document to replace the existing satellite network at the orbit position of 120 degrees east in order to maintain the rights to access satellite orbit and to increase the opportunity to use the frequency band, and the NBTC Meeting No. 21/2019 on 11 December 2019 has its resolution to submit a new satellite network document to replace the existing satellite network at the orbit position of 126 degrees east. In addition, the NBTC has approved the submission of NGSO satellite network document as follows:

3.1 RTAFSAT Satellite Network of Royal Thai Air Forces

3.2 THEOS-2 Satellite Network of the Geo-Informatics and Space Technology Development Agency (Public Organization)

3.3 JAISAT-1 Satellite Network of the Radio Amateur Society of Thailand

3.4 THAI IOT Satellite Network of Navaminda Kasatriyadhiraj Royal Air Force Academy



4. Refarming spectrum in the frequency band of 2600 MHz

4.1 The NBTC has spectrum refarmed the unused or the unworthy used frequencies in order to be more worthy utilized in the frequency band of 2500-2690 MHz according to the NBTC Notification on Criteria, Procedures and Condition for the Recall of the Unused or Unworthy Used Spectrum in order to be more worthy utilized. The NBTC Meeting No.4/2019 on 5 March 2019 has its resolution to approve the recall of the frequencies as follows:

- Having spectrum refarmed in the frequency band of 2500-2690 MHz from 3 licensees, namely MCOT Public Company Limited, Signal Department, Royal Thai Army, and the Directorate of Joint Communications Royal Thai Armed Forces Headquarters, as well as recalling all frequencies from the licensees, including the unlicensed frequencies, for totally 190 MHz in order to re-allocate for international mobile telecommunications service.

- Having determined the termination date of the license to use spectrum for 45 days starting from the date on which the NBTC has its resolution to recall the spectrum along with stipulating conditions for the termination of the use of the recalled spectrum. However, during the operation, the recalled spectrum can be used for a period but not exceeding 120 days starting from the date that the NBTC has its resolution to recall the said spectrum.

On 11 March 2019, the Office of the NBTC had already issued a letter informing the resolution of the NBTC Meeting to the 3 licensees, namely MCOT Public Company Limited, Signal Department Royal Thai Army, Directorate of Joint Communications Royal Thai Armed Forces Headquarters.

4.2 The NBTC has appointed a Sub-committee for considering compensation, reimbursement or remuneration for the recall of the spectrum in the frequency band of 2500 - 2690 MHz on 4 July 2019 consisting of the representatives from the Office of the NBTC and other organizations, namely the State Enterprise Policy Office, Office of the Council of State,

Office of the Attorney General, Office of the National Economic and Social Development Council, Budget Bureau, and the Office of the National Digital Economy and Society Commission with the power and duties to consider and provide opinions regarding to the determination of methods and conditions for compensation, reimbursement or remuneration for those who have been recalled in the frequency band of 2500 - 2690 MHz to the NBTC within 60 days starting from the date of receipt of the documentary evidence and study results from the consultant that the NBTC has hired an educational institution of the state or a state research institute or other non-profit research institution for the consideration of the NBTC. The Sub-committee had organized 18 meetings by inviting the advisors including stakeholders to clarify additional information along with obtaining information, study reports and other documents related for consideration. On 19 December 2019, the Sub-committee had prepared a report on the results of the consideration and opinions on the determination of methods and conditions for compensation, reimbursement or remuneration for those who have been recalled of the spectrum in the frequency band of 2500 - 2690 MHz and already presented to the NBTC for consideration.

5. Coordination on spectrum management along the border areas.

The NBTC has held the Joint Technical Committee Preparatory Meeting on the Radio Frequency Coordination and Allocation along the Border areas (JTC) with neighboring countries annually, and in 2019 The NBTC has held the related meeting in order to coordinate the operation and solve problems on the use of the frequency as well as pushing forward policies on the spectrum sharing in various frequency bands as follows:

5.1 The 2nd Joint Technical Committee Preparatory Meeting on the Radio Frequency Coordination and Allocation along the Border areas between Thailand - Myanmar (JTC-2) during 14 - 16 May 2019 in Chiang Mai, Thailand.

The meeting had reached an important agreement on the determination of Coordination Parameters for the coordination of mobile phone services in the frequency band of 900 MHz, 1800 MHz, 2100 MHz band, and 2300 MHz.

5.2 The 8th Joint Technical Committee Preparatory Meeting on the Radio Frequency Coordination and Allocation along the Border areas between Thailand - Cambodia (JTC-8) during 28 - 30 May 2019 in Phnom Penh, the Kingdom of Cambodia. The meeting had reached an agreement on the determination of Coordination Parameters for the coordination of mobile phone services in the frequency bands of 900 MHz, 1800 MHz, and 2100 MHz. Also, Thailand had exchanged information about the plan to use the spectrum in the frequency band of 2600 MHz in order to prepare for the implementation of IMT (TDD system) in the future.

5.3 The 34th Joint Technical Committee Preparatory Meeting on the Radio Frequency Coordination and Allocation along the Border areas between Thailand - Malaysia (JTC-34) during 19 - 20 June 2019 in Ayutthaya, Thailand.

The meeting had reached an important agreement on the issue concerning frequency interference resolution in the frequency band of 2300 MHz. Also, Thailand had exchanged information about the plan to use the spectrum in the frequency band of 2600 MHz in order to prepare for the implementation of IMT (TDD system) in the future.

5.4 The 10th Joint Technical Committee Preparatory Meeting on the Radio Frequency Coordination and Allocation along the Border areas between Thailand - Lao PDR (JTC-10) during 16 - 18 October 2019 in Vientiane, Lao PDR. The meeting had reached an important agreement and the conclusion on the adjustment of signal strength level in the areas of Mukdahan Province, Thailand - Savannakhet, Lao PDR, Nakhon Phanom Province, Thailand - Kham Mouan Sub-District, Lao PDR and Bueng Kan Province, Thailand - Borikhamxai Sub-District, Lao PDR. Also, Thailand had exchanged information about the plan to use the spectrum in the frequency band of 700 MHz and 2600 MHz in order to prepare for the implementation of IMT (TDD system) in the future.



Regulation on the Telecommunications Services

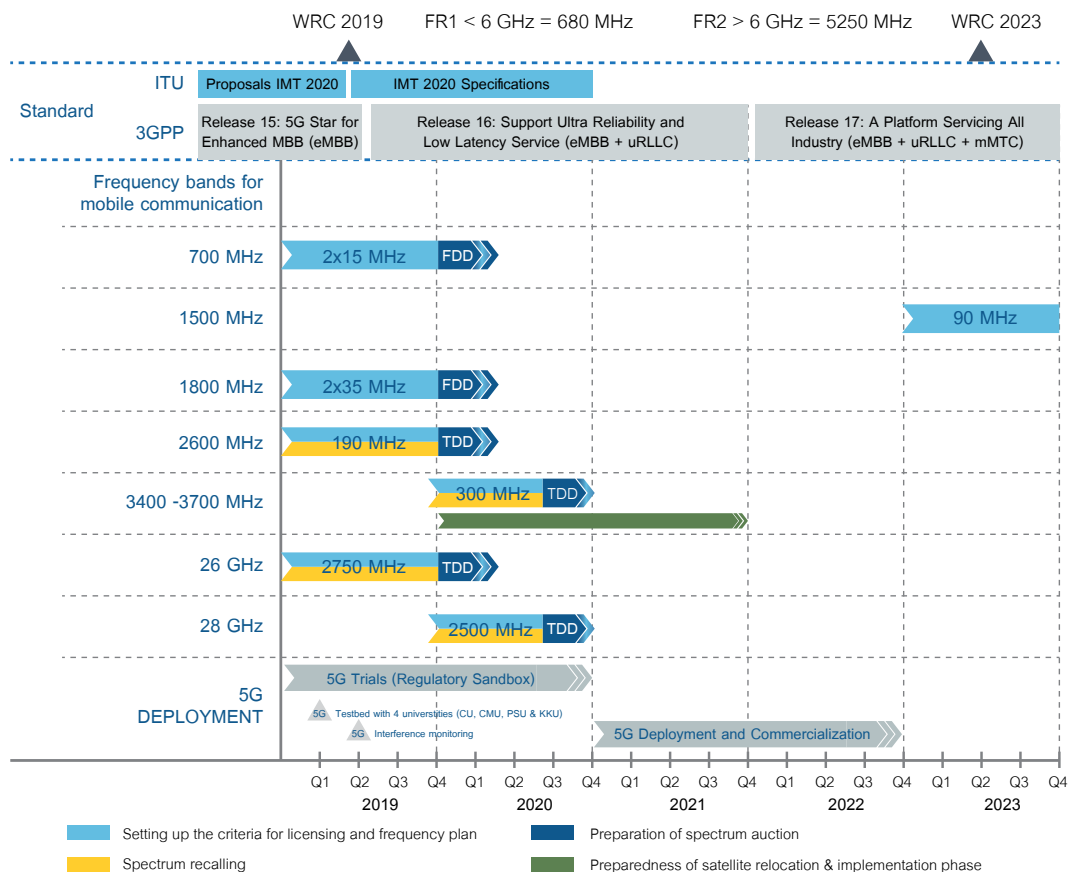
In 2019, the NBTC had implemented the important policy on telecommunications services regulation and pushed forward the mission according to the Action Plan as follows:

1. Driving the country's 5G technology

1.1 Formulation of the 5-year Plan of Spectrum Allocation for International Mobile Telecommunications Services of Thailand (2019 - 2023) to be used as a roadmap for allocating spectrum resources, promoting and supporting the development of telecommunication technology such as 5G technology and supporting the development of economy and digital society of Thailand. The plan has determined a preliminary timeframe for the spectrum allocation for International Mobile Telecommunications Services in the 5-year period (2019 - 2023) such as the frequency band of 700 MHz, 1500 MHz, 1800 MHz, 2600 MHz, 3400 - 3700 MHz, 26 GHz, and 28 GHz. Also, the plan has already been published to the public via website of the Office of the NBTC.

1.2 Issuance of the NBTC Notification on Licensing Criteria and Procedures to Use the Spectrum for International Mobile Telecommunication in the Frequency Band of 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz to prepare for the spectrum auction in several frequency bands simultaneously such as the frequency band of 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz by the 1st quarter of the year 2020 in order to encourage operators to be able to strategically manage the business planning and select a suitable frequency band for the 4G and 5G service models, which will benefit the development of the country's to be modern and consistent with the rapid change of the world of technology as well as support the development of economy and digital society of the country.

Preliminary Timeframe



1.3 Preparedness for the import of telecommunication devices and equipment and applications for 5G technology, the NBTC has drafted two NBTC Notifications on technical standards for telecommunications devices and equipment which uses IMT-2020 (5G) technology as follows:

(1) The NBTC Notification on technical standards for telecommunications devices and equipment for radiocommunications devices of International Mobile Telecommunications (IMT) which uses IMT-2020 (5G) technology.

(2) The NBTC Notification on technical standards for telecommunications devices and equipment for base station radiocommunications devices of International Mobile Telecommunications (IMT) which uses IMT-2020 (5G) technology.

1.4 Establishment of the 5G test/trial Center. by the year 2018, the NBTC has signed the Memorandum of understanding regarding the study and establishment of the 5G test/trial Center with Chulalongkorn University, and, to expand the cooperation with other entities, in the year 2019 the NBTC has signed the Memorandum of understanding with additional 3 leading national universities consisting of Chiang Mai University, Khon Kaen University and Prince of Songkla University with the objectives to build a strong foundation and support changes in the transition to 5G technology through building cooperation mechanism and to exchange academic experiences and knowledge with educational institutions that are well-prepared either in the human resources or digital technology. Under the said cooperation, the 5G testing/trial center will be established in all 4 universities. Also, the study, test, and examination of the availability of equipment, system and services related to the 5G technology will be conducted such as Internet of Things (IoT) devices, Big Data storage and analytic system, Intelligent Transportation System (ITS), Telehealth systems, etc. There will also be an exchange and enhancement of knowledge, experiences and technical information including the organization of training workshops and seminars to enhance the 5G technology knowledge between personnel of both agencies. In the year 2019, the outcome of operation under the cooperation are as follows:

(1) Having opened the 5G AI/IoT Innovation Center in the year 2019 at Chulalongkorn University on 4 February 2019 to support Chulalongkorn University as a hub for connecting telecommunications industry with other related industries. Also, the NBTC has collaborated with Chulalongkorn University since 19 August 2019 to carry out fifteen sub-projects on the establishment of 5G testing/trial center in the university such as the project to establish and manage the 5G testing/trial center, the project on data transmission of remote images of eye examination via wireless communication system for surgery operation, project on the development of communication system and data transmission of air quality measurement in the hospitals, project on the development and control of service robots via the 5G network, project on the installation of intelligent street light control system, project on the development of automatic vehicle prototype for car sharing service, and project on the installation and test of the next generation electricity pole application system on 5G technology, etc., in which all budgets have been supported by the BTFP Fund.

(2) For Chiang Mai University, Khon Kaen University and Prince of Songkla University have still been in the process of preparing proposals for submitting for financial support in the year 2020.

1.5 5G Testing/Trial

(1) Having issued the NBTC Notification on Criteria for Granting License to Use Spectrum for the Development and Testing Innovations in the Regulatory Sandbox which has been published in the Royal Gazette on 14 August 2019 to support testing activities, research and development of telecommunication innovations, which have been temporarily used for a period until the equipments are ready for the production process for further general use or commercial use. The above criteria provide an opportunity for having specific areas for testing and developing innovations in telecommunications, broadcasting and television services for a temporarily period which has been deregulated and reduced some unnecessary processes of the regulatory compliance as well as creating incentives and supporting the development of telecommunication

innovations in Thailand where relevant persons are able to control and follow-up the spectrum usage before the technology is available for production or commercial use in wide area and ready for further entry into the regulatory process that is generally enforced. Those people who involved in this Notification consist of the followings.

- The sandbox coordinator in specific areas such as the organization wishing to use the area as sandbox area for innovation development and testing. The organization must have the right to manage the area proposed to be the sandbox area. The sandbox coordinator will be responsible for coordinating between the innovations developers and testing in the sandbox area and solving problems if any interference occurs.

- The innovation developer and tester such as government agency or juristic person established under Thai law who wish to use the spectrum for developing and testing innovations in the sandbox area under the deregulation which is subject to conditions that the sandbox coordinator has been approved by the NBTC for the sandbox areas.

- The NBTC is the authority responsible for approving the regulatory guidelines and the use of spectrum within the sandbox areas and the Office of the NBTC is the authority responsible for granting license to developers and testing persons to use spectrum for the innovations development and testing in the sandbox areas including ensuring that the regulation is compliance with the conditions set out for that sandbox areas.



(2) Issuing the licensing to use the frequency for 5G Testing/Trial

In 2019, the NBTC has issued 8 licenses to use the frequency for 5G testing/trial to telecommunications business operators as details shown in Table 1.

Table 1 : The licensing to use the frequency for 5G testing/trial

No.	Company	Number of licence (Expiry Date)	Venue	Frequency band
1	Advance Wireless Network Co., Ltd.	FREQ/TRIAL/62/001 29 October 2019	Chulalongkorn University	26.5 - 27.5 GHz
2	True Move H Universal Communication Co., Ltd.	FREQ/TRIAL/62/002 29 October 2019	Chulalongkorn University	24.25 - 27.5 GHz
				26.5 - 29.5 GHz
				3.3 - 3.8 GHz
3	TOT Public Co., Ltd.	FREQ/TRIAL/62/003 15 November 2019	<ul style="list-style-type: none"> • Kasetsart University Sriracha campus • Chulalongkorn University 	24.25 - 27.5 GHz
				26.5 - 29.5 GHz
				3.3 - 3.8 GHz
4	Advance Wireless Network Co., Ltd.	FREQ/TRIAL/62/004 20 December 2019	Chulalongkorn University	3.4 - 3.7 GHz 5G Testing
			Shinnawatra University	3.4 - 4.2 GHz (Satellite interference testing/trial)
5	DTAC Trinet Co., Ltd.	FREQ/TRIAL/62/005 17 January 2020	Chulalongkorn University	24.25 - 27.5 GHz
				26.5 - 29.5 GHz
				3.3 - 3.8 GHz
6	Advance Wireless Network Co., Ltd.	FREQ/TRIAL/62/006 14 January 2020	<ul style="list-style-type: none"> • Chiang Mai University • Khon Kaen University • Prince of Songkla University 	26.5 - 27.5 GHz
			Prince of Songkla University	3.4 - 3.8 GHz
7	Advance Wireless Network Co., Ltd.	FREQ/TRIAL/62/007 3 February 2020	<ul style="list-style-type: none"> • Technical Training Center Optic Repeater • ESV TOWER • SHINAWATRA TOWER 2 (MACRO) • Eastern Region Headquarters (2-story junction building) • AIS Contact Center-Development & Training Arena Nakhon Ratchasima 	723 - 733 MHz Paired with 778 - 788 MHz
				2500 - 2690 MHz
				25 - 26 GHz
				27.5 - 28.5 GHz

No.	Company	Number of licence (Expiry Date)	Venue	Frequency band
8	True Move H Universal Communication Co., Ltd.	FREQ/TRIAL/62/008 7 April 2020	<ul style="list-style-type: none"> • Chiang Mai University • Khon Kaen University • Prince of Songkla University • In the area of the Eastern Economic Corridor Development Project (EEC) • True Digital Park Wisdom 101 Building • In the area of Siam Square • Icon Siam Department Store • EmQuartier Department Stores • Koh Phangan, Surat Thani Province 	24.25 - 27.5 GHz
				26.5 - 29.5 GHz
				2496 - 2690 MHz
				703 - 713 MHz Paired with 758 - 768 MHz

2. Spectrum allocation in the frequency band of 700 MHz

The Order of the Head of the National Council for Peace and Order No. 4/2019 on Measures to Solve Problems in Television and Telecommunications Business Operation dated 11 April 2019 has designated the Office of the NBTC to consider recalling the spectrum in the frequency band of 700 MHz in the range of 694 - 790 MHz from the licensees to use the spectrum for the provision of digital terrestrial television services in other digital systems besides the licensee to use the spectrum for the provision of digital terrestrial television services who wishes to return the license, and the Office of the NBTC shall assign the frequency which has been recalled for the use in telecommunications service by considering the frequency assignment to the licensee to use the spectrum in the frequency band of 890 - 915 MHz/ 935 - 960 MHz in the first priority. Also, in case that the licensee has applied for the licensee to use the spectrum in the frequency band of 700 MHz, the licensee will offered a payment extension for spectrum auction in the frequency band of 900 MHz from the previous 4 installments to 10 installments. In this regard, the Office of the NBTC has carried out the operation in accordance with the Order of the Head of National Council for Peace and Order No. 4/2019 by having allocated a set of spectrum

for telecommunications services in the frequency band of 700 MHz on 19 June 2019. For the result of the spectrum allocation in the frequency band of 700 MHz, the allocation was made for 3 sets of spectrum at the total price of the licensing to use the spectrum of 52,752 million baht, and when the VAT was included the amount was totally 56,444.64 million baht. The beginning period of the license will be started on 1 October 2020 or until the NBTC will define otherwise. The license applicant who have the right to be granted of the license to use the spectrum are as follows:

(1) True Move H Universal Communication Co., Ltd.

The set of frequency to be allocated, set 1, was totally 2 x 10 MHz in the frequency range of 703 - 713 MHz paired with 758 - 768 MHz, the price of the licensing to use the spectrum was 17,584 million baht.

(2) DTAC TriNet Co., Ltd.

The set of frequency to be allocated, set 2, was totally 2 x 10 MHz in the frequency range of 713 - 723 MHz paired with 768 - 778 MHz, the price of the licensing to use the spectrum was 17,584 million baht.

(3) Advance Wireless Network Co., Ltd.

The set of frequency to be allocated, set 3, was totally 2 x 10 MHz in the frequency range of 723 - 733 MHz paired with 778 - 788 MHz, the price of the licensing to use the spectrum was 17,584 million baht.



3. Installation of the Overhead telecom and broadcast cables underground

Since the year 2016, the NBTC has a primary policy of installation of the overhead telecom and broadcast cables underground which is in line with the government's policy on changing the antenna to the electrical wire system in order to improve the messy overhead telecom and broadcast cables laying on the electricity poles in Bangkok to be organized by having the overhead telecom and broadcast cables underground which will help create beautiful scenery, increase the safety of life and people's property, and utilize telecommunications infrastructure for the utmost benefits of the nation. The operation was done in collaboration with the Metropolitan Electricity Authority (MEA), the Provincial Electricity Authority (PEA), Bangkok Metropolitan Administrator, Royal Thai Police Headquarters, the Telecommunications Association of Thailand under the Royal Patronage and telecommunication operators. In the year 2019,

the NBTC had provided its support and coordination with telecommunication operators business for having all overhead telecom and broadcast cables underground in the completed routes as follows:

3.1 The routes for having overhead telecom and broadcast cables underground, the proceeding route along the metropolis by Grand Royal Barge Procession in honour of the Royal Coronation ceremony, for the total distance of 4.58 kilometers

- Atsadang Road
(From Ratchadamnoen Klang Road to Bamrung Muang Road)
- Bamrung Muang Road
(From Saphan Chang Rongsi Intersection to Si Kak Sao Ching Cha Intersection)
- Fueang Nakhon Road
(From Si Kak Sao Ching Cha Intersection to Si Kak Phraya Si Intersection)
- Charoen Krung Road
(From Si Kak Phraya Si Intersection to Tye Wang Intersection)
- Rachini Road
(From Ratchadamnoen Klang Road to Saphan Chang Rongsi Intersection)
- Tanao Road
(From Ratchadamnoen Klang Road to Tanao Road Circle)
- Phra Sumen Road
(From Sip Sam Hang Road to Ratchadamnoen Klang Road)
- Bowonniwet Road
(From Tanao Road Circle to Phra Sumen Road)
- Ratchabophit Road
(From Fueang Nakhon Road to Atsadang Road)
- Atsadang Road
(From Saphan Chang Rongsi Intersection to Mon Bridge Intersection)
- Rachini Road
(From Saphan Chang Rongsi Intersection to Mon Bridge Intersection)

3.2 Having overhead telecom and broadcast cables underground in areas of MEA

- From Sukhumvit Road to Saen Saep Canal
- Sathu Pradit Road
(From Road around Chaloe Maha Nakhon Express Way to Soi Sathu Pradit 12)
- Soi Sawang Arom
(From Soi Sathu Pradit 19, Sathu Pradit Road to Naradhiwas Rajanagarindra Road)
- Na Phra That Road
(From Na Phra Lan Road to the Entrance to Thammasart University)
- Phetchaburi Road
(From Yommarat Intersection to Uruphong Intersection)
- Nakhon Sawan Road
(From Nang Lerng Intersection to Khlong Phadung Krung Kasem)
- Office of the Permanent Secretary for Defense, Sri Saman Road

3.3 Having overhead telecom and broadcast cables underground in areas of PEA

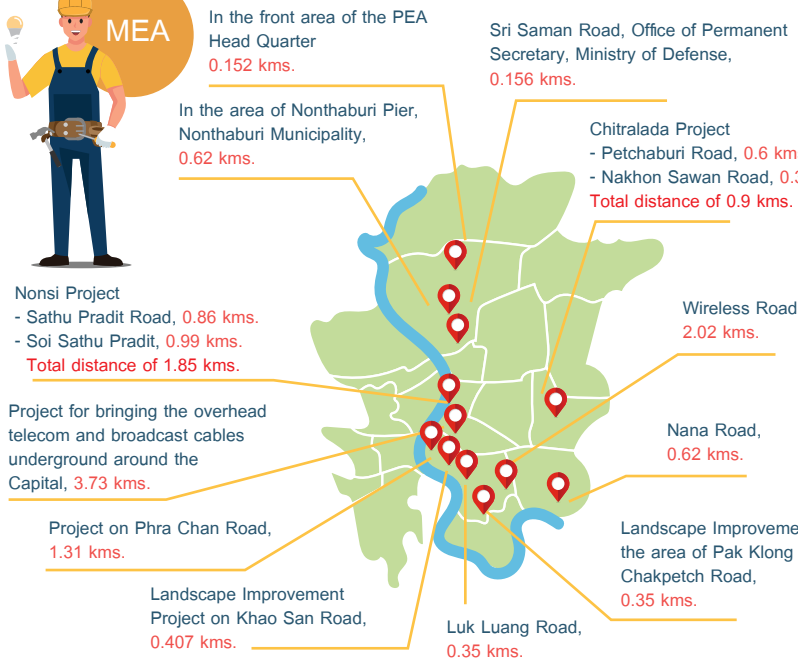
- Phayao province, in areas of Chan road, Kwan Phayao
- Samut Songkram province, in areas of Mae Klong Market Road (From Wat Petch Intersection to Thaweekij Plaza along to Thanachart Bank)
- Lampang province (From Clock Tower Intersection to Muang Lampang District Office)
- Nakhon Phanom province, Sunthorn Wichit Road (From Clock Tower to New Governor Residence)
- Nakhon Phanom province, Nittayo Road (From Ban Noi Nong Khem Intersection to Pratimakrum T-junction)

Plan

for installing the overhead telecom and broadcast cables underground during the year 2019 - 2020



MEA

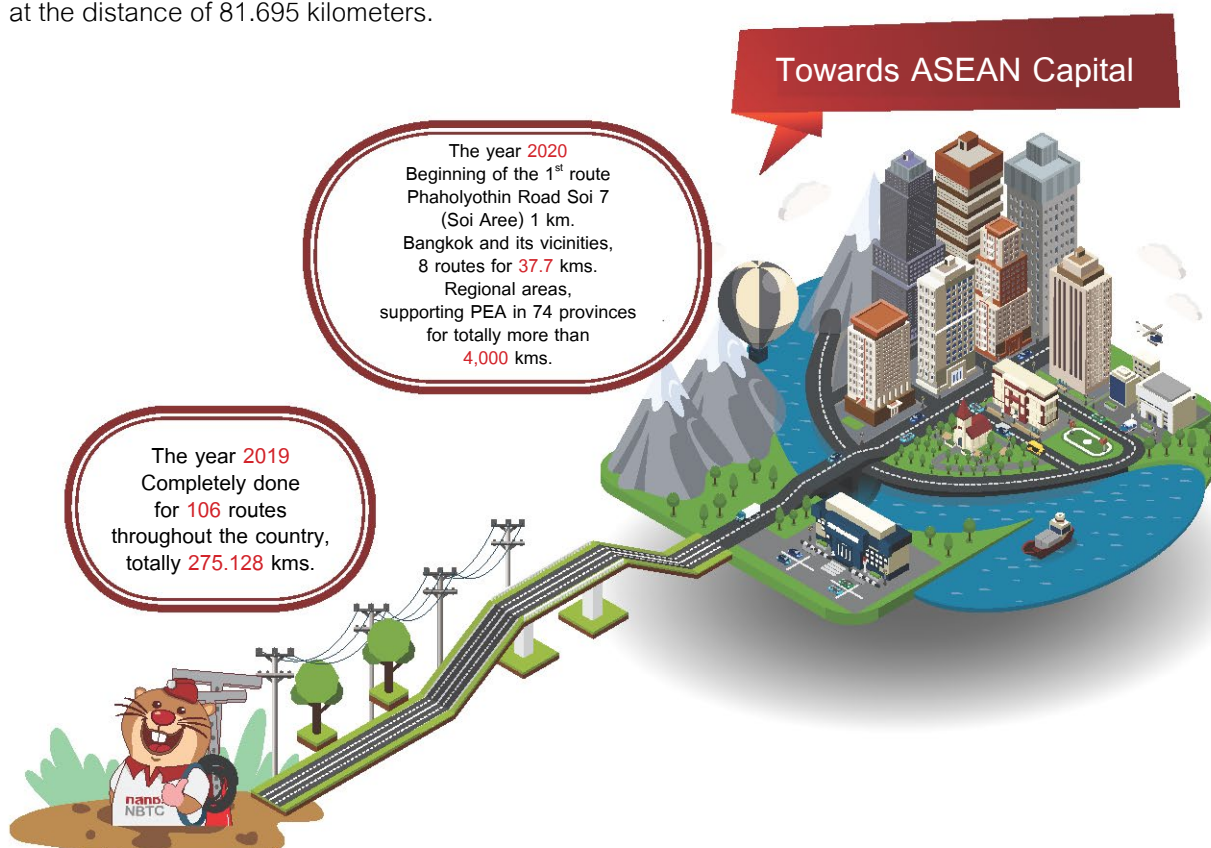


PEA



Result of the installation of the overhead telecom and broadcast cables underground nationwide was completely done in totally 106 routes, at the distance of 275.128 kilometers which could be divided to 24 routes in Bangkok at the distance of 27.21 kilometers. The operation had been done in cooperation between the Office of the NBTC, MEA, Bangkok metropolitan administrator, telecommunications operators, broadcasting and television operators. For installing the principle routes of overhead telecom and broadcast cables such as the routes of Rama V road, Krung Kasem, Rama IX to Phang Mueang Junction, area of Din Daeng from Vibhavadi junction to Mae Phra Fatima Church, etc., and the routes in 4 regions nationwide for 82 routes at the distance of 249.918 kilometers in which the operation had been done in cooperation between the Office of the NBTC, PEA, telecommunications operators, broadcasting and television operators that could be divided to the North region for 22 routes at the distance of 49.189 kilometers, the North Eastern region for 28 routes at the distance of 70.864 kilometers, the Central region for 11 routes at the distance of 46.17 kilometers and the South region for 21 routes at the distance of 81.695 kilometers.

In 2010, the Office of the NBTC will cooperate with MEA to installation overhead telecom and broadcast cables underground for 8 routes in areas of Bangkok and its vicinities at the distance of 37.7 kilometers, as well as the cooperation with Bangkok metropolitan administration for the installation of overhead telecom and broadcast cables underground for improving scenery and developing the Chaloem Phra Kiat Road in honour of the Royal Coronation Ceremony, Bangkok, for 3 roads consisting of (1) Naradhiwas Rajanagarindra Road (2) Industrial Ring Road (3) Ratchadaphisek Road; and in regional areas, the Office of the NBTC will provide its support to the PEA in the operation through collaborating and urging all telecommunications operators and broadcasting and television operators to operate according to the plan. In case that some routes that are outside the operating plan have been found risky to cause harm to lives and property of the people, the Office of the NBTC will put the routes in the plan for the implementation for the safety of lives and property of the people further.



4. The Beautiful Mobile Phone Number Auction

The NBTC has a policy to promote people to be able to access the beautiful mobile phone numbers equally and thoroughly by organized the beautiful mobile phone numbers auctions since the year 2016. The revenue from the auctions has been delivered as the state revenue for more than 268 million baht, and in the year 2019 the NBTC had organized two auction of beautiful number of mobile phone service, and received the total revenue for 48,878,186 baht (including VAT). After deducting expenses, the revenue will be further delivered as the state revenue.

(1) The 1st beautiful mobile phone number auction held on 26 January 2019 for 999 numbers and 198 beautiful numbers were auctioned with a total revenue of 29,238,910 baht (including VAT).

(2) The 2nd beautiful mobile phone number auction held on 3 - 4 August 2019, which was the auction of 154 beautiful numbers remained from the 1st auction that has not yet been auctioned off for 687 numbers with a total revenue of 19,639,276 baht (including VAT).

5. The development of a system for individual identification and verification by electronic identity cards on mobile phones (“Mobile ID”)

The NBTC has a policy to promote the determination of standards and processes for digital individual identification and verification by utilizing the mobile phone subscriber registration database with the identity system of telecommunication industry including increasing a safety channels and promoting new innovations for the access to electronic transactions of the people or agencies both public and private sectors and protecting personal information which will also promote the government policy on the use of digital ID as well. Therefore, the Office of the NBTC has initiated a project to develop a system for individual identification and verification by electronic identity cards on mobile phones (“Mobile ID”).

On 14 February 2019, the Office of the NBTC has signed a Memorandum of Understanding (MOU) with Advanced Wireless Network Company Limited (AIS) and Bangkok Bank Public Company Limited on the development of a system for individual identification

and verification by electronic identity cards or being called as the “Mobile ID” (testing period) where there will be trials and development of interesting services to the public from time to time in order to create an experience of the provision of new digital services to the public in conducting electronic transactions. During the testing period, the service will be available in two forms:

- AIS customers use the “Mobile ID” which is to connect the phone number that the customer opens a deposit account at the branch. It will help reduce the process of filling out documents and verify the ownership on the customer’s phone number.
- AIS customers can use the “Mobile ID” to participate in Bangkok Bank CSR programs, such as booking, quickly and easily.

For the future action plans, the NBTC will discuss with telecommunication operators, banks and other government agencies who was interested in developing services so that people can use the service thoroughly, and providing a variety of additional services.



6. Consumer protection in telecommunications service

The NBTC has always emphasized the importance of consumer protection in telecommunications service. In 2019, important policies were established to promote the adoption of digital technology to increase the efficiency of consumer protection through developing various applications and promoting people to have knowledge, understanding and awareness of consumer rights in telecommunications service including conducting discussions with industry sector to encourage participation in driving policy and

preparing the readiness of the related industry in the utilization of technology and innovation as well as developing and improving laws, regulations and standards to be suitable for the context of the development of digital economy and society. The important actions are as follows:

6.1 Raising consumer awareness and developing a strong consumer network by organizing various activities such as

(1) Building knowledge about the effects of electromagnetic radiation from mobile phone base stations on health in regional areas by lecturers consisting of representatives of the Office of the NBTC, Ministry of Public Health, and Engineering Institute of Thailand under the Royal Patronage. The activities were attended by representatives of government agencies, private sectors, local government organizations, village headmen, civil society groups, community leaders, mass media and the people.

(2) Building knowledge of the public on consumer rights in telecommunications service and protection of personal information from the use of telecommunication services in order to enhance knowledge and understanding of the attendees on consumer rights in telecommunications service and realizing the rights that they have according to the law and knowingly of telecommunications services. The attendees consisted of the head of government agencies, local government organizations, village headmen, community leaders, consumer protection agencies, local media and interested people. The attendees can use the knowledge gained to protect their rights and disseminate it to people in their area so that they can use the rights properly and correctly.

(3) Raising awareness of the youth to promote learning about consumer rights in telecommunications service at the secondary education to enhance knowledge and understanding as well as to support them in playing a role in the knowledge transfer on consumer rights in the use of basic telecommunications services and disseminate the knowledge widely.

(4) Organizing workshops continuously to strengthen the citizen networks on consumer rights protection in telecommunications service in 77 provinces either in the central and provincial areas.

(5) Building capacity of citizen networks in the district level for consumer protection in telecommunications service to enhance knowledge and understanding of new issues relating to the use of telecommunications services including building cooperation with leaders of the citizen networks to have a proper understanding of consumer rights so that they can expand the knowledge gained in organizing this activity to members in their own community effectively.

(6) Promotion and development of students and youth networks in raising awareness of consumer rights in telecommunications service to disseminate knowledge and build an understanding on consumer rights and the correct use of telecommunications services for the youth in the secondary and higher education levels so that they can further disseminate their knowledge to other people within their own educational institutions.

6.2 Promoting the adoption of digital technology to increase the efficiency of consumer protection through developing applications. During the year 2018 - 2019, the following applications have been launched.

(1) **Prute-ti-maat Application** which is the application to help consumers to understand their behavior on the use of mobile phone through the retrieve of usage information at any time and considering the adjustment of phone packages or promotions to suit their own usage, and to use easily and simply. The main screen will show daily information in 3 parts: calling service usage volume, SMS /MMS, service volume of Upload/Download service, and volume of applications usage in the current day and in the past 7 days, as well as showing the top 5 applications with the most daily usage. There are also other features such as information of networks, activities and stories that the users are interested and other recommended applications as well. The database obtained from all such applications will be stored for analysis and

procession in the form of quantitative data and overall frequency of usage only. It will be safe and no personal data will be collected from short messages service (SMS) or conversations in any application.

(2) **Kan-Kuan Application** which is to help protect the privacy of rights of mobile phone users in the case of being annoyed by calls through mobile phone numbers such as bullying, direct sales, insurance sales and debt collection. The application users can report the phone numbers that are disturbing, causing troubles to the Office of the NBTC through the system and such phone numbers will be blocked after the inspection of the inspection unit. The management system is divided into 2 parts (1) the Whitelist, it can be categorized into the Whitelist that can be blocked, such as unsolicited sales, insurance sales, credit sales and direct sales, the users have to register the Kan-Kuan application system so that people know the incoming call of numbers and can select the calling numbers, and the Whitelist that cannot be blocked but be able to call between Monday - Friday during 08.00 - 17.00 hours in order not to cause disturbance to the people, such as debt collection, call for payment from a communication service provider or a financial institution; and (2) the Blacklist for phone numbers that disturb the users beyond the specified time. The Office of the NBTC will collect the disturbing phone numbers and send to all telecommunications operators for further action. The penalties shall include giving warnings, blocking numbers for 3 months and finally cancelling numbers.

(3) **NetCheck Application** which is to assist mobile phone users for checking the signal quality and internet service usage through the service provided by mobile operators. It is important information for the consideration of complaint handling process of the Office of the NBTC in a RealTime service.

(4) **2 Shots Application** is an application used for verifying the identity of SIM card buyers through the identity verification and mobile phone subscriber registration in order to protect mobile phone users for the safely use as well as preventing the falsity of registration through checking the identity of SIM card buyers before registration and activation.

(5) **3 Steps Application** is an application that allows citizens to verify mobile phone numbers registered in their names from the database of all mobile phone operators, inform the strange number registered in their names or their own numbers that are missing from the verification, and lock the subscription of a new number in order to prevent others from falsifying their ID card to register a new number.

(6) **Netcare Application** is the application for parents use to control the use of internet of children in order to prevent problems from internet addiction, misuse or unknowingly use of the children, increase communication time in order to build relationships in the "family", an important institution of society. It has various functions, including the function to set duration of usage which can set up the number of hours to be used each day, for example, Monday to Friday can be used for 2 hours per day; Holidays or weekends can be used for 3 hours per day; the function to set duration of usage which can specify the duration for the use of the internet, such as between 7.00 - 8.00 P.M.; the function for suspension of the use of some applications such as wishing to turn off YouTube but can still access to website or Google to find information; and the function to instant switch off the use of internet. In addition, there is an SOS button that can be used in an emergency case. When pressing the button, the application will immediately call the guardian and send the location to the email address registered by parents which is also helpful in increasing the safety of the family members.

(7) **MoCheck Application** which is used to search information of telecommunications equipment that has been certified of standard by the Office of the NBTC and to reduce the risk of the use of telecommunications equipment, or uncertified batteries which may cause harm to the users. The application supports the search by the applicant's code, standard certificate number, model, brand, letter or manufacturer, list of operators who are importers, telecommunications equipment manufacturers who are responsible in case of any problems arised from the use of telecommunications equipment etc.

(8) **Oliang Application** which is used as a channel for sharing knowledge and experiences and informing important news and activities in telecommunications service for the NBTC employees and third parties.

6.3 Establishment of mechanisms for working with various sectors on the development of telecommunications service

The NBTC has a policy to promote the establishment of mechanisms to work with various sectors to support the efficient and effective operation of telecommunications service which will bring benefits to the public and the people as a whole. In the year 2019, the following operation have been done:

(1) Cooperation with Bangkok Metropolitan Administration in having brought the overhead telecom and broadcast cables underground

Having signed the memorandum of understanding with Bangkok Metropolitan Administration to carry out the project to promote the development and determination of guidelines for having the overhead telecom and broadcast cables underground in the Bangkok area on 18 June 2019 in order to manage the overhead telecom and broadcast cables underground in the Bangkok area for a beautiful scenery and reduce accidents caused by messy overhead telecom and broadcast cables. This also includes the development of the capital city into an ASEAN Capital by focusing on areas with high importance of economy and the areas with the landscape and urban development plan for the first priority. The operation will be proceed to cover the entire area and gradually bring the power lines and overhead telecom and broadcast cables underground. After that the electricity poles in the area will be gradually broken. In the future, when all the overhead telecom and broadcast cables were taken underground, the scenery will be beautiful, which is good for the development and promoting the growth in tourism, supporting the future growth of the telecommunications industry, increasing economic and social potential, supporting the transition to an ASEAN Capital of Bangkok. For the past operation, the Office of the NBTC had invited Krungthep Thanakom Company Limited,

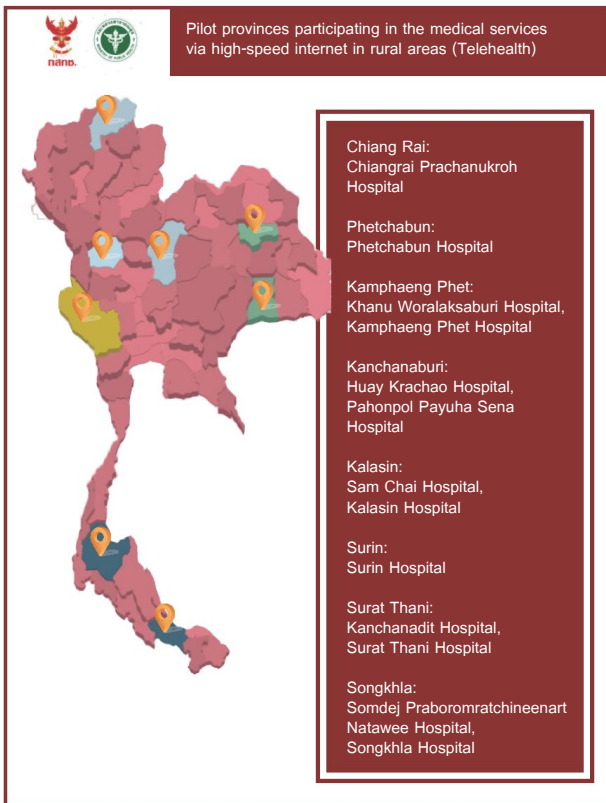
an enterprise under the supervision of Bangkok Metropolitan administration who has been assigned by Bangkok Metropolitan administration to carry out the process for hiring a contractor for the procurement and driving the project on construction and laying the overhead telecom and broadcast cables conduits underground along major roads, secondary roads, as well as shortcuts and the routes in the alley across Bangkok areas for a total distance of 2,450 kilometers; attended the meetings to discuss issues of selecting users of telecommunications network service. The Office of the NBTC had also sent letters to all licensees surveying for information concerning the capacity of overhead telecom and broadcast cables conduit that each licensee intends to use and requesting the licensees to report the results of the survey to the Office of the NBTC.

(2) Collaboration with the Ministry of Public Health to enhance the access to public health services of people in rural areas

Having signed the memorandum of understanding with the Ministry of Public Health on the determination of guidelines for the development and application of medical services via high-speed internet in rural areas (Telehealth) to enhance the access to public health services of people in rural areas through the project on the provision of broadband internet services and mobile phone signal in remote areas (Zone C) and border areas (Zone C+) by applying information technology and communications to the Telehealth project, such as applying software with artificial intelligence (AI) technology to assist in disease screening, the telehealth advice system so that people living in remote areas are able to access medical services without having to travel to the hospital, and increasing efficiency in taking care of chronic disease patients.

The project will be implemented in two dimensions: the 1st dimension, the diseases which create significant problems and have impacted on people including chronic non-communicable diseases (NCD) which accounts for 75 percent of Thai deaths such as diabetes and hypertension; and the 2nd dimension, the diseases which lack specialist doctor

including retinal disease resulting from diabetes and skin diseases. In the initial phase, there were 8 pilot provinces participating in the project, namely Chiang Rai, Phetchabun, Kamphaeng Phet, Kanchanaburi, Kalasin, Surin, Surat Thani and Songkhla, covering 15 Sub-district Health Promotion Hospitals (SHPS), 4 Family Physician Clinics (Large SHPS), 5 Community Hospitals (CMH), 8 Provincial Hospitals as well as Specialized Eye Disease Centers, Specialized Dermatology Center. In the future, the project will expand to cover other rural areas throughout the country.



(3) Cooperation with the Bank of Thailand in dealing with cyber threats

Having discussed with the Bank of Thailand during 22 - 24 September 2019 at Centra by Centara Maris Resort, Jom Tien, Chonburi, In order to prepare the Action Plan for Coordination in case that a cyber threat occurs between the Office of NBTC and the Bank of Thailand and related parties so that the operation be done effectively. Details of the Action Plan also include the coordination process to

deal with cyber threat of the financial institutions and telecommunications sectors, such as the guidelines framework and preparedness methods for dealing with cyber threats, reporting and sharing facts to get accurate information, management guidelines and coordination procedures to deal with the severity of cyber threats at various levels. In addition, both organizations will join hands in the implementation of the TCI-CERT under the support of TB-CERT, and rehearsal of cyber threats, etc.

(4) Cooperation with the National Statistical Office to survey the telecommunications service users

Having signed the memorandum of cooperation with the National Statistical Office on 16 August 2019 to jointly drive the academic support, study and research in the broadcasting, television, telecommunications services and information technology and communications, including building knowledge and enhancing operational capabilities of both agencies, especially the collection of sample data of the researches for more efficient by using the “Prute-ti-maat” application under the policy to use communication technology as a tool to reach more samples. This will ensure that accurate information will be received in fast time, and the statistics data and indicators can be used for the analysis of reliable data which will lead to the formulation of policy and development planning in various areas appropriately and in accordance with the situation and trends in consumer behaviors, as well as forecasting the market trend of telecommunications services effectively.

6.4 Improvement of important regulations on consumer protection

(1) The NBTC Notification on Registration and Data Storage of Mobile Phone Service Users

Having issued the NBTC Notification Registration and Data Storage of Mobile Phone Service Users which has been published in the Royal Gazette on 9 April 2019 in order to make the a clearer regulation regarding registration and data storage of mobile phone users to be the same standard for both post-paid and pre-paid system in which service providers will have more accurate and complete storage of users' data to reduce the problems of counterfeiting

of the service user registration. The NBTC has stipulated necessary and appropriate criteria and rules such as registration's evidence of service users, obligations of service providers for identification and verification, users' data collection, and users' data management and data verification.

(2) The NBTC Notification on Standard of Quality of Telecommunications Service Provision

Having issued the NBTC Notification on Standard of Quality of Telecommunications Service Provision which has been published in the Royal Gazette on 25 October 2019 in order to merge the NBTC Notification on the Standard of Quality of Telecommunications Service Provision (Voice Service) and the NBTC Notifications on the Standard of Quality of Telecommunications Service Provision (Data Service) for Mobile Telecommunications Network as one notification, and to improve some parameters of quality of service and measurements of voice service to be more appropriate as well as to add more parameters of quality of telecommunications services in data service through fixed telecommunications network

at the same time so that it can be used as a reference framework for the regulation of quality of service of Thailand and protection of telecommunications service users to be receiving quality services. The Notification shall be effective from 1 January 2020 onwards.

(3) The NBTC Notification regarding Definition and Regulation of the Structure of Domestic Mobile Phone Service Rates

Having issued the NBTC Notification on Definition and Regulation of Structure of Domestic Mobile Phone Service Rate on 22 November 2019 to regulate the structure of domestic mobile phone service rate to be the same standard in all frequency bands, and to encourage consumers to use mobile phone services at fair service rates by requiring that the licensee shall determine the service rates according to the rights to use of all promotional programs or offered service promotion, in which the average service rates must be in accordance with the service rates specified by the NBTC. The Notification will be effective from 1 January 2020 onwards.



Regulation on the Broadcasting and Television Services

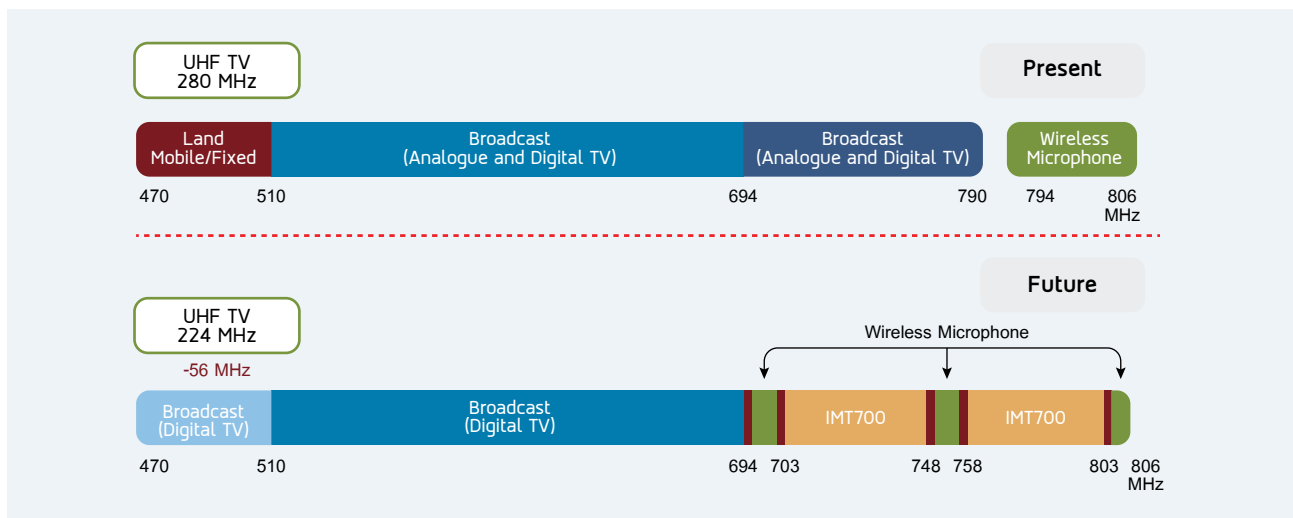
In the year 2019, the NBTC had implemented the policy on the regulation of broadcasting and television service as follows:

1. Spectrum refarming in the frequency band of 700 MHz from the licensees to use the spectrum for the provision of digital terrestrial television service

1.1 According to the Order of the National Council for Peace and Order No.4/2019 regarding Measures to Solve Problems of Television and Telecommunications Business Operation dated 11 April 2019 requiring that the Office of the NBTC shall consider the recall of spectrum in the frequency band of 700 MHz in the range of 694 - 790 MHz from the licensees to use the spectrum for the provision of digital terrestrial television services in order to re-allocate

the spectrum for telecommunications service, and the NBTC Notification on Spectrum Management Master Plan B.E.2562 (2019), Thailand Footnotes T-P4 and the predetermined timeframe; that is, the licensee to use the spectrum in the frequency range of 694 - 790 MHz shall have the rights to use the frequency according to the original rights, scope and conditions not later than 30 September 2020 as the aforementioned frequency will be used for the international mobile telecommunications services (IMT) on 1 October 2020 as prescribed in the licensing criteria related. The NBTC has therefore set up the plan for the use of frequency in various frequency bands whether before and after the completion of the spectrum recalling process in the frequency band of 700 MHz as follows:

**Chart of the plan for the use of frequency in various frequency bands whether before and after the completion of the spectrum recalling process in the frequency band of 700 MHz
In the range of 470 - 806 MHz**



The important process to recall the spectrum in the frequency band of 700 MHz from the digital terrestrial television operators in the preparatory process prior to the improvement or adjustment of the digital terrestrial television network equipment (MUX) to support the recall of the spectrum in the frequency band of 700 MHz are as follows:

(1) Formulation of the New Version of Radio Frequency Plan for Digital Terrestrial Television Service to support the recall of the spectrum in the frequency band of 700 MHz.

Having issued the NBTC Notification on the Radio Frequency Plan for Digital Terrestrial Television Service to support the recall of the spectrum in the

frequency band of 700 MHz, which has been published in the Royal Gazette on 25 November 2019. The abovementioned radio frequency plan has required that the radio frequency channels 24 - 48 or the frequency band of 494 - 694 MHz can be used for the provision of digital terrestrial television service of 5 networks as usual, and the coverage area of all networks will be a bit higher compared to the present (increasing from approximately 95.1 percent to 95.6 percent of the total households nationwide) with a few differences in the area coverage of each network. In addition, the changes over networks are only about the change of frequency channel, the change of network characteristics (SFN/MFN) and adjustment of delay value without changing the antenna pattern, effective radiation power (ERP) or installation of new station.

(2) Setting up the plan for digital terrestrial television network improvement to support the recall of the spectrum in the frequency band of 700 MHz

The Sub-committee to Determine Compensation Methods and Conditions according to the Order of the Head of National Council for Peace and Order No. 4/2019 Meeting No. 11/2019 held on 1 October 2019 had considered the plan for digital

terrestrial television network improvement to support the recall of the spectrum in the frequency band of 700 MHz by inviting the licensees to provide network services and facilities services for the provision of digital terrestrial television services as well as the licensees to provide digital terrestrial television services to attend the meeting to discuss on the related issues. In the meeting, 4 licensees to provide network services and facilities services, namely the Royal Thai Army, Thai Public Broadcasting Service (Thai PBS), MCOT Public Company Limited and the Government Public Relations Department, had agreed in principles for the improvement of digital terrestrial television and defined the digital terrestrial television network into 17 phases. It is expected that the duration for ordering equipment manufacture will be approximately 5 months, and the duration for tuning between the phases about 10 days. The NBTC had its resolution in the NBTC Meeting No. 21/2019 on 11 December 2019 approved the improvement of the terrestrial television network to support the recall of the spectrum in the frequency band of 700 MHz and determined a complete time by 30 September 2020. Details are as shown in Table 2.

Table 2 : Plan for digital terrestrial television network improvement

Operation of MUX	Year 2020								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Order for production and delivery of related equipment									
Adjustment of frequency and device									
• Group of stations in the South Region									
• Group of stations in the North Region									
• Group of stations in the Northeast Region									
• Group of stations in the Central and East Region									

Remarks : The Phase of Plan for digital terrestrial television network improvement may be changed according to the readiness or appropriateness

1.2 The compensation, reimbursement or remuneration for those who got affected by the recall of the spectrum in the frequency band of 700 MHz

Having established measures for compensation, reimbursement or remuneration for those who got affected by the recall of the spectrum in the frequency band of 700 MHz according to the Order of Head of National Council for Peace and Order No.4/2019 on Measure to Resolve Problems of Broadcasting and Television Business Operation which requiring that there shall be a compensation, reimbursement or remuneration for those who got affected by the recall of the spectrum in the frequency band of 700 MHz as details below:

(1) Providing an exempt of the license fee to use the spectrum for the provision of digital television services in the 5th and 6th installments for the licensees who got affected by the recall of the spectrum in the frequency band of 700 MHz according to article 12 (1) (1.1) of the Order of the Head of National Council for Peace and Order No. 4/2019 at the amount of 13,622,400,000 baht.

(2) Rental fees for digital television networks in the type of using the frequency for digital terrestrial television service (MUX) in the remaining licensing period, from June 2020 onwards, according to the actual amount agreed by the contract parties of the article 12 (1) (1.2) of the Order of the Head of National Council for Peace and Order No. 4/2019 at the amount of 16,453,600,000 baht.

(3) Determination of compensation, reimbursement or remuneration for the improvement or changes of television network equipment of the licensees to provide network service and the licensees to provide facilities service for the provision of digital television service according to article 12 (2) of the Order of the Head of National Council for Peace and Order No. 4/2019 by having issued the Office of the NBTC Notification on criteria, procedures and conditions for the compensation, reimbursement or remuneration to those who got affected by the recall of the spectrum in the frequency band of 700 MHz for the case of network service licensee and facility service licensee for providing digital terrestrial television service on 18 September 2019. The Office of the NBTC by the Sub-committee to determine compensation according to the Order of the Head of National Council for Peace and Order No. 4/2019 in the Meeting No. 13/2019 on 19 October 2019, had considered the determination of reimbursement or remuneration for the improvement or changes of television network equipment of the licensees to provide network service and the licensees to provide facilities service for the provision of digital television service of 5 networks (4 licensees) at the actual costs but not exceed the budget framework of 761,420,123 baht which consisted of the procurement expenses for equipment modifications, expenses on personnel of the licensees and other expenses. Details are as shown in Table 3.

Table 3 : Determination of compensation, reimbursement or remuneration for the improvement or changes of television network equipment

No.	Network service licensee and facility service licensee for providing digital terrestrial television service	Budget framework (baht)
1	Royal Thai Army	159,284,487
2	Thai Public Broadcasting Service (Thai PBS)	254,076,774
3	MCOT Public Company Limited	219,918,752
4	The Government Public Relations Department	128,140,110
Total		761,420,123

1.3 Returning licenses to use the spectrum for the provision of digital terrestrial television service

Having operated according to the Order of the Head of National Council for Peace and Order No.4/2019 on Measure to Resolve Problems of Broadcasting and Television Business Operation, Article 10 which requiring that the licensees to use

the spectrum for the provision of digital terrestrial television service be able to return the licenses and the Office of the NBTC shall consider the determination of compensation to the licensees. There were 7 licenses (7 Channels) that the licensees wish to return and the total compensation was 2,932,680,060.75 baht. Details are as shown in Table 4.

Table 4 : The compensation paid to the licensees to use the spectrum for the provision of digital terrestrial television service

No.	licensees to use the spectrum for the provision of digital terrestrial television service	Program channels	Compensation (baht)
1	Spring 26 Company Limited	Spring 26	675,764,580.43
2	Spring News Television Company Limited	Spring News	500,951,978.91
3	Bright TV Company Limited	Bright TV	371,983,430.95
4	Voice TV Company Limited	Voice TV	378,054,170.42
5	MCOT Public Company Limited	MCOT Family	163,298,367.32
6	BEC-Multimedia Company Limited	3SD	680,083,695.45
7	BEC-Multimedia Company Limited	3 Family	162,543,837.27
Total 7 licenses			2,932,680,060.75

2. The operation according to the measures to support the digital terrestrial television service operators

In the past, the NBTC has carried out the activities for supporting the digital terrestrial television service operators whether to support on the cost of television signals transmission for general service through satellite according to the NBTC Notification on criteria for the provision of general television service (Must Carry Notification) which is in accordance with the Order of the Head of National Council for Peace and Order No. 766/2016 on Measures to Promote the Broadcasting, Television and Telecommunications Services for the public benefits, This also includes being under consideration to support Central Organizations on the ratings survey of TV channels to support the digital television industry according to the Order of the Head of National Council for Peace and Order No. 4/2019 on Measures to Solve Problems of the Television and Telecommunications Business Operation. Details of operation are as follows:

2.1 Supporting the expenses for television signals transmission for general service via satellite according to the Must Carry Notification

To ensure that people have been provided with basic television service universally and fairly, the NBTC has issued the notification regarding criteria for the provision of general television service by requiring that digital terrestrial television service operators shall provide television service according to the program schedules with the same contents in all channels, either the terrestrial or satellite systems continuously. As a result, the digital terrestrial television service operators have to pay for the transmission of television signals for general service via satellite. According to the Order of the Head of National Council for Peace and Order No. 76/2016, the costs shall be supported for 3 years through the BTFP Fund and as of 31 December 2019 the NBTC has already supported the expenses for the amount of 1,332.796 million baht.

2.2 Providing support to the Central Organization on the survey of TV ratings to support the digital television industry

Having issued the Office of the NBTC Notification on Criteria, Procedures, and Conditions for Money Allocation for the Survey of TV Ratings to Support the Digital Television Industry (No.2) dated 27 September 2019 according to Article 14 of the Order of the Head of National Council for Peace and Order No. 4/2019 which requiring that in case of licensees to use spectrum for the provision of digital terrestrial television service have gathered to establish a central organization regarding the survey of TV ratings to support the digital television industry, the Office of the NBTC shall consider the money allocation for a certain amount for the operation. Also, the Notification stipulates that the central organization requesting for financial support shall notify the request in writing to the Office of the NBTC within 1 year starting from the effective date of the Notification. The Office of the NBTC has determined the budget framework for supporting the survey of TV ratings at the amount of not exceeding 431,000,000 baht.

3. The operation in the broadcasting service

In the year 2019, the NBTC has driven the operation to develop and support the quality operators for providing community service as follows:

3.1 Having evaluated the quality and efficiency of licensees for providing community service (trial operation) who have been granted the supporting fund according to the NBTC Notification on Criteria for Promoting the Well-prepared Community and Supporting the Quality Operators for Providing Community Service B.E.2560 (2017) Supporting Round (No. 1) from dated 2 October 2018 to 1 October 2019.

3.2 Formulating the plan to support quality licensees for providing community service (trial operation) according to the NBTC Notification on Criteria for Promoting the Well-prepared Community and Supporting the Quality Operators for Providing Community Service B.E.2560 (2017) (No.2) which the NBTC Meeting No. 6/2019 on 9 April 2019

has its resolution to approve the plan to support quality licensees for providing community service (trial operation) (No.2) and the Office of the NBTC had proposed the results of the NBTC's consideration to the Meeting of the Research and Development Fund Management Committee No. 5/2019 on 23 May 2019 and the Meeting had its resolution to determine budget framework for supporting licensees for providing community service (trial operation) (No.2) at the amount of 3,084,382 baht. The Office of the NBTC has therefore issued a notification regarding the submission of application for being granted the support of licensees for providing community service (trial operation) (No.2) by specifying the period for submission of a request for supporting during 3 June - 2 July 2019, and 8 stations/licensees for providing community service (trial operation) have submitted the applications with completed documents in accordance with the conditions. Subsequently, the NBTC Meeting No.16/2019 on 24 September 2019 had its resolution to approve the additional support on quality licensees for providing community service (trial operation) (No.2) and extend the period for submission of a request for another 30 days (since 1 - 30 October 2019). After the expiration of the period, additional 9 stations/licensees for providing community service (trial operation) have submitted the applications of requests which are currently under consideration. It is expected to be completed by March 2020.



4. Consumers protection in the broadcasting and television services

In 2019, the NBTC had carried out activities to protect consumers in the broadcasting and television services either in the regulation on the actions which are considered to exploit consumers, strengthening consumers and public media literacy, promoting and protecting the rights of persons with disabilities to access or recognize and utilize television programs as well as developing guidelines regarding consumer protection in the broadcasting and television services as follows:

4.1 Regulation on the actions which are considered to exploit consumers in the broadcasting and television services

The NBTC has regulated the actions which are considered to be an exploitation of consumers in the broadcasting and television services in areas of the advertisement of food, drugs, and health products and others whether on non-frequency used television (satellite TV and cable TV), digital TV or broadcasting service (commercial service) which has been done continuously by focusing on the follow-up and monitor the broadcast of programs or advertisements that may be the actions considered to be the exploitation of consumers, such as programs/advertisements of food, drugs, and health products, the fraudulent advertising, etc. The operation has been done through the cooperation between the Office of the NBTC (Headquarters) and the Office of the NBTC Region for monitoring and resolving problems on the advertisement of food, drugs, and health products in regional areas to be more efficient throughout the country in order to protect consumers in the broadcasting and television services. The Office of the NBTC has also collaborated with the Food and Drug Administration (FDA), Ministry of Public Health, to join the determination of a policy to expand the implementation of advertising surveillance to the regions by assigning the Office of the NBTC Region and the Provincial Public Health Office to coordinate, monitor and collect information and evidence concerned for the consideration of the actions considered to be



an exploitation of consumers, and submit the results to the Office of the NBTC (Headquarters) for further action. In addition, the Office of the NBTC held a meeting to discuss the problems of the advertisement of food, drugs, and health products via the internet and social media with the FDA and social media service provider, Google (Thailand) Company Limited, on 21 May 2019 to find solutions and co-working mechanisms although the regulation on the advertisement of food, drugs, and health products via radio and television media has been successful, those illegal ads however continue to be found in other media. In addition, the NBTC also provided trainings for the broadcasting and television operators in the area of advertising that is deceptive or materially misleading to build understanding of the broadcasting and television operators concerning the regulation of business operators in the case of advertising of food, drugs, and health products that have the characteristics to be an exploitation of consumers in broadcasting and television service.

4.2 Strengthening consumers and enhancing the capability of people of media literacy

In 2019, the NBTC had organized activities for protecting consumers and establishing consumer networks in the broadcasting and television services including the activity on building knowledge and understanding, raising knowingly so that the consumers in the broadcasting and television services be strong and able to protect their rights according to the Broadcasting Master Plan, which is in accordance with the National Reform Plan on Mass Communication and Information Technology through the following processes:

(1) Having carried out activities in the integration and consumer protection and building consumer networks in the broadcasting and television services as follows:

- Developing consumer networks to monitor and notify information/complaints by coordinating with the radio-television media consumer networks, and the regulatory agencies involved in the regulation of the broadcasting and television services.
- Conducting a project to encourage the participation of consumer networks in the broadcasting and television services by organizing activities and exhibitions, including infotainment activities that can interpolate knowledge and understanding to promote integration and enhance the potential of consumer networks for driving the work on consumer protection in broadcasting and television services in 5 regions.
- Organizing activities/platforms on consumer protection in the broadcasting and television services which participated by consumer networks in each region to give views and opinions in order to promote the participation of consumer networks.
- Increasing more channels of communication such as organizing field activities, establishing a website: <http://nbt.go.th>, Social Media, Facebook: <https://www.facebook.com/con.rights>, infographic, and video media.

(2) Developing and enhancing potential of people in media literacy

In 2019, the NBTC has developed and enhanced people's potential in media literacy as follows:

- Enhancing media literacy in radio - television media in 13 higher education institutions covering 4 regions by holding workshops to promote personnel in educational area in higher education level that provide teaching and learning in communication science or mass communication, and science of education or education science in order to have knowledge and understanding including the use of variety of techniques or methods and being

able to apply media literacy contents or knowledge to the teaching and learning effectively as well as promoting an integrated media literacy teaching and learning in the field of communication science or mass communication, and science of education or education science appropriately in such educational institutions. In addition, the NBTC has promoted the media literacy in 36 non-formal education institutions through organizing workshops to exchange knowledge and learning and participation in promoting media literacy in radio and television media with local educational institutions to enhance the work on promoting and supporting the continuous development for enhancing people's ability in media literacy in the broadcasting and television services.

- Having joined the network of educational institutions in holding 3 meetings to raise awareness on knowing the right, knowing radio-television media with the network of educational institutions in the areas as follows:

No.1 Organizing camp activity on "Creative Youth, Know the Media" in the Northeast region between 18 - 19 July 2019 in Khon Kaen Province. The activity was participated by representatives of educational institutions, local government organization, media organizations and people in the area.

No.2 Organizing a seminar project on the "Children and Youth Leaders Network in East Region" in order to access, understand, and be aware of radio and television media consumption, on 21 July 2019 in Chanthaburi Province.

No.3 Organizing a seminar for enhancing skills on media literacy, knowing the rights, empowering the youth consumer networks under the project "Promoting the Radio-Television Consumer Network in the Central region to become the Active Consumer" by the Consumer Networks in broadcasting and television services in the South Region (Power Gen Team) on 22 August 2019 in Songkhla Province.

- (3) Promoting and protecting the rights of the people with disabilities to access or recognize and utilize television programs.

In 2019, the NBTC had carried out activities to promote and protect the rights of the people with disabilities to access or recognize and utilize important television programs as follows:

- Studying and preparing proposals for the preparation of criteria in accordance with the NBTC Notification on Promotion and Protection of the Rights of the People with Disabilities to Access or Recognize and Utilize Television Programs and having issued the Office of the NBTC on Level of Knowledge and Abilities of Sign Language Interpreters for the Provision of Television Services which has been published in the Royal Gazette on 10 September 2019.

- Regulating the business operation under the NBTC Notification on Promotion and Protection of the Rights of the People with Disabilities to Access or Recognize and Utilize Television Programs by following-up the results of the provision of television services that provide interpretation services, closed caption, or audio description in the year 2018, and sending letters to the operators requiring for the submission of reports on the results of the provision of television services that provide interpretation services, closed caption, or audio description in the year 2019.

- Organizing trainings to enhance the knowledge of digital broadcasting and television operators for providing closed caption or audio description services so that the people with disabilities are able to access information.

- Promoting the rights of the elderly, the disabled, or the disadvantaged to access information by organizing the public hearing meeting to gather views/opinions from organizations of each type of disability, related professional organizations on the provision of suitable services so that the operators can gather the opinions from each organization of disability for providing suitable services according to basic measures and promoting measures to meet the needs.

- Building knowledge and understanding about the rights to recognize and utilize information of the people with disabilities through organizing training for raising awareness of the rights to communicate of people with disabilities (hearing) to access or perceive and utilize the television service, and trainings for promoting the rights to communicate of people with disabilities (communication camp for the deaf) in collaboration with the Deaf Association of Thailand and the Faculty of Communication Arts, Dhurakij Pundit University.

(4) Developing criteria and management regarding consumer protection in the broadcasting and television services

In order to protect the rights and liberties of consumers from being violated or taken advantage by the broadcasting and television operators, therefore in 2019, the NBTC has developed criteria and management regarding consumer protection in the broadcasting and television services in addition to complaints handling as follows:

- Establishing guidelines on consumer protection in the broadcasting and television services which is in accordance with the National Strategy on Social Cohesion and Equity in order to create fairness and reduce inequality in all dimensions and in line with the National Reform Plan on Laws which aims to protect the rights of consumers from being taken advantage by operators.

- Building knowledge and understanding of operators and to deter the actions of the radio and television broadcasting operators through the process of giving comments and suggestions in the meeting of the Sub-committee on Consumer Protection in the Broadcasting and Television Services in order to promote the improvement of services, broadcast of programs or advertisements or the action that not being considered taking advantage of consumers in the broadcasting and television services.

5. Trial operation on digital radio broadcasting

5.1 The NBTC had signed a memorandum of understanding with Royal Thai Army on the trial operation of digital radio broadcasting on 16 July 2018, and later on the NBTC has granted the license to the Royal Thai Army by Royal Thai Army Radio and Television to use the spectrum in the broadcasting service for trial operation or testing for the digital radio broadcasting trial operation DAB+ for providing service in Bangkok and nearby provinces for a period of not more than 6 months from the date that the license has been granted. Also, the test result report in details shall be submitted to the Office of the NBTC for acknowledgment periodically and the operation must be

complied with the NBTC Notification on Criteria for the Licensing to Use Spectrum in the Broadcasting and Television Services for Trial operation or Testing, including the conditions prescribed by the NBTC and other relevant laws. In this regard, the NBTC Meeting No.20/2019 on 26 November 2019 had considered the extension of the licensing period for digital radio broadcasting trial operation DAB+ of Royal Thai Army Radio and Television for another 6 months, ending on 22 May 2020. The Royal Thai Army Radio and Television has begun the digital radio broadcasting trial operation DAB+ on 6 April 2019 for 12 channels to provide the services including audio, text, and images and slide show. Details are as shown in Table 5.

Table 5 : Digital radio broadcasting trial operation in DAB+ system

No.	licensees to use the spectrum for the provision of digital terrestrial television service	Owner of Radio Stations
1	LTMFM 95 MHz	MCOT Public Company Limited
2	Cool Fahrenheit 93	Royal Thai Army
3	JS100 Radio	Royal Thai Army
4	FM One 103.5	Royal Thai Army
5	Hitz 95.5	MCOT Public Company Limited
6	Green Wave 106.5	Office of the NBTC
7	MET 107	MCOT Public Company Limited
8	Radio Thailand 92.5	Public Relations Department
9	FM One 101	Royal Thai Armed Forces Headquarters
10	FM 94 MHz (Bangkok Smile 94)	Royal Thai Army
11	Thai PBS Radio	Thai Public Broadcasting Service (Thai PBS)
12	NBTC (Remarks: Test Channel)	Office of the NBTC

5.2 The Royal Thai Army Radio and Television has planned to distribute DAB + digital radio receivers for 3,100 receivers, consisting of table receivers that display messages, hybrid receivers, car receivers and portable receivers, to the organizations and related parties to use for trial or testing and evaluating broadcast testing results under the project, such as radio broadcasting operators participating in the trial operation, public vehicle operators, government agencies, Sub-committees involved, signal measurement cars, advisors, scholars, people, Office of the NBTC, Royal Thai Army, as well as organized public relations activities. The NBTC Meeting No.18/2019 on 22 October 2019 had its resolution to approve the operation plan and in the year 2020 the Office of the NBTC has planned to take actions on setting guidelines, principles and criteria for digital broadcasting business licensing for trial operation or testing, including the revision of the radio frequency plans in digital broadcasting service for trial/testing the use of spectrum as well as planning on the extension of the period for trial or testing the use of spectrum by the year 2021 by specifying a period of trial or testing of 3 years/time, not more than 2 times.

6. Monitoring the improvement of the digital terrestrial television network (MUX) to support the recall of spectrum in the frequency band of 700 MHz.

In 2019, the NBTC has prepared for the improvement of the digital terrestrial television network to support the recall of spectrum in the frequency band of 700 MHz consisting of the follow-up of the improvement of digital terrestrial television networks (adjustment of frequency and equipment to comply with the new radio frequency plan), verification of documents and evidence supporting compensation, reimbursement or remuneration including the regulation under the conditions attached to the license for the provision of digital terrestrial television network service and the Memorandum of Understanding (MOU) regarding the receipt of compensation, reimbursement or remuneration from the effects arisen directly from the recall of spectrum in the frequency band of

700 MHz of the licensees of network service and the licensees of facility service for the provision of digital television service, including preparing an action plan to communicate with the audience in order to prepare for the adjustment of the frequency for the provision of digital terrestrial television service in each area, as well as building knowledge and understanding of digital TV receiver installation technicians or distributors or other related parties so that they can be aware of the importance and well-prepared. In addition, the NBTC has followed-up the improvement of the digital terrestrial television network to be completed as planned. There are 3 important parts of operation as follows:

(1) Determination of the progress report form of network improvement, focusing on the follow-up of the production and transportation of important equipment and the installation or improvement of equipment of each station.

(2) Analysis and monitor of the progress of network improvement including the assessment of situations and obstacles in order to propose ways to improve for the licensees of network service.

(3) Monitoring and following-up the progress of field operation especially in areas where network improvements are complex and may have an impact on audiences.

In the year 2020 onwards, the NBTC will accelerate the implementation under the plan for digital terrestrial television network improvement.



International activities in the broadcasting, television and telecommunication services

The NBTC and the Office of the NBTC have performed the mission as the government administration agency who have the authority to manage the international communications business with the International Telecommunication Union (ITU) or international organizations, governments and foreign agencies within the framework of powers and duties as prescribed by law and in accordance with the Cabinet Resolution on 20 February 2018 designating the Office of the NBTC as the administrative agency on behalf of the Thai government to the International Telecommunication Union replacing the Ministry of Digital Economy and Society. The NBTC has coordinated the work with international organizations to host international conferences, attend meetings or sending representatives to attend important meetings to discuss guidelines for implementation and jointly formulate a policy framework for developing communication services at the national level, as well as operating under the agreement of cooperation of agencies to expand cooperation in the development of international communication services including enhancing competitiveness and developing personnel's potential in the broadcasting, television and telecommunications services continually through such cooperation as follows:

1. The meetings with the International Telecommunication Union (ITU)

1.1 Meeting with the Secretary-General of the International Telecommunication Union on 13 June 2019, General Sukit Khamasundara, Acting Chairman of the NBTC, Mr. Takorn Tantasith, Secretary-General of the NBTC, had discussed with Mr. Houlin Zhao, Secretary-General of ITU, on the performance of the administrative agency on behalf of the Thai government under the relevant issues such as policies on the regulation and cooperation frameworks at various levels, the duty of the NBTC as the ITU's administrative

agency, relocation of the ITU Regional Office for Asia and the Pacific in Thailand to the Office of the NBTC, Region 1, and the plan for conducting meetings with the ITU such as jointly being the host of Center of Excellence (COE) and the Regulator's Roundtable (RR) Meeting, etc.

1.2 Meeting to discuss for a conclusion on the relocation of the ITU Regional Office for Asia and the Pacific, which the Office of the NBTC had proposed to relocate the ITU Regional Office for Asia and the Pacific in Thailand from Thailand Post Company Limited to the Office of the NBTC, Region 1 in order to reduce the cost of area rental. Currently, it is in the process of consideration and preparation of the operation plan and the budget plan to be proposed to the Cabinet meeting for further consideration.

1.3 Meeting to discuss on the construction of new buildings of the ITU Headquarters under the meeting framework of the Executive Council of the International Telecommunication Union in the year 2019 on 27 September 2019 in Geneva, the Swiss Confederation. The NBTC had already presented their opinions and having voted in support of the new building project of the ITU Headquarters.

2. **Co-hosting international conferences** such as the Regulator's Roundtable (RR) meeting and the International Training Program (ITP), the NBTC in collaboration with the International Telecommunication Union (ITU) co-hosted the ITU Asia-Pacific 9th Regulators Roundtable (RR) and International Training Program (ITP) of the year 2019 during 2 - 6 September 2019 at the Sheraton Grande Sukhumvit Hotel, Bangkok. The meeting had provided an opportunity for representatives of different countries to discuss the current interesting issues in telecommunications and information technology and exchange knowledge and opinions on the regulation in information technology and communications especially the acceleration of

the transformation to digital era and telecommunications business regulation in the 5th generation (5th Generation of Regulation). Besides, the NBTC had organized training under the topic of “International Training Program (ITP)” during 4 - 6 September 2019 which was participated by the staff of the Office of the NBTC, government officials, and private sector from ITU members' countries in the Asia-Pacific region for more than 80 participants. The training also provided the exchange of knowledge on ICT development trends to support the policy of Thailand 4.0 and the issue on collaborative regulation. The result of the event was widely accepted and received a lot of praise from either ITU representatives or representatives from various countries.

3. Sending representatives to attend the International Telecommunication Union (ITU) meetings as follows:

3.1 Meeting of the ITU Council 2019 (ITU Council 2019) at the Headquarter of the International Telecommunication Union (ITU), in Geneva, the Swiss Confederation, during 10 - 12 June 2019. The Office of the NBTC had acted as the Head of the Thai Delegation to the meeting and the ITU Councillor as the administrative agency on behalf of Thailand of the ITU. Thailand is one of the countries that has been consistently elected as a member of the ITU Council. The important issues discussed at the meeting were (1) planning and operating policy of ITU (2) the organization of ITU activities (3) the encouragement of SMEs to join ITU as an associate member (4) the use of AI for cultural and historical conservation benefits, and (5) preparation for the 2021 World Telecommunication Policy Forum (WTPF), etc.

3.2 The World Radiocommunication Conference 2019 (WRC-19) of the International Telecommunication Union during 28 October - 22 November 2019 at Sharm El Sheikh, Arab Republic of Egypt. The NBTC had followed-up the progress and considered issues related to the preparation for the World Radiocommunication Conference continuously since the year 2016, and appointed a working group for the preparation of the World Radiocommunication

Conference consisting of the executives and officials of the Office of the NBTC, experts and representatives from public and private sectors. The working group has its power and duty to consider the arrangements of Thailand to play the role of participation of the meeting, preparation of Thailand position documents to be presented to the meeting, and being the representative to attend the WRC-19. The Cabinet had a resolution on 22 October 2019 to approve the Thailand position documents and appointed the Thai delegation along with authorizing the representatives of the Office of the NBTC to act as the Head of Delegation and Deputy Head of Thai Delegation in discussions, voting, and signing the Final Acts of the World Radiocommunication Conference 2019.

3.3 International Telecommunication Union meetings on Radiocommunication Sector (ITU - R), the Office of the NBTC had sent representatives to join the working group and prepare proposals to the meeting, such as (1) preparation and revision of radio frequency plans including guidelines for the spectrum management and technology for the broadcasting and television services. (2) Preparation of Thailand position for the assignment of the radio frequency bands for the use of International Mobile Telecommunications (IMT) service in the future, including the additional radio frequency assignments for mobile service at the World Radiocommunication Conference 2019 (WRC-19), and (3) preparation of the plan and frequency band assignment and the use of frequency for mobile telecommunication service both in land and maritime of Thailand, etc.

3.4 International Telecommunication Union meetings on Telecommunication Standard (ITU-T), the Office of the NBTC had sent representatives to attend the meeting in which important discussion issues are such as (1) the use of the Internet of Things (IoT) which is currently being used widely and increasing steadily both domestic and international and it is an important technology for the development of smart cities and communities to be able to connect information with each other.

This will enable solving the problem of congestion both in the residence and traffic (2) the development of standards related to the efficiency of quality of telecommunication service provision (QoS) and quality of experience (QoE) of telecommunications service provision for communication tools, and (3) preparation of criteria and regulations, licensing schemes, and regulation concerning the digital television business operation and digital radio, etc.

3.5 International Telecommunication Union meeting on Telecommunications Development Sector (ITU - D), the Office of the NBTC had sent representatives to attend the meetings in which important discussion issues are such as (1) tools and guidelines on the regulation for testing the digital use (2) development of important Infrastructure such as a competitive policy, frequency plans, receiving international cooperation and service, etc.

4. The operation under the agreement of cooperation as follows:

4.1 Agreement of cooperation between the Office of the NBTC and Ministry of Digital Telecommunication Development and Mass Communication of the Russian Federation. The objective is to establish the cooperation and enhance the development of broadcasting, television and telecommunications services of both countries in 3 main areas: (1) International Mobile Roaming (IMR), which emphasizes cooperation and promotes business negotiations to reduce service costs of provision of service in order to reduce roaming charges between each other (2) Digital Broadcasting Television, exchanging information on digital television development practices including the development of broadcast content and (3) Security of Telecommunication Usage, exchanging of knowledge and experience on the safety to use telecommunications service.

Under the agreement, the Office of the NBTC and the Ministry of Digital Telecommunication Development and Mass Communication of the Russian Federation, had held a Forum on Digital Cooperation, during 19 - 20 September 2019 at Eastin Grand Hotel,

Sathorn, Bangkok, to provide opportunities for the information exchange and development in broadcasting, television and telecommunications services of Thailand and Russia which will lead to the process of knowledge body building including encouraging business entities to exchange ideas and experiences in the operation, which will open up business opportunities as well as to strengthen good relations between Thailand and Russia. The forum was attended by more than 195 participants.

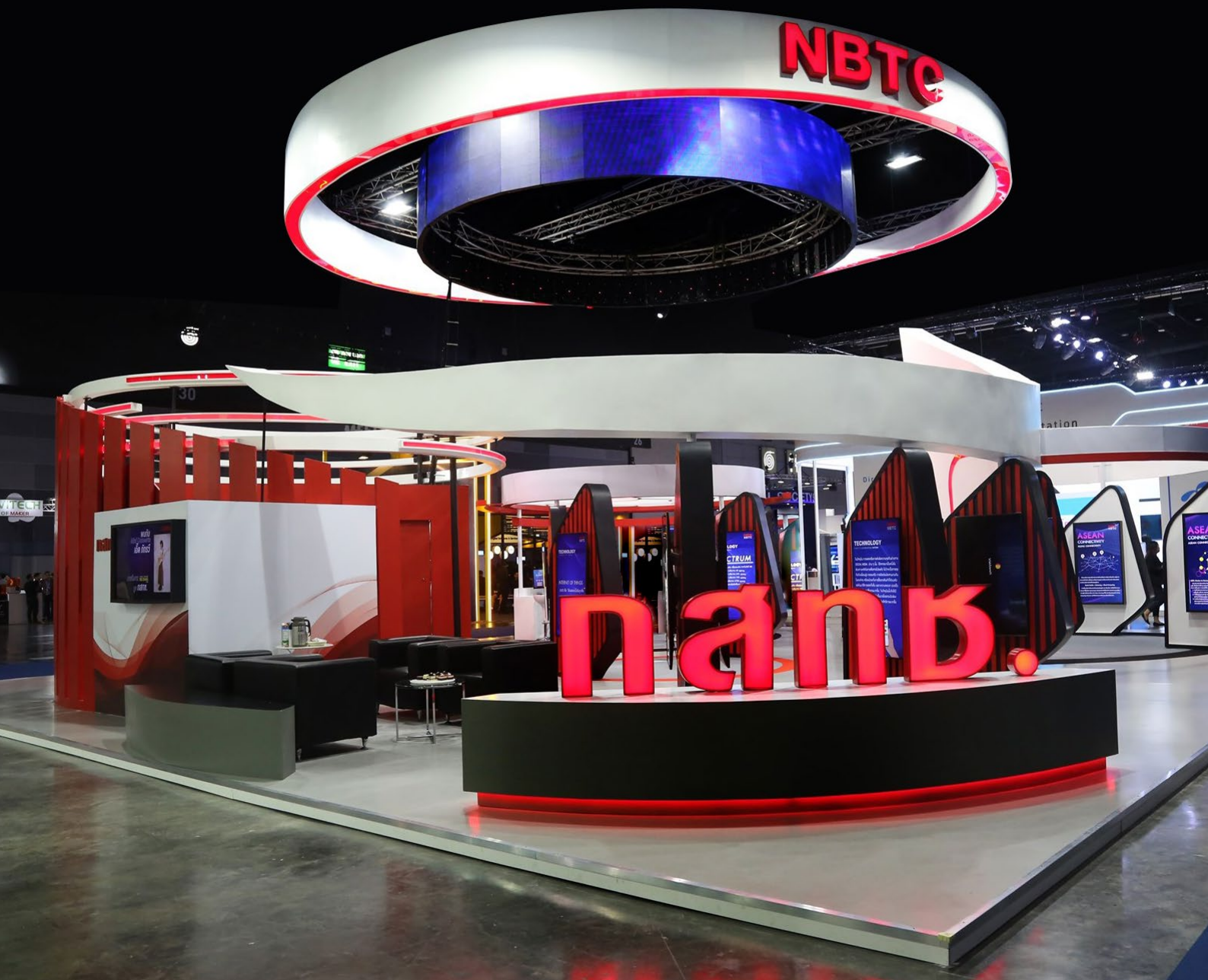
4.2 Agreement of cooperation on program content between the Office of the NBTC and the Korea Communications Commission. The objective is to promote cooperation between both regulatory agencies in fostering cooperation among television operators and to promote the joint production of content, cooperation between program producers on the dissemination of international program content, organization of activities on the dissemination of television program contents such as meetings, seminars and exhibitions, etc., as well as exchange information on regulation and policies related to television program content between both countries.

Under the agreement of cooperation, from the year 2017 until now, 4 meetings have been held between the NBTC and the Korea Communications Commission to find the ways of cooperation to promote television business. In 2019, the Bilateral Meeting was held on 29 October 2019 at the Office of the NBTC to promote cooperation between the two agencies including the exchange of information and progress in driving the broadcasting, television and telecommunication services.



3

Major Performance of the Office of the NBTC



Management of the Office of the NBTC

In the year 2019, the Office of the NBTC had focused on managing the organization according to the good governance policy by promoting and encouraging the personnel of the Office of the NBTC to perform duties with integrity, morality, transparency, adhering to the principles of good governance in operations including the management of the organization to achieve the success in accordance with the operational direction and policy set, which are the efficiency development of personnel management, promotion of talented people, good people, promotion and development of the quality of work towards international standards, environmental development in the Office of the NBTC to create incentives for working, and the potential development of personnel of the Office of the NBTC to have expertise in working and enhancement of knowledge body continuously in order to be a key mechanism in driving the NBTC's mission to achieve the goals under the vision of being a leading organization in ASEAN regulating and developing communications business for sustainable national development. In 2019, important actions are as follows:

1. Having given the importance to the operation for driving the prevention and suppression of corruption and misconduct in the public sector along with promoting the personnel of the office of the NBTC to perform their duties by taking into account the public benefits by announcing the intention of management to create an anti-corruption culture, raise the level of governance in the management of all sectors, and reform the entire process of prevention and anti-corruption by pushing forward the operation to achieve the goals under the vision, missions and 10 core values of the Office of the NBTC which consists of duty performance, budget expenditure, exercise of power, the use of government property, resolution of corruption problems, quality of operation, communication efficiency, improvement of the working system, disclosure of information, and the prevention of corruption.

2. Having arranged a Memorandum of Agreement of the Integrity of Project on Provision of Broadband Internet Service in Remote Areas (Zone C) on 27 May 2019 for the transparency of government procurement projects and building confidence to the private sector participating in the project. It also encourages the personnel of the Office of the NBTC to perform duties with transparency and integrity which is an important foundation for cultivating a conscience of performing duties with honesty,

transparency and accountability having resulted on the improvement of the result of the integrity and transparency assessment of the operation of the Office of the NBTC to the AA level. The activities included the arrangement of a meeting to clarify guidelines for preparing the Code of Ethics of staff and employees of the Office of the NBTC according to the Ethical Standards Act B.E.2562 (2019) to be used as a criteria for government officials to be honest, having positive attitudes of serving people for the convenience and non-discrimination and performing duties with efficiency, as well as organizing training activities to strengthen good governance under the topic "Raising the level of governance in service provision and internal process management" in order to enhance knowledge and understanding about the application of good governance to the operations, especially raising the level of governance in service provision and internal process management to be effective in response to service recipients and stakeholders by taking into account the correctness, fairness, equity, transparency and accountability.

3. Upgrading the Office of the NBTC to become the digital office which is to continue the operation from the previous year. The Office of the NBTC has appointed a working group to drive the development of the Office of the NBTC to become a concrete and efficient digital office in terms of upgrading the work processes,

improvement of laws and regulations related, and development of personnel's ways of thinking, in order to move towards the digital office. This will be useful for the response to the people's needs and be able to support the rapid change of context of the world. The Office of the NBTC has set a goal to develop the central database system for automatic data transmission between the Office of the NBTC and external agencies by the year 2011 in order to comply with the government policy to drive Thailand towards the digital economy.

4. Raising awareness of personnel of the Office of the NBTC on the organization's risk management and internal control by having appointed a committee to evaluate the result of internal control consisting of experts from outside agencies who have knowledge and expertise to determine guidelines for evaluating the results of the internal control of the Office of the NBTC and preparing reports on the results of internal control evaluation of the Office of the NBTC under Section 79 of State Fiscal and Financial Discipline Act, B.E.2561 (2018) and the Ministry of Finance's Regulations on Standards and Criteria for Internal Control for State Agencies B.E.2561 (2018) requiring state agencies to conduct internal audits, internal control and risk management by complying to the standards and criteria set by the Ministry of Finance.

5. Developing the quality of work system towards the international Standard ISO 9001: 2015 continuously since the year 2013 so that all bureaus under the Office of the NBTC can develop the quality of management system towards the international standard ISO 9001: 2015. In 2019, the Office of the NBTC had developed the system, supported and promoted corporate consciousness in 11 bureaus under the Administration Cluster, Strategic and Internal Affairs Cluster, Regional Affairs Cluster, Telecommunications Cluster, Broadcasting Cluster. The Office of the NBTC will continue to develop the management system to cover all bureaus according to the strategy determined.

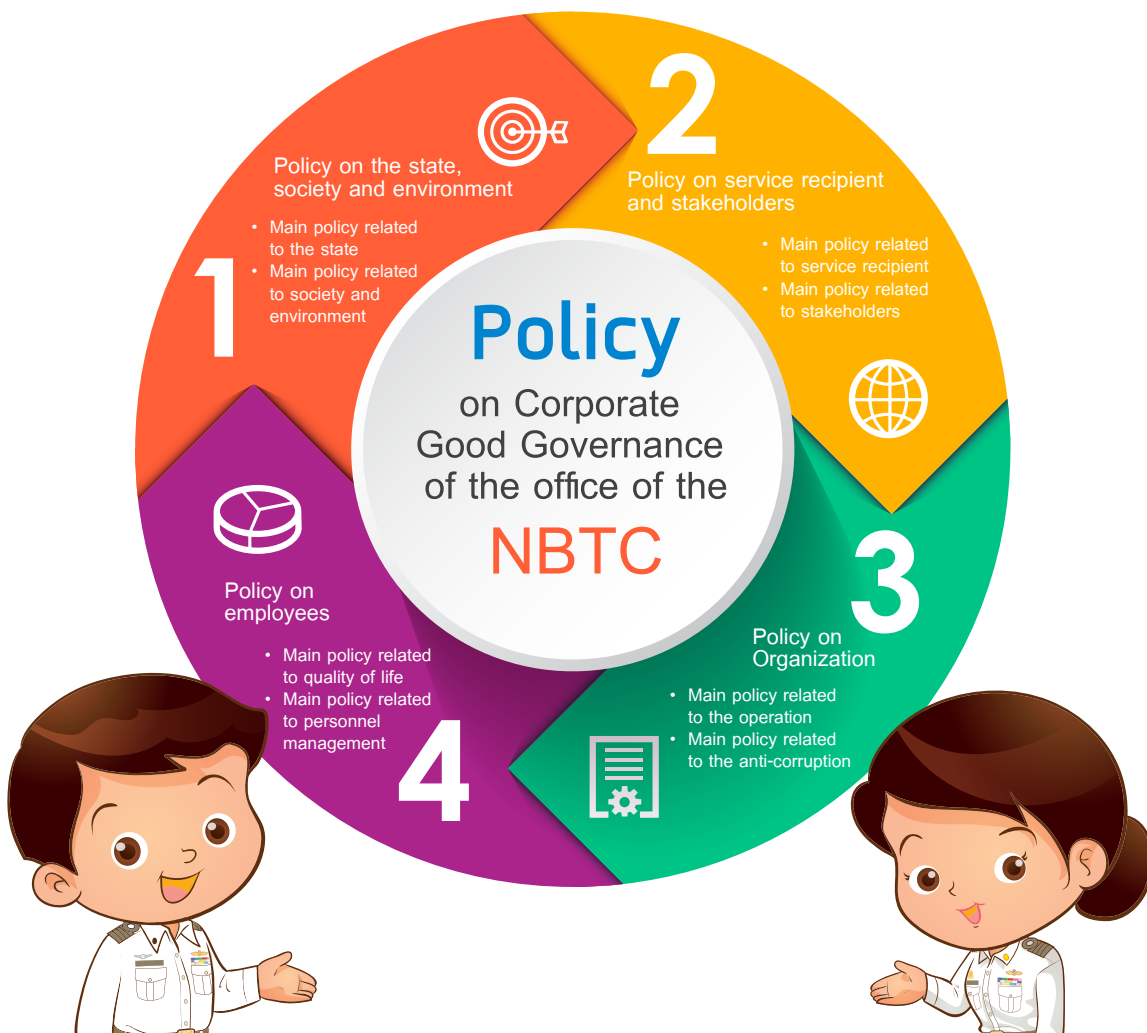
6. Strengthening the efficiency of personnel management and organizational environment by emphasizing on building engagement of employees to the organization, building confidence and managing personnel by applying a merit system. The Office of the NBTC also organized various important projects such as the annual project for selection of merit practitioners "Merit, You Can Do It", the project for employees' children in the summer, the project on health promotion, the project on welfare shop "Sai Lom Market", the project on campaign to reduce the use of plastic bags within the Office of the NBTC, the project on campaign for waste separation within the Office of the NBTC, the project for improving cafeteria to meet sanitary standards, etc.



7. Supporting and promoting personnel of the Office of the NBTC to grow the will of saving the environment with the goal of raising awareness and social responsibility in solving environmental problems together as well as being a part in conserving the world's environmental resources. The Office of the NBTC has a policy to reduce the use of plastic bags within the Office of the NBTC in order to reduce environmental pollution by aiming to reduce and stop using plastic bags and grow the will of personnel in reusing containers and use cloth bags instead of plastic bags, through having collaboration with the merchants of welfare shops in the cafeteria of the Office of the NBTC to refrain from using foam containers

and replacing with paper containers instead as well as promoting campaigns on waste separation in each type appropriately.

8. Developing potentials of human resource of the Office of the NBTC continuously to enhance their skills and expertise in duty performance to be well-prepared to support the mission effectively in order to achieve the goal of upgrading the Office of the NBTC to become a high-performance organization. For example, conducting a project on knowledge management of the Office of the NBTC, conducting annual activities on knowledge sharing between brothers and sisters of the Office of the NBTC, etc.



The Follow-up and Monitoring the use of spectrum in broadcasting, television and telecommunications services

The Office of the NBTC has its duties in managing spectrum and regulating the use of frequencies in broadcasting, television and telecommunications services to be efficiently with no interference including follow-up and monitoring the use of frequencies whether in the central areas such as Bangkok and its vicinities, including regional areas which covering service areas throughout the country as follows:

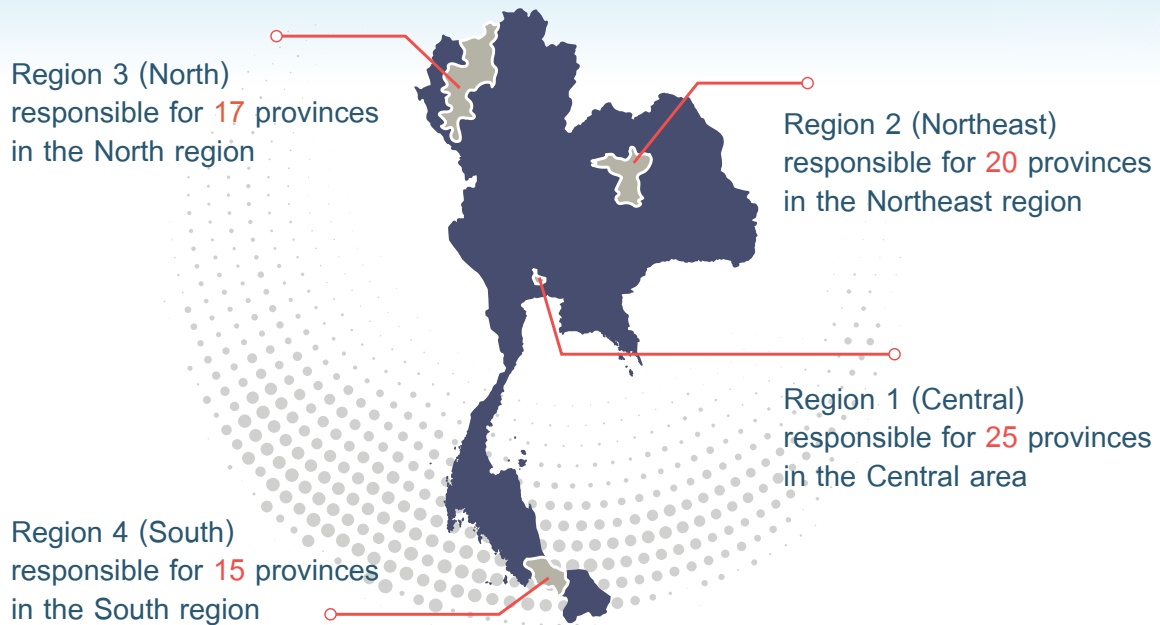
The Office of the NBTC, Region 1 (Central) consists of the NBTC Sub-region Office (Samut Prakan), NBTC Sub-region Office (Chanthaburi), NBTC Sub-region Office (Suphan Buri), NBTC Sub-region Office (Prachin Buri), NBTC Sub-region Office (Phra Nakhon Si Ayutthaya) and NBTC Sub-region Office (Ratchaburi), which responsible for 25 provinces in the Central area.

The Office of the NBTC, Region 2 (Northeast) consists of the NBTC Sub-region Office (Roi Et), NBTC Sub-region Office (Ubon Ratchathani), NBTC Sub-region Office (Nakhon Ratchasima), NBTC Sub-region Office (Udon Thani), and NBTC Sub-region Office (Nakhon Phanom), which responsible for 20 provinces in the Northeast region.

The Office of the NBTC, Region 3 (North) consists of the NBTC Sub-region Office (Lampang), NBTC Sub-region Office (Tak), NBTC Sub-region Office (Phitsanulok), NBTC Sub-region Office (Chiang Rai) and NBTC Sub-region Office (Nakhon Sawan), which responsible for 17 provinces in the North region.

The Office of the NBTC, Region 4 (South) consists of the NBTC Sub-region Office (Yala), NBTC Sub-region Office (Phuket), NBTC Sub-region Office (Nakhon Si Thammarat), NBTC Sub-region Office (Surat Thani) and NBTC Sub-region Office (Chumphon), which responsible for 15 provinces in the South region.

In order to ensure the use of radio frequency in broadcasting, television and telecommunications services to be correct with no interference according to the standard of the radio frequency emission of International Telecommunication Union (ITU). The tasks consisted of Monitoring the possession of radio frequency, Monitoring of the radio frequency emission standard and resolving radio frequencies interference; handling complaints on the use of frequencies; monitoring the unauthorized use of frequencies; searching, arresting and prosecuting the offenders whom have used, installed, traded radio communications equipment without permission against the Radiocommunications Act B.E.2498 (1955) and the Broadcasting and Television Businesses Act B.E.2551 (2008). The Office of the NBTC has also monitored the frequencies radiation to be in line with the standard on safety of the EMF radiation on human health, and monitoring contents on television programs and radio programs which may be the exaggerated advertising. In the year 2019, the Office of the NBTC had followed-up and monitored the use of spectrum in the broadcasting, television and telecommunications services as follows:



1. Monitoring the possession of radio frequency

Having monitored to control the use of radio frequency to be in accordance with the criteria, provisions and conditions authorized by the Office of the NBTC and established a database of radio frequency possession to be used for the effective assignment of frequency whether in the case of new frequencies allocation, sharing frequency channels allocation, recall of unused frequencies, and being used as a primary information for the investigation of unauthorized frequencies and using the information for analysis and extension of the monitor of radio frequency possession and further suppression of the actions of the violators under the requirements of the ISO 9001: 2008. The Office of the NBTC Region and the NBTC Sub-region have monitored the annual radio frequency possession as follows:

(1) Having monitored the possession of radio frequencies for aeronautical radionavigation from the frequency band of 108 - 137 MHz, which is scheduled to monitor 24 hours every day because the frequencies used for aeronautical navigation are the frequencies required for communication in aeronautical service and It is necessary because it concerns the safety of people.

Therefore, the frequencies are considered to be monitored regularly for protecting and resolving problems of interference on aeronautical radionavigation quickly, accurately and accurately.

(2) Having monitored radio frequency under the plan by assigning the NBTC Sub-region, using equipment for monitoring the use of frequency either fixed or a remote control system, to be in accordance with the plan set.

(3) Having monitored the possession of frequencies according to the request.

2. Monitoring of the radio frequency emission standard to control radio frequency emission to be in accordance with the standards and conditions prescribed in the license of the Office of the NBTC and the technical measurement service of radio frequency emission as requested, or having coordinated with both domestic and international agencies by complying with the requirements of ISO 9001: 2008 and ITU recommendations, which are frequency measurement, bandwidth, field strength and spurious emissions measurements. Details are as shown in Table 6

Table 6 : Parameters for monitoring standard of frequency emission

Type of station	Parameters to be monitored
1. Radiocommunications stations/Mobile phone base stations	<ul style="list-style-type: none"> • Frequency Tolerance • Bandwidth • Unwanted Emission • Heights of antenna
2. High-frequency radio/television broadcasting stations 3. Radio broadcasting stations (trial operation) 4. Television stations (trial operation)	<ul style="list-style-type: none"> • Frequency Deviation Limits • Frequency Tolerance • Bandwidth • Unwanted Emission • Field Strength • Heights of antenna

The Office of the NBTC had monitored the frequency emission of mobile phone base stations, radiocommunications stations, radio broadcasting stations, radio broadcasting stations (trial operation) and television broadcasting stations. Details are as shown in Table 7.

Table 7: Monitoring result of the standard of frequency emission

Type of Station	Number (station)	Monitoring result	
		Pass	Fail
Mobile phone base stations	514	514	-
Radiocommunications stations	4	4	-
Radio broadcasting stations (trial operation)	2,213	2,152	61
High-frequency radio broadcasting stations	307	300	7
High-frequency television broadcasting stations (TV Digital)	563	561	2
Total	3,601	3,531	70

Remarks : Data as of December 2019

The reason that the monitoring result of the standard of frequency emission of radio broadcasting stations and television broadcasting stations do not meet specified criteria is because there was an unwanted emission, frequency deviation and out of bandwidth emission which exceed the specified standard. Therefore, the Office of the NBTC had required operators to resolve problems and improve the transmitters to be further in accordance with the specified standards.

3. Monitoring and resolving radio frequencies interference

The Office of the NBTC had received complaints on frequencies interference from public agencies, private agencies, people, and broadcasting, television, and telecommunications operators through various channels such as telephone, fax, letters, and Call Center 1200 for 232 issues and the issue on frequencies used having been interfered was the top-first priority, accounting for 52.59 percent, followed by the issue

on installation of radiocommunications stations/safety on human health, and quality of service/provision of service, and other issues, respectively. However, having considered the complaints on frequency of all agencies, it was found that the Aeronautical Radio Co., Ltd. filed the highest complaints on frequency interference for 71 issues with the main reason come from the spurious emission of radiocommunications transmitters which may not meet technical standards prescribed by the Office of the NBTC or other equivalent Certification Bodies which led to the faultily function of radiocommunications transmitters. The secondary reason of the interference comes from the use of co-channel frequencies and intermodulation product, the interferences that are the result of the broadcasting of radio broadcasting stations for trial operation, either the spurious emission, the use of co-channel frequencies, and the result of intermodulation product which is in the same frequency band of aircraft

navigation, the frequencies used for controlling air traffic and the frequency for instrument landing system which made the communication in the aviation radio service inefficient and may lead to a flight accident. However, having considered from all complaints on the use of frequencies, it was found that 43 complaints made by people, public/private agencies were on the issue of the installation of radiocommunications stations/safety on human health, and the problem is only concerns of the complainants. However, the Office of the NBTC in all region has already monitored and informed the result to the complainants. For the monitor and resolution of radio frequencies interference of 189 issues, the Office of the NBTC Region and NBTC Sub-region Office had investigated the causes, resolved and completely ended the radio frequencies interference problems for all 189 issues. Details are as shown in Table 8 and Table 9.

Table 8 : Complaint issues on the use of frequencies of organizations in the year 2019

Organizations filing complaints	Complaint issues				Total	Percent
	Frequencies used having been interfered	Installation of station/ Safety on human health	Quality of signal/ problems on service provision	Others		
Aeronautical Radio Co., Ltd.	71	0	0	0	71	30.60
Radio broadcasting stations	14	0	0	0	14	6.03
Government agencies/Stateenterprises	12	2	2	2	18	7.76
Companies/Department stores/Shops	1	1	0	0	2	0.86
General public	8	40	44	19	111	47.84
Mobile phone operators	16	0	0	0	16	6.90
Total	122	43	46	21	232	100.00
Percent	52.59	18.53	19.83	9.05	100.00	

Remarks : Data as of December 2019

Table 9 : Result of problem resolution of the radio frequency interference in all services in the year 2019

Organizations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Office of the NBTC, Region 1	11	11	8	8	6	14	4	7	5	3	9	3	89
Office of the NBTC, Region 2	3	7	4	9	3	3	3	5	4	2	4	1	48
Office of the NBTC, Region 3	1	0	1	2	1	4	2	4	3	2	2	1	23
Office of the NBTC, Region 4	7	1	1	1	4	0	3	1	5	2	3	1	29
Total	22	19	14	20	14	21	12	17	17	9	18	6	189

Remarks : Data as of December 2019

4. Monitoring the unauthorized frequency

Having monitored the use of frequencies and been notified the use of frequencies to ensure the efficient use of radio frequency and achievement of the objectives including investigating the illegal use of frequencies in various characteristics. It was found that the most use of unauthorized frequencies are mainly

occurred in broadcasting and radiocommunications services, the Office of the NBTC has, therefore, issued the order for suspending the operation and taking legal process on the 22 offenders either having found by the Office of the NBTC Region/Sub-region or receiving complaints from people, private agencies and public agencies. Details are as shown in Table 10.

Table 10 : Action on suspension and legal process on the offenders of using unauthorized frequencies in the year 2019

Office of the NBTC	Services that use unauthorized frequencies			Source of finding				Total
	Radio Broadcasting service	Radio communications service	Total	Letter of complaints			Found by Office of the NBTC Region/ Sub-region	
				People	Private agencies	Public agencies		
Office of the NBTC, Region 1	-	-	-	-	-	-	-	-
Office of the NBTC, Region 2	-	-	-	-	-	-	-	-
Office of the NBTC, Region 3	1	7	8	-	-	-	8	8
Office of the NBTC, Region 4	-	3	3	1	-	-	2	3
Total	1	10	11	1	-	-	10	11

Remarks : Data as of December 2019

5. Searching and arresting according to the laws

Having operated on searching and arresting and taken legal process on the offenders against the Radiocommunications Act B.E.2498 (1955) and Section 53 of the Broadcasting and Television Businesses Act for the unauthorized use, installation, trade of

radiocommunications equipment, in cooperation with military and police officers. In the year 2019, the offenders found and submitted to the inquiry officers for prosecution was totally 45. cases Details are as shown in Table 11.

Table 11: Result of the search and arrest the offenders in the year 2019

Office of the NBTC	Broadcasting service				Telecommunications service			
	Number of cases	Number of property in dispute			Number of cases	Number of property in dispute		
		Number of Radio communications devices	Number of equipment	Total		Number of Radio communications devices	Number of equipment	Total
Office of the NBTC, Region 1	7	52	-	52	6	883	-	883
Office of the NBTC, Region 2	12	261	31	292	2	5	5	10
Office of the NBTC, Region 3	5	8	26	34	7	63	55	118
Office of the NBTC, Region 4	3	-	-	-	3	19	3	22
Total	27	321	57	378	18	970	63	1,033

Remarks : Data as of December 2019

6. Regulation on safety of human health from the use of radiocommunications devices and measurement of electromagnetic field radiation levels of radiocommunications stations (EMF)

Having operated on the measurement of the electromagnetic field radiation levels (EMF) of mobile phone base stations of telecommunications service providers throughout the country to be in accordance with the guidelines for regulating the safety on human health which is the important criteria prescribed as international standard. The results from the measurement will be used for comparing with the limits of exposure to electromagnetic radiation from radiocommunications

equipment that can radiate electromagnetic waves close to the head or having a distance less than 20 centimeters from the body in the normal working position. The Specific Absorption Rate (SAR) in the frequency band of 100 KHz - 10 GHz for those who receive electrical specific electromagnetic waves from working and those who receive electromagnetic wave in general must not exceed the value according to the NTC. TS. 5001 - 2550 (EMF Safety). Details are as shown in Table 12.

Table 12 : Value according to the NTC. TS. 5001 - 2550 (EMF Safety)

1	Limitation of SAR for occupational exposure group	Limitation of SAR (W/kg)
	Average SAR for the whole-body	0.4
	SAR for only the head & trunk	10
	SAR for only the limbs	20
2	Limitation of SAR for general public exposure group	Limitation of SAR (W/kg)
	Average SAR for the whole-body	0.08
	SAR for only the head & trunk	2
	SAR for only the limbs	4

In 2019, the Office of the NBTC had measured the EMF radiation level for totally 933 times which can be divided to the operation according to the operating plan for 882 times and the operation according to complaints received from people in addition to the plan

for 51 times. The result of the measurement found that the EMF radiation level of radiocommunications stations meets the requirement of the standards. Details are as shown in Table 13.

Table 13 : Plan - result of the measurement of EMF radiation in the year 2019

Measuring Organizations	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total	
	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result	Plan	Result
Region 1	14	19	14	17	14	12	14	1	14	9	14	17	14	12	14	18	14	21	14	46	14	26	14	28	168	226
Region 2	0	1	0	1	0	0	0	2	0	1	30	1	30	4	30	32	30	29	30	22	30	37	30	35	210	165
Region 3	12	6	12	4	12	6	12	3	12	3	12	3	12	8	12	8	12	20	12	16	12	18	12	19	144	114
Region 4	30	21	30	46	30	44	30	49	30	17	30	46	30	35	30	39	30	39	30	34	30	37	30	21	360	428
Total	56	47	56	68	56	62	56	55	56	30	86	67	86	59	86	97	86	109	86	118	86	118	86	103	882	933

Remarks : Data as of December 2019

However, if the measurement of electromagnetic radiation is classified according to operator, it was found that the electromagnetic field radiation level

(EMF) of the operators' radiocommunications stations was complied with the specified standard. Details are as shown in Table 14.

Table 14 : Result of the measurement of EMF radiation in the year 2019
classified by operator

Operators	The year 2019												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
AWN	18	20	19	18	8	24	19	29	38	40	44	40	317
DTN	16	23	21	19	9	19	19	25	32	36	31	30	280
TUC	12	19	12	12	6	18	14	32	31	28	26	22	232
TOT	1	5	8	5	6	6	6	7	5	8	12	6	75
CAT	-	1	2	1	1	-	1	4	3	6	5	5	29
Total	47	68	62	55	30	67	59	97	109	118	118	103	933

Remarks : Data as of December 2019

7. Monitoring illegal contents and advertising which is against the food and drug laws related to the broadcasting and television services

In order to extend the result of operation to provincial areas effectively, the Office of the NBTC has therefore signed a Memorandum of Understanding (MOU) on regulating the illegal advertising of food, drugs and health products or operating in a manner that exploits consumers in broadcasting, television and telecommunications services, in cooperation with the regulatory and enforcement agencies, which are the Office of the NBTC, the Food and Drug Administration (FDA), the Office of the Consumer Protection Board (OCPB), the Royal Thai Police (RTP) and the Ministry of Digital Economy and Society, on 26 February 2019. The essence of the MoU is as follows: (1) working integration between agencies which focusing on reducing the communication process for transferring information between each other in order to increase the efficiency of law enforcement; (2) the use and exchange of information on the joint operation between agencies, and (3) the public relations to build knowledge and enhance capability of consumers in order to select, purchase and use health products including

the remedy on consumer damages. There was also a press release to inform the public about the progress of operation on resolving problems of illegal advertising of food, drugs and health products with the expectation to increase the efficiency of the handling and resolving the advertising of food, drugs and health products.

In the year 2019, the Office of the NBTC had continuously followed-up and monitored the broadcasting of illegal contents of program and advertising which is considered to be the action that exploits consumers through the collaboration with agencies concerned such as the Office of the NBTC Region/Sub-region, the Food and Drug Administration (FDA), and Provincial Public Health Office (PHO) to take 6 field operations for following-up, receiving problems and obstacles and providing recommendations on the operation for resolving problems on illegal advertising of food, drugs and health products in provincial area level in Phitsanulok, Phetchaburi, Ratchaburi, Songkhla, Chumphon, and Ranong. When any problems or obstacles have been found during the operation, the Office of the NBTC Headquarters, the Office of the NBTC Region and the Office of the NBTC Sub-region throughout the country had held

teleconferences to report problems and discuss solutions together. It was also discussed with the FDA and the Ministry of Public Health for seeking effective ways to protect consumers and be able to summarize

the operation on monitoring of illegal content against food and drugs laws related to the broadcasting and television services. Details are as shown in Table 15.

Table 15 : Results of the operation on monitoring of illegal contents against food and drugs laws related to broadcasting and television services in the year 2019

Action taken	Digital TV	Satellite TV and Cable TV	Broadcasting service
Having monitored and found the advertising of operators that is considered an action which exploits consumers/ FDA or PHO considered guilty	16 persons (73 cases)	67 persons (152 cases)	986 stations (2,118 advertising cases)
Having an administrative order on licensees to temporary suspend the advertising that is considered an action which exploits consumers	15 persons (53 orders)	65 persons (136 orders)	136 stations (141 orders)
Having an administrative order on licensees to suspend the advertising that is considered an action which exploits consumers	9 persons (11 orders)	53 persons (57 orders)	63 stations (63 orders)

Remarks : Data from 1 January to 31 December 2019



Efficiency and effectiveness for consumers' complaints consideration in the broadcasting, television and telecommunications services

The Office of the NBTC has carried out the task on monitoring the customers' complaint receiving in the broadcasting, television and telecommunications services to protect consumers from being exploited by the operators and acknowledge their rights by resolving those problems as well as carrying out the mediation and resolving disputes between consumers and operators in order to maintain a good relationship of the parties. The task also includes developing communication channels of the people to facilitate service users perpetually. In the year 2019, there were significant performance results as follows:

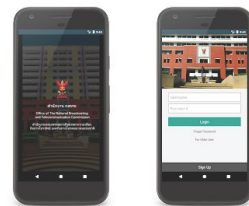
1. Complaints receiving

Having developed and improved the efficiency of the Call Center 1200 of the Office of the NBTC for receiving and resolving complaints in order to upgrade the provision of service to people and consumers, promptly considering and resolving complaints in the broadcasting, television and telecommunications services. The Call Center 1200 will be able to support the service provision to people throughout 24 hours through various channels such as Hotline 1200, Mobile Application NBTC 1200, SMS, Email, Fax, Social Contact, and channels for exchanging information on

complaints related to external organizations, including Government Information Service Center for People "Hotline 1111" Office of the Permanent Secretary, the Prime Minister's Office, and the Office of the Consumer Protection Board (OCPB) "Hotline 1166".



Mobile NBTC 1200



In 2019, the number of complaints receiving through Call Center was decreased when compared to the year 2018 in which the number of complaints was totally 2,005 issues and the top three complaints consists of complaints on mobile phone service for 1,398 issues such as being charged for unsubscribed SMS and SMS Spam, mobile number portability service; followed by complaints on internet service for 294 issues and complaints on installation of mobile phone base stations/radiocommunications stations for 127 issues, respectively. Details are as shown in Table 16.



Table 16 : Complaints receiving through the Call Center of the Office of the NBTC or Call Center 1200 in the year 2019

NO.	Complaint receiving	Number (issues)		Increase / (Decrease)
		The year 2019	The year 2018	
1	Mobile phone service, being charged for unsubscribed SMS / SMS Spam, mobile number portability service	1,398	2,065	(667)
2	Internet service	294	321	(27)
3	Installation of mobile phone base stations/radiocommunications stations	127	180	(53)
4	Others such as request for cancellation of satellite dish service without any charges/ being unable to use basic telephone service, etc.	186	288	(102)
Total		2,005	2,854	(849)

Remarks : Data as of December 2019

Moreover, the number of inquiries from the people received by the Call Center 1200 was totally 74,071 issues, which is increased when compared to the year 2018. The top three inquiries are composed of inquiries on project on the provision of broadband internet service in border areas for 42,404 issues, followed by inquiries on mobile phone service for

7,467 issues such as being charged for unsubscribed SMS and SMS Spam, details of service usage and cancellation of mobile phone service and inquiries on channels for contacting the broadcasting, television and telecommunications operators for 5,852 issues respectively. Details are as shown in Table 17.

Table 17 : Statistic of inquiries from the people received by the Call Center 1200

NO.	Complaint receiving	Number (issues)		Difference
		The year 2019	The year 2018	Increase / (Decrease)
1	Inquiries on project on the provision of broadband internet service in border areas / inquiries on information for viewing digital terrestrial television	42,404	15,579	26,825
2	Inquiries on mobile phone service	7,467	10,205	(2,738)
3	Details of service usage and cancellation of mobile phone service / inquiries on channels for contacting the broadcasting, television and telecommunications operators	5,852	4,776	1,076
4	Others such as inquiries on information for digital terrestrial television / information for licensing procedure of possessing, using, installing radiocommunications equipment, etc.	18,348	16,195	2,153
Total		74,017	46,755	27,316

The Call Center 1200 has also been the center for receiving complaints on the unorganized overhead telecom and broadcast cables and coordinated operators and agencies concerned to resolve the problems soonest, as well as followed up the result of the resolution and informed the complainant. In addition, the Call Center has provided assistance for receiving complaints in the case that people had an accident caused by disorganized overhead telecom and broadcast cables, including monitoring the dissemination of information via social media and sending the information to the Office of the NBTC Region for investigating the area where the incident occurred and meeting with the victims to help as soon as possible.

In the year 2019, the number of complaints of people on disorganized overhead telecom and broadcast cables was totally 3,424 issues which can be categorized by areas of problems found under the responsibility of the Office of the NBTC Region as follows: the Office of the NBTC, Region 1 for 2,256 issues, the Office of the NBTC, Region 2 for 261 issues, the Office of the NBTC, Region 3 for 324 issues, and the Office of the NBTC, Region 4 for 313 issues.

2. Consumers' complaints handling in broadcasting, television and telecommunications services

2.1 Resolving complaints in broadcasting and television service

(1) The Office of the NBTC has handled the complaints on the action which is considered to be an exploitation of consumers in broadcasting and television services according to the process under the prescription of the NBTC Notification on Determination of Procedure and Duration for the Consideration of Request or Complaint in Broadcasting and Television Services and the Notification of the Office of the NBTC on the Action which is considered to be an Exploitation of Consumers in Broadcasting and Television Services B.E.2555 (2012). It is found that the number of complaints in 2019 was totally 73 issues which can be resolved/ended for 68 issues, or accounting for 93.15 percent. Having considered the complaints classified by type of service, it was found that the number of complaints in television service was 70 issues, mostly about cancellation of service provision, changes on terms of service provision without notifying consumers in advance of not less than 30 days, non-refund of unpaid bill to consumers within 30 days as required by law (such as satellite box costs, advance payment for monthly package) and the complaints in broadcasting service for 3 issues. Details are as shown in Table 18.

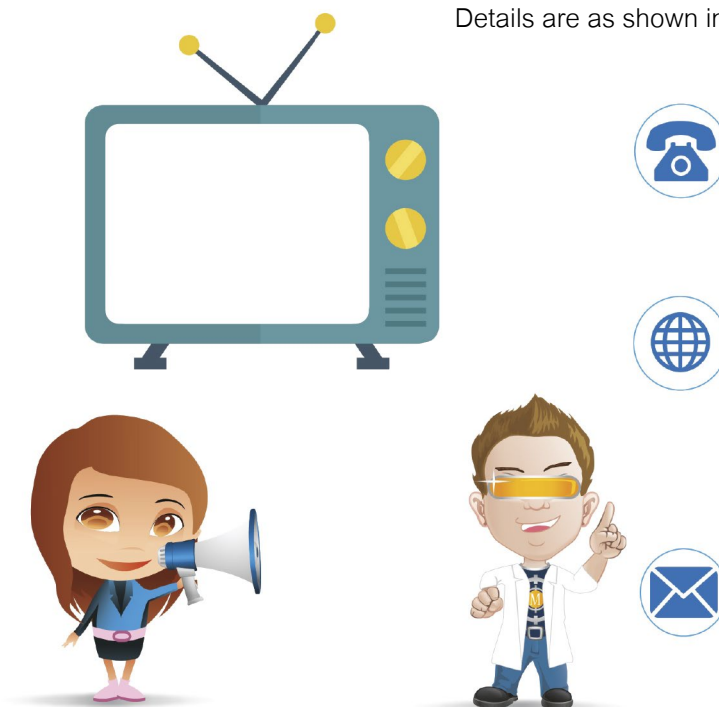


Table 18 : Statistics of complaints concerning the action which is considered to be an exploitation of consumers in the broadcasting and television services

Type of service	Number (issues)	Resolved/Ended		In process	
		Number of complaints	Percent	Number of complaints	Percent
Television service					
1. Digital TV					
1.1 Program channels	3	3	100.00	-	-
1.2 Devices/signal receivers	-	-	-	-	-
2. Subscription service					
2.1 Network					
2.1.1 Satellite box	64	59	92.19	5	7.81
2.1.2 Cable TV	1	1	100.00	-	-
2.2 Program channels	2	2	100.00	-	-
Total	70	65	92.86	5	7.14
Broadcasting service					
1. High power radio broadcasting station (existing operator)	-	-	-	-	-
2. licensees for trial operation					
2.1 Public service	-	-	-	-	-
2.2 Community service	-	-	-	-	-
2.3 Commercial service	3	3	100.00	-	-
Total	3	3	100.00	-	-
Grand total	73	68	93.15	5	6.85

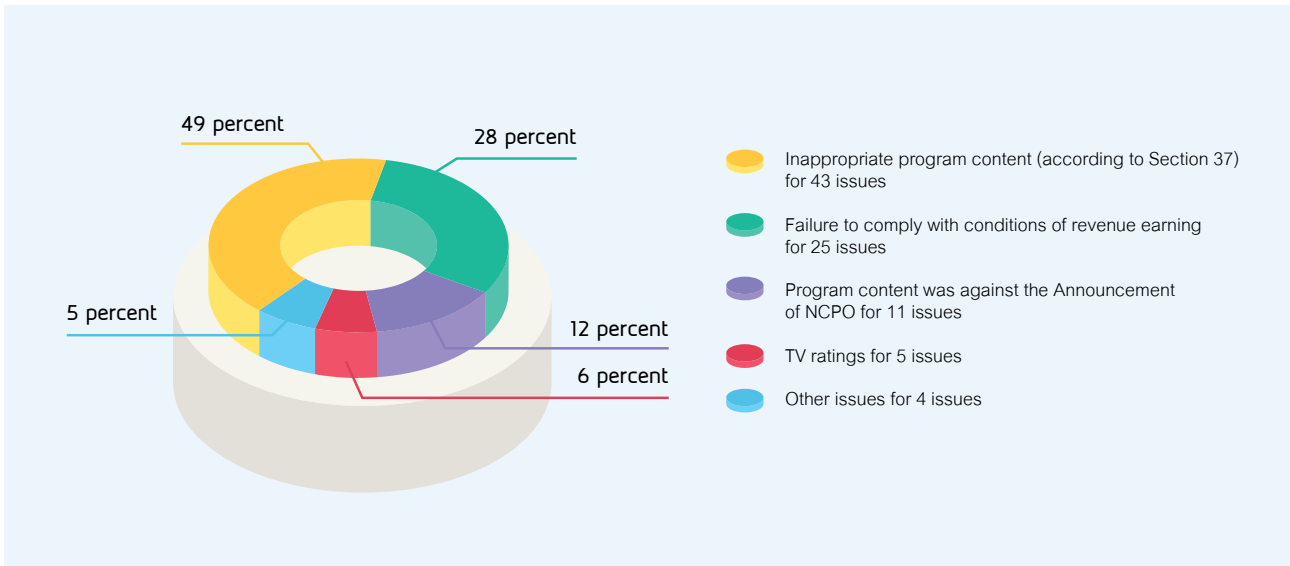
Remarks : 1) Data as of 3 October 2018 - 30 September 2019 as the process of complaints consideration in broadcasting and television service is in accordance with the NBTC Notification on Determination of procedure and duration to be completed for considering the request or complaints in broadcasting and television services which is totally not less than 2 - 3 months.

2) Data of the complaints as of 31 December 2019.

(2) The Office of the NBTC has carried out the complaints on program schedule and content in broadcasting and television services for totally 88 issues which can be divided to 1) digital TV service for 44 issues 2) cable TV and satellite TV system for 8 issues 3) radio broadcasting in trial operation for 32 issues and 4) radio (existing operators) for 4 issues. The highest number of complaints was the issue on inappropriate contents which had been considered in accordance with the legal framework, Section 37 of the Broadcasting Business Act B.E.2551 (2008), such as the content that is against the public order or good morals of the people which is accounted for 49 percent, followed by the issue on failure to comply with the conditions concerning revenue earning of the radio broadcasting (trial operation) for public service and community service and failed to comply with the NBTC Notification on Licensing Criteria for

Radio Broadcasting Services (Trial Operation) B.E. 2555 (2012), which is accounted for 28 percent, the issue on program content that caused confusion, provocation, incitement to conflicts which are against the Announcement of the National Council for Peace and Order No.97/2014 regarding to provide cooperation to the operation of the National Council for Peace and Order and disseminating information to the public, additional amended by the Announcement of the National Council for Peace and Order No.103/2014, which is accounted for 12 percent. the issue of TV rating due to the presentation of sexual content, language and violence, which is accounted for 6 percent, and other issues, which is accounted for 5 percent. As of 31 December 2019, 82 complaints had already been resolved/ended, or accounting for 93.18 percent. Details are as shown in Chart 1.

Chart 1 : Complaint issue on program schedule and content classified by issue



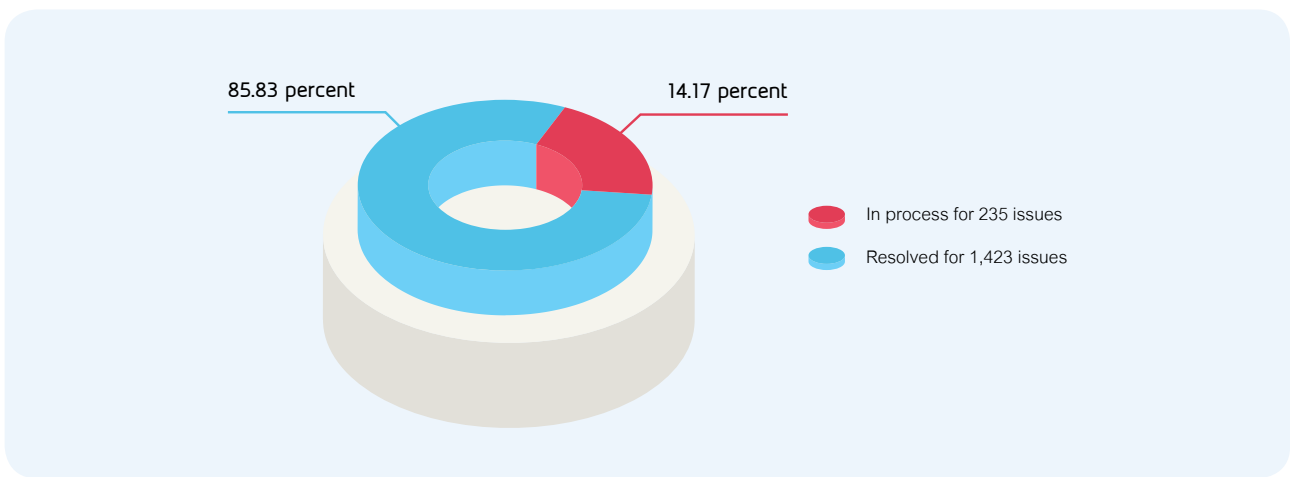
Remarks : Complaints data since 1 October 2018 - 30 September 2019 in which the process of consideration was taken under the NBTC Determination of Procedure and Duration for the Consideration of Request or Complaint in Broadcasting and Television Services

2.2 Resolving problems of complaints in telecommunications service

(1) Having resolved problems of complaints in telecommunications service or those who have suffered from the provision of telecommunications service such as problems on standard and quality of service provision, add-on service, Billing inaccuracy

and cancellation of service. In the year 2019, the number of complaints was totally 1,658 issues in which 1,423 issues were resolved or accounting for 85.83 percent, and 235 issues have been in process or accounting for 14.17 percent. Details are as shown on Chart 2.

Chart 2 : Status of complaints resolving process in telecommunications service



Remarks : Data as of 31 December 2019

Having classified the complaints by type of service, the top-four types of complaints received were (1) mobile phone service for 1,295 issues, accounting for 78.11 percent (2) internet service for 294 issues, accounting for 17.73 percent (3) fixed-line service for

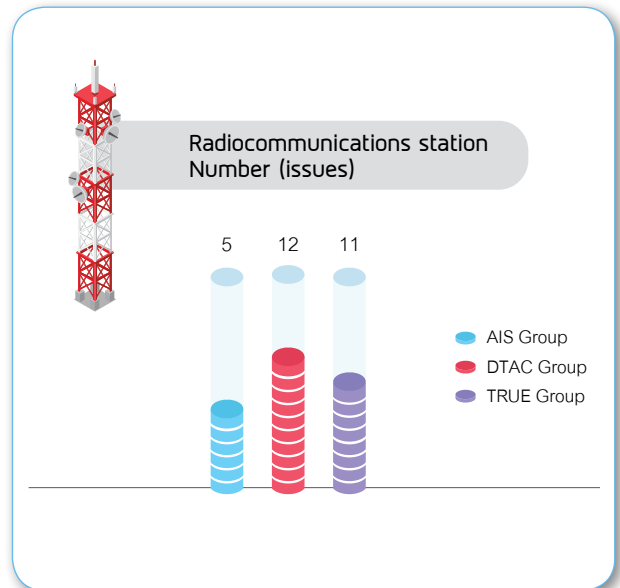
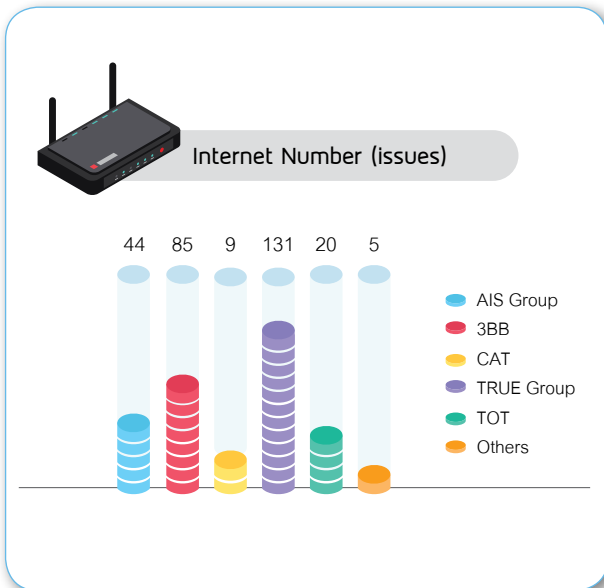
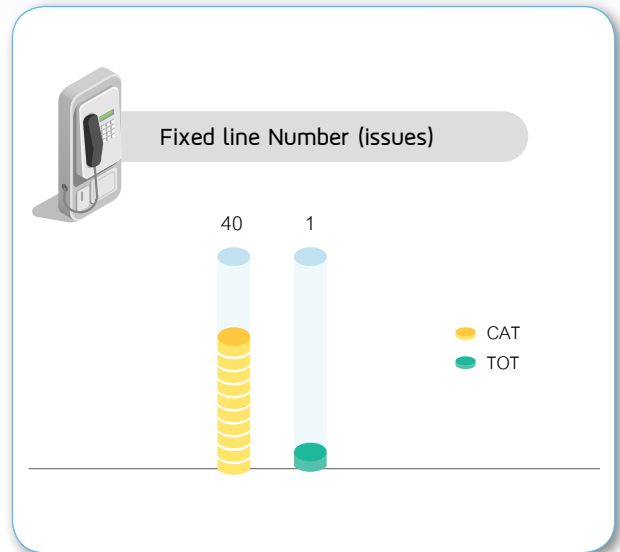
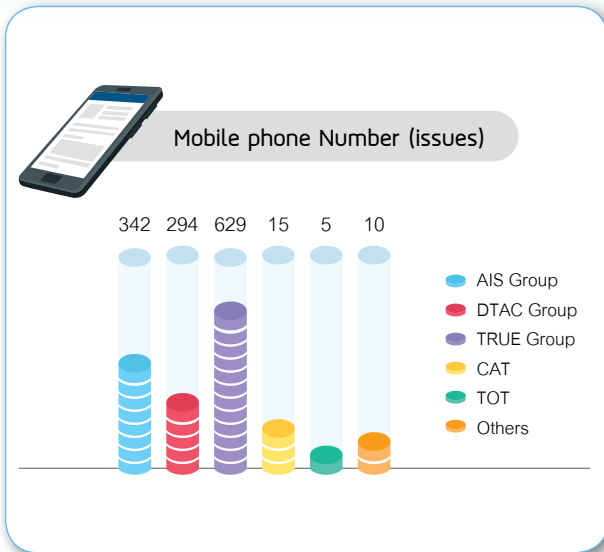
41 issues, accounting for 2.47 percent and (4) radiocommunications stations for 28 issues, accounting for 1.69 percent. Details are as shown in Table 19 and Chart 3.

Table 19 : Status of complaints resolving process categorized by type of service in the year 2019

Type of service	Total complaints		Status of complaints			
	Number	Percent	Resolved/ Ended	Percent	In process	Percent
Mobile phone	1,295	78.11	1,109	85.64	186	14.36
Internet	294	17.73	252	85.71	42	14.29
Fixed-line	41	2.47	34	82.93	7	17.07
Radiocommunications stations	28	1.69	28	100.00	-	-
Total	1,658	100.00	1,423	85.83	235	14.17

Remarks : Data as of 31 December 2019

Chart 3 : Number of complaints of each service provider classified by type of service



Having classified the complaints into 9 issues, the top-three issues received were issue on standard and quality of service provision for 621 issues, accounting for 37.45 percent, issue on billing inaccuracy

for 303 issues, accounting for 18.28 percent, and issue on add-on service for 286 issues, accounting for 17.25 percent. Details are as shown in Table 20.

Table 20 : Status of complaints resolving process categorized by problem issues in the year 2019

No.	Main complaint issues	Total complaints	Status of complaints	
			Resolved	In process
1	Standard and quality of service provision	621	527	94
2	Billing inaccuracy	303	263	40
3	Add-on service	286	261	25
4	Cancellation of services	259	217	42
5	Right of privacy and personal information	85	73	12
6	Validity of service	78	62	16
7	Incorrect/incomplete information provision	14	9	5
8	Access to services	9	8	1
9	Other complaints	3	3	0
Total		1,658	1,423	235

Remarks : Data as of 31 December 2019

(2) Having disseminated the public relations media to educate the public about channels for receiving complaints through Call Center 1200 (free service) so that consumers in telecommunications service and general public living in the provincial areas in all regions of Thailand are able to receive such information and realize of consumers' rights in telecommunications and use telecommunications services worthily and fairly and protect themselves from the violation of their rights.

(3) Having prepared public relations media to educate people about consumer rights in telecommunication service in the form of video infographic media, published on the website. (www.tcp.nbtc.go.th), Facebook and various public

relations media by presenting useful information to consumers such as problems arising from SMS SPAM, press *137 (free service for all network) to cancel the annoying message or unintended subscription, introduction of the mission of the Telecommunications Consumer Protection Bureau, etc.

(4) Organizing the workshop on telecommunications dispute mediation on 28 October 2019 at Ari 1 Meeting Room, 22nd Floor, the Quarter Ari Hotel, Bangkok with a view to providing opportunity for the participants in exchanging knowledge and experiences gained from proceeding the telecommunications dispute mediation and applying to the dispute mediation to be more effectively.

Management of the Broadcasting and Telecommunications Research and Development Fund for the Public Interest

In the year 2019, the major performance of the Broadcasting and Telecommunications Research and Development Fund for the Public Interest under the management of the Fund Management Committee is as follows:

Important performance

1. Strategic Plan Driven

Having reviewed and improved the BTFP Master Plan to be connected and in line with the direction of national development under the 20-Year National Strategy, National Economic and Social Development Plan No.12, Development Plan for Digital Economy and Society, the 20-Year National Research and Innovation Strategy B.E.2560 - 2579 (2017 - 2036), including the NBTC Master Plan which consists of Spectrum Management Master Plan, Telecommunications Master Plan, Broadcasting Master Plan, and Plan for the Provision of Universal Basic Telecommunications Service and Social Service, by organizing a focus group to brainstorm opinions and suggestions on the preparation of the (draft) 4-Year Research and Development Fund Master Plan B.E.2563 - 2566 (2020 - 2023) from relevant agencies such as association, foundations, educational institutions, government agencies and operators in the regional areas: the South region (Songkhla province), the North region (Chiang Mai province), and the Central areas (Bangkok). The 4-Year Research and Development Fund Master Plan is expected to be announced in early 2020.

2. The Fund Allocation

Having allocated fund, according to the Fund's objectives for the public interest and people and to promote and support the fund under the framework as follows:

(1) **The fund grant type 1** Project originating from the eligible person who requested be promoted and supported by the fund according to the Fund's objectives and Section 52 (1) (2) (3) and (4) of the Act on the Organization B.E.2553 (2010) and its amendment or open-end fund for 24 projects at the amount of 143.00 million baht.

(2) **The fund grant type 2** Project focusing on the achievement-based according to the policies of the Fund Management Committee by determining the term of reference at the amount of 326.75 million baht, including supporting the fund in case of making an agreement with government agencies at the amount of 88.97 million baht and the announcement of the additional budget framework in August 2019 at the amount of 200.00 Million baht.

(3) **The fund grant type 3** Projects or operations announced by the NBTC to achieve the objectives of the Fund at the amount of 89.64 million baht for 2 projects, which are the Thailand Luk Thung Song Championship Contest Project, proposed by the Government Public Relations Department at the amount of 30.00 million baht and the Project for the Establishment of 5G Testing/Trial Center in Chulalongkorn University, proposed by Chulalongkorn University at the amount of 59.64 million baht.

(4) **The fund grant type 4** Supporting the operation according to the law on the Thai Media Fund at the amount of 530.00 million baht.

3. Monetary management of the BTFP

The revenue of the BTFP was totally 10,371.48 million baht, which most of the money was received from telecommunications licensees for the operation according to the Plan for the Provision of Universal Basic Telecommunications Service and Social Service, and broadcasting licensees at the amount of 8,258.82 million baht, interests from funds and others, at the amount of totally 2,112.66 million baht; while the Fund's expenditures was totally 9,890.94 million baht which was the spending in the projects according to the Fund's objectives at the amount of 6,105.42 million baht. and another amount of 3,785.52 million baht

for lending to the Office of the NBTC for compensation paid to the digital TV licensees who request to return the licenses prior to the validity date of license while the Fund still has obligations under project agreements at the amount of 45,269.57 million baht. Therefore, the Fund has the remaining money after deducting the obligation as of 31 December 2019 at the amount of 4,359.94 million baht, which the Fund has deposited all cash in commercial banks and specialized financial institutions in the country according to the Regulation of the Fund Management Committee regarding the collection, expenditure, accounting and accounting systems B.E.2555 (2012) and its amendment with an average rate of return at 1.64 percent per year.

4. Follow-up and evaluation

Having established a mechanism to follow-up and evaluate the operation of the Fund as follows:

(1) Having appointed the committee to follow-up and evaluate the research and development project in broadcasting, television and telecommunications services for public interest to follow-up and evaluate the results of the expenditures to be in accordance with the objectives of the BTFFP including inviting the grantees to report the progress of the projects to the Sub-committee's meeting.

(2) Having required the fund grantees to submit the project progress report and the expenditure report according to the period specified in the fund grant contract agreement

(3) Having appointed the committee to examine and accept the research results consisting of experts in related fields to supervise the results of the project implementation according to the fund grant contract agreement to be effective and achieve the projects' objectives including approving the projects' outcome delivered by the grantees.

5. Promoting the image of the BTFFP

Having published and disseminated information on policies, role and duties, mission, and performance including the preparation of executive interviews to be published to the public through various

communication channels in order to enhance knowledge and understanding of the operation of the Research and Development Fund as follows:

(1) Selecting printed media and online media in each target group so that the information can be disseminated in the widest area.

(2) Ranking news of the public relations to reach the target audience continuously, comprehensively and effectively.

(3) Organizing activities by inviting the media from various fields to study visit the projects granted by the BTFFP, which received a very good feedback from the media in posting a press release on the project to develop technology prototypes that help improving the quality of emergency medical services in rural areas in various media whether printed media, television or online media.

(4) Having collected and published the manual for the BTFFP's scholarships application to be used as guidelines for the implementation under the contract for the grantees either in the part of the scholarship application, making a scholarship agreement, implementation under the contract, finance and accounting operations, project closure, and breach of contract, in order to disseminate to the public for their acknowledgement and understanding of the Fund raising process.

In addition to the public relations, in the year 2019, the BTFFP has established the academic cooperation with the International Telecommunication Union (ITU) for the 3rd year with the objectives to enhance knowledge and potential of the applicants for research scholarships, researchers, lecturers, representatives from agencies, foundations, organizations, associations and other agencies applying for the promotion and support of the fund from the BTFFP on the issues of new technology to the future high speed internet technology. In the year 2019, the BTFFP and ITU had organized a training on "Building Distributed Ledger Technologies (Blockchain) Projects".

Follow-up of efficiency and effectiveness

The efficiency and effectiveness of the BTFP's operation in 2019 are as follows:

1. Efficiency

(1) The Fund allocation to support the implementation of projects under Section 52 is efficiently by achieving the specified target number of projects and being able to save costs which the BTFP had announced to promote and support the fund grant type 1 in the year 2019 under the allocation budget framework of 300.00 million baht through the selection of organization appropriate to be promoted and supported including having reduced the budget to be appropriate with the amount of work by taking into account the maximum benefit of the budget expenditure, and proposed the consideration results to the NBTC for consideration and approval.

In the year 2019, there were 22 projects of those who deserved to be promoted and supported at the allocation budget of 130.70 million baht from the total amount requested for being promoted and supported of 200.04 million baht, in which the budget could be reduced and saved for 69.34 million baht, or accounting for 35 percent. In this regards, there are 2 projects being under the consideration of the NBTC, namely, the project to develop an assessment system for the elderly classification in order to design facilities equipment used in the daily life of the elderly and develop a Smart EMS system for being used as a safety warning system for the elderly caregivers and the monitoring system for the quality of the traffic surface by using machine learning which retrieving data from vehicles' sensor passing through the IoT network. Details are as shown in Table 21 and Table 22.

Table 21 : Projects which had been approved by the NBTC

Unit : million baht

No.	Projects	Budget requested for allocation	Budget approved	Details
1	Project to develop a pilot integrated platform for providing sign language interpretation for the hearing impaired	6.95	5.14	To develop a pilot integrated platform for providing sign language interpretation service that is suitable for the needs of the hearing impaired.
2	Project on Internet Learning Center to enhance knowledge of the elderly to use the information system for improving the quality of life	8.83	8.82	Having established the Internet Learning Centers for 4 elderly social welfare development centers to enhance knowledge of the elderly and provide opportunity for accessing the information system easier and more convenient, which make the elderly a broaden worldview, receive a variety of information and better quality of life.
3	Digital technology learning center pilot project (Digital Native)	14.92	7.27	Developing 2 prototype internet centers (Digital Native) and digital economy communities in Zone C areas that has no access to electricity (Pilot)
4	Training project for promoting young IT technologists	3.55	3.49	Conducting training on Tech Start Up for 120 students throughout the country and organizing the pitching contest

No.	Projects	Budget requested for allocation	Budget approved	Details
5	Media knowledge development project in broadcasting and television services	7.59	6.96	Conducting training to enhance knowledge in various fields to senior and middle-level executives of agencies involved in radio, television, and mass media for 110 persons
6	Project on "White Television Awards"	16.15	8.49	Conducting a television award contest for 20 awards.
7	Project on "Development Skill for Future Data"	3.29	1.30	Conducting training for 50 freelance journalists and students who are interested in becoming young journalists on the quest for facts in making news.
8	Creative digital media contest project to stop bullying in the online world (student level)	1.00	0.69	Conducting training on cyber bullying for 400 students in Phitsanulok province, and organizing a media contest.
9	Project to develop national readiness of wireless communications in the 5G era, the 2 nd episode, massive MIMO technology and high-precision positioning use case	1.66	1.65	Conducting training on technologies used in the standard of wireless communications in the 5G era and high-precision positioning use case for students, professors, researchers and practitioners for 500 persons
10	Project on digital technology marketing strategy to support Thailand 4.0	2.00	1.97	Conducting a training of 100 students in the 3 rd and 4 th year on Digital Marketing, producing 20 learning materials.
11	Training on Professional Freelance Journalism for Television (PFJT) for professional freelance television reporters	1.49	1.42	Conducting training for 40 news editors, reporters on producing news independently
12	Project for producing and developing human resource on infrastructure to prepare for the digital age	19.64	10.42	Conducting training for 500 technicians and instructors throughout the country on fiber optic.
13	Project on knowledge development in online social media for creative benefits	9.60	5.51	Conducting training for 120 government personnel in the 3 provinces of the Southern border areas on the preparation of social media

No.	Projects	Budget requested for allocation	Budget approved	Details
14	Developing online educational materials on positive raising children for parents to develop potential of Thai children and prevent the effects of electronic media on children and teenagers.	5.00	4.73	Studying, collecting and analyzing data for the production of online educational materials on positive raising children for parents through a variety of formats and channels such as Facebook/YouTube channel; conducting trainings in 4 regions and e-Training for parents including producing storybooks for early childhood and comic books on the effects of electronic media on children and adolescents for children from school age in both normal book format and e-Book in order to provide parents and guardians with right attitudes, knowledge and understanding about the positive raising children, and be aware of the effects of electronic media on children and teenagers
15	Project to develop a technology prototype that help connect operators' health data via high-speed digital networks.	10.00	6.77	Developing a technology prototype system (data center system), a smartphone consultation system, a virtual technology consultation system via tablet which cover a various and appropriate medical consulting styles for the use in aviation medicine of either the Air Force or the hospitals of the Air Force.
16	Project for research, development and establishment of the Center of Thailand Telecommunication CERT	26.24	18.85	Establishing the Center of Thailand Telecommunication CERT (TTC-CERT) by developing a data exchange platform that connects to the threat intelligence feed, and disseminating knowledge about the use of telecommunications service to the public. The TTC-CERT will act as a center for information exchange between members to be able to jointly monitor cyber threats to the telecommunication industry effectively.
17	An application for building a large agricultural farm, data management, production and marketing for farmer Network	5.59	4.50	Developing an application for data management of production and marketing for farmers' networks that is able to serve farmers' networks in collecting the agricultural product information in their own group for increasing efficiency in the management such as transportation, public relations on sales and production planning together. This allows the relevant agencies to plan for supporting agricultural products effectively.

No.	Projects	Budget requested for allocation	Budget approved	Details
18	Innovation for the development of digital citizenship skills in information technology security for the elderly	3.95	3.52	Conducting a study on digital citizenship skills in information technology security for the elderly by taking in-depth interviews of experts, and conducting surveys of the group of the elderly by using online inquiries in order to design innovative communication in information technology security for the elderly (AL-Chatbot) to get an appropriate content and model of innovative communication, along with providing policy recommendations for driving the safe use of information technology among the elderly in Thailand.
19	Project on Intelligent Medical and Monitoring System for Patients Baby and Elderly with Low Cost Wireless Body Area Sensor Devices	3.68	3.48	Building smart devices to support the Medical Hub system to be used in service provision and health promotion by installing wireless sensors and various vital signal monitoring systems on the body of patients, infants and the elderly, and automatically sends alert information to users, doctors and healthcare workers when it found abnormal signal from the initial measurement of the patient or the elderly. This can be used in both hospitals and homes.
20	Research and development of radar system for drone detection to prevent unauthorized drone flight.	11.00	9.97	Conducting research and development of an innovative radar system to search and arrest unauthorized drone in drone flight prohibited areas, designing a radar signal processing system for searching and arresting unauthorized drones including developing a prototype of high-frequency transmitters and receivers of drone detection system. The output from the project will be a prototype of a radar detection system which being able to monitor the use of undetected drones and reduce the use of drones in unauthorized areas, including obtaining knowledge body in designing drone detection system for the environment of Thailand
21	Project on the online system for the development of professionals in cyber security	29.78	8.78	Establishing a cyber security learning platform system which has been designed for personnel development on cyber via the internet web-based where users can access to this learning system anywhere at any time. The system is able to accommodate different groups of users and ages as it is designed as an online game-based cybersecurity learning platform that competes among other users. It also has a rating system which make users enjoy themselves and attract attention.

No.	Projects	Budget requested for allocation	Budget approved	Details
22	Development of online library prototype system to support being a smart city in Bangkok areas.	8.13	6.96	Developing online library prototype system to support being a smart city in Bangkok areas in order to create a suitable model for compiling e-Books and link books from multiple databases that meet the needs of users as much as possible, and selecting at least 700 electronic books, including supplying electronic books from the library agency for learning and agencies related in order to encourage reading and learning of people and to support being a smart city in Bangkok areas as well. The researchers have collaborated with 37 libraries for learning in the Bangkok areas to develop and supply books that are most suitable for the needs of the people.
Total		200.04	130.69	

Remarks : Data as of 31 December 2019

Source : Research and Development Fund Bureau, the Office of the NBTC

Table 22 : Projects in process of proposing to the NBTC

Unit : million baht

No.	Projects	Budget requested for allocation	Budget approved	Details
1	Project for developing an assessment system for the elderly classification to design the facilitated equipment in daily life of the elderly and to develop the Smart EMS system for being used as a safety warning system for the elderly caregivers.	19.99	4.44	Conducting a study of guidelines on design and improvement of residences, including suitable facilities in the daily life of the elderly according to environment and life being, developing the Mobile Application system for the elderly caregivers and those concerned as well as establishing a database of the elderly and studying physical characteristics and living behavior of the elderly and related persons in Nakhon Phanom province. The target consists of 100 elderly people in Nakhon Phanom area who voluntarily participate in the project. The results of the study will help relevant agencies in providing basic information on the residences, the elderly, the environment and the living behavior of the elderly in Nakhon Phanom province and to serve as a database for developing projects and activities responsive to the needs of the elderly.

No.	Projects	Budget requested for allocation	Budget approved	Details
2	Surveillance system for traffic surface quality by Machine Learning with sensor data in the vehicle through the IoT network.	49.98	7.86	Conducting a study and developing a prototype of traffic surface surveillance system using artificial intelligence technology to integrate information of multi types and sources, types of surface anomalies and potential causes of anomalies, such as holes, drainage holes that are not aligned with road level, steel plate for temporary road digging, improper retarding itch, improper drainage gutter, etc., and being used for developing a prototype device for detecting anomalies of the traffic surface by using an underpass system. The expected benefits from the project are the government agencies, especially the local administration shall have choices to survey the traffic surfaces in the area of responsibility in a simple and low-cost way, get reliable information with high specificity and apply to resolve on problematic traffic surfaces in real time, prioritize tasks for resolving in a short time, proper use of the repair maintenance budget, and more accurately assess the road construction work performed by the contractor.
Total		69.97	12.30	

Remarks : Data as of 31 December 2019

Source : Research and Development Fund Bureau, the Office of the NBTC

(2) Financial management

The Fund has projected cash flows according to the Fund's money receive and expenditure plans with obligations as necessary in the saving accounts, while the remaining funds are invested in fixed deposits, commercial banks and local financial institutions based on credit risk and liquidity risk to assess the operating results of various banks as the criterion for selecting the bank for each investment in order to get the best return and low risk. In the year 2019, the Fund received an average rate of return of 1.64 percent, higher than the previous year which was 1.51 percent. For the disbursement in the year 2019, the Fund has a disbursement plan of 14,860.67 million baht but can only disburse at the amount of 4,991.74 million baht or accounting for 33.59 percent, lower than targeted because of the disbursement plan in 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) which were high-value project. The disbursement did not comply with the plan due to the difficulty and obstacles of the installation of the services, especially the problem of accessing the area for service installation in forest areas that need to be approved from government agencies in accordance with relevant laws and regulations which an agreement shall be made in details of the types of service points in order to solve problems together both the Office of the NBTC (service users) and the contractors (service provider). In addition, TOT Public Company Limited, partner of contract who provide the services and broadband service under the Contract No.0006/2017, Group 2 (North region) and the Contract No.0003/2017, Group 3 (Northeast region) cannot

deliver the work as the operations have not met the requirements of the contract and are not subject to the fines burden according to the contract. Therefore, the NBTC has terminated the contract. Currently, it is in the process of implementing according to the Government Procurement and Supplies Management Act B.E.2560 (2017) and preparing the new auction.

For the project on the provision of broadband internet service in remote areas (Zone C), it is in the process of reviewing, analyzing and reporting the result of project implementation of the controlling consultant and taking field operation of the procurement acceptance committee for inspection. Details are as shown in Table 23.

Table 23 : The Fund disbursement compared to targets

Unit : million baht

No.	Projects	Target	Actual disbursement	Percent of disbursement
1	Projects that have been allocated according to the mission of the fund	442.74	391.03	88.32
2	Supporting Thai Media Fund	810.00	683.29	84.36
3	Project on the provision of broadband internet service and mobile phone in border areas (Zone C+)	5,258.04	612.50	11.65
4	Project on the provision of broadband internet service in remote areas (Zone C)	6,054.95	1,355.23	22.38
5	Project to support the transition to digital television viewing	1,975.82	1,772.69	89.72
6	Other projects	319.12	177.00	55.46
Total		14,860.67	4,991.74	33.59

Remarks : Research and Development Fund Bureau, the Office of the NBTC

2. Effectiveness

(1) For the Fund's performance in the year 2019, the fund's income was amounted to 4,864.06 million baht, increasing from the previous year at the amount of 151.79 million baht, and the expense was 3,012.71 million baht, increasing from the previous year at the amount of 360.14 million baht. For the financial status of the Fund in the year 2019, the fund's assets was 66,289.75 million baht, decreasing from the previous year at the amount of 2,794.49 million baht, the total liabilities was 60,906.12 million baht,

decreasing from the previous year at the amount of 4,986.36 million baht. However, the Fund still has an obligation under the project contracts for 45,269.57 million baht, with the current ratio of 40.67 times, increasing from the previous year 23.05 times, and better than the general criteria which should not be lower than 1.5 times, and the debt ratio was 0.92 times, decreasing from the previous year 0.03 times, better than the general criteria which should not exceed 1.5 times. Details are as shown in Table 24.

Table 24: Financial statement of the Fund comparison between the year 2019 and 2018

Unit : million baht

	The year 2019	The year 2018 (approved by SAO)	Increase (Decrease)	Percent
1. Performance				
Revenue	4,864.06	4,712.27	151.79	3.22
Revenue from contribution to the Fund	3,953.70	4,069.17	(115.46)	(2.84)
Revenue from deposit interest	884.34	638.18	246.16	38.57
Other revenue	26.01	4.92	21.09	428.40
Expenses	3,012.71	2,652.57	360.14	13.58
Expense for subsidies	3,012.59	2,652.52	360.07	13.57
Depreciation and amortization	0.13	0.05	0.07	136.19
Other expenses	0.00	0.00	0.00	0.00
Revenue over (below) expense	1,851.35	2,059.70	(208.35)	(10.12)
2. Financial status				
Asset	66,289.75	69,084.25	(2,794.49)	(4.05)
Bank deposits	49,629.51	49,148.97	480.54	0.98
Accrued income	8,995.58	8,684.79	310.79	3.58
Other current assets	1,699.45	544.64	1,154.81	212.03
Non-current assets	5,965.22	10,705.84	(4,740.63)	(44.28)
Liability and equity	66,289.75	69,084.25	(2,794.49)	(4.05)
Current liability	1,483.45	3,313.58	(1,830.13)	(55.23)
Long-term debts	59,422.67	62,578.90	(3,156.23)	(5.04)
Equity	2,926.32	2,926.32	0.00	0.00
Revenue over (below) accumulated expense	2,457.32	265.45	2,191.87	825.73
Obligation under project contracts	45,269.57	47,197.56	(1,927.99)	(0.04)

	The year 2019	The year 2018 (approved by SAO)	Increase (Decrease)	Percent
3. Cash flow				
Cash received	10,371.48	16,499.36	(6,127.88)	(37.14)
Cash received from contribution to the Fund	8,988.82	14,598.66	(5,609.83)	(38.43)
Cash received from deposit interest	596.31	596.64	(0.33)	(0.06)
Other cash received	786.35	1,304.07	(517.72)	(39.70)
Cash disbursement	9,890.94	5,749.53	4,141.41	72.03
Payment for subsidies	5,535.06	2,552.06	2,983.00	116.89
Other cash disbursement	4,355.88	3,197.47	1,158.41	36.23
Cash received over (less) payment	480.54	10,749.83	(10,269.29)	(95.53)
4. Financial ratio				
Current ratio (times)	40.67	17.62	23.05	130.82
Debt Ratio (times)	0.92	0.95	(0.03)	(3.15)

Remarks : Data as of 31 December 2019

Source : Research and Development Fund Bureau, the Office of the NBTC

(2) The implementation of the projects that were granted and spent in the year 2019 had achieved the objectives under Section 55 of the Act on Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E.2553 (2010) and its amendment as those projects will drive the development of broadcasting, television and telecommunications services including being a part of the linchpin for the development of Thailand in many dimensions such as economy, society, human resources development, and security.

3. Operational goals in the year 2020

3.1 Goal on driving policies and strategies

In the year 2020, the Fund Management Committee has set the operational goals to push forward the Fund's policy and strategy as follows:

(1) Having announced the Master Plan on Research and Development in Broadcasting, Television and Telecommunications Services in 4 years B.E.2563 - 2566 (2020 - 2023).

(2) Formulation of the Master Plan on Promotion and Development of Personnel in Broadcasting, Television, Telecommunications and Information Technology in 5 Years to be a direction framework for the promotion and support of personnel and to respond to the needs of the labour market in broadcasting, television and telecommunications and information technology truly and sustainably in line with the policy and direction of the country development.

(3) Setting up a budget framework and the fund allocation timeframe in the year 2021, guidelines for procurement of durable articles in projects funded by the Research and Development Fund for grantees who are not government agencies to comply with in order to provide flexibility for the grantees with transparency and accountability which make the worth use of the Fund, including having reviewed and improved the Fund allocation process, such as regulations, announcement, the Fund grant contracts, to be in line with the Fund Management Committee's policy on working proactively.

3.2 Goals on the Fund's monetary allocation

The NBTC has agreed and approved the budget framework and guideline for monetary allocation in the year 2020 as proposed by the Fund Management

Committee at the amount of 1,700.00 million baht, Details are as shown in Table 25.

Table 25 : The Fund's budget framework and guideline for monetary allocation in the year 2020

No.	The Fund's monetary allocation framework in the year 2020	Amount (million baht)
1	Project Type 1 Project or activity originating from the eligible person requested be promoted and supported according to the Fund's objectives (open-wided funding)	300.00
2	Project Type 2 Project prescribed by the Fund Management Committee	900.00
	2.1 Project focusing on the achievement-based according to the policies of the Fund Management Committee (by means of competition contest and beauty contest)	670.00
	- Broadcasting and television service	200.00
	- Telecommunications service	200.00
	- Spectrum management	70.00
	- Research and Development	200.00
	2.2 Continual projects (by having agreement with the granted agencies)	30.00
	2.3 Project focusing on the achievement-based according to the state's policies (In case of making an agreement with government agencies)	200.00
3	Project Type 3 Projects or operations announced by the NBTC to achieve the objectives of the Fund	-
4	Project Type 4 Supporting the operation according to the law on Thai Media Fund according to Section 52 (5) of the Act	500.00
Total		1,700.00

3.3 Goal on follow-up and evaluation of efficiency of the Fund's expenditure

The Fund Management Committee will improve the management system continuously to be more effective and secure than the previous year by managing and maintaining the Fund's monetary to be more growth and secure, the development of rules and regulations related to the operation such as practical guideline for project management and applying information technology to facilitate the operation of the Research and Development Bureau and the Fund grantees. It will also enhance the potential

of personnel of the Research and Development Fund Bureau to be ready to work in accordance with the BTPF's policies and plans towards the goals achievement. The personnel development includes skills and experiences in policy and plan analysis, project analysis and evaluation, finance and accounting, management of research, intellectual property and foreign languages, as well as promoting the public relations on the BTPF performance such as the research granted by the Fund, and information which will be useful to the society and image of the BTFP to be more widely known.

4

Report on Market Situation and Competition

in Broadcasting , Television and
Telecommunications Services in the year 2019



Market situation and competition in broadcasting and television services

1. Market situation of television service in the year 2019

1.1 Advertising value of terrestrial television service in the year 2019

The advertisement value of terrestrial television service in the year 2019 was totally 68,030.53 million baht which can be categorized to the advertising of public television channels at the amount of 4,228.96 million baht, the children, youth and family channels at the amount of 385.34 million baht, the news and

documentary channels at the amount of 1,902.15 million baht, the Standard Definition channels (SD) at the amount of 17,929.16 million baht, and the High Definition channels (HD) at the amount of 43,584.92 million baht. Having considered the advertising value of terrestrial television program in the year 2019 comparing with the advertising value in the year 2018, it is found that the advertising value is likely to increase for approximately 83.31 million baht or increasing 0.12 percent. Details are as shown in Table 26.

Table 26 : Advertising value of terrestrial television service during the year 2018 - 2019

Type of TV channels	2018		2019 ¹	
	Million baht	Percent	Million baht	Percent
Public television channels	4,515.43	6.64	4,228.96	6.22
Children, youth and family channels	623.79	0.92	385.34	0.57
News and documentary channels	2,592.38	3.82	1,902.15	2.79
Standard Definition channels	18,045.28	26.56	17,929.16	26.35
High Definition channels	42,170.34	62.06	43,584.92	64.07
Total	67,947.22	100.00	68,030.53	100.00

Remarks : Data as of 31 December 2019

Source : Nielsen



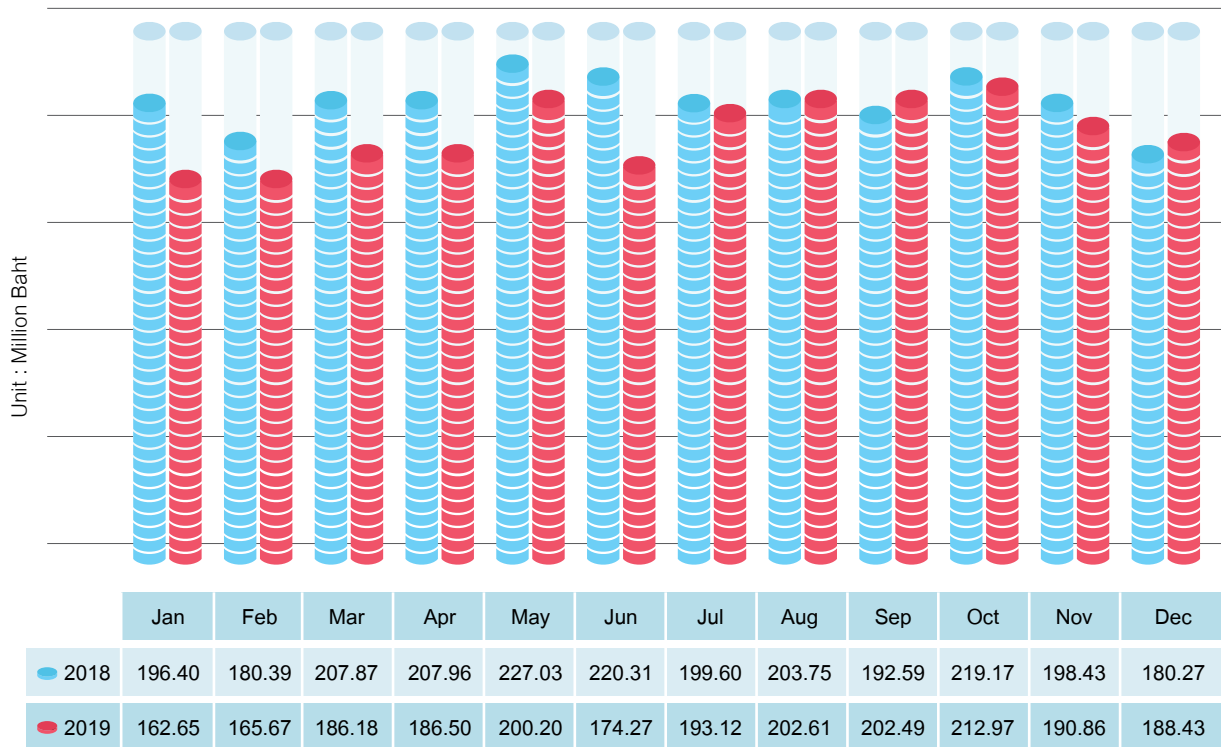
¹ From October 2019 onwards, the database of advertising value of terrestrial television is the data collection of existing 18 program channels except Channel 3 Family, MCOT Family, Spring News, Bright TV, Voice TV, SPRING 26 and 3SD.

1.2 Advertising value on cable/satellite TV in the year 2019

The value of advertising on cable/satellite TV in the year 2019 was totally approximately 2,265.95 million baht, decreasing from the previous year for 168 million baht, or accounting for 7 percent from the

year 2018. This has shown the trend of distributing less money toward advertising had been spread on cable/satellite TV channels. Details are as shown in Chart 4

Chart 4 : Advertising value on cable/satellite TV programs during the year 2018 - 2019



Source : Nielsen

1.3 Behavior of viewing animation media programs² in the year 2019

From the survey of the media consumption behavior of the viewers nationwide³ in the type of viewing animation media, it is found that the main equipment that viewers use is the digital television receivers with a proportion of 33.6 percent, mobile phones with a proportion of 27.2 percent, television receiver (analog television) with a proportion of 20.1 percent and smart TV with a proportion of 11.1 percent.

In addition, some viewers also choose to watch via desktop computers and portable computers with a proportion of 6 percent, and tablets with a proportion of 2 percent.

For the venue of viewing, it is found that the most viewing is from the residences which is up to 93.6 percent, followed by working places at 4.9 percent, while traveling at 1.2 percent, and viewing from other locations at 0.3 percent, respectively. Details are as shown in Table 27.

² Animation media means television program either regular programs which can be live watched according to the broadcast schedule/program schedule and past viewing or viewing as required including videos on demand through websites or applications.

³ Office of the NBTC has conducted a project to survey the behaviors and trends of media consumption in Thailand by having surveyed the sample group of 10,000 households throughout the country, categorized into 5 regions according to the criteria of the National Statistical Office, consisting of Bangkok and its vicinities, central region, northern region, northeastern region, and southern region, and 26 provinces had been chosen for being sample areas of this research.

Table 27 : Behavior of viewing animation media in overall nationwide

Unit : Percent

Behavior of viewing animation media	Nationwide	Behavior of viewing animation media	Nationwide
(N = Number of viewers of animation media)	(8,588)	(N = Number of viewers of animation media)	(8,588)
1. Main equipment that viewers use to view animation media programs		2. Venue of viewing animation media programs	
Digital television receivers	33.6	Houses/residences	93.6
Mobile phones	27.2	Working places	4.9
Television receivers (analog television)	20.1	While traveling/in cars	1.2
Smart TV	11.1	Others	0.3
Desktop computers, Notebooks,aptops, Portable computers	6.0		
Tablets	2.0		
Game players	0.0		
3. Average duration in viewing animation media programs		4. Time period in viewing animation media programs	
More than 2 hours/day - 4 hours/day	36.9	18.01 - 22.00 hrs.	70.9
1 - 2 hours/day	32.6	10.01 - 14.00 hrs.	7.8
More than 4 hours/day - 6 hours/day	15.6	22.01 - 02.00 hrs.	7.8
More than 6 hours/day	7.9	06.01 - 10.00 hrs.	6.9
Less than 1 hour/day	7.0	14.01 - 18.00 hrs.	6.3
		02.01 - 06.00 hrs.	0.3

Source : Office of the NBTC

For the average duration in viewing animation media programs, it is found that most viewers spend more than 2 - 4 hours per day which is the highest proportion of 36.9 percent, followed by spending 1 - 2 hours per day at the proportion of 32.6 percent, while the viewers who spend more than 4 - 6 hours per day have a proportion of 15.6 percent. The others spend more than 6 hours per day and less than 1 hour per day with the proportion of 7.9 percent and 7.0 percent respectively. In this regard,

the viewing time period of most viewers is concentrated in the period of 18.01 - 22.00 hrs. with the proportion of 70.9 percent because the said period is the after work hours so the viewers have free time and be comfortable to view the programs the most while other periods share similar proportion of viewing such as the period of 10.01 - 14.00 hrs. and 22.01 - 02.00 hrs. at 7.8 percent. The period with the least viewers was during the period 02.01 - 06.00 hrs., with a proportion of only 0.3 percent.

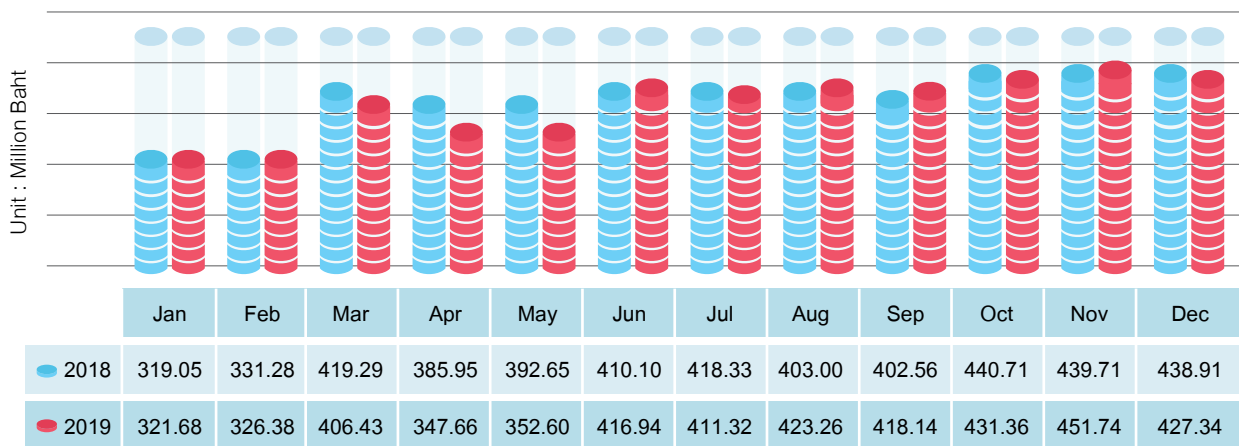
Regarding the type of animation media being viewed in this survey, it is found that most of the viewers, about 84.9 percent, have still watched the live programs according to the broadcast schedule of the television stations, with 49.9 percent being the only live viewers according to the broadcast schedule and another 35 percent is the live viewing according to the broadcast schedule along with on-demand viewing while 15.1 percent is only on-demand viewing. The survey results reflect the importance of television service that has broadcasted according to the regular programming which still has a great influence on people in the age of the advancement of internet technology.

2. Market situation of broadcasting service in the year 2019

2.1 Advertising value in the broadcasting service in the year 2019

The advertising value via the 36 high power radio broadcasting stations in FM system in Bangkok and its vicinities (88.0 - 91.5, 93.0 - 103.5, and 104.5 - 107.0 MHz) in 2019 was 4,735 million baht. However, when the comparison was made to the year 2018, it is found that the advertising value in the year 2018 was approximately 4,802 million baht, higher than the advertising value in the year 2019 for 67 million baht or accounting for 1.4 percent. Details are as shown in Chart 5.

Chart 5 : Advertising expenses via the high power radio broadcasting stations in FM system in Bangkok and its vicinities during the year 2018 - 2019



Source : Nielsen

2.2 Behavior of listening to audio media⁴ in the year 2019

2.2.1 Type of audio media

From the behavior survey of the sampling 10,000 households nationwide, it is found that people listening to audio media, including radio programs, online music and music streaming was 55.6 percent or 5,564 people, while 44.4 percent have no listening to audio media.

The total number of 5,564 audio media listeners throughout the country can be categorized into 3 types consisting of the group of listeners on radio only for 1,815 people or 32.6 percent, the group of listeners on online music or music streaming only for 1,909 people or 34.3 percent, and the group of listeners on both types for 1,840 people or 33.1 percent.

⁴ Audio media means listening to radio programs, online music, and music streaming

2.2.2 Listening to radio programs

From the behavior survey of listening to radio programs, it is found that most audio media listeners or 65.7 percent still receive the media through radio, while 34.3 percent do not listen to the radio program. In addition, the survey had also conducted on behavior of consumers in listening to the radio

program in various dimensions consisting of the main equipment used for listen to radio, frequency that are used for listening to radio programs, channels for listening to online radio, venue, duration and time period of listening to radio program. Details are as shown in Table 28.

Table 28 : Behavior of Listening to radio programs nationwide

Unit : Percent

Behavior of Listening to radio programs	Nationwide	Behavior of Listening to radio programs	Nationwide
(N = Number of radio programs listeners)	(3,655)	(N = Number of radio programs listeners)	(3,655)
1. Main equipment used for listening to radio programs		4. Venue for listening to radio programs	
Home radio/portable radio/car radio	68.9	Houses/Residences	46.6
Mobile phones/tablets (listening via 3G/4G/Wifi)	19.3	While traveling/in cars	41.7
Mobile phones/tablets (receiving radio frequency directly, not using 3G/4G/Wifi)	7.8	Working places	10.9
Desktop computers, Notebooks, Labtops/ Portable computers (Listening to radio via internet)	3.7	Others	0.8
Smart Speakers	0.3	5. Average time in listening to radio programs	
2. Frequency used for listening to radio programs*		1 - 2 hours/day	37.5
FM	85.9	Less than 1 hour/day	36.9
Online radio	17.5	More than 2 hours - 4 hours/day	15.2
AM	11.2	More than 4 hours - 6 hours/day	7.3
3. Channels for listening to online radio**		More than 6 hours/day	3.1
(N = Number of online radio programs listeners)	(632)	6. Time period for listening to radio programs	
Applications	65.9	06.01 - 09.00 hrs.	33.1
Websites	39.7	09.01 - 12.00 hrs.	21.0
		12.01 - 15.00 hrs.	14.2
		15.01 - 18.00 hrs.	9.5
		18.01 - 21.00 hrs.	12.5
		21.01 - 24.00 hrs.	7.0
		00.01 - 03.00 hrs.	0.9
		03.01 - 06.00 hrs.	1.8

Remarks : * One respondent can answer more than one type of frequency

** One respondent can answer more than one online channels

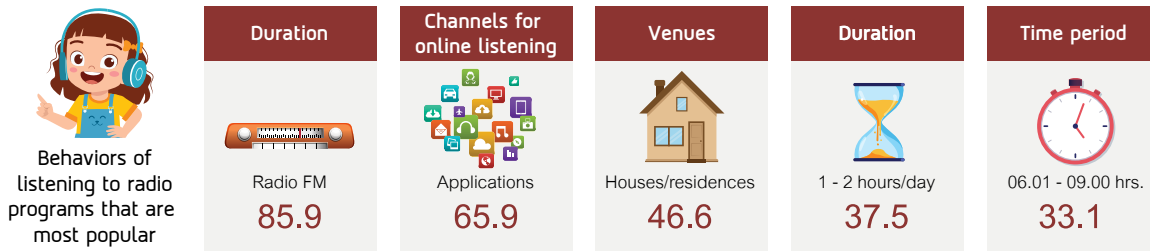
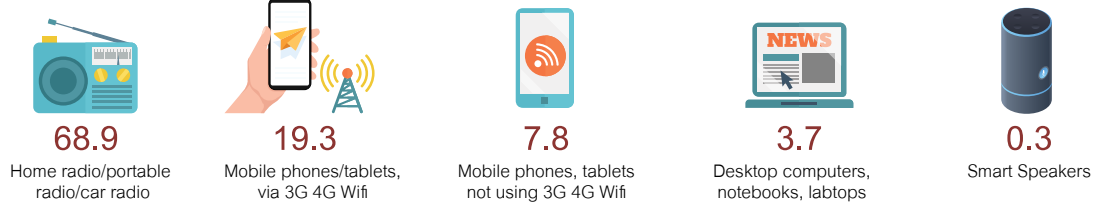
Source : Office of the NBTC



Behaviors of Listening to radio programs nationwide

Main equipment used for listen to radio programs

*Survey results of 3,655 radio programs listeners (Unit : Percent)



- **Main equipment used for listening to radio programs.** From the survey, it is found that most listeners also like to listen to radio programs via radio receivers whether from home radio, portable radio or car radio at 68.9 percent, followed by mobile phones and tablets through the mobile networks either 3G, 4G or Wifi at 19.3 percent, and listen to the radio from mobile phones and tablets at 7.8 percent, listening through the internet, desktop computers, notebooks, laptops and portable computers at 3.7 percent and smart speakers at 0.3 percent.

- **Frequency used for listening to radio programs.** From the survey, it is found that most listeners, or 85.9 percent, like to listen to radio programs via FM system, followed by online radio at 17.5 percent, and AM system at 11.2 percent.

- **Channels for listening to radio programs.** From the survey, it is found that the important channel that the consumers used for listening to radio programs is listening through applications at 65.9 percent, while listening through websites is about 39.7 percent.

- **Venue for listening to radio programs.** From the survey, it is found that most radio listeners still prefer listening to the radio from houses or residences at the proportion of 46.6 percent, followed by listening

while traveling or staying in cars at the proportion of 41.7 percent, while listening to radio at working places has only 10.9 percent.

- **Average time in listening to radio programs.** From the survey, it is found that most radio listeners take about 1 - 2 hours/day in listening to radio programs or with a proportion of 37.5 percent, followed by taking less than 1 hour/day with a proportion of 36.9 percent. This can be seen that the consumers' behavior has not been spent much time on listening to radio programs, which reflected from the proportion of radio listeners exceeding 6 hours per day with a proportion of only 3.1 percent.

- **Time period for listening to radio programs.** From the survey, it is found that the morning period from 06.01 - 09.00 hrs. is the most popular time for the radio program listeners at the proportion of 33.1 percent, followed by the period of 09.01 - 12.00 hrs. with a proportion of 21 percent, while during the day, the period of 15.01 - 18.00 hrs. is the time with the least radio program listeners at the proportion of 9.5 percent. For the night time, the period of 00.01 - 03.00 hrs. is the time with the least radio program listeners with a proportion of only 0.9 percent.

2.2.3 Listening to online music and music streaming through websites or applications

At present, listening to online music and music streaming has been more popular. Data from the survey shows that the proportion of listeners to online music and music streaming is increasing up to 67.4 percent of the total number of audio media listeners with only 32.6 percent that has not listened to

online music and music streaming. In addition, the consumers' behavior has also been surveyed on listening to online music and music streaming in various dimensions such as main equipment used, channels for listening, venues, frequency, duration, and time period, etc., for the better understanding of the behavior of the listeners. Details are as shown in Table 29.

Table 29 : Behavior in listening to online music and music streaming nationwide

Unit : Percent

Behavior in listening to online music and music streaming	Nationwide	Behavior in listening to online music and music streaming	Nationwide
(N = Number of listeners to online music and music streaming)	(3,749)	(N = Number of listeners to online music and music streaming)	(3,749)
1. Main equipment used for listening		4. Frequency of listening	
Mobile phones	83.7	Everyday	37.9
Desktop computers, Notebooks, Labtops/ Portable computers	13.6	3 - 4 days/week	30.3
Tablets	2.2	1 - 2 days/week	19.6
Smart speakers	0.5	5 - 6 days/week	12.2
2. Channels for listening *		5. Average time in listening	
Applications	79.4	1 - 2 hours/day	44.1
Websites	29.7	Less than 1 hour/day	22.5
		More than 2 hours - 4 hours/day	21.3
		More than 4 hours - 6 hours/day	7.8
		More than 6 hours/day	4.3
3. Venue for listening		6. Time period of listening	
Houses/Residences	61.0	06.01 - 09.00 hrs.	13.8
While traveling/in cars	23.1	09.01 - 12.00 hrs.	12.3
Working places	13.8	12.01 - 15.00 hrs.	11.2
Others	2.1	15.01 - 18.00 hrs.	12.5
		18.01 - 21.00 hrs.	27.1
		21.01 - 24.00 hrs.	21.4
		00.01 - 03.00 hrs.	1.4
		03.01 - 06.00 hrs.	0.3

Remarks : *One respondent can answer more than one channel

Source : Office of the NBTC

- **Main equipment used for listening.** The advancement of technology has increased various channels for listening to online music and music streaming. However, the most popular devices used for listening are mobile phones which is accounted for 83.7 percent, followed by desktop computers, notebooks, labtops, and portable computers with the proportion of 13.6 percent, while listening via tablets and smart speaker are accounted for only 2.2 percent and 0.5 percent respectively.

- **Channel for listening.** Since most of the listeners use mobile phones as a major device, the channel for listening has therefore become via the applications with the highest proportion of 79.4 percent while listening through websites has a proportion of 29.7 percent.

- **Venue for listening.** From the survey, it is found that most listeners like to listen to online music and music streaming at houses and residences with the highest proportion of 61 percent, followed by listening during traveling and at the working places at the proportion of 23.1 percent and 13.8 percent respectively.

- **Frequency of listening.** From the survey, it is found that most listeners or about 37.9 percent like to listen to online music and music streaming daily, followed by 3 - 4 days per week with a proportion of 30.3 percent, 1 - 2 days per week with a proportion of 19.6 percent and 5 - 6 days per week with a proportion of 12.2 percent, respectively.

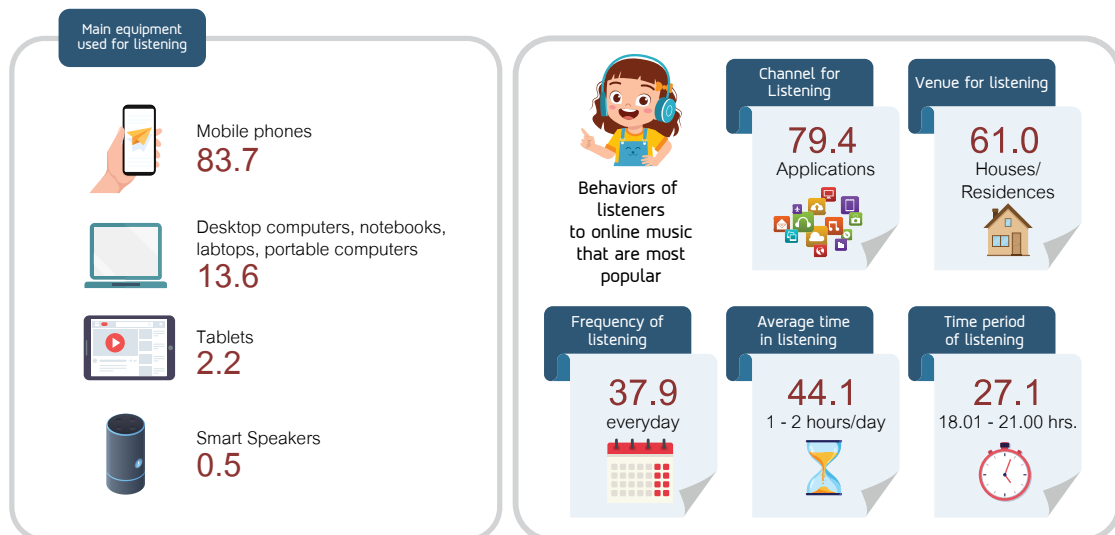
- **Average time in listening.** From the survey, it is found that the behavior of listeners on duration for listening to online music and music streaming is similar to listening to radio programs which most of them take 1 - 2 hours per day in listening at the proportion of 44.1 percent, followed by less than 1 hour per day with a proportion of 22.5 percent and more than 2-4 hours per day with the proportion of 21.3 percent.

- **Time period of listening.** From the survey, it is found that the time period of listening to online music and music streaming and normal radio is different; that is, listening to normal radio is mostly in the morning since it is the listening to programs organized according to the broadcasting program before the beginning of the day. However, listening to online music and music streaming is mostly done in the after work hours during 18.01 - 21.00 hrs. with a proportion of 27.1 percent, followed by 21.00 - 24.00 hrs. with the proportion of 21.4 percent, while the period with the least listeners is after midnight to early morning.

Behaviors of

Listening to online music and music streaming nationwide

* Survey results of listeners to online music and music streaming **3,749** persons (Unit : Percent)



Market situation and competition in telecommunications service

1. Market situation in telecommunications service in the year 2019

The World Economic Forum (WEF), Geneva, Switzerland, has reported the result of global competitiveness ranking of 141 countries around the world from the Global Competitiveness Index (GCI) by considering the country development factors to promote economic growth continuously and sustainably consisting of 103 indicators of assessment criteria which are divided into 12 pillars such as environment in infrastructure institution, environment in macroeconomic, public health and basic education, advanced education and training, efficiency of goods market, labor market, money market development, technology availability, market size, business expertise, and innovation. The result of this ranking found that Thailand has a world ranking from 38th to 40th rank, and ranked 3rd in ASEAN countries, after Singapore that ranked 1st in the world and Malaysia that ranked 2nd in ASEAN countries and ranked 27th in the world. For other countries in ASEAN such as Indonesia ranked 50th, Brunei Darussalam ranked 56th, the Philippines ranked 64th, Viet Nam ranked 67th and Cambodia ranked 106th, etc.

For the 2017 ICT Development Index (IDI) Report which is the indicator to measure the digital divide and compare ICT performance within 176 countries worldwide, it is found that in the recent year Thailand ranked 76th in the world with a better ranking from the previous rank. In ASEAN, Thailand has still remained 4th rank, after Singapore, Brunei Darussalam and Malaysia. However, the key indicators indicate that Thailand ranking is still above the world average and the average of the countries in Asia-Pacific region.

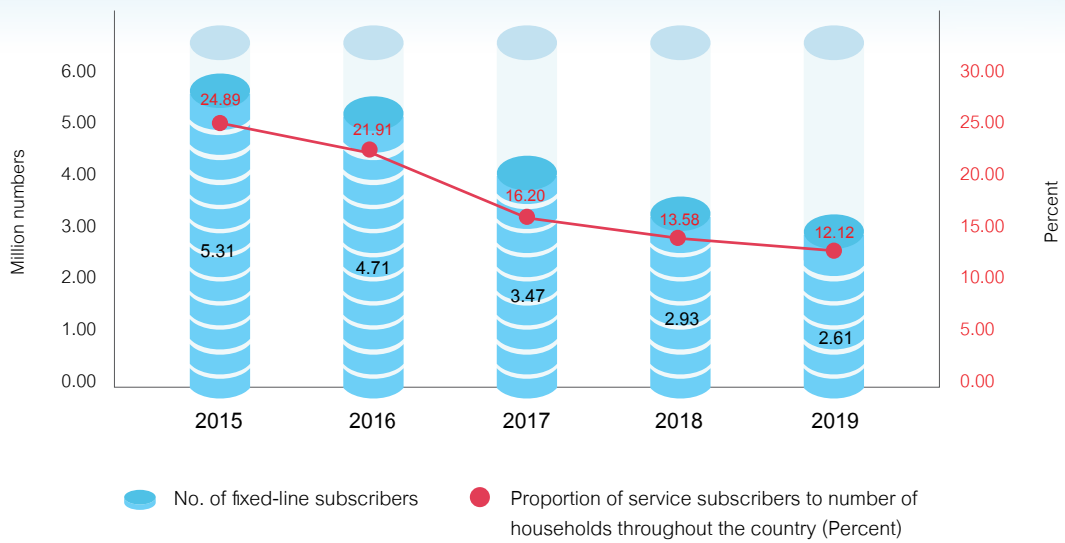
There was only the data of the number of fixed internet subscribers per 100 inhabitants and the usage amount of international internet bandwidth (bits/second) per user which remained lower than the world average. It is expected that the operation of the NBTC in the next phase which having focused on the development of the wired internet infrastructure including the expansion of international internet bandwidth will enhance the potential of a better ICT competitiveness and a better rank of ICT development of the country.

The important market situation can be divided into 3 markets consisting of market of fixed-line service, market of mobile phone service and market of internet service.

1.1 Market of fixed-line service

The number of subscribers in the market of fixed-line service of Thailand in the year 2019 has a constant decrease. In year 2019, the number of subscribers had decreased 2.61 percent when compared to the year 2018 and the proportion of the fixed-line subscribers per the number of households was 12.12 percent. Details are as shown in Chart 6. The market share of fixed-line service is occupied by TOT Public Company Limited (TOT) as it is an incumbent in the market with the main reasons that the nature of the fixed-line business which requires a high investment, thus resulting in a natural monopoly. Besides, there are several limitations under the terms of contract for the entrance to the competition of new operators which made the results of the commercial investment analysis for the fixed-line business unworthy. This includes the market has been fully saturated, situation and the behavior of users that have changed to use substituted services with other technologies to achieve communication objectives for a reason of convenience and lower cost.

Chart 6 : Number of fixed-line subscribers during the year 2015 - 2019

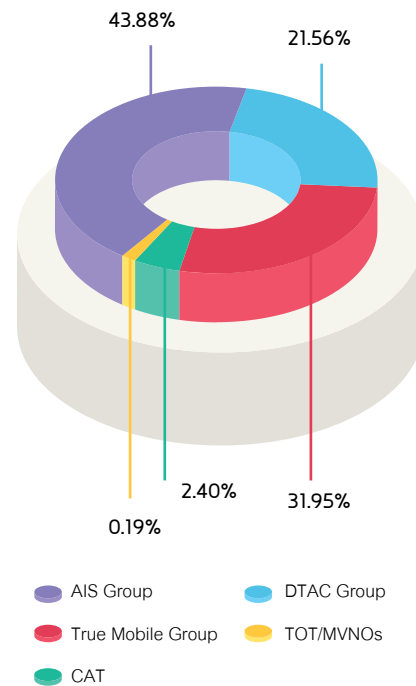


Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

1.2 Market of mobile service

The number of mobile subscribers in the year 2019 was approximately 129.61 million numbers or increasing 3.61 percent comparing to the year 2018. Having compared the number of mobile subscribers to 100 inhabitants, the penetration rate was 190.64 percent and when considering the market share of mobile service in year 2019, it is found that AIS Group held the largest market share of 43.88 percent, followed by True Mobile Group who held the market share of 31.95 percent. Details are as shown in Chart 7. The HHI value of the mobile service market in the year 2019 was 3,418 increasing from the year 2018 which was 3,407.

Chart 7: Market share of mobile service providers in the year 2019



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

1.3 Market of Internet Services

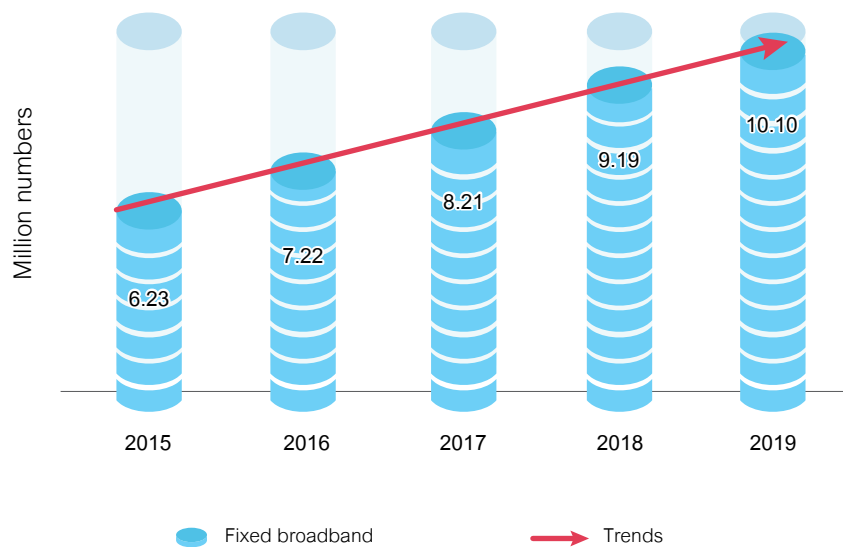
At present, the internet service of Thailand can be provided in various platforms and most internet users have used services through mobile broadband service platform and fixed broadband service platform

(1) Fixed Broadband Service

Nowadays, the market of narrowband internet service is about to disappear from the internet service market such as Dial-up technology, and

the broadband service can be connected to several technologies by switching from technology in the group of xDSL (Digital Subscriber Line) to technology of FTTP (Fiber to the Premises). In 2019, the number of fixed broadband service subscribers was increased to 10.10 million subscribers, or accounting for 9.95 percent when compared to the year 2018. Details are as shown in Chart 8.

Chart 8 : Number of fixed broadband service subscribers during the year 2015 - 2019

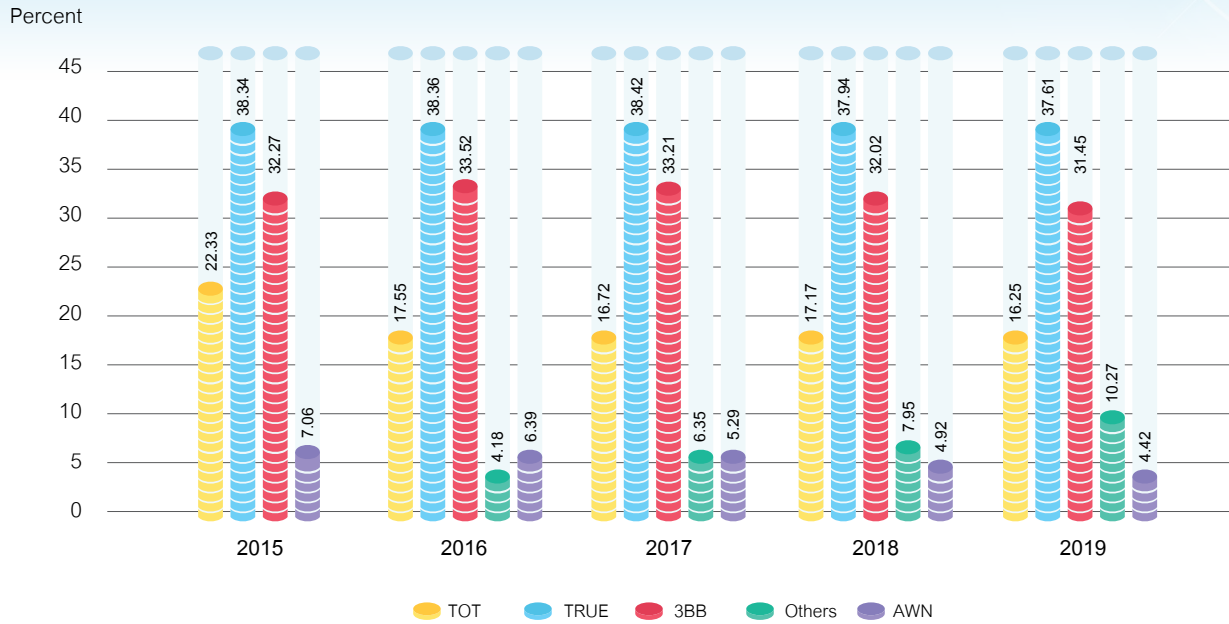


Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

When considering the accessibility, it is found that the proportion of the number of fixed broadband service subscribers was 14.86 subscribers per 100 inhabitants or 46.84 households that have subscribed the service per 100 households throughout the country.

For the market share of fixed broadband service in the year 2019, it is found that TRUE held the largest market share of 37.61 percent, followed by 3BB who held the market share of 31.45 percent, details are as shown in Chart 9. The HHI value in the year 2019 was dropped to 2,793 when compared to the previous year which was 2,847.

Chart 9 : Market share of fixed broadband service during the year 2015 - 2019



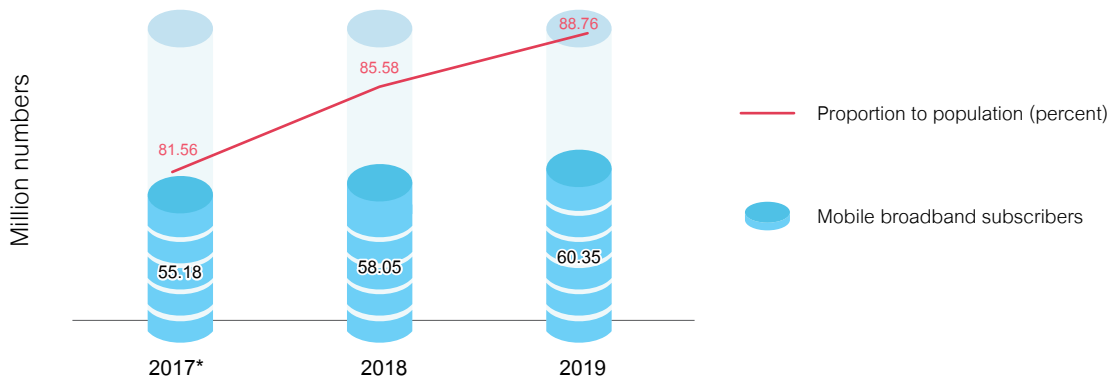
Source : Telecommunications Policy and Resources Management Bureau, Office of the NBTC

(2) Mobile Broadband Service

The number of mobile broadband service subscribers was approximately 60.35 million numbers, or increasing 3.95 percent when compared to the year 2018 with the access rate to the population of 88.76 percent. Details are as shown in Chart 10.

Having considered the market share in the year 2019, it is found that the proportion of AIS Group was the largest at 44.85 percent, followed by True Mobile Group with the proportion of 30.23 percent, and DTAC Group with the proportion of 22.10 percent. Details are as shown in Chart 11. For the HHI value, in the year 2019 was increased to 3,417 when compared to the previous year which was 3,377.

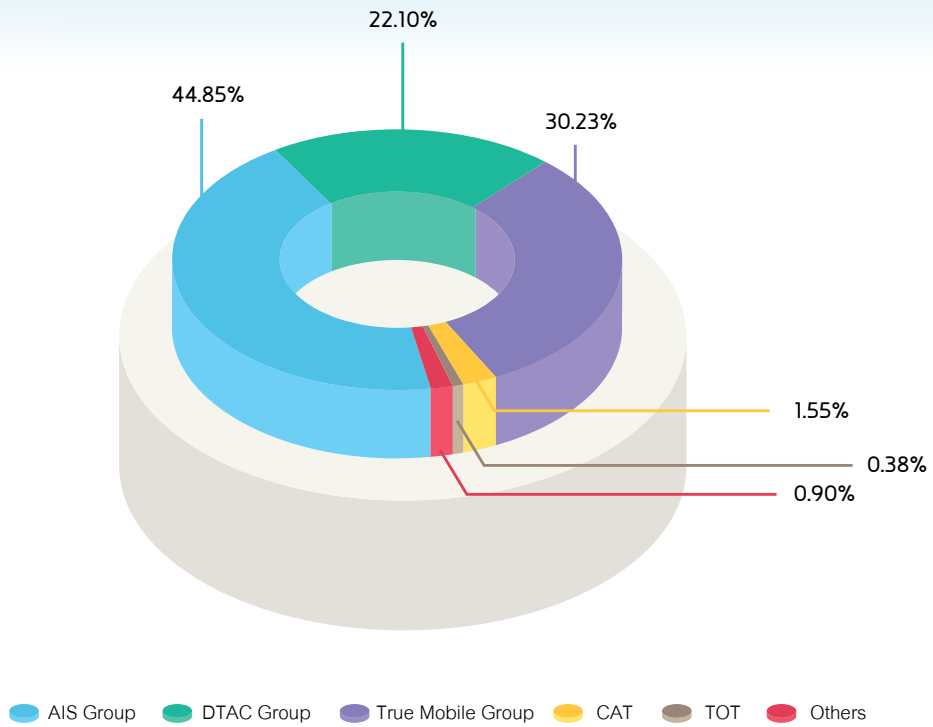
Chart 10 : Number of mobile broadband service subscribers during the year 2017 - 2019



Remarks : *Since 2017, a revision of the calculation of new mobile internet service subscribers has been made in order to comply with the number of mobile phone service registrants.

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

Chart 11: Market share calculated from number of internet service subscribers in the year 2019



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

The observation on the action in the nature of dominance in broadcasting and telecommunications service which has impacted the benefits of the state and people

1. The observation on the action in the nature of dominance in broadcasting and television services which has impacted the benefits of the state and people

The NBTC has revised, and abolished the NBTC Notification on Determination of Characteristics and Regulatory Measures for Mergers, Cross-shareholdings and Dominance in Broadcasting Service with the objective of deregulating the criteria and reducing procedures to comply to a complicated notification by issuing the NBTC Notification on Regulatory Measure on Mergers in Broadcasting Services, publishing in the Royal Gazette on 20 August 2018. The part of broadcasting services dominance has been specified in Chapter 2 Business dominance by persons having mutual interests which is prescribed that if there is any action in a manner of the business domination, either directly or indirectly, done by persons having mutual interests that may result in a monopoly, reduction or restriction of competition, the NBTC may have an order to determine a special measure to prevent the action which is considered a monopoly or a cause to unfair competition. However, in the year 2019, there has not yet evidence of any licensees involving in the action in a manner of the broadcasting business domination, either direct or indirect, which may result in a monopoly, reduction or restriction of competition.

2. The observation on the action in the nature of dominance in telecommunications service which has impacted the benefits of the state and people

The NBTC had regulated the mergers in telecommunications service and carried out activities according to the mergers by issuing the NBTC Notification on Measure to Regulate Mergers in Telecommunications Service publishing in the Royal

Gazette on 19 January 2018. In 2019, there were the operations concerning the business mergers between the licensee who is a company within the group or affiliated company or a business merger between the controlling party and the licensee that is a company within the group or affiliated company as follows:

(1) The mergers between ALT Telecom Co., Ltd. and International Gateway Co., Ltd. through assets transfer at the amount of 612,730,000 baht in which the ALT Telecom Public Co. Ltd., had a letter No. ALT-IG-NBTC-001/2019 dated 11 January 2019 regarding the notification of the transfer and/or merger of assets of the company and the International Gateway Co., Ltd., had a letter No. IG-NBTC-001/2019 dated 11 January 2019 regarding the notification of the transfer and/or merger of assets of affiliated companies, and the Office of the NBTC had a letter No. ONBTC 2502/3544.06 and ONBTC 2502/3544.07 dated 30 January 2019 notifying the acknowledgement of the business merger according to Article 6 of the NBTC Notification on Telecommunication Regulatory Measure and Business Mergers.

(2) The mergers between True Move H Universal Communication Co., Ltd., and Real Move Co., Ltd., through the entire business transfer at the value of 45,370,033,164.63 baht in which the True Move H Universal Communication Co., Ltd., had a letter No. TUC-H/REG/657/2019 dated 2 September 2019 on the compliance to the NBTC Notification on Measure to Regulate Mergers in Telecommunications Service and the Office of the NBTC had a letter No. ONBTC 2572/28664 dated 17 September 2019 notifying the acknowledgement of the business merger according to Article 6 of the NBTC Notification on Telecommunication Regulatory Measure and Business Mergers.

Quality of service and telecommunications service rates that are important to the people

In 2019, the NBTC has regulated the business operation, set up the standard of quality of telecommunications service provision, regulated the structure of the rate of service in order to protect service users in receiving the quality service at fair price as follows:

1. Regulation on quality of service provision

Having monitored the quality of telecommunications service provision both in voice service⁵ and data service⁶ to ensure that the service provision is in line with the standards attached to the NBTC Notification on Standard of Quality of Telecommunication Service Provision (Data Service) via Mobile Telecommunications Network which has been published in the Royal Gazette on 15 May 2018. The notification requires operators to submit the quarterly report on the test of quality of service provision to the Office of the NBTC, as well as taking the field operation to measure the quality of service provision to be in accordance with the standard and quality of telecommunications service provision either voice service or data service via mobile telecommunications network. In addition, the NBTC has monitored the quality of telecommunications service provision both from the report on the test of quality of service provision submitted by telecommunications operators and taking the random tests which can be summarized as follows:

1.1 Monitoring the quality of telecommunications service provision from the report on the test of quality of service provision submitted by telecommunications operators

(1) The quality of service provision (voice service) of telecommunications operators consists of fixed-line service, public payphone service, and long distance call via satellite communications service, it is found that in the year 2019 the quality of telecommunications services (voice service) provided by all service providers⁷ has met the required standards and most service providers have a high standard in service quality.

(2) The quality of service provision (data service) of telecommunications operators consisting of Advance Wireless Network Company Limited (AWN), CAT Telecom Public Company Limited (CAT), True Move H Universal Communication Company Limited (TUC), DTAC TriNet Company Limited (DTN), Total Access Communication Company Limited (TAC), and TOT Public Company Limited (TOT). In 2019, it is found that the quality of telecommunications services (data service) provided by all service providers has met the required standards.

⁵ The quality of service parameters are shown in Appendix of the NBTC Notification on Standard of Quality of Telecommunications Service Provision (Voice Service) which has been published in the Royal Gazette on 29 June 2017, No.134, Special Section 173 D.

⁶ The quality of service parameters are shown in Appendix of the NBTC Notification on Standard of Quality of Telecommunications Service Provision (Data Service) via Mobile Telecommunications Network which has been published in the Royal Gazette on 5 October 2012, No.129, Special Section 152 D.

⁷ 1. Fixed-line service: (1) CAT Telecom Public Company Limited (2) True Internet Corporation Company Limited (True Universal Convergence Company Limited) (3) TOT Public Company Limited (4) FIT Telecom Company Limited, and (5) Triple T Broadband Company Limited
2. Public phone service : TOT Public Company Limited.

3. Mobile service : (1) CAT Telecom Public Company Limited. (2) Real Move Company Limited. (3) True Move H Universal Communication Company Limited. (4) DTAC TriNet Company Limited. (5) Advance Wireless Network Company Limited. (6) Mobile 8 Telco (Thailand) Company Limited. (7) Loxley Public Company Limited. (8) Loxley Mobile Company Limited. (9) The White Space Company Limited. (10) TOT Public Company Limited.

4. Satellite communication long distance call service : Aces Regional services Company Limited.

1.2 Monitoring the quality of telecommunications service provision by the Office of the NBTC

Having monitored and tested the quality of mobile services either voice or data services provided by 5 operators consisting of CAT Telecom Public Company Limited, TOT Public Company Limited, True Move H Universal Communication Company Limited, DTAC TriNet Company Limited and Advance Wireless Network Company Limited, and the test results of quality of mobile service provision whether call setup success rate in the case that the call was made within the same network (Voice On-net) or the call was made across network (Voice Off-net), it is found that the quality of telecommunications service

(Voice service) of all service providers has met the required standards as summarized follows:

(1) The test result of quality of mobile service provision within the same network (Voice On-net) as of the 3rd quarter of 2019 found that the quality of telecommunications service provision (voice service) of all service providers has met the required standards; that is, the success call ratio was 98.90 percent which is higher than the required target (must higher than 90 percent) and the call drop rate was 0.06 percent which is higher than the required target (must lower than 2.0 percent). Details are as shown in Table 30.

Table 30 : Test result of quality of mobile service provision within the same network (Voice On-net)

Measurement Index of Quality of Service	Required target	Test results within the same network (Voice On-net)		
		Q1*	Q2**	Q3**
Successful call ratio (%)	≥90.00	98.59	99.52	98.90
Drop Call Rate (%)	≤2.00	0.00	0.03	0.06

- Remarks: 1) *In Q1 the tests had been done in 4 areas consisting of the Office of the NBTC Region 4 (Songkhla), the Office of the NBTC Region 2 (Khon Kaen), the Office of the NBTC Region 3 (Chiang Mai) and the Headquarter of the Office of the NBTC (Sailom).
- 2) ** In Q2 and Q3 the tests had been done in 13 areas consisting of the Office of the NBTC Region 1 (Nonthaburi), of the Office of the NBTC Region 4 (Songkhla), NBTC Sub-region Office (Prachin Buri), NBTC Sub-region Office (Ratchaburi), NBTC Sub-region Office (Khon Kaen), NBTC Sub-region Office (Roi Et), NBTC Sub-region Office (Ubon Ratchathani), NBTC Sub-region Office (Lampang), NBTC Sub-region Office (Tak), NBTC Sub-region Office (Phitsanulok), NBTC Sub-region Office (Nakhon Si Thammarat), NBTC Sub-region Office (Surat Thani), and the Headquarter of the Office of the NBTC (Sailom)

Source : Telecommunications Enforcement Bureau, Office of the NBTC

(2) The test result of quality of mobile service provision across network (Voice Off-net) as of the 3rd quarter of the year 2019 found that the quality of telecommunications service (Voice service) of all service providers has met the required standards;

that is, the success call ratio was 98.96 percent which is higher than the required target (must higher than 90 percent) and the call drop rate was 0.08 percent which is higher than the required target (must lower than 2.0 percent). Details are as shown in Table 31.

Table 31 : Test results of quality of mobile service provision across network (Voice Off-net)

Measurement Index of Quality of Service	Required target	Test results within the same network (Voice On-net)		
		Q1*	Q2**	Q3**
Successful call ratio (%)	≥90.00	99.27	99.33	98.96
Drop Call Rate (%)	≤2.00	0.00	0.26	0.08

Remarks: 1) * In Q1 the tests had been done in 4 areas consisting of NBTC Sub-region Office (Lampang), NBTC Sub-region Office (Nakhon Ratchasima), NBTC Sub-region Office (Phuket), and the Headquarter of the Office of the NBTC (Sailom)
 2) ** In Q2 and Q3 the tests had been done in 14 areas consisting of the Office of the NBTC Region 3 (Chiang Mai), NBTC Sub-region Office (Samut Prakan), NBTC Sub-region Office (Chantaburi), NBTC Sub-region Office (Suphan Buri), NBTC Sub-region Office (Phra Nakhon Si Ayutthaya), NBTC Sub-region Office (Nakhon Ratchasima), NBTC Sub-region Office (Udon Thani), NBTC Sub-region Office (Nakhon Phanom), NBTC Sub-region Office (Chiang Rai), NBTC Sub-region Office (Nakhon Sawan), NBTC Sub-region Office (Yala), NBTC Sub-region Office (Phuket), NBTC Sub-region Office (Chumphon), and the Headquarter of the Office of the NBTC (Sailom).

Source: Telecommunications Enforcement Bureau, Office of the NBTC

(3) The test results of quality of mobile service provision (data service) had been done by measuring the FTP DL/UL average throughput, FTP DL/UL completed rate, and HTTP completed rate.

In 2019, it is found that the quality of telecommunications service provision (data service) of all service providers has met the required standards. Details are as shown in Table 32.

Table 32 : Test results of quality of mobile service provision (Data Service)

Measurement Index of Quality of Service	Required target	Test results on 3G* technology			Required target	Test results on 4G** technology			
		Q1	Q2	Q3		Q1	Q2	Q3	
FTP DL	FTP mean data rate (Mbps)	≥0.750	5.92	8.21	7.62	≥2.5	10.34	17.03	16.87
	FTP success ratio (%)	≥80	97.86	97.86	98.46	≥80	98.15	99.12	98.15
FTP UL	FTP mean data rate (Mbps)	≥0.300	3.35	4.13	4.16	≥0.5	10.08	11.34	10.08
	FTP success ratio (%)	≥70	99.20	98.59	99.08	≥70	98.83	99.36	98.83
HTTP	HTTP success ratio (%)	≥90	98.91	98.05	99.37	≥ 90	98.53	99.13	98.53

Remarks: 1) *The test on 3G technology in Q1 had been done in 4 areas consisting of NBTC Sub-region Office (Samut Prakan), NBTC Sub-region Office (Lampang), NBTC Sub-region Office (Yala), and NBTC Sub-region Office (Nakhon Ratchasima); and in Q2 and Q3 the test had been done in 13 areas consisting of the Office of the NBTC Region 2 (Khon Kaen), the Office of the NBTC Region 3 (Chiang Mai), the Office of the NBTC Region 4 (Songkhla), NBTC Sub-region Office (Samut Prakan), NBTC Sub-region Office (Chantaburi), NBTC Sub-region Office (Phra Nakhon Si Ayutthaya), NBTC Sub-region Office (Nakhon Ratchasima), NBTC Sub-region Office (Udon Thani), NBTC Sub-region Office (Chiang Rai), NBTC Sub-region Office (Nakhon Sawan), NBTC Sub-region Office (Yala), NBTC Sub-region Office (Chumphon), and the Headquarter of the Office of the NBTC (Sailom).

2) ** The test on 4G technology in Q1 had been done in 4 areas consisting of the Office of the NBTC Region 2 (Khon Kaen), the Office of the NBTC Region 3 (Chiang Mai), NBTC Sub-region Office (Phuket), and the Headquarter of the Office of the NBTC (Sailom); and in Q2 and Q3 the test on 4G technology had been done in 14 areas consisting of the Office of the NBTC Region 1 (Nonthaburi), NBTC Sub-region Office (Suphan Buri), NBTC Sub-region Office (Prachin Buri), NBTC Sub-region Office (Ratchaburi), NBTC Sub-region Office (Roi Et), NBTC Sub-region Office (Ubon Ratchathani), NBTC Sub-region Office (Nakhon Phanom), NBTC Sub-region Office (Lampang), NBTC Sub-region Office (Tak), NBTC Sub-region Office (Phitsanulok), NBTC Sub-region Office (Phuket), NBTC Sub-region Office (Nakhon Si Thammarat), NBTC Sub-region Office (Surat Thani), and the Headquarter of the Office of the NBTC (Sailom).

Source: Telecommunications Enforcement Bureau, Office of the NBTC

1.3 Measuring the quality of service according to the NBTC Notification on Standard and Quality of Telecommunications Service Provision (Voice Service) and the NBTC Notification on Standard of Quality of Telecommunications Service Provision (Data Service) for Mobile Phone Network as follows: (1) fixed service in 23 provinces and (2) mobile service in 74 provinces.

1.4 Measuring the quality of mobile service for the service provision on LTE-Advanced technology or beyond, by having contracted the outsource for testing the quality of mobile phone service for the service provision on LTE-Advanced technology or beyond in 61 provinces, and having tested by the Office of the NBTC in 36 provinces.

1.5 Measuring the quality of mobile service according to special tasks assigned as follows:

(1) Having measured the quality of service during the royal ceremonies for 2 times: (1) during 4 - 6 May 2019 and (2) during 17 - 24 May 2019.

(2) Having supported the measurement of the signal strength along Thailand-Laos PDR borders in the areas of Mukdaharn, Nakhon Phanom provinces, Thailand and Savannakhet District, Khammouane District, Laos PDR for 3 times : (1) during 21 - 26 April 2019 (2) during 10 - 14 June 2019 and (3) during 16 - 20 September 2019.

(3) Having supported the measurement of the signal strength to resolve the problem of frequency interference in the frequency band of 2300 MHz along the borders of Thai-Malaysia, in the area of Narathivas province and nearby areas of Thailand and the areas of the Kedah, Peris, Kelantan State, Malaysia, as follows: (1) during 28 January - 1 February 2019 (2) during 4 - 8 March 2019 and (3) during 21 - 26 July 2019.

1.6 Having issued the NBTC Notification on Standard of Quality of Telecommunications Service Provision which has already been published in the Royal Gazette on 25 October 2019 in order to combine the NBTC Notification on Standard of Quality of Telecommunications Service Provision (Voice Service) and the NBTC Notification on Standard of Quality of Telecommunications Service Provision (Data Service) for Mobile Phone Network into one notification, and

improve some parameters of service quality and service measurement of voice service to be more appropriate. This includes adding some parameters of quality of telecommunications services (data service) via fixed telecommunications network at the same time to be used as a reference framework for regulating the quality of services in Thailand which supports the protection of telecommunication users to receive appropriate quality services. The Notification will come into effect from 1 January 2020 onwards.

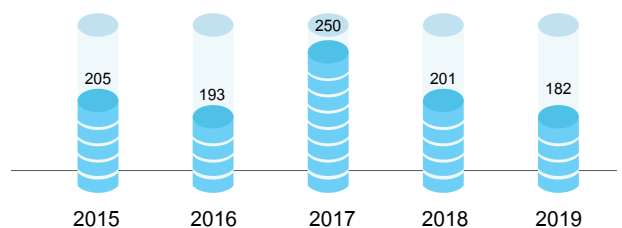
2. Regulation on telecommunications service rate

In 2019, the NBTC had carried out the regulation on telecommunications service rate, the determination of the structure of service rate to be fair for users, and regulated mobile service rate in the frequency band of 2100 MHz, 1800 MHz and 900 MHz to be in line with the licensing conditions including reviewing the rate of telecommunications license fee to be suitable with market environment and promoted mobile service users to be served with cheaper service tariff as follows:

2.1 Rate of fixed-line service

At present, there is only one incumbent of fixed-line service or TOT Public Company Limited (TOT). In 2019, when considering the average revenue per user (ARPU) per month of the fixed-line service of TOT, it is found that there is a downward trend from the previous year which may be caused by the demand for use at home is likely to decrease. At the 4th quarter of the year 2019, the average revenue per user (ARPU) per month per number was 182 baht, decreasing from the year 2018 as shown in Chart 12. However, at present, fixed-line service is still needed especially for the business sector for communication.

Chart 12 : Average revenue per user (ARPU) per month per number of fixed-line service provision



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

2.2 Rate of mobile service

The mobile service providers in Thailand consists of (1) Mobile Network Operators (MNOs) such as Advance Wireless Network Company Limited (AWN), DTAC TriNet Company (DTN), True Move H Universal Communication Company Limited (TUC), CAT Telecom Public Company Limited (CAT), TOT Public Company Limited (TOT), and (2) Mobile Virtual Network Operators (MVNOs). Having monitored and regulated the rate of mobile service of the service providers, it is found that the average rate of mobile service are as follows:

(1) Rate of mobile service in the frequency band of 2.1 GHz

Having monitored and regulated the rate of mobile service in the frequency band of 2.1 GHz to be in accordance with the conditions attached to the telecommunications license, type 3 for International Mobile Telecommunications (IMT) service in which the service rate shall not exceed the service rate as shown in Table 33.

Table 33: Average rate of mobile service in the frequency band of 2.1 GHz in the year 2019

Average rate of mobile service in the frequency band of 2.1 GHz in the year 2019 ⁸				
	Voice service (Baht/minute)	SMS service (Baht/message)	MMS service (Baht/message)	Internet service (Baht/MB)
Rate regulated	0.82	1.33	3.32	0.28
Average rate of service	0.63	1.15	2.89	0.19
Average decrease (%)	-23.17	-13.53	-12.95	-32.14

Source: Telecommunications Tariffs Bureau, Office of the NBTC

(2) Average rate of mobile service in the frequency band of 1800 MHz and 900 MHz

Having monitored and regulated the rate of mobile service in the frequency band of 1800 MHz to be in accordance with the NBTC Notification on Criteria and Procedures for the Licensing to Use the Spectrum for Telecommunications Service in the

Frequency Band of 1800 MHz and the NBTC Notification on Criteria and Procedures for the Licensing to Use the Spectrum for Telecommunications Service in the Frequency Band of 295 - 915 MHz / 940 - 960 MHz in which the rate of service according to the licensing condition shall be lower than the reference rate. Details are as shown in Table 34.

Table 34 : Average rate of mobile service in the frequency band of 1800 MHz and 900 MHz in the year 2019

Average rate of mobile service in the frequency band of 1800 MHz and 900 MHz in the year 2019 ⁹				
	Voice service (Baht/minute)	SMS service (Baht/message)	MMS service (Baht/message)	Internet service (Baht/MB)
Rate regulated	0.69	1.15	3.11	0.26
Average rate of service	0.56	0.94	2.55	0.15
Average decrease (%)	-18.84	-18.26	18.01	-42.31

Source : Telecommunications Tariffs Bureau, Office of the NBTC

⁸ Data of the average rate of mobile service in Q3 of the year 2019

⁹ Data of Average rate of mobile service at Q3 of the year 2019

(3) An overall average rate of mobile service in all frequency bands

From the monitor of mobile service rate of licensees in all three frequency band consisting of

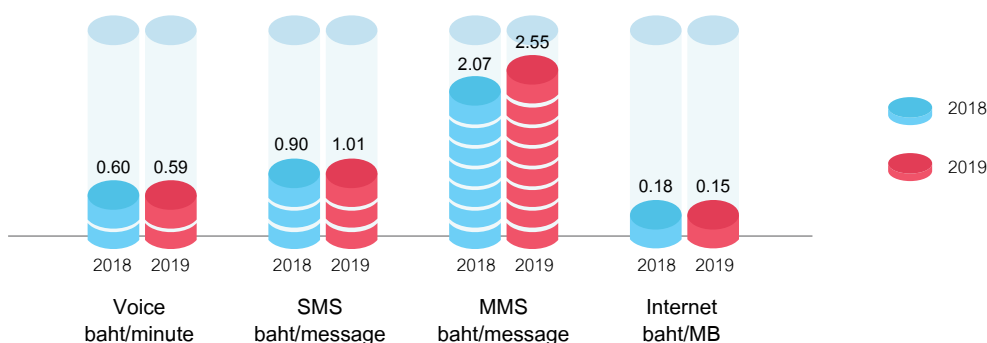
the frequency in the band of 2100 MHz, 1800 MHz and 900 MHz, it is found that during the year 2018 - 2019 the average rate of each service (Voice, SMS, MMS, Internet) are as shown in Table 35 and Chart 13.

Table 35 : Average rate of mobile service in all frequency bands in the year 2019

Average rate of mobile service in the frequency band in the year 2019 ¹⁰				
	Voice service (Baht/minute)	SMS service (Baht/message)	MMS service (Baht/message)	Internet service (Baht/MB)
2018	0.60	0.90	2.07	0.18
2019	0.59	1.01	2.55	0.15
Rate of change (%)	-2.75	12.66	28.51	-6.97

Source : Telecommunications Tariffs Bureau, Office of the NBTC

Chart 13 : Average rate of mobile service in all frequency bands



Source : Telecommunications Tariffs Bureau, Office of the NBTC

When considering the overall rate of mobile service in all frequency bands, it is found that the rate of SMS service and MMS service were increased 12.66 and 28.51 percent respectively when compared to the year 2018. However, the average rate of service is in accordance with the conditions required by the NBTC Notification, while the average rate of voice service and internet service was decreased 2.75 and 6.97 percent respectively when compared to the year 2019.

2.3 Rate of fixed internet service

There are 4 main service providers of fixed internet service consisting of TOT Public Company Limited (TOT), True Internet Company Limited, Triple T Broadband Company Limited (3BB) and Advance Wireless Network Company Limited (AWN). Having considered the rate of high speed internet connected via FTTH in the year 2019, it is found that the rate of internet service is likely to decrease. Details are as shown in Table 36.

¹⁰ Data of Average rate of mobile service at Q3 of the year 2019

Table 36 : Rate of high speed internet service connected via FTTx

Details	2018				2019		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Rate of high speed internet service Connected via FTTx (Baht per Mbps)	10.41	11.09	10.70	10.70	5.38	4.34	4.34

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

3. Regulation of Structure Rate of Domestic Mobile Service

To ensure that the determination of the structure rate of domestic mobile service is fair to service users and providers, in 2019, the Office of the NBTC has formulated the NBTC Notification on Determination and Regulation of Structure Rate of Domestic Mobile Service which has already been published in the Royal Gazette on 22 November 2019 and shall be effective on 1 January 2020 onwards. The objectives

of the Notification are to regulate the structure rate of mobile service to be the same standard in all frequency bands and to support the consumers to use the service at fair service rate. The Notification has prescribed that the licensee shall set up rate of service according to the right to use the rate of all sales promotion programs available or provided in which the average rate must be in accordance with the service rates. Details are as shown in Table 37 and Table 38.

Table 37 : Determination of rate of service according to the right to use the rate of all sales promotion programs available or provided under the NBTC Notification on Determination and Regulation of Structure Rate of Domestic Mobile Service

Type of service	Rate of service *
Voice service	Not exceed 0.60 baht/minute
SMS service	Not exceed 0.89 baht/message
MMS service	Not exceed 2.33 baht/message
Mobile internet service	Not exceed 0.16 baht/MB

Remarks : *The above rate of service is excluded VAT

Source : Telecommunications Tariffs Bureau, Office of the NBTC

Table 38 : Determination of an initial rate of service according to the right to use the rate of all sales promotion programs under the NBTC Notification on Determination and Regulation of Structure Rate of Domestic Mobile Service

Type of service	Rate of service *
Voice service	Not exceed 0.011 baht/minute
SMS service	Not exceed 1.00 baht/message
MMS service	Not exceed 2.45 baht/message
Mobile internet service	Not exceed 0.18 baht/MB

Remarks : *The above rate of service is excluded VAT

Source : Telecommunications Tariffs Bureau, Office of the NBTC

Trends of Broadcasting, Television and Telecommunications Industries in the year 2020

Trends of Broadcasting and Television Industries in the year 2020

In the past few years, the behavior of Thai people in watching television has been changed to the viewing through internet and mobile application (Over the Top (OTT) Platform). The main reason that increases the behavior of watching television programs through the OTT platform arises from the convenience and modernity caused by OTT technology. The technology has broken the limitations of watching traditional programs on television whether time limitation and program schedule, sharpness limitation or even location limitation.

The OTT technology has not only changed the television viewing behaviors of the people, but also changed the environment for terrestrial television business operation. The changing environment has created challenges for digital terrestrial television operators. Among the above challenges, many TV channel operators have planned to adjust themselves such as developing and producing program content to be more interesting in order to attract their customer base, purchasing foreign copyright programs whether movies, series and sports broadcasting, joining collaboration with OTT operators to develop and expand the production of program contents with better quality as well as penetrating various target groups by developing their own online platform.

The adjustment of the digital terrestrial television operators resulting in the development and innovation of content production programs in the television industry. In addition, certain types of program content copyright, such as sports broadcasting, has also drawn the attention of several operators which lead to the competition for the right to broadcast the event through paying a huge amount of money in order to be able to broadcast live sports programs. It could not be denied that the incident created opportunities

for local content producers including copyright owners of program content, on the other hand, the digital terrestrial television business operators have to bear with more cost of the program contents.

Although OTT technology has influenced the digital television industry and changed the people's behavior in viewing television programs, the survey of behavior and trends of Thai media consumption in the year 2019, however, It is found that most of the viewers at 84.9 percent approximately have still watched live programs according to the broadcast schedule of the TV station, 49.9 percent have watched only live programs according to the broadcast schedule, and 35 percent of the viewers have watched live programs according to the broadcast schedule along with on-demand viewing via websites or application, while 15.1 percent have watched only on demand via website or application only. The survey results reflect the importance of television service broadcasting according to the normal program schedule that has still influenced people throughout the country.

For the radio operators, they need to adjust themselves in the same model of the television channel operators; that is, from the survey results of behaviors and trends of media consumption of Thailand in the year 2019, it is found that the trend of listening to online music or music streaming has a higher proportion than listening to radio in general, which means the group that only listens to radio has a proportion of 32.6 percent, while those who listen to online music or music streaming has a proportion of 34.3 percent. The changing behavior of radio listening has created more opportunities for radio business operators to broadcast content and music through online channels and applications.

The above-mentioned listening to online radio and music streaming often reflects the behavior of young people who are currently using the internet and mobile phones as communication devices. However, since most of the population of Thailand is the elderly,

population that is quite hard to change their behaviors. Therefore, the access to radio media through traditional channels such as listening to radio in FM and AM system through radio receiver has still been important.

Trends of telecommunications industries in the year 2020

The telecommunications industries of Thailand has been growth continuously which is the result of an increasing amount of the use of internet, while the internet market has also been intensely competing over the years, resulting in reduced rate of services currently, which means that the speed of sending or receiving data increases while the service rate has remained unchanged. Therefore, even though the number of internet users has continually been increasing and the internet has been used at higher speed but the value generated in the communication market grows at a slower rate; while the behavior of consumers has changed to the communication through social media including receiving news, watching movies, listening to music, searching for information and doing more online transactions. This has pushed the service providers to continually invest for network expansion

in order to be able to support the needs of consumers with increased demand. In addition, in the year 2020, there shall be a 5G spectrum auction which will help increase the potential of the telecommunications industries of the country, including being enable the country's infrastructure to compete with other countries, as well as preparing for the relocation of production bases of various countries such as the United States, Japan and China, to increase the opportunity to access technology and ability to compete in trade, the opportunity to access information and medicine, and also apply technology to develop the agricultural, commercial transportation, and service sectors for the transition to the 5G technology era with stability and sustainable development.



5

Budget Management in the year 2019

The overall performance on budget expenditure of the Office of the NBTC in the year 2019 compared to the year 2018

In 2019, the Office of the NBTC had operated according to the Action Plan and the Budget Expenditure Plan in 2019 for a total amount of 5,549.837 million baht with the status of the annual budget expenditure of the Office of the NBTC as of 31 December 2019 at the amount of 5,019.246 million baht or accounting for 90.44 percent. Having considered the Plan - Result of the budget expenditure in the year 2019, it is found that the overall of the 2019 budget expenditure at the amount of 5,019.246 million baht can be divided into

the result of the budget expenditure for the missions of the NBTC and the Office of the NBTC at the amount of 3,493.890 million baht, or accounting for 90.98 percent, expenditure for projects at the amount of 1,286.242 million baht, or accounting for 88.36 percent, central budget at the amount of 29.114 million baht, or accounting for 66.59 percent, and contribution to the Fund as required by law at the amount of 210.000 million baht, or accounting for 100 percent. Details are as shown in Table 39.

Table 39 : Status of budget expenditure in the year 2019

Unit : Million baht

Items	Fiscal year of 2019		
	Plan	Result	Percent
1. Budget expenditure for missions of the NBTC and the Office of the NBTC	3,840.394	3,493.890	90.98
2. Expenditure for projects	1,455.723	1,286.242	88.36
3. Central Budget	43.719	29.114	66.59
Total (1 + 3)	5,339.837	4,809.246	90.06
4. Contribution to the Fund	210.000	210.000	100.00
Total	5,549.837	5,019.246	90.44

Source : Strategic and Budget Bureau, Office of the NBTC


Having compared the results of budget expenditure of the year 2018 to 2019, it is found that the Office of the NBTC have a better spent of the budget expenditure for the mission of the NBTC and the Office of the NBTC effectively.

In 2018, the budget expenditures was accounted for 77.84 percent of the budget received, and in the year 2019, the result of budget expenditure was accounted for 90.44 percent of the budget received. Details are as shown in Table 40.

Table 40 : Comparison of plan-result of the budget expenditure between the year 2018 and 2019

Items	Fiscal year of 2018			Fiscal year of 2019		
	Plan	Result	Percent	Plan	Result	Percent
1. Budget expenditure for missions of the NBTC and the Office of the NBTC	3,624.355	3,113.126	85.89	3,840.394	3,493.890	90.98
2. Expenditure for projects	2,126.056	871.826	41.01	1,455.723	1,286.242	88.36
3. Central Budget	70.949	4.321	6.09	43.719	29.114	66.59
Total (1 - 3)	5,821.360	3,989.273	68.53	5,339.837	4,809.246	90.06
4. Cash remaining bring forward to allocate for the BTFP Fund	(530.000)	-	-	-	-	-
Total (1 - 4)	5,291.360	3,989.273	75.39	5,339.837	4,809.246	90.06
5. Contribution to the Fund	585.000	585.000	100.000	210.000	210.000	100.00
Total	5,876.360	4,574.273	77.84	5,549.837	5,019.246	90.44

Source : Strategic and Budget Bureau, Office of the NBTC

A person in a dark blue suit and light-colored tie is holding a tablet computer. The background is a blurred office setting with a large window. Overlaid on the image are various financial data visualizations: a bar chart with blue and teal bars, a white arrow pointing upwards, a line graph with white dots and connecting lines, and a network diagram with white nodes and lines. The text "Financial Statement of the Office of the NBTC in the year 2019" is centered in a white box. Other faint text includes "Sep", "1,009", "July", "Aug", and "Sep".

Financial Statement of the Office
of the NBTC in the year 2019

Financial Statement of the Office of the NBTC in the year 2019

The Office of the National Broadcasting and Telecommunications Commission Financial Statement As of 31 December 2019

Unit : baht

	Notes	31 December 2019	31 December 2018 (Revised)	1 January 2018 (Revised)
Assets				
Current Assets				
Cash and cash equivalent	2.3,4	20,467,172,586.31	40,464,262,859.33	19,400,382,454.14
Short-term investment	2.4,5	39,259,005,699.91	42,726,836,153.43	35,064,447,047.99
Receivables from license fee	2.5,6	137,956,519.22	145,420,790.32	149,156,751.48
Accrued income - current portion of long-term loans	2.6,7	75,684,598,215.35	21,959,696,769.97	45,304,151,727.71
Contribution to the Digital Development Fund	21	-	-	7,602,867.22
Prepaid expenses	8	367,389,907.18	9,845,168.35	6,824,432.45
Receivables from spectrum and radiocommunications rental	2.7	26,608,193.60	28,159,920.43	28,430,991.80
Loan receivable according to Section 52 (6) current portion of long-term receivables	9	0.00	1,300,000,000.00	2,000,000,000.00
Other current assets	10	1,815,809,908.27	815,020,534.46	903,593,690.49
Total current assets		137,758,541,029.84	107,449,242,196.29	102,864,589,963.28
Non-current Assets				
Bank deposit with obligation	11	505,673,867.74	500,665,084.04	547,288,177.09
Long-term investments	12	220,276,543.81	217,021,225.43	213,603,568.33
Accrued revenue	2.6,7	117,573,633,000.00	196,027,852,000.00	154,816,802,000.00
Plant and equipment	2.8,13	1,442,735,004.67	1,224,135,308.02	1,311,204,883.70
Ongoing project assets	14	2,178,996,546.00	1,005,795,479.42	-
Financial lease assets	15	198,756,454.13	88,672,433.94	73,316,892.77
Intangible asset	2.9,16	217,638,652.26	308,445,320.09	337,335,209.88
Loan according to Section 52 (6)	9	-	8,400,000,000.00	9,000,000,000.00
Total non-current assets		122,337,710,068.61	207,773,166,850.94	166,299,550,731.77
Total assets		260,096,251,098.45	315,222,409,047.23	269,164,140,695.05

Notes to financial statements are an integral part of these financial statements

The financial statement as of 31 December 2019 has not yet been approved by the State Audit Office of the Kingdom of Thailand

The Office of the National Broadcasting and Telecommunications Commission
Financial Statement
As of 31 December 2019

Unit : baht

	<u>Notes</u>	<u>31 December 2019</u>	<u>31 December 2018</u> <u>(Revised)</u>	<u>1 January 2018</u> <u>(Revised)</u>
<u>Liabilities and Equity</u>				
Current Liabilities				
Creditors and notes payable	17	1,033,185,590.16	1,264,865,435.51	952,893,123.46
Accrued revenue	18	94,684,164.41	109,940,127.91	77,692,122.13
Estimated liabilities for employee benefit	2.14,19	34,005,830.00	36,831,269.00	14,182,480.00
State revenue in transit to the Treasury - current portion of long-term debts	2.11,20	63,818,365,739.86	37,246,726,218.13	42,958,925,066.96
Output tax on spectrum auction in transit - current portion of long-term debts	21	4,362,041,454.01	882,015,009.78	2,048,424,432.43
Contribution to the Digital Development Fund for Economy and Society - current portion of long - term debts	22	2,370,092,690.24	751,061,724.84	-
Financial lease liabilities - current portion of long-term debts	23	72,571,663.09	30,106,086.94	37,797,693.74
Estimated current liabilities of the Must Carry Project	24	365,488,291.00	332,369,974.91	172,134,702.83
Estimated current liabilities of the Mux Project	25	163,150,328.91	276,150,000.00	-
Other current liabilities	26	308,729,875.46	1,771,712,259.68	1,697,615,229.25
Total current liabilities		<u>72,622,315,627.14</u>	<u>42,701,778,196.70</u>	<u>47,959,664,850.80</u>
Non-current Liabilities				
Accrued revenue	2.10,27	59,354,569,238.53	63,981,561,629.84	53,751,498,460.71
Estimated non-current liabilities for Employee benefit	2.14,19	959,535,096.00	870,438,699.00	790,540,702.00
Spectrum and radiocommunications equipment rental held in trust	2.7	26,608,193.60	28,159,920.43	28,430,991.80
State revenue in transit to the Treasury	2.11,20	104,946,855,000.00	176,220,350,000.00	144,688,600,000.00
Output tax on spectrum auction in transit to the Treasury	21	7,691,733,000.00	12,824,252,000.00	10,128,202,000.00
Contribution to the Digital Economy and Society Development Fund	22	4,935,045,000.00	6,983,250,000.00	-
Financial lease liabilities	23	121,228,554.19	61,515,328.96	39,671,195.75
Other non-current liabilities	28	156,744,208.05	155,365,875.13	176,402,786.11
Total non-current liabilities		<u>178,192,318,290.37</u>	<u>261,124,893,453.36</u>	<u>209,603,346,136.37</u>
Total Liabilities		<u>250,814,633,917.51</u>	<u>303,826,671,650.06</u>	<u>257,563,010,987.17</u>
Equity				
Capital		198,325,867.44	198,325,867.44	198,325,867.44
Retained earnings		9,083,291,313.50	11,197,411,529.73	11,402,803,840.44
Total equity		<u>9,281,617,180.94</u>	<u>11,395,737,397.17</u>	<u>11,601,129,707.88</u>
Total Liabilities and Equity		<u>260,096,251,098.45</u>	<u>315,222,409,047.23</u>	<u>269,164,140,695.05</u>

Notes to financial statements are an integral part of these financial statements

The financial statement as of 31 December 2019 has not yet been approved by the State Audit Office of the Kingdom of Thailand

The Office of the National Broadcasting and Telecommunications Commission
Comprehensive Profit and Loss Statement
For the year ended 31 December 2019

Unit : baht

	<u>Notes</u>	<u>2019</u>	<u>2018</u> <u>(Revised)</u>
Revenue from operations			
Revenue from telecommunications service	2.12,29	9,134,845,339.81	72,100,712,773.46
Revenue from broadcasting and television service	30	1,379,260,314.38	1,415,785,334.23
Revenue from the Research and Development Fund	31	2,119,767,355.19	1,653,628,110.48
Other revenues	32	<u>1,081,438,126.19</u>	<u>883,904,299.79</u>
Total revenues		<u>13,715,311,135.57</u>	<u>76,054,030,517.96</u>
Operating Expenses			
Compensation, recompense or remuneration according to the Order of the Head of NCPO	33	3,755,403,060.75	-
State revenue to be delivered to the Treasury	2.12,34	818,523,014.92	53,709,651,600.43
Expenses of the auction	2.12,35	24,063,582.02	21,592,184.90
Contribution to the Digital Economy and Society Development fund	22	1,292,617,535.45	10,850,155,800.40
Human resources expenses	2.19,36	1,630,265,740.65	1,520,366,551.53
Operating expense	2.19,37	1,636,450,806.12	1,405,049,691.24
Public utilities expenses	2.19,38	76,655,795.46	77,675,385.96
Depreciation and amortization	39	603,573,326.54	614,645,216.46
Interest expense from financial lease		5,583,539.73	3,520,558.45
Contributions to Education, Research and Development	2.18,40	361,856,907.35	105,468,495.50
Expense for promoting and supporting the Fund's objectives	41	3,012,580,166.66	1,897,155,276.20
Contributions to Technology Development Fund for Education		<u>10,000,000.00</u>	<u>10,000,000.00</u>
Total expenses		<u>13,227,573,475.65</u>	<u>70,215,280,761.07</u>
Net profit for the period		<u>487,737,659.92</u>	<u>5,838,749,756.89</u>

Notes to financial statements are an integral part of these financial statements

The Office of the National Broadcasting and Telecommunications Commission
Statement of Changes in Equity
For the year ended 31 December 2019

Unit : baht

	<u>Notes</u>	<u>Equity</u>	<u>Retained earnings</u>	<u>Total</u>
As of 1 Jan 2018 (according to the statement reported)		198,325,867.44	10,430,442,159.44	10,628,768,026.88
The effect from updating errors	3	-	<u>972,361,681.00</u>	<u>972,361,681.00</u>
As of 1 Jan 2018 (revised)		198,325,867.44	11,402,803,840.44	11,601,129,707.88
Revenue to be delivered to the Treasury		-	(6,044,142,067.60)	(6,044,142,067.60)
Net profit for the period (revised)		-	<u>5,838,749,756.89</u>	<u>5,838,749,756.89</u>
As of 31 Dec 2018 (revised)		<u>198,325,867.44</u>	<u>11,197,411,529.73</u>	<u>11,395,737,397.17</u>
As of 1 Jan 2019 (according to the statement reported)		198,325,867.44	10,856,887,636.40	11,055,213,503.84
The effect from updating errors	3	-	<u>340,523,893.33</u>	<u>340,523,893.33</u>
As of 1 Jan 2019 (revised)		198,325,867.44	11,197,411,529.73	11,395,737,397.17
Revenue to be delivered to the Treasury		-	(2,601,857,876.15)	(2,601,857,876.15)
Net profit for the period		-	<u>487,737,659.92</u>	<u>487,737,659.92</u>
As of 31 Dec 2019		<u>198,325,867.44</u>	<u>9,083,291,313.50</u>	<u>9,281,617,180.94</u>

Notes to financial statements are an integral part of these financial statements

The Office of the National Broadcasting and Telecommunications Commission
Cash Flow Statement
For the year ended 31 December 2019

Unit : baht

	<u>2019</u>	<u>2018</u> <u>(Revised)</u>
Cash flow from operating activities		
Net profit for the period	487,737,659.92	5,838,749,756.89
Reconciled the revenue over net expense to net cash (expense) from operating activities		
Depreciation and amortization	603,573,326.54	614,645,216.46
Transfer of durable goods from the projects	(2,461,216,500.00)	-
Doubtful accounts (Bad debts receivable)	-	1,384,481.14
Doubtful accounts	6,878,238.22	-
Interest revenue	(433,678,936.18)	(799,554,651.16)
Loss (profit) from the amortization of plant and equipment	519,820.23	6,445.70
Loss (profit) from the cancellation of financial lease contract	(7,169.43)	-
Interest expense	5,583,539.73	3,520,558.45
Expenses for employee benefit	104,102,145.90	116,729,266.00
Profit from operating activities before change in assets and liabilities from operating activities	<u>(1,686,507,875.07)</u>	<u>5,775,481,073.48</u>
(Increase) decrease of change of operating assets		
Fee receivable	586,032.88	2,351,480.02
Accrued revenue	24,729,317,554.62	(17,866,595,042.26)
Prepaid expenses	(357,544,738.83)	(3,020,735.90)
Spectrum and radiocommunications equipment rental receivable	1,551,726.83	271,071.37
Other current assets	(1,290,013,230.44)	126,665,887.46
Bank deposits with commitment	(5,008,783.70)	46,623,093.05
Increase (decrease) of change of operating liabilities		
Creditors and note payables	19,271,512.83)	131,940,782.91
Deferred income	(15,255,963.50)	32,248,005.78
Contribution in transit to the Digital Development Fund for Economy and Society	(429,174,034.60)	7,741,914,592.06
Other current assets	(1,462,982,384.22)	74,097,030.43
Deferred income	(4,626,992,391.31)	10,230,063,169.13
Spectrum and radiocommunications equipment rental held in trust	(1,551,726.83)	(271,071.37)
Output tax on spectrum auction in transit from spectrum auction	(1,652,492,645.77)	1,529,640,667.35
Estimated liabilities of the Must Carry project	33,118,316.09	160,235,272.08
Estimated liabilities of the MUX project	(112,999,671.09)	276,150,000.00
Other non-current liabilities	<u>1,378,332.92</u>	<u>(21,036,910.98)</u>
Net Cash from Operating Activities	13,106,157,005.15	8,236,758,364.61
Cash expense for employee benefit	<u>(17,831,187.90)</u>	<u>(14,182,480.00)</u>
Net Cash from Operating Activities	<u>13,088,325,817.25</u>	<u>8,222,575,884.61</u>

The Office of the National Broadcasting and Telecommunications Commission
Cash Flow Statement
For the year ended 31 December 2019

Unit : baht

	<u>2019</u>	<u>2018</u> <u>(Revised)</u>
Cash flow from investing activities		
Cash expense for short-term investment	3,467,830,453.52	(7,662,389,105.44)
Cash expense for long-term investment	(3,255,318.38)	(3,417,657.10)
Cash receivable from interest	722,902,792.81	764,122,667.39
Cash receivable from loan according to Section 52 (6)	9,700,000,000.00	1,300,000,000.00
Cash expense for plant and equipment	(648,143,389.33)	(323,691,849.87)
Cash expense for ongoing projects assets	1,301,512,812.62	(757,786,996.57)
Cash expense for intangible assets	<u>(162,938,143.67)</u>	<u>(199,201,019.01)</u>
Net cash flow expense for Investing Activities	<u>14,377,909,207.57</u>	<u>(6,882,363,960.60)</u>
Cash Flow from Monetary Acquiring Activities		
Surplus to be remitted as state revenue	(44,701,855,478.27)	(6,044,142,067.60)
Revenue to be submitted to the Treasury	(2,601,857,876.15)	25,819,551,151.17
Cash expense for financial lease contract	<u>(159,611,943.42)</u>	<u>(51,740,602.39)</u>
Net cash flow receive and (expense) for monetary acquiring activities	<u>(47,463,325,297.84)</u>	<u>19,723,668,481.18</u>
Increase in net cash and cash equivalents	(19,997,090,273.02)	21,063,880,405.19
Cash and cash equivalents at the beginning of accounting	<u>40,464,262,859.33</u>	<u>19,400,382,454.14</u>
Cash and cash equivalents at the ending of accounting period	<u>20,467,172,586.31</u>	<u>40,464,262,859.33</u>
Additional cash flow data:		
Non-cash items		Unit : baht
Plant and equipment acquired with outstanding payment	85,460,700.84	46,545.00
Intangible assets acquired with outstanding payment	48,752,090.25	8,262,767.00
Ongoing projects assets acquired with outstanding payment	245,072,977.83	248,008,482.85

Notes to financial statements are an integral part of these financial statements

The Office of the National Broadcasting and Telecommunications Commission
Notes to Financial Statements
For the year ended 31 December 2019
(Unit : Million baht, except as being specified)

1. General Information

The Office of the National Broadcasting and Telecommunications Commission or “the Office of the NBTC” is a juristic person, having a status of a state agency, 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) (the Act on the Organization 2010) to have powers and duties in regulating and developing the broadcasting, television and telecommunications services for the National Broadcasting and Telecommunications Commission, called in short “the NBTC” who has set up policies, criteria, procedures, conditions, fees, and other rules in matters related to spectrum management, licensing and frequency usage regulation, broadcasting, television and telecommunications business operation, telecommunications numbering usage, telecommunications network interconnection or access, prevention of monopoly or unfair competition, consumer protection, and provision of the broadcasting, television and telecommunications universal service. Also, a Fund shall be established under the Office of the NBTC, namely the “Broadcasting and Telecommunications Research and Development Fund for the Public Interest”, called in short “the Research and Development Fund”.

The Headquarter of the Office of NBTC is located at 87 Soi 8 (Sai Lom), Phaholyothin Road, Sam Sen Nai, Phayathai, 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) as follows:

- (1) Spectrum license fees and business license fees under Section 42 paragraph two and Section 45 paragraph three
- (2) Revenues or benefits accrued from the conduct of duties of the NBTC and the Office of the NBTC
- (3) Revenues derived from the Office of the NBTC's property
- (4) Money and property donated to the Office of the NBTC in accordance with the regulation set forth by the NBTC for the operation of the Office of the NBTC
- (5) Subsidies from the government

Revenues of the Office of the NBTC under (1) and (2) after deducting by expenditures for efficient operation of the Office of the NBTC, necessary burden costs, and money allocated for the Fund under Section 52, the Technology Development Fund for Education under the law on national education and the digital Economy and Society Development Fund under the law on digital development for economy and society, shall be remitted as the state revenue.

2. Accounting Policies

The policies of accounting to be used in the preparation of financial statements of the Office of the NBTC are as follows:

2.1 Criteria for financial statement preparation

The financial statement of the Office of the NBTC have been prepared in accordance with the general accepted accounting principles including the accounting standards issued under the Accounting Professions Act B.E. 2547 (2004) including the interpretation and accounting practical guidelines promulgated by Federation of Professions.

The financial statements are recorded on the accrual basis and employed the historical cost basis to measure the value of the component included, except those specifically stated in other accounting policies.

2.2 The standards of financial statement, the interpretation of accounting standards and the interpretation of financial statement have become effective in the current period and in the future. Details are as follows:

Having become effective in the accounting period starting from or after 1 January 2019.

Accounting standards No.1 (amended in 2018)	on Financial Statement Presentation
Accounting standards No.7 (amended in 2018)	on Cash Flow Statement
Accounting standards No.8 (amended in 2018)	on Accounting policies, change of accounting forecast and errors
Accounting standards No.10 (amended in 2018)	on Situation after reporting period
Accounting standards No.16 (amended in 2018)	on Land, plant and equipment
Accounting standards No.17 (amended in 2018)	on Lease agreement
Accounting standards No.19 (amended in 2018)	on Employee Benefit
Accounting standards No.36 (amended in 2018)	on Impairment of Assets
Accounting standards No.37 (amended in 2018)	on Estimated liabilities, contingent liabilities, and contingent assets
Accounting standards No.38 (amended in 2018)	on Intangible assets
Financial report standards No.10 (amended in 2018)	on Consolidated financial statement
Financial report standards No.15 (amended in 2018)	on Revenue from Contracts with Customers
Interpretations of financial report standards No.21 (amended in 2018)	on Money to be delivered to the State

Having become effective on or after the accounting period of 1 January 2020.

Accounting standards No.1 (amended in 2019)	on Financial Statement Presentation
Accounting standards No.7 (amended in 2019)	on Cash Flow Statement
Accounting standards No.8 (amended in 2019)	on Accounting policies, change of accounting forecast and errors
Accounting standards No.10 (amended in 2019)	on Situation after reporting period
Accounting standards No.16 (amended in 2019)	on Land, plant and equipment
Accounting standards No.19 (amended in 2019)	on Employee Benefit
Accounting standards No.36 (amended in 2019)	on Impairment of Assets
Accounting standards No.37 (amended in 2019)	on Estimated liabilities, contingent liabilities, and contingent assets
Accounting standards No.38 (amended in 2019)	on Intangible assets
Financial report standards No.10 (amended in 2019)	on Consolidated financial statement
Financial report standards No.12 (amended in 2019)	on Disclosure of interests in other entities
Financial report standards No.15 (amended in 2019)	on Revenue from Contracts with Customers
Financial report standards No.16 (amended in 2019)	on Lease agreement
Interpretations of financial report standards No. 21 (amended in 2019)	on Money to be delivered to the State

The Federation of Accounting Professions under the Royal Patronage of His Majesty the King has issued Accounting Standards, Standards of Financial Report, new Interpretations of Standards of Financial Report and the amendments which have become effective on the accounting period beginning on or after 1 January 2018. The Executive had assessed the impact of standards and interpretations of such standards and believed that most of them are unchanged in important principles, and will not have any significant impact on the financial statements.

2.3 Cash and Cash Equivalents

Cash and cash equivalents comprise of cash on hand, deposits held at call with banks and cash in bank accounts in classification of less than and 3-month fixed-term account.

2.4 Short-Term Investment

Short-term investment is the cash in bank accounts in classification of 3-month fixed-term account from the date of acquisition but no longer than 12 months.

2.5 Fee Receivables

Fee receivables are shown by estimated net value receivable after deducting the doubtful debts which is estimated from reviewing of outstanding balances at the end of accounting periods.

Allowance for doubtful accounts refers to the difference between the receivable book value comparing to receivable realizable value, doubtful account will be recognized in the statement of comprehensive income and will be considered as an integral part of the expenses.

2.6 Accrued income

Accrued income refers to the annual license fee revenue, calculating from the revenue from the business operation taken in the accounting period of the licensee. The payable will be made once a year, within one hundred and fifty days from the end of the accounting period according to the NBTC Notification on Broadcasting Business License Fee B.E.2555 (2012) and the NBTC Notification on Telecommunications Business License Fee including the revenue from spectrum auction according to Section 42 and 45 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 Announcement of the National Council for Peace and Order No. 80/2014, the Order of the Head of the National Council for Peace and Order No. 76/2016, and the Order of the Head of the National Council for Peace and Order No. 9/2018.

2.7 Receivables of spectrum and radiocommunications equipment rental

The receivables of spectrum and radiocommunications equipment rental are the receivables that the Office of the NBTC collected from debtors on behalf of the Ministry of Finance. The entry will be recorded in double with the spectrum and radiocommunications equipment rental receivables account. When the amount is paid by the debtors, the recorded entry of spectrum and radiocommunications equipment rental receivables account will be transferred to the account of state revenues in transit to the Treasury - the radiocommunications equipment rental and violation fees.

2.8 Plant and equipment

2.8.1 Assets owned by the authority, plant and equipment having shown by cost price deducted by accumulated depreciation and losses result from accumulated impairment.

Cost price includes direct costs associated with acquisition of assets, the cost of construction, the property constructed by the authority itself. This includes the cost of materials, direct labor and other direct costs related to the supply of assets so that those assets are in the right place and ready to be used.

The components of each building and equipment which are varied and different in the use must be recorded separately from each other.

Profits or losses on disposals of plant and equipment are the difference between net returns receiving from the disposals and accounting value of plant and equipment. The net amount will be recognized as income or expense in profits or losses.

2.8.2 Leased assets, The leases that an authority may take the risks and remuneration of possessing the leased assets can be classified by financial lease, plant and equipment acquired through financial lease contracts are recorded as assets by current value of the minimum amount to be paid according to the lease contract, depending on less amount may be, deducted by the accumulated depreciation and losses from accumulated impairment.

The rentals paid will be classified into finance expenses and deduction from the liabilities under the lease contract to ensure that the rate of interest, when compared to the outstanding liabilities in each period, is a fixed rate. Finance expenses will be directly recorded on profits or losses.

Costs incurred afterward

The cost of replacing components will be recognized as a part of the accounting value of the item of plant and equipment. If there is a possibility that the authority will get the future economy-based benefits from that item and be able to reliably measure the cost value of the item, the replaced component will be deleted from the account by the accounting cost value incurred in the regular maintenance of plant and equipment and will be recognized on profits or losses upon the occurrence.

Depreciation is calculated by using a straight line basis over the estimated useful lives as follows:

Type of Asset	Estimated Useful Lives (Year)
Plant and its addition	5 - 20
Electrical and radio equipment	5
Computer equipment	3
Vehicles equipment and transportation	8
Office supplies and others	2 - 15

Criteria for the Recognition of Plant and Equipment

- | | | |
|-------------|---|---|
| 1997 - 2002 | - | Equipments to be recognized as assets must have historical cost from purchasing or acquisition at price per unit, set, or group not less than 30,000 baht. |
| | - | Equipments that purchased or acquired before the year 2007 shall not be estimated for the price but must be recorded in the Asset Control Registration. |
| 2003 - 2007 | - | Equipments to be recognized as assets must have historical cost from purchasing or acquisition not less than 5,000 baht, and be classified according to the durable articles standard account of the Office of the NBTC without having amended the existing criteria. |
| 2008 - 2018 | - | Equipments to be recognized as assets must have historical cost from purchasing or acquisition not less than 10,000 baht, and be classified according to the durable articles standard account of the Office of the NBTC without amended the existing criteria. |
| 2019 | - | Equipments to be recognized as assets must be classified according to the durable or normal condition and having a long service life, un wasteful or unchanged in a short time. |

2.9 Intangible Asset

Intangible assets will be recorded by cost after deducting accumulated amortization and allowance for impairment losses.

The amortization is calculated by using the straight line method according to the estimated useful lives of the intangible assets.

Criteria for the recognition of intangible assets

2010 - 2013	Intangible assets of computer program to be recognized as assets must have its value of not less than 50,000 baht
2014 - 2018	Intangible assets of computer program to be recognized as assets must have its value of not less than 30,000 baht
2019	Intangible assets of computer program to be recognized as assets must have its value of not less than 20,000 baht

2.10 Deferred income

The revenue from spectrum auction for the provision of digital TV services will be recognized as deferred income based on the actual costs of each period in relation provide people with a comprehensive digital television broadcasting service. The unrecognized income will be shown as liabilities in the deferred income account.

2.11 Surplus to be delivered as state revenue

Surplus or benefits accrued from the operation under powers and duties of the NBTC and the Office of the NBTC in any year which had been received in a year after deducting the efficient operating expenses of the Office of the NBTC, other necessary burdens, contributions to the Funds according to Section 52, the Technology Development Fund for Education under the National Education Act and the Digital Economy and Society Development Fund under the Law on Digital Economy and Society Development, the rest must be remitted as state revenue. besides, the Office of the NBTC will bring the residual money from necessary obligations expenses in the previous years in which the operation could not be completed within 2 years remitted as the state revenue including any program or project that has already been budgeted but has not paid or committed within that fiscal year, those program or project shall be folded and the Office of the NBTC shall submit the budget for such program or project as state revenue.

2.12 The revenue from spectrum auction for IMT service in the frequency band of 900 MHz and 1800 MHz after deducting the cost of the auction preparation including interests must be submitted as state revenue according to the Act on the Organization B.E.2553 (2010), Section 45 Paragraph One.

2.13 License fees for the use of spectrum for the provision of digital television services, in category of national commercial services in the 1st installment, shall be submitted to the Research and Development Fund. However, the fee in part of a minimum price will be used for supporting the public to access to the digital television services thoroughly to be in accordance with to the NBTC Notification on Criteria, Procedures and Conditions for the Spectrum Auction for the Provision of Digital Television Services, in Category of National Commercial Services B.E.2556 (2013) and Section 53 (2) of the Act on the Organization B.E.2553 (2010).

However, the revenue from the license fees for the use of spectrum for the provision of digital television services, in category of national commercial services, after deducting the expenses, must be submitted as state revenue according to the Announcement of the National Council for Peace and Order No.80/2014. Besides, prior to the effective date of the Notification, if the revenue from the license fees have not yet been submitted to the Research and Development Fund after deducting the expenses, it must be submitted as state revenue

within fifteen days starting from the effective date of this Notification according to the Order of the Head of National Council for Peace and Order No.76/2016 regarding Measures for Promoting Broadcasting, Television and Telecommunications Business Operation for the Public Benefit. This includes the Order of the Head of National Council for Peace and Order No.9/2018 regarding Measures to Mitigate the Impacts on Radio Broadcasting Service and Television Business Operators by having suspended the payment of the license fees for the use of spectrum which shall not exceed three years and the licensee shall pay the interests on the due date of the license fee payment in each installment to the Office of the NBTC at the same rate of the interest rate policy prescribed by the Financial Policy Committee, Bank of Thailand and the Order of the Head of National Council for Peace and Order No.4/2019 on Measures to Solve Problems of Television and Telecommunication Business Operation by having exempted the payment of license fee for the use of spectrum according to the criteria, procedures and conditions prescribed by the Office of the NBTC.

2.14 Employee Benefits

The Office of the NBTC is not subject to the Labour Protection Act, Labour Relations Act, Social Security Act, and Compensation Act. The Office of NBTC has its regulations regarding employee benefits as follows:

2.14.1 Short-term employee benefits

Liabilities estimation of short-term employee benefits are recognized without discounted cash flows and recognized as an expense in the profit and loss statement when the employees work for the organization and liabilities are recognized at the amount expected to be paid for the special remuneration payment to employees and benefits in the form of short-term cash or legal obligations or inferred obligations to be paid as a result of the employee's work in the past and this obligation can be reasonably estimated.

2.14.2 Employee benefits after retirement

1) Contribution Project

The Office of the NBTC has set up a provident fund for employees to be as welfare and support the savings in a kind of a contribution plan as being defined according to the Office of the NBTC's Regulation regarding the Provident Fund of employees of the National Telecommunications Commission B.E.2549 (2006). The NBTC has separated assets of the provident fund from the assets of the Office of the NBTC and managed by the external fund manager. The said provident fund receives contributions from employees and contributions from the Office of the NBTC and the contributions to the provident fund are recorded as expenses in the profits and loss statement for the period in which the transaction occurred.

2) Project on pension benefit

The Office of NBTC has obligated to pay compensation to employees upon their retirement in accordance with the NBTC Regulation regarding Employees' Pension and Welfare after Retirement B.E.2555 (2012) and the compensation is considered as the pension benefit project.

Liability estimation of employee benefits under the project on pension benefit will be recognized in the financial statement by the current value of the obligation at the end of the reporting period. The obligation is calculated by using the estimated discount method by an independent insurance actuator every year.

The liability incurred during the transition period which are caused by the difference of benefit obligation and liability in the balance sheet for the project on pension benefit according to the old accounting policy as of the date the accounting policy has been changed, the Office of the NBTC will recognize through the full amount of retained earnings by using backward adjustment method.

The profits and losses from the estimation under the actuarial science principle will be recognized in other comprehensive income.

The past service costs will be recognized in full amount in the profits or losses statement as soon as the project is adjusted or reduced in size or when the Office of the NBTC recognizes the cost of the related project adjusted.

2.15 Revenue Recognition

The Office of the NBTC had recognized the revenues in each type as follows:

- Revenue from the spectrum auction, Section 41, Paragraph Two, and Section 45, Paragraph Two under the Organization Act B.E.2553 (2010) has been recognized on an accrual basis according to the content of relevant agreements.
- Revenue from the remuneration for spectrum usage for radiocommunications service has been recognized on an accrual basis
- Revenue from license fees under the Radiocommunications Act has been recognized upon the receipt of forms and fees
- Revenue from business license fee has been recognized on an accrual basis
- Revenue from numbering fee has been recognized monthly on an accrual basis
- Revenue from license fees for spectrum transfer has been recognized upon the receipt of forms and fees
- Revenue from application fee has been recognized according to revenue category of the application upon the receipt of the application and fees
- Revenue from the contributions to the Broadcasting and Telecommunications Research and Development Fund for the Public Interest (for the expense in USO projects) is the revenue to be delivered to the Fund according to the Broadcasting Business Act and Telecommunications Business Act which has been recognized on an accrual basis
- Revenue from Por Nor 1 Radio Broadcasting Station has been recognized monthly on an accrual basis
- Revenue from other fees has been recognized upon the receipt of forms and fees
- Revenue from interest receivables has been recognized on proportion of time basis
- Other revenues apart from the above-mentioned revenue have been recognized on an accrual basis

2.16 The revenue of state-enterprises according to Section 84, Paragraph Three of the Act on the Organization B.E.2553 (2010) prescribing that when three years have lapsed after the day on which this Act has come into force, the state enterprises' revenues, which are derived from the undertakings under the authorization, concession or contract according to Paragraph Two that the state enterprises operated under the law on private participation in state undertaking whether the undertaking is in whole or in part, shall be subtracted by the expenses of business license fees calculated from income base which is generated from the authorization, concession or contract, expenses for supporting the provision of universal basic telecommunications and social services in accordance with the government policies and Section 50 in part of calculating from income base which is generated from the authorization, concession or contract, and expenses incurred from the operation associated with the authorization, concession or contract as prescribed by the Ministry of Finance and remitted to the NBTC, upon which it shall transfer the said money to the state treasury.

2.17 The revenue from services provision on behalf of the state is the revenue under the NBTC Notification on Measure for Temporary Protection of Users in the case of Termination of the Licensing, Concession or Contract for Provision of Mobile Phone Service B.E. 2556 (2013), Article 7, which stipulating that during the protection period, the service provider shall be the recipient for the revenue payment of service provision on behalf of the state by having receivable account separated specifically, and shall report the amount of revenue and interests

which has deducted the cost of network usage, telecommunications numbering fees, cost of management expenses and other cost of expenses that are needed to the provision of services. The rest shall be examined by the Office of the NBTC before being remitted as state revenue.

2.18 The contribution for education, research and development has been recognized as an expense when it is approved to be paid to the right holder. The unpaid money to be delivered back within the period will be deducted from the total expense of the contributions. If the money were delivered after the year of disbursement, it will be recorded as unpaid and return revenue of the contribution for education, research and development showing as other non-operating revenue. These guidelines include the expense with similar items.

2.19 The expenditure for the management of the Research and Development Fund, such as the assets for the Fund management, personnel expenses, meeting remuneration for the committees, expense of public relations activities, expense for organizing meetings, material cost for the Fund management, cost for public utilities, etc., shall be disbursed by the Office of the NBTC according to the Regulation of the Research and Development Fund.

3. Re-adjustment of financial statements

Since 1 January 2019, the Broadcasting and Telecommunications Research and Development Fund for the Public Interest had corrected the errors of the revenue recognition, that the Office of the NBTC allocated for supporting the Must Carry expenses only in 2017 and the rest of money shall be delivered to the treasury as a state revenue, which was previously recognized as revenue for the whole amount to be the liability entry by having recognized when expenses occurred. In addition, the expenses to support the Must Carry project and the Mux project which were recognized for the whole amount in the first year of support, shall be recognized according to the year of support. The accumulative result from the errors correction has been adjusted for retained earning as of 1 January 2018 as shown in the changes of equity statement.

The impact on the financial statement as of 1 January 2018 and 31 December 2018, the statement of comprehensive income for the year ended 31 December 2018 is presented as follows:

	Previously reported	Adjustment list	Revised
Financial statement as of 1 January 2018			
Current liabilities estimation on Must Carry project	959.47	(787.34)	172.13
Deferred income	53,266.20	485.29	53,751.49
Non-current liabilities estimation on Must Carry project	670.32	(670.32)	-
Revenue over accumulated expenses	10,430.44	972.36	11,402.80
Financial statement as of 31 December 2018			
Current liabilities estimation on Must Carry project	1,156.45	(824.08)	332.37
Current liabilities estimation on Mux project	1,255.35	(979.20)	276.15
Deferred income	62,109.07	1,872.49	63,981.56
Non-current liabilities estimation on Must Carry project	1.74	(1.74)	-
Non-current liabilities estimation on Mux project	408.00	(408.00)	-
Revenue over accumulated expenses	10,856.89	340.52	11,197.56
Comprehensive income statement for the year ended 31 December 2018			
Revenue from the broadcasting and television services	2,802.99	(1,387.20)	1,415.79
Expensed for promoting and supporting the Fund's objectives	2,652.52	(755.36)	1,897.16

4. Cash and Cash Equivalents

	<u>2019</u>	<u>2018</u>
Cash	0.28	0.25
Petty cash	0.48	0.50
Receivable cheque	1.06	0.35
Bank deposit		
Current account	114.88	159.75
Bank deposit account	17,282.77	35,321.23
Fixed deposit account for 3-month term	<u>3,067.70</u>	<u>4,982.18</u>
Total	<u>20,467.17</u>	<u>40,464.26</u>
Cash and Cash Equivalents consist of		
Cash and cash equivalents from the revenue gained under Section 65 (1-2)	7,743.34	7,616.72
Cash and cash equivalents from the revenue gained under Section 65 (3-5)	189.98	178.71
Cash and cash equivalents of the Research and Development Fund	10,370.89	6,422.51
Cash and cash equivalents from trust money, guarantee deposits, and others	<u>2,162.96</u>	<u>26,246.32</u>
Total	<u>20,467.17</u>	<u>40,464.26</u>

The cash and cash equivalents as of 31 December 2019 and 2018 at the amount of 20,467.17 and 40,464.26 million baht respectively had already included the deposits from the Broadcasting and Telecommunications Research and Development Fund for the Public Interest at the amount of 21.23 million baht (included the interests receivable).

5. Short-term investments

	<u>2019</u>	<u>2018</u>
Fixed deposit account (more than 3 - 12 months)	<u>39,259.01</u>	<u>42,726.84</u>
Total of short-term investments	<u>39,259.01</u>	<u>42,726.84</u>
Short-term investments consist of		
Short-term investments from the Research and Development Fund	39,258.63	42,726.46
short-term investments from deposit	<u>0.38</u>	<u>0.38</u>
Total	<u>39,259.01</u>	<u>42,726.84</u>

6. Fee Receivables

	<u>2019</u>	<u>2018</u>
Receivables from remuneration of radio frequency	0.09	0.07
Receivables from numbering fee	801.56	797.75
Receivables from business license fee	30.92	74.04
Receivables	<u>30.26</u>	<u>29.61</u>
Total	862.83	901.47
<u>Less</u> doubtful accounts	<u>(724.87)</u>	<u>(756.05)</u>
Net total	<u>137.96</u>	<u>145.42</u>

6. Fee Receivables (continued)

Aging analysis of unpaid accrued receivables

All types of fee receivables of the Office of the NBTC can be categorized as follows:

	<u>2019</u>	<u>2018</u>
Unpaid debts less than 180 days	3.76	0.72
Unpaid debts more than 180 days but less than 365 days	2.09	3.51
Unpaid debts more than 365 days but less than 730 days	34.04	4.42
Unpaid debts more than 730 days	793.88	74.24
Legal disputes	<u>29.06</u>	<u>818.58</u>
Net total	<u>862.83</u>	<u>901.47</u>

The numbering fee receivables as of 31 December 2019 and 2018 for 801.56 and 797.75 million baht respectively have included the numbering fee of True Move Company Limited since 1 March 2014 to 31 December 2015 for 647.29 million baht and surcharge for 141.13 million baht and the total was 788.42 million baht but True Move refuses to pay the numbering fee to the Office of the NBTC with the reason that the company must comply to the NBTC Notification on Measures for Protecting Users in Temporary Period in case of Termination of the Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) in which the said Notification has limited True Move's rights in taking benefits from the inactivate numbers and it gave the company the burden for bearing the telecommunications numbering fees. Therefore, True Move is able to include the telecommunications numbering fees in the cost which will be deducted from the operating revenue. It has thus requested the Office of the NBTC to consider the exception of all telecommunications numbering fees since 16 September 2013 (starting from the date of the concession terminated) onwards. However, for the telecommunications numbering fees from 16 September 2013 to 28 February 2014 at the amount of 190.97 million baht that already paid to the Office of the NBTC, the company has submitted a letter to the Office of the NBTC requesting for the refundable fees. Later on, the Telecommunications Commissions (TC) had the resolution in the Meeting No.12/2014 dated 7 May 2014 disagreed to approve the request for the exception of telecommunications numbering fees of True Move and the resolution in the TC Meeting No.26/2014 dated 14 October 2014 agreed to assign the Office of the NBTC to take legal processes, and on 31 August 2015 the Office of the NBTC had already submitted the case to the attorney of the Office of Civil Litigation for further proceeding against True Move according to the Undecided Case No.490/2016 which is in the process of the court to determine the end date of facts finding. However, the Office of the NBTC was the defendant on the claim for damages arising from the compliance to the Notification on Measure for Protecting Users in Temporary Period in case of Termination of the Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) in the case that the expense is higher than the plaintiff's income and requesting for the refund of the telecommunication number fees already paid by the plaintiff according to the Undecided Case No.2013/2015, with the capital of 16,265.06 million baht which is in the process of the court to determine the end date of facts finding and the Administrative Court has ordered to include the Undecided Case No.1712/2016 and the Undecided Case No.2392/2018.

7. Accrued Incomes

	2019	2018
Current portion		
Accrued income of revenue from spectrum auction in the frequency band of 1800 MHz	6,693.38	-
Accrued income of revenue from spectrum auction of Digital TV	627.02	-
Accrued income of revenue from spectrum auction in the frequency band of 900 MHz	54,800.26	8,602.80
Accrued income of revenue from business license fee	4,568.36	4,879.43
Accrued income of revenue from the contributions to the USO Fund	<u>8,995.58</u>	<u>8,477.47</u>
Total current portion	<u>75,684.60</u>	<u>21,959.70</u>
Current portion of long-term debts		
Accrued income of revenue from spectrum auction in the frequency band of 900 MHz	109,804.25	164,604.52
Revenue from spectrum auction in the frequency band of 1800 MHz	6,693.39	13,386.77
Accrued income of revenue from spectrum auction of Digital TV	<u>1,075.99</u>	<u>18,036.56</u>
Total current portion of long-term debts	<u>117,573.63</u>	<u>196,027.85</u>
Total	<u><u>193,258.23</u></u>	<u><u>217,987.55</u></u>

For the accrued income of revenue from spectrum auction in the frequency band of 900 MHz as of 31 December 2019 and 2018 at the amount of 164,604.51 and 173,207.32 million baht respectively and the accrued income of revenue from spectrum auction in the frequency band of 1800 MHz as of 31 December 2019 and 2018 at the amount of 13,368.77 and 13,386.77 million baht, the licensees have brought the Letters of Guarantee issued by the financial institution in type of commercial bank under the Financial Institutions Business Act B.E. 2551 (2008), to guarantee the payment for the remaining amount of an accrued income from the spectrum auction according to the NBTC Notification. However, the Head of National Council for Peace and Order has the Order No.4/2019 on Measures to Solve Problems on Television and Telecommunications Business Operation dated 11 April 2019, Article 6, Paragraph Two, which stipulated that the Office of the NBTC shall consider dividing the payment of all spectrum auction in the frequency band of 900 MHz that the licensees have to pay to ten installments per year equally, starting from the year the licensee has been granted of the license according to the Order of Notification, and after the Office of the NBTC has divided the money from spectrum auction into the installments from the year 2020 onwards, the installments to be paid in the year 2020 shall include the compensation of the previous installment.

For the accrued income of revenue from spectrum auction of Digital TV as of 31 December 2019 and 2018 at the amount of 1,703.01 and 18,036.56 million baht respectively which is the revenue from the spectrum auction for the provision of digital television service in the category of national commercial service for 24 licenses, the Office of the NBTC received the payment of 22 licenses and already submitted the revenue to Ministry of Finance according to the National Council for Peace and Order Announcement No.80/2014 regarding the Additional Amendment to the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services. However, for the revenue from the spectrum auction of 2 licenses which the Office of the NBTC has not yet received the payment for 1,005.60 million baht and value-added tax of 70.39 million baht, totally outstanding amount of 1,075.99 million baht, the licensees have brought the Letters of Guarantee issued by the financial institution in type of commercial bank under the Financial Institutions Business Act B.E.2551 (2008), to guarantee the payment for license fees to use the spectrum in which the Supreme Administrative Court issued an order affirming the order of the Administrative Court that the NBTC suspends any action on the execution under the letter of guarantee of commercial banks until the judgment has been made

7. Accrued Incomes (continued)

or otherwise provided by the order according to the Order No. 450/2017 dated 23 May 2017 and the Office of the NBTC is the defendant in the case that the government officials acted unlawfully due to the regulation of the transition to digital television signal transmission system has not been complied to the law and Master Plan. In addition, the withdrawal of the license according to the Resolution of the Broadcasting Commission (BC) with a capital of 749.88 million baht is under the consideration of the Supreme Administrative Court.

On 20 December 2016, the Head of National Council for Peace and Order has the Order No. 76/2016 regarding Measure for Promoting the Broadcasting, Television and Telecommunications Business Operation for the Public Benefit to extend the payment period of license fee to use the spectrum in the remaining amount plus interest of the amount to be paid at the interest rate set by the Monetary Policy Committee of Bank of Thailand, and on 23 May 2018 the Head of National Council for Peace and Order has the Order No. 9/2018 on Measures to Mitigate the Impacts on Broadcasting and Television Business Operators to suspend the payment of license fee to use the spectrum which shall not exceed 3 years and the licensees shall pay the interests at the interest rate set by the Monetary Policy Committee of Bank of Thailand. However, the Head of National Council for Peace and Order had the Order No. 4/2019 on Measures to Solve Problems on Television and Telecommunications Business Operation dated 11 April 2019, Article 12 (1.1), to waive the license fee for the use of spectrum to be paid for the last two installments of the price exceeding the minimum price or the starting price according to the Notification and to proceed at the amount of 14,575.97 million baht.

The accrued income of revenue from business license fee as of 31 December 2019 and 2018 at the amount of 4,568.36 and 4,879.43 million baht respectively is the revenue that the Office of the NBTC charged from the operators in the progressive rate of revenue from the operation of telecommunications business type 1 - 3 according to the NBTC Notification on Telecommunications License Fees and the Revenue from Broadcasting and Television Business Operation according to the NBTC Notification on Broadcasting License Fees in which the operators shall pay those amount within 150 days starting from the end of the accounting period.

The accrued income of revenue from the contribution to the USO Fund as of 31 December 2019 and 2018 at the amount of 8,995.58 and 8,477.47 million baht respectively is the forecast of revenue that the Fund will receive from telecommunications business licensees and broadcasting and television business licensees in the year 2019 and 2018 by calculating from the value of revenue base of telecommunications business operation from January to December, according to the practical guidelines prescribed by the NBTC.

8. Prepaid Expenses

	2019	2018
Prepaid expense on land rental	6.44	6.44
Other prepaid expenses	360.95	3.41
Total	367.39	9.85

9. Loans receivable according to Section 52 (6)

The loan receivable according to Section 52 (6) is the money that the Research and Development Fund has loaned to the Ministry of Finance to promote and support the budget according to the objectives of the Research and Development Fund, Section 52 (6) of the Act on the Organization B.E.2553 (2010) which has additional specified by the NCPO's Announcement of No. 80/2014 on 9 July 2014, under the Memorandum of Loan Agreement dated 7 January 2016 at the amount of 14,300.00 million baht to be used as a partial loan for the loan project for the development of water resources management system and the road transport system in the urgent phase. The Cabinet had its resolution on 26 May 2015 to approve that the Ministry of Finance borrow money from the Research and Development Fund and the NBTC had its resolution in the Meeting No. 6/2015 on 17 June 2015 to approve the loan from the Research and Development Fund to Ministry of Finance by disbursing from the telecommunications universal service fund account in the same amount that the Cabinet approved. In addition, the Cabinet had a Resolution on 11 August 2015 to approve the guidelines for the loan repayment to the Fund by requiring the Ministry of Finance to set the annual expenditure budget for the year 2017 to 2020 in order to repay to the Fund.

The Head of National Council for Peace and Order had issued the Order No. 4/2019 on Measures to Solve Problems on Television and Telecommunications Business Operation dated 11 April 2019, Article 16, prescribing that for the benefit of the management of the state budget, the Ministry of Finance does not return the remaining amount of money borrowing from the Broadcasting, Television and Telecommunications Research and Development Fund for the Public Interest, which was used to replace some of the loans for the project on the development of water management system and the road transport system in the urgent phase according to the Cabinet Resolution on 26 May 2015 and the Announcement of the National Council for Peace and Order No. 80/2014 on Additional Amendment of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services. This will result in the zero (0) amount of the loans receivable by the Ministry of Finance for the amount of 9,700.00 million baht.

Loans receivable according to Section 52 (6) as of 31 December 2019 and 2018 are as follows:

	2019	2018
Balance as of 1 January	9,700.00	11,000.00
<u>Increase</u> Loan receivable according to Section 52 (6), current installment	-	-
Total	9,700.00	11,000.00
<u>Less</u> Receiving payment of current installment	-	(1,300.00)
Ministry of Finance has not made the repayment	(9,700.00)	-
Balance as of 31 December	-	9,700.00
Current portion	-	1,300.00
Current portion of long-term debts	-	8,400.00
Total	-	9,700.00

10. Other Current Assets

	<u>2019</u>	<u>2018</u>
Suspended input tax	36.68	68.33
Revenue Department Receivables	40.78	-
Advance loans Receivables	1.96	14.49
Accrued interest	500.00	210.77
Advance payment	1,219.53	500.52
Other current assets	<u>16.86</u>	<u>20.91</u>
Total	<u>1,815.81</u>	<u>815.02</u>

The accrued interest receivables as of 31 December 2019 and 2018 at the amount of 500.00 and 210.77 million baht respectively are mostly the accrued interest on bank deposits of the Research and Development Fund at the amount of 495.36 and 207.33 million baht, respectively.

The advance payment as of 31 December 2019 and 2018 at the amount of 1,219.53 and 500.52 million baht respectively is mostly the advance payment according to the project on the provision of broadband internet service and mobile phone signal in the border areas for approximately 3,920 villages under the Plan for the Provision of Basic Universal Telecommunications Service and Social Service in Urgent Phase (2012-2016) in which the Fund will deduct the said advance payment from the service fee to be paid in each period until the total amount of the advance payment has already paid completely. However, the advance payment under the conditions of the contract, the service provider who is the partner of contract must have a letter of guarantee issued by a commercial bank in the same amount to the advance payment for a warranty.

11. Bank deposits with obligations

	<u>2019</u>	<u>2018</u>
Special savings account	<u>505.67</u>	<u>500.67</u>
Total	<u>505.67</u>	<u>500.67</u>

The bank deposits with obligations at the amount of 500.00 million baht are deposits in a commercial bank with an obligation to maintain the deposits for employee's housing loan.

12. Long-term Investment Fund

	<u>2019</u>	<u>2018</u>
Fixed account deposits over 12 months	<u>220.28</u>	<u>217.02</u>
Total	<u>220.28</u>	<u>217.02</u>

13. Plant and equipment

Items	2019					2018	
	Building and its improvement	Electrical and radio equipment	Computer equipment	Vehicles and transportation equipment	Office supplies and others	In process activities	Total
Cost value							
Bring forward at the beginning of period	876.86	1,955.12	947.12	185.34	377.52	118.94	4,214.13
Increase during the period	13.57	265.58	28.91	5.44	18.84	506.15	516.25
Decrease during the period	(2.93)	(5.45)	(17.73)	(5.40)	(5.92)	(263.90)	(269.48)
Balance at the end of period	887.50	2,215.25	958.30	185.38	390.44	361.19	4,460.90
Accumulated depreciation							
Bring forward at the beginning of period	581.08	1,319.89	874.66	165.93	294.62	-	2,902.93
Increase during the period	26.55	236.22	50.29	9.05	29.77	-	351.32
Decrease during the period	(0.92)	(5.22)	(17.74)	(3.66)	(5.20)	-	(18.07)
Balance at the end of period	606.71	1,550.89	907.21	171.32	319.19	-	3,236.18
Book value							
As of 31 December 2019	280.79	664.36	51.09	14.06	71.25	361.19	1,442.74
As of 31 December 2018	295.78	635.23	72.46	19.41	82.90	118.94	1,224.72

14. Project assets in process

The project assets in process as of 31 December 2019 and 2018 at the amount of 2,179.00 and 1,005.80 million baht respectively are the costs incurred from the implementation under the contract for the project on the provision of broadband internet service and mobile phone signal in the border areas consisting of the cost of the USO Net building construction, cost of procurement and installation of communication network equipment for the provision of broadband internet service in schools, sub-district health promotion hospitals, and mobile phone signal for people in remote areas. The Fund shall record the costs in the project assets account in process, and will register the assets, along with transferring the recognition entry as the cost of each type of asset when the assets are available for public service provision which is in line with objectives of the Management.

15. Assets under the financial lease contract

	2019			2018
	Computer equipment	Vehicles and transportation equipment	Total	Total
Capital cost				
Bring forward at the beginning of period	60.21	76.02	136.23	221.19
Increase during the period	103.53	49.64	153.17	62.37
Decrease during the period	<u>(12.56)</u>	<u>(1.24)</u>	<u>(13.80)</u>	<u>(147.33)</u>
Balance at the end of period	<u>151.18</u>	<u>124.42</u>	<u>275.60</u>	<u>136.23</u>
Less Accumulated amortization				
Bring forward at the beginning of period	(22.48)	(25.08)	(47.56)	(147.87)
Increase during the period	(21.47)	(22.48)	(43.95)	(47.02)
Decrease during the period	<u>12.58</u>	<u>2.09</u>	<u>14.67</u>	<u>147.33</u>
Balance at the end of period	<u>(31.37)</u>	<u>(45.47)</u>	<u>(76.84)</u>	<u>(47.56)</u>
Book value				
As of 31 December 2019	<u>119.81</u>	<u>78.95</u>	<u>198.76</u>	<u>-</u>
As of 31 December 2018	<u>37.73</u>	<u>50.94</u>	<u>-</u>	<u>88.67</u>

16. Intangible Asset

	Bring forward	During the period		Balance
	As of 1 Jan 2019	Increase	Decrease	as of 31 Dec 2019
Computer programs	1,244.60	122.81	5.45	1,361.96
<u>Less Accumulated amortization</u>	<u>936.15</u>	<u>213.62</u>	<u>5.45</u>	<u>1,144.32</u>
Total	<u>308.45</u>	<u>(90.81)</u>	<u>-</u>	<u>217.64</u>

17. Creditors and Notes Payable

	2019	2018
Creditors	988.95	957.79
Credit card payable	0.17	0.11
Cheques not yet cashed	<u>44.07</u>	<u>306.97</u>
Total	<u>1,033.19</u>	<u>1,264.87</u>

17. Creditors and Notes Payable (continued)

The creditors as of 31 December 2019 and 2018 at the amount of 988.95 and 957.79 million baht respectively are mostly the creditors of the Research and Development Fund for 432.21 and 897.17 million baht respectively, the creditors arising from the payable annual contribution to support the operation of the Thai Media Fund as of 31 December 2019 and 2018 at the amount of 126.71 and 280.00 million baht respectively, and including the creditors of operators participating in the project to support the public in the transition to the digital terrestrial television, as of 31 December 2019 and 2018 at the amount of 305.40 and 617.17 million baht respectively, have collected coupons received from people in the exchange for purchases or a discount to purchase equipment for receiving digital terrestrial television with a value of 690.00 baht per coupon to reimburse from the Research and Development Fund. The Research and Development Fund will pay for the coupons receiving from each operator after completing the verification of the correctness and completeness of documents supporting the disbursement as well as the expenses for supporting the projects that the people responsible have submitted the work according to the conditions specified in the contract and have already been approved by the work examination committee

18. Advance Revenues

	<u>2019</u>	<u>2018</u>
Advance remuneration for radiocommunications	70.07	72.15
Advance numbering fee	6.74	6.86
Advance revenue from digital TV spectrum auction	-	20.68
Others	<u>17.87</u>	<u>10.25</u>
Total	<u>94.68</u>	<u>109.94</u>

19. Liabilities Estimation for Employee Benefits

Project on Pension Benefit

According to the NBTC Regulation regarding the Employees' Pension and Welfare after Retirement B.E.2555 (2012), the Office of the NBTC has a burden to pay benefits upon retirement of employees, the employee who has been ordered to leave the job without guilty, or death, and the employee who has worked for the Office of the NBTC at least one year including the employee who resigns without guilty and has received permission from the authorized person to put into position and appoint or the assigned person, and must have worked for the Office of the NBTC at least three years, the employees shall receive the regular pension paid by calculating from the duration of being served the organization multiply by the last salary.

In case that any employee get harm or sick due to operating duties, they also have the right to receive extra pension at 24 times of the last salary and if the employee died prior to be paid the extra pension, they shall receive the extra pension at 30 times of the last salary.

The Office of the NBTC has provided a bank account of the pension fund to be as source of money for employees' pension and assistance after retirement. The source of money of the pension fund is derived from the initial fund allocated from the annual budget expenditure, interests of the pension fund and other money. In the case that the pension fund is insufficient to be paid for the eligible employees in any year, the Office of the NBTC shall disburse the employees' pension from the central budget of the Office of the NBTC in that year.

19. Liabilities Estimation for Employee Benefits (continued)

The present value of liabilities estimation for employee benefits to be paid is as follows:

	<u>2019</u>	<u>2018</u>
Current liabilities estimation for employee benefits	34.00	36.83
Non-current liabilities estimation for employee benefits	<u>959.54</u>	<u>870.44</u>
Present value of the liabilities estimation for employee benefits	<u>993.54</u>	<u>970.27</u>

Changes of the present value of liabilities estimation for employee benefits for the year ended 31 December are as follows:

	<u>2019</u>	<u>2018</u>
Liabilities estimation for employee benefits at the beginning of the period	907.27	804.72
<u>Increase</u> Cost of benefits that is recognized in the statement of comprehensive profits and losses	104.10	116.73
<u>Less</u> Employees' benefit being paid	<u>(17.83)</u>	<u>(14.18)</u>
Liabilities estimation for employee benefits at the end of the period	<u>993.54</u>	<u>907.27</u>

Expenses recognized in the earnings statement for the year ended 31 December are as follows:

	<u>2019</u>	<u>2018</u>
Current cost of service	78.99	94.88
Net interests of liabilities estimation for the net defined employee benefits	<u>25.11</u>	<u>21.85</u>
Total	<u>104.10</u>	<u>116.73</u>

The main assumption used in the estimation according to actuarial science principle is as follows:

Main assumption	Range of age	Percent per year
1. Discount rate		1.76 to 3.94
2. Rate of salary raise	less than 40 years	8.0
	from 40 years to less than 55 years	6.0
	from 55 years	4.0
3. Employee turnover rate	less than 30 years	3.0
	from 30 years to less than 55 years	1.0
	from 55 years	0.0
4. Mortality rate		

The assumption related to the future mortality rate has been derived from Thai Mortality Ordinary Table 2017 (TMO 2017) with an improvement in the mortality rate of 3.0 percent per year

19. Liabilities Estimation for Employee Benefits (continued)

The sensitivity of the main assumption

The changes in each assumption involved in the actuarial science estimation that may be reasonably possible at the end of the reporting period. The results of the sensitivity analysis of the impact assumption on obligations under the project of defined benefits as of 31 December are as follows:

	Impact assumption on obligations under the project of defined benefits				
	Change of assumption Percent	Increase of assumption		Decrease of assumption	
		Million baht		Million baht	
		2019	2018	2019	2018
Discount rate	1.00	(114.96)	(106.81)	137.70	128.32
Expected rate of salary raise	1.00	143.51	123.78	(121.86)	(105.47)
Employee turnover rate	20.00	(4.91)	(3.02)	4.98	3.08
Improvement of mortality rate	1.00	0.24	0.18	(0.26)	(0.19)

The estimated risks involved with the project of benefits under the discount method of each unit are: the difference between the actual rate of salary raise, employee turnover rate and mortality rate and the assumptions used such as the rate of salary raise is higher than expected and the employee turnover rate is lower than expected, which will cause losses according to the actuarial science. In addition, the current economic situation may cause the discount rate to be higher or lower, which is used to measure the fair value of liabilities. This project of benefits has no specific risk for the Office or risk for investment since it is a project without the establishment of a fund.

The analysis of the maturity of non-discounted employee benefits payment from the year 2020 onwards is as follows:

	Current portion Million baht	Current portion of long term debts (1-3 yrs.) Million baht	Current portion of long term debts (exceed 3 yrs.) Million baht	Total Million baht
As of 31 December 2019				
Liabilities estimation of employee benefits	34.00	85.73	4,335.32	4,455.05
Total	34.00	85.73	4,335.32	4,455.05

20. State Revenue in Transit to the Treasury

	Bring forward As of 1 Jan 2019	During the period		Balance As of 31 Dec 2019
		Deferred transit Increase/ Decrease	Delivered	
Current portion				
Radiocommunications equipment rental and violation fees	0.64	1.74	0.37	2.01
Fines	10.32	6.07	4.78	11.61
Revenue from spectrum auction in frequency band of 900 MHz	11,448.47	50,132.16	11,439.12	50,141.51
Revenue from spectrum auction in frequency band of 1800 MHz	20,217.38	5,314.43	20,209.89	5,321.92
Revenue from Digital TV spectrum auction	1.69	2,226.59	11.26	2,217.02
Revenue from the beautiful numbers auction	147.65	43.61	0.78	190.48
Revenue from state-enterprises according to Section 84	-	147.66	147.66	-
Revenue from service provision on behalf of the state	-	603.81	603.81	-
Revenue from Por Nor 1 Radio Station	95.20	52.52	49.12	98.60
Surplus to be delivered to the Research and Development Fund	-	485.29	-	485.29
Surplus to be delivered as state revenue in 2017	2,524.80	-	2,524.80	-
Surplus to be delivered as state revenue in 2018	2,800.58	-	-	2,800.58
Surplus to be delivered as state revenue in 2019	-	2,549.35	-	2,549.35
Total current portion	<u>37,246.73</u>	<u>61,563.90</u>	<u>34,991.59</u>	<u>63,818.37</u>

	Bring forward As of 1 Jan 2019	During the period		Balance As of 31 Dec 2019
		Deferred transit Increase/ Decrease	Delivered	
Current portion of long-term debts				
Revenue from spectrum auction in frequency band of 900 MHz	148,729.40	(50,105.32)	-	98,624.08
Revenue from spectrum auction in frequency band of 1800 MHz	10,634.35	(5,317.17)	-	5,317.18
Revenue from Digital TV spectrum auction	16,856.60	(15,851.00)	-	1,005.60
Total current portion of long-term debts	<u>176,220.35</u>	<u>(71,273.49)</u>	<u>-</u>	<u>104,946.86</u>
Total	<u>213,467.08</u>	<u>(9,710.26)</u>	<u>34,991.59</u>	<u>168,765.23</u>

21. Spectrum Auction Output Tax in Transit

	<u>2019</u>	<u>2018</u>
Current portion		
Spectrum auction in the frequency band of 900 MHz	3,585.06	562.80
Spectrum auction in the frequency band of 1800 MHz	437.89	-
Digital TV Spectrum auction	41.02	-
Accrued income - Telecommunications service	287.60	306.57
Accrued income - Broadcasting service	10.47	12.65
Total current portion	<u>4,362.04</u>	<u>882.02</u>
Current portion of long-term debts		
Spectrum auction in the frequency band of 900 MHz	7,183.46	10,768.52
Spectrum auction in the frequency band of 1800 MHz	437.88	875.77
Digital TV Spectrum auction	70.39	1,179.96
Total current portion of long-term debts	<u>7,691.73</u>	<u>12,824.25</u>
Total	<u>12,053.77</u>	<u>13,706.27</u>

22. Contribution to the Digital Economy and Society Development Fund

	Bring forward	During the period		Balance
	As of 1 Jan 2019	Deferred transit Increase/ Decrease	Delivered	As of 31 Dec 2019
Revenue to be delivered under Section 65	147.76	1,292.62	(1,122.54)	317.84
Spectrum auction in the frequency band of 900 MHz	602.63	1,109.88	(599.25)	1,113.26
Spectrum auction in the frequency band of 1800 MHz	0.67	938.32	-	938.99
Total current portion	<u>751.06</u>	<u>3,340.82</u>	<u>(1,721.79)</u>	<u>2,370.09</u>
Spectrum auction in the frequency band of 900 MHz	5,106.60	(1,109.88)	-	3,996.72
Spectrum auction in the frequency band of 1800 MHz	1,876.65	(938.32)	-	938.33
Total current portion of long-term debts	<u>6,983.25</u>	<u>(2,048.20)</u>	<u>-</u>	<u>4,935.05</u>
Total	<u>7,734.31</u>	<u>1,292.62</u>	<u>(1,721.79)</u>	<u>7,305.14</u>

The contribution to the Digital Economy and Society Development Fund as of 31 December 2019 and 2018 at the amount of 7,305.14 and 7,734.31 million baht is in accordance with the Digital Economy and Society Development Act B.E.2560 (2017) Section 24, in which the Office of the NBTC has allocated from the revenue from the spectrum assignment and the revenue of the Office of the NBTC at the rate of 15 percent starting from 25 January 2017 onwards.

23. Financial Lease Liabilities

	31 December 2019		
	Less than 1 year	1 - 5 years	Total
Total minimum amount to be paid under the lease contract	79.32	126.14	205.46
Interest under the deferred lease/financial lease contract	(6.75)	(4.91)	(11.66)
Current value of minimum amount to be paid under the lease contract	<u>72.57</u>	<u>121.23</u>	<u>193.80</u>

	31 December 2018		
	Less than 1 year	1 - 5 years	Total
Total minimum amount to be paid under the lease contract	32.88	64.50	97.38
Interest under the deferred lease/financial lease contract	(2.77)	(2.99)	(5.76)
Current value of minimum amount to be paid under the lease contract	<u>30.11</u>	<u>61.51</u>	<u>91.62</u>

24. Liabilities provisions on the Must Carry project

The accrued expenses for supporting the Must Carry project were arisen from the estimation under budget framework which had been approved by the NBTC Resolution in the Meeting No.10/2017 on 23 August 2017 approving supporting the expenses for the provision of public television service broadcasting through satellite and supporting the expense for the transmission of general television service through satellite for the licensees so that the people are able to view general television service thoroughly according to the NBTC Notification on Criteria for the Broadcast of General Television Service and according to the Order of the Head of National Council for Peace and Order No. 76/2016 regarding Measure to Promote the Broadcasting Business for the Public Benefit. Details are as follows:

	2019	2018
Balance as of 1 January according to original report	1,158.19	1,629.79
<u>Adjustment</u>	<u>(825.82)</u>	<u>(1,457.66)</u>
Balance as of 1 January after adjustment	332.37	172.13
<u>Increase</u> estimation set for current year	<u>637.33</u>	<u>631.84</u>
Total	969.70	803.97
<u>Less</u> supporting money paid in current period	<u>(604.21)</u>	<u>(471.60)</u>
Balance as of 31 December	<u>365.49</u>	<u>332.37</u>

25. Liabilities estimation of the MUX project

The liabilities estimation of expenses for supporting the MUX project arised from an estimation of the budget framework according to the rental rate of digital terrestrial television frequency-used network in accordance with the NBTC Meeting's Resolution. No. 11/2018 on 13 June 2018 and No. 19/2018 on 10 October 2018, having been revised to be in line with the guidelines for operation to support expenses for the rental of digital terrestrial television frequency-used network at the rate of fifty percent of the rental rate of the said television network for a period of twenty-four months starting from the date the Order comes into force in accordance with the Order of the Head of National Council for Peace and Order No. 9/2018 on Measures to Mitigate Impact on Radio and Television Broadcasting Operators dated 23 May 2018. Details are shown as follows:

25. Liabilities estimation of the MUX project (continued)

	<u>2019</u>	<u>2018</u>
Balance as of 1 January according to original report	1,663.35	1958.40
<u>Adjustment</u>	<u>(1,387.20)</u>	<u>(1,958.40)</u>
Balance as of 1 January after adjustment	276.15	0.00
<u>Increase</u> estimation set for current year	<u>930.96</u>	<u>571.20</u>
Total	1,207.11	571.20
<u>Less</u> supporting money paid in current period	<u>(1,043.96)</u>	<u>(295.05)</u>
Balance as of 31 December	<u>163.15</u>	<u>276.15</u>

26. Other Current Liabilities

	<u>2019</u>	<u>2018</u>
Accrued expenses	249.89	123.84
Withholding tax payable	7.20	10.70
Creditors - the Revenue Department	-	1,583.68
Other current liabilities	<u>51.64</u>	<u>53.49</u>
Total	<u>308.73</u>	<u>1,771.71</u>

27. Deferred Income

	<u>2019</u>	<u>2018</u>
Deferred income from the fee of the provision of universal service	57,408.89	60,914.13
Deferred income from the license fee to use spectrum for the provision of Digital TV service	1,748.44	2,871.61
Deferred income from administrative fines	<u>197.24</u>	<u>195.82</u>
Balance at the end of period	<u>59,354.57</u>	<u>63,981.56</u>

The movement of deferred income in the period of 2019 and 2018 is as follows:

	<u>2019</u>	<u>2018</u>
Bring forward at the beginning of period	63,981.56	53,266.20
<u>Increase</u> deferred income during the period	19,148.47	15,189.11
<u>Less</u> recognized as revenue during the period	<u>(23,775.46)</u>	<u>(4,473.75)</u>
Balance at the end of the period	<u>59,354.57</u>	<u>63,981.56</u>

27. Deferred Income (continued)

The deferred income as of 31 December 2019 and 2018 at the amount of 59,354.57 and 63,981.56 million baht respectively mostly is the deferred income from the fee of the provision of universal service for 57,408.89 and 60,914.13 million baht respectively.

In the year 2018, the Office of the NBTC has continued to implement the project to support people to receive digital television services thoroughly in the second phase by having extended the period for redemption indefinitely and the operators participating in the project reimbursement for the redemption in the year 2018 for totally 417.07 million baht. In addition, the Fund has taken the rest of money from project implementation to support the cost of network rental of the frequency-used digital terrestrial television (MUX) for licensees of digital terrestrial television service at the amount of 50 percent of the rental rate of the television network for a period of twenty-four months which was the rental charge in the year 2018 for 571.20 million baht, starting from the date that the Order of the Head of National Council for Peace and Order No. 9/2018 on Measures to Mitigate Impacts on Radio and Television Broadcasting Operators dated 23 May 2018 has become effective. As a result, the deferred revenue from spectrum auction as of 31 November 2018 remained 2,871.61 million baht.

In the year 2019, the Office of the NBTC has continued to implement the project to support people to receive digital television services thoroughly in the second phase by having extended the period for redemption to 30 September 2019 and the operators participating in the project reimbursement for the redemption in the year 2019 for totally 192.21 million baht, and support the cost of network rental of the frequency-used digital terrestrial television (MUX) for licensees of digital terrestrial television service at the amount of 50 percent of the rental rate of the television network for a period of twenty-four months which was the rental charge in the year 2019 for 930.96 million baht. As a result, the deferred revenue from spectrum auction as of 31 December 2019 remained 1,748.44 million baht.

The deferred revenues from administrative fines as of 31 December 2019 and 2018 at the amount of 197.24 and 195.82 million baht respectively are the administrative fines that the Fund received from mobile phone service providers which the Office of the NBTC has sent letters to notify the mobile phone service operators to pay but those service providers disagreed with the Order of the Office of the NBTC and filed a lawsuit with the Administrative Court asking for the revocation of the said Order. Currently, it is in the process of consideration of the Administrative Court. If the Court has the judgement to revoke the Order, the plaintiff will request for a refund of the administrative fines with an additional interest at the rate of 7.5 percent consisting of

The receipt of administrative fines from three mobile phone service providers which paid in the year 2013 and 2014 in case of failure to comply with Article 11 of the National Telecommunications Commission Notification on the Standard of Telecommunications Service Provision Agreement B.E.2549 (2006), which has to amend the conditions of mobile phone service provision to have no provisions in the characteristics that being a compulsory to use the service within the specified period unless it has been approved by the NBTC in advance, at the rate of 100,000.00 baht per day, totally 71.70 million baht, which is currently in the process of consideration of the Supreme Administrative Court.

The receipt of administrative fines from a mobile phone service provider which paid in the year 2014 in case of violation or failure to comply with the National Telecommunications Commission Notification on Criteria for Telecommunications Number Allocation and Management B.E.2551 (2008) which requiring that mobile phone service providers have duties to collect data and details about service users, at a rate of 80,000.00 baht per day for an amount of 34.96 million baht. It is currently in the process of consideration of the Supreme Administrative Court.

27. Deferred Income (continued)

The receipt of administrative fines from three mobile phone service providers which paid in the year 2016 and 2018 in case of violation or failure to comply with the NBTC Notification on Criteria and Procedures for the Preparation of Separation Account in Telecommunications Service for the fiscal year 2011 at the rate of 140,000.00 baht per day, at the amount of 58.94 million baht, and the fiscal year 2012 at the rate of 210,000.00 baht per day, at the amount of 22.89 million baht, totally 81.83 million baht. It is currently in the process of consideration of the Supreme Administrative Court.

The receipt of administrative fines from a mobile phone service provider which paid in the year 2017 in case of violation of the NBTC Notification on Criteria for Mobile Number Portability Service and the conditions of operating guidelines for porting mobile phone service users of service providers according to the NTC Notification on Criteria for Mobile Number Portability Service Porting Process Manual at the amount of 7.33 million baht which is in the process of consideration of the Administrative Court.

The receipt of administrative fines from a mobile phone service provider which paid in the year 2019 in case of failure to compliance with the decision to the dispute of telecommunication interconnection No. 1/2016, at the amount of 1.42 million baht which is in the process of consideration of the Administrative Court.

28. Other Non-Current Liabilities

	2019	2018
Contract guarantee deposits	86.09	78.75
Performance guarantee	69.29	75.37
Security deposit	0.56	0.48
Trust money for the monument construction	0.38	0.38
Other trust money	0.42	0.39
Total	<u>156.74</u>	<u>155.37</u>

The contract guarantee deposits as of 31 December 2019 and 2018 at the amount of 69.29 and 75.37 million baht respectively is mostly the guarantee deposits of the Research and Development Fund at the amount of 57.29 and 60.09 million baht respectively which had charged from the operators participating in the project for supporting the public in the transition to digital terrestrial television for the guarantee of quality of goods and protection of consumers for using the set-top-box for not less than 2 years. The Research and Development Fund will collect the guarantee deposits at 5 percent of the amount of coupon value distributed to the participating operators.

29. Revenue from Telecommunications Business

	<u>2019</u>	<u>2018</u>
Revenue from spectrum auction in the frequency band of 900 MHz	-	38,064.00
Revenue from spectrum auction in the frequency band of 1800 MHz	-	25,022.00
Revenue from the state-enterprises according to Section 84 Paragraph Three	147.66	-
Revenue from the service provision on behalf of the state	603.81	-
Revenue from the auction of beautiful numbers	44.21	13.70
Revenue from the radiocommunications frequency remuneration	143.39	156.19
Revenue from license fee under the Radiocommunications Act	205.76	278.21
Revenue from business license fees	4,085.13	4,346.10
Revenue from numbering fee	3,847.89	4,160.57
Revenue from other fees	<u>57.00</u>	<u>59.94</u>
Total	<u>9,134.95</u>	<u>72,100.71</u>

The revenue from service provision on behalf of the state in the year 2019 at the amount of 603.81 million baht was the revenue from the NBTC Notification on Measure for Protecting Users in Temporary Period in case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013), Article 7 prescribing that during the protection period, the service providers shall have responsibility to receive payment of revenue from the provision of services on behalf of the state by having separated accounts of payment receipt specifically, and reporting the amount of revenue and its incurred interests which have already been deducted the cost of network usage and telecommunications numbering fees, the expense cost of management, and other necessary costs to service provision, the rest amount of revenue shall be audited by the Office of the NBTC before further delivering as state revenue. The revenue consists of those consists of the revenue of spectrum in the frequency band of 1800 MHz which the concession ended on 15 September 2013 was divided into 3 periods. The first period was during 16 September 2013 - 17 July 2014 at the amount of 1,697.00 million baht which the Telecommunication Commission (TC) had its resolution to approve that the revenue from the provision of service in the period of protecting users in the frequency band of 1800 MHz shall be delivered as state revenue. The second period was during 18 July 2014 - 17 July 2015 the TC had assigned a working group to audit the money to be delivered as state revenue from the provision of service in the period of protecting users in the frequency band of 1800 MHz, and the third period started from 18 July 2015 onwards until the new service provider has been chosen. Besides, the TC had considered in TC Meeting No.30/2015 on 16 November 2015 Agenda 5.2 the termination date of mobile phone service provision in the period of protecting users, and agreed that while the Office of the NBTC has not yet received the decision judgment from the Head of NCPO plus the mobile phone service provision in the frequency band of 1800 MHz will be ended on 18 November 2015, therefore, to avoid the contrary to the intention of the Order of the Head of the National Council for Peace and Order, the TC had its resolution to postpone the termination date of the users protection from 18 November 2015 until the NCPO make its decision judgment or the TC has already granted a license to use spectrum in the frequency band of 1800 MHz to any winning bidder. However, the TC had granted licenses to the winning bidders to use spectrum in the frequency band of 1800 MHz on 25 November 2015 and 3 December 2015 and assigned the Office of the NBTC to inform the relevant parties of the result including operating guidelines in case of the provision of mobile phone service in the frequency band of 900 MHz to be in the same direction.

29. Revenue from Telecommunications Business (continued)

The Office of the NBTC has issued the licenses to use spectrum for telecommunications service in the frequency band of 1800 MHz which have been effective since 26 November 2015. For the frequency band of 900 MHz which the concession ended on 30 September 2015, it was in process of the auction fee payment by the winning bidders within 90 days as from the date of receiving the written document informing of being the winning bidder according to the NBTC Notification regarding Criteria and Procedure for the Licensing of Spectrum for Telecommunications Service in the Frequency Band of 895 - 915 MHz/940 - 960 MHz and the Order of the Head of National Council for Peace and Order No.16/2016 on Spectrum Auction for Telecommunications Service for the arrangement of arrange the spectrum auction in the frequency band of 900 MHz, frequency range of 895 - 905 MHz pair with 940 - 950 MHz and assigned the NBTC to protect users for temporary period to ensure that the users have received benefits and used the services continuously until 30 June 2016 or until the NBTC has already granted a license to use spectrum to the winning bidder as the case may be. Later on, the NBTC has already granted licenses to the winning bidders since 30 June 2016.

30. Revenue from the Broadcasting and Television Services

	<u>2019</u>	<u>2018</u>
Revenue from spectrum auction for television service provision	1,143.85	988.26
Revenue from broadcasting service (trial operation)	36.81	57.73
Revenue from television business license fee	161.26	224.25
Revenue from license fees under Section 70	19.10	42.17
Revenue from other fees	<u>18.24</u>	<u>103.38</u>
Total	<u>1,379.26</u>	<u>1,415.79</u>

In the year 2019 and 2018, the Office of the NBTC had the revenue from spectrum auction for television service provision at the amount of 1,143.85 and 988.26 million baht respectively which had been recognized from the spectrum auction for the provision of digital television service in the category of national commercial service, in the 1st installment of the Research and Development Fund plus interest revenue.

31. Revenue from the Research and Development Fund

In the years 2019 and 2018, the Office of the NBTC had the revenues from the licensees (for the payment in USO projects) at the amount of 2,119.77 and 1,653.63 million baht respectively contributing to the USO Telecommunications Fund for the year ended 31 December 2019 and 2018 at the amount of 1,499.68 and 1,089.20 million baht, respectively. Those revenues were allocated from the revenue of telecommunications business operation by the telecommunications licensees under the criteria prescribed in the National Telecommunications Commission (NTC) Notification on Criteria and Procedures for Revenue Collection to be used for the Provision of Basic Telecommunications and Social Services B.E.2555 (2012) according to the NTC Notification on Plan for the Provision of Universal Basic Telecommunications Service and Social Service B.E.2555 - 2559 (2012 - 2016) and the NTC Notification Criteria and Procedures for Revenue Collection to be used as Guidelines for the Provision of Universal Basic Telecommunications and Social Services B.E.2560 (2017) for spending under the NTC Notification on Plan for the Provision of Universal Basic Telecommunications Service and Social Service B.E.2560 - 2564 (2017 - 2021). Therefore, the money received has been recorded as liabilities until the expenditures are spent according to the plan and it will be recognized as the revenue based on assets or actual expenses of the expenditures under the Plan for the Provision of Universal Basic Telecommunications Service and Social Service and the revenue contributed to the USO Broadcasting Fund for the year ended 31 December 2019 and 2018 at the amount of 600.85 and 559.51 million baht, respectively.

31. Revenue from the Research and Development Fund (continued)

The revenues were collected from the broadcasting operators (excluded the broadcasting and television licensees for public service and community service) according to the Criteria and Procedures for Revenue Contribution to the Broadcasting and Telecommunications Research and Development Fund for the Public Interest, which has become effective since 7 December 2016, by calculating from revenues of service provision of licensees, subscription fee, direct and indirect advertising revenues, or other revenues related to the service provision before deducting expenses once a year. The revenue from business operation that occurred in the accounting period of licensees in the year 2019 and 2018 shall be calculated as an annuity that must be submitted to the Fund at the rate of 0.50 - 2.00 percent within 150 days starting from the end of the accounting period.

32. Other revenues

	<u>2019</u>	<u>2018</u>
Revenue from Por Nor 1 Radio Station	56.95	50.63
Interest receivable	1,012.13	799.55
Other revenues	<u>12.36</u>	<u>33.72</u>
Total	<u>1,081.44</u>	<u>883.90</u>

33. Compensation, recompense or remuneration according to the Order of Head of National Council for Peace and Order

	<u>2019</u>	<u>2018</u>
Compensation from the return of license to use spectrum for Digital TV	3,755.40	-
Exempt the revenue from spectrum auction of Digital TV	12,635.80	-
Revenue from spectrum auction of Digital TV to be delivered to the Treasury	<u>(12,635.80)</u>	<u>-</u>
Total	<u>3,755.40</u>	<u>-</u>

34. Revenue to be delivered to the Treasury

	<u>2019</u>	<u>2018</u>
Revenue from the state-enterprises under Section 84 Paragraph 3	147.66	-
Revenue from service provision on behalf of the state	603.81	-
Spectrum auction in the frequency band of 900 MHz	14.49	32,342.49
Spectrum auction in the frequency band of 1800 MHz	9.03	21,267.27
Spectrum auction for Digital TV	9.09	93.95
Beautiful numbers auction	<u>34.44</u>	<u>5.94</u>
Total	<u>818.52</u>	<u>53,709.65</u>

35. Expense for spectrum auction

	<u>2019</u>	<u>2018</u>
Expenses for arrangement of spectrum auction in frequency band of 900 MHz	13.89	2.32
Expenses for arrangement of spectrum auction in frequency band of 1800 MHz	4.43	12.21
Expenses for arrangement of beautiful numbers auction	<u>5.74</u>	<u>7.06</u>
Total	<u>24.06</u>	<u>21.59</u>

36. Human Resources Expenses

	<u>2019</u>	<u>2018</u>
Employees' salaries	1,029.83	964.25
Extra remuneration for employees	193.37	137.44
Remuneration for the NBTC	19.37	21.86
Monthly remuneration	69.17	66.15
Fringe benefits	135.97	136.65
Provident Fund	81.65	77.29
Retirement pension	<u>100.90</u>	<u>116.73</u>
Total	<u>1,630.26</u>	<u>1,520.37</u>

37. Operating Expenses

	<u>2019</u>	<u>2018</u>
Overtime expense	3.73	3.96
Meeting compensation	33.41	38.57
Other remuneration	4.24	2.67
Expenses for domestic travel	41.05	36.54
Cost for repairment	83.06	79.09
Rental cost	156.52	128.02
Maintenance cost	252.06	252.01
Payment for contract services	234.16	173.50
Expenses paid for guests' reception	4.93	4.81
Expense for organizing ceremonious events	41.22	4.16
Taxes and fees	17.94	11.83
Expenses for trainings and seminars	122.27	109.10
Expenses for training registration	10.29	16.87
Expenses for public relations activities	256.19	203.26
Expenses for meetings arrangement	63.65	63.26
Expenses for radiocommunications equipment calibration	6.02	5.10
Expenses for hiring consultants	200.98	102.20
Donation and charity	1.21	56.54
Other current expenses	0.45	1.55
Substance and Sub-standard supplies	52.67	63.04
Doubtful accounts	6.88	2.67
Expenses for traveling abroad	43.49	46.29
Miscellaneous expenses	<u>0.03</u>	<u>0.01</u>
Total	<u>1,636.45</u>	<u>1,405.05</u>

38. Public Utilities Expenses

	<u>2019</u>	<u>2018</u>
Electricity	34.07	31.45
Water	1.15	1.16
Office telephone usage	3.99	2.35
Mobile phone usage	16.00	19.22
DSTV service	0.07	0.07
Internet service	16.53	19.12
Postal service	<u>4.85</u>	<u>4.31</u>
Total	<u>76.66</u>	<u>77.68</u>

39. Depreciation and Amortization

	<u>2019</u>	<u>2018</u>
Depreciation-Building and its improvement	26.55	28.91
Depreciation-Electrical and radio equipment	236.20	204.32
Depreciation-Computer equipment	48.65	68.61
Depreciation-Vehicles and transportation	4.88	6.06
Depreciation-Office supplies and others	43.95	43.43
Depreciation-Financial lease contract	<u>29.72</u>	<u>47.02</u>
Total Depreciation	<u>389.95</u>	<u>398.35</u>
Amortization-Computer programs	<u>213.62</u>	<u>216.30</u>
Total Amortization	<u>213.62</u>	<u>216.30</u>
Total Depreciation and Amortization	<u>603.57</u>	<u>614.65</u>

40. Financial support for education, research and development in broadcasting, television and telecommunications services

	<u>2019</u>	<u>2018</u>
Financial support for study, research and development	345.21	83.72
Expense for supporting education scholarship	<u>16.65</u>	<u>21.75</u>
Total	<u>361.86</u>	<u>105.47</u>

41. Expenses for promoting and supporting objectives of the Research and Development Fund

	<u>2019</u>	<u>2018</u>
Expense for the provision of universal service	2,186.42	1,767.31
Expense for research and development	233.18	95.78
Expense for human resource development	52.57	12.65
Expense for consumer protection	10.41	10.10
Expense for the Thai Media Fund	<u>530.00</u>	<u>11.32</u>
Total	<u>3,012.58</u>	<u>1,897.16</u>

41. Expenses for promoting and supporting objectives of the Research and Development Fund (continued)

The expenses for the provision of universal service obligation in the year 2019 and 2018 at the amount of 2,186.42 and 1,767.31 million baht respectively, according to the NBTC Notification on Plan for the Provision of Universal Basic Telecommunications Service and Social Service are the estimation under the budget framework approved by the NBTC Resolution No. 10/2017 on 23 August 2017 to support the expenses for the provision of public television service that having broadcasted TV program through satellite from 1 January 2018 to 9 January 2020, and to support the licensees of the expenses for public television signal transmission through satellite from 1 January 2018 to 19 December 2019 so that the people are able to view the public television service thoroughly according to the NBTC Notification on Criteria of Broadcasting Public Television Service and the Order of the Head of National Council for Peace and Order No.76/2016 on Measures for Supporting Broadcasting, Television and Telecommunications Business Operation for the public Interest.

42. Contingent liabilities

The provision of the Act on the Organization B.E.2553 (2010) Section 27(12) and Section 50 stipulates that the Office of the NBTC shall set forth a plan for the provision of universal basic telecommunications and social services and the plan has become effective on 30 May 2018 according to the NBTC Notification on the Plan for the Provision of Universal Basic Telecommunications Service and Social Service B.E.2560 - 2564 (2017 - 2021) No.2, as well as the issuance of Criteria and Procedure for Revenue Collection to be used for the Provision of Universal Basic Telecommunications Service and Social Service on 30 May 2018 which has become effective since 31 May 2018 onwards. The timeframe for the implementation has been set during the year 2017 - 2021 with the budget estimation of the operation under the Plan for the Provision of Universal Basic Telecommunications Service and Social Service B.E. 2560 - 2564 (2017 - 2021) at the amount of 45,456.63 million baht.

The Office of the NBTC has been implementing the missions in accordance with the Action Plan for the Provision of Universal Basic Telecommunications Service and Social Service B.E.2560 - 2564 (2017 - 2021) in 15,732 villages, including the estimation of expenses of the projects under the Action Plan for universal telecommunications service provision which is subjected to future information and situation may be changed. The NBTC may revise the plans and expenses in order to be in line with the facts to be occurred; therefore, the explicit estimation of the expenses and time for spending can not be done currently.

43. Individual or enterprise related

Individual or enterprise related to the Office of the NBTC means individual or enterprise having the power to manage or control the Office of the NBTC or be controlled by the Office of the NBTC, whether directly or indirectly, or being under the same control as the Office of the NBTC or has a significant influence with the Office of the NBTC, committees, executives or employees of the Office of the NBTC.

In considering the relationship between individual or enterprise relating to the Office of the NBTC in each item, the Office of the NBTC takes into account the content of the relationship rather than its legal form.

43. Individual or enterprise related (continued)

<u>Organization</u>	<u>Characteristic of relationship</u>
Ministry of Finance	A government agency that allocates the national budget to the Office of the NBTC in case the revenue of the Office of the NBTC is insufficient for the operating expenses, and receives the state revenue from the Office of the NBTC.
Digital Economy and Society Development Fund	A government agency that receives 15 percent of the revenue of the Office of the NBTC according to the Digital Development for Economic and Social Development Act B.E.2560 (2017)
Office of the National Digital Economy and Society Commission	A regulatory body of the Digital Economy and Society Development Fund
TOT Public Company Limited	An enterprise that Ministry of Finance holds 100 percent of shares
CAT Telecom Public Company Limited	An enterprise that Ministry of Finance holds 100 percent of shares
Clearing House for Number Portability Company Limited	An enterprise that serves as a center of information system service for providing mobile number portability service in accordance with the National Telecommunications Commission Notification on Criteria for Mobile Number Portability Service dated 3 May 2009.

Details of the lists between individual or enterprise related are as follows:

Accrued income - enterprise related consists of

	<u>Consolidated financial statement</u>	
	<u>31 Dec 2019</u>	<u>31 Dec 2018</u>
Other enterprise related		
Accrued income - current portion	1,665.66	-
Total accrued income - enterprise related	<u>1,665.66</u>	<u>-</u>

Loan according to Section 52(6) - enterprise related consists of

	<u>Consolidated financial statement</u>	
	<u>31 Dec 2019</u>	<u>31 Dec 2018</u>
Other enterprise related		
Loan according to Section 52(6) - Current portion	-	1,300.00
Loan according to Section 52(6) - Current portion of long-term debts	-	8,400.00
Total loans according to Section 52(6) - enterprise related	<u>-</u>	<u>9,700.00</u>

43. Individual or enterprise related (continued)

Other current assets - enterprise related consists of

	Consolidated financial statement	
	31 Dec 2019	31 Dec 2018
Other enterprise related		
Other current assets	16.73	-

Note payable - enterprise related consists of

	Consolidated financial statement	
	31 Dec 2019	31 Dec 2018
Other enterprise related		
Note payable	9.70	-

State revenue to be delivered to the Treasury - enterprise related consists of

	Consolidated financial statement	
	31 Dec 2019	31 Dec 2018
Other enterprise related		
State revenue to be delivered to the Treasury - Current portion	63,818.37	37,246.73
State revenue to be delivered to the Treasury - Current portion of long-term debts	104,946.86	176,220.35
Total State revenue to be delivered to the Treasury - enterprise related	168,765.23	213,467.08

Contribution to the Digital Economy and Society Development Fund - enterprise related consists of

	Consolidated financial statement	
	31 Dec 2019	31 Dec 2018
Other enterprise related		
Contribution to the Digital Economy and Society	2,370.09	751.06
Development Fund - Current portion		
Contribution to the Digital Economy and Society	4,935.05	6,983.25
Development Fund - Current portion of long-term debts		
Total Contribution to the Digital Economy and Society	7,305.14	7,734.31
Development Fund - enterprise related		

43. Individual or enterprise related (continued)

Revenue and expenditure - enterprise related consists of

	Consolidated financial statement	
	31 Dec 2019	31 Dec 2018
Revenue		
Revenue from telecommunications service Other enterprise related	1,134.16	1,608.88
Revenue from broadcasting and television services Other enterprise related	0.52	0.59
Revenue from the Research and Development Fund Other enterprise related	1,779.55	-
Expenditure		
Expenses – money to be delivered to the Treasury Other enterprise related	818.52	53,709.65
Contribution to the Digital Economy and Society Development Fund Other enterprise related	1,292.62	10,850.15
Expenses for operation and public utility Other enterprise related	23.11	18.13

44. Major Events, Disputes and Lawsuits

1. Disputes and Lawsuits that the Office of the NBTC was the plaintiff consisted of

1.1 The Office of the NBTC was the plaintiff for the offence of breach of contract for the radio broadcasting station rental in the frequency of 98.5 MHz and demanded a payment for damages for 41.51 million baht according to the Undecided Case No. 9278/2015 (Undecided Case No. 4800/2010, Decided Case No. 4067/2011) which is reliable that the Office of the NBTC will receive some payment of debts.

1.2 The Office of the NBTC was the plaintiff for the offence of breach of contract for Por Nor 1 radio broadcasting station rental, and demanded a payment for damages with capital of 53.13 million baht according to the Undecided Case No. 17794/2014 (Undecided case No. 6024/2009, Decided Case No. 1935/2011) which is reliable that the Office of the NBTC will not receive the payment of debts as the debtor has no assets to be seized for an execution of debts payment.

1.3 The Office of the NBTC was the plaintiff for the offence of the delivery of revenue from the provision of mobile phone service in the frequency band of 1800 MHz in the consumer protection period starting from the effective date of the Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) until the ending date of service provision according to the Undecided Case No. 1228/2016 with capital of 2,311.97 million baht according to the Undecided Case No. 1441/2016 with capital of 869.51 million baht, and was the defendant according to the Undecided Case No. 2392/2018 and 2399/2018 respectively. The case is in the process of determination of ending date of fact findings of the Supreme Administrative Court and the public prosecutor, the attorney of the two plaintiffs, submitted a request to amend the indictment.

1.4 The Office of the NBTC had requested for the settlement of the bankruptcy case for 9.20 million baht according to the Undecided Case No. 811/2002 (Decided Case No. 755/2002) in which the Office of the NBTC may not be distributed of the assets.

1.5 The Office of the NBTC was the plaintiff for the offence of breach of contract for radiocommunications device rental according to the Undecided Case No. 2618/2006 (Decided Case No. 646/2007) with capital of 11.17 million baht, which is reliable that the Office of the NBTC will not receive the payment of debts as the debtor has no assets to be seized for an execution of debts payment.

44. Major Events, Disputes and Lawsuits (continued)

1.6 The Office of the NBTC was the plaintiff for the offence of breach of contract and claim for damages according to the Undecided Case No. 4469/2019 with capital of 6.80 million baht which is reliable that the Office of the NBTC will win the case in which the Court allows the parties to negotiate according to their wishes and determines the guidelines for the proceedings.

1.7 The Office of the NBTC was the plaintiff for the offence of unpaid annual license fees according to the Undecided Case No. 2730/2019 with the capital of 27.13 million baht which is reliable that the Office of the NBTC will win the case and it is under the consideration of the Court.

1.8 The Office of the NBTC was the plaintiff for the offence of unpaid annual license fees according to the Undecided Case No. 2731/2019 (Decided Case No. 4952/2019) with the capital of 65.18 million baht in which the Court had sentenced to pay according to the capital and was in the execution of the judgment.

2. Disputes and Lawsuits that the Office of the NBTC was the defendant consisted of

2.1 The Office of the NBTC was the defendant for the offence in relations to the dispute on administrative contract according to the Undecided Case No. 701/2017 (Undecided Case No. 1370/2015, Decided Case No. 1911/2017) with the capital of 9.32 million baht which is reliable that the Supreme Administrative Court will uphold the judge that the Office of the NBTC pays in some part (lose a lawsuit in some part).

2.2 The Office of NBTC was the defendant for the offence in relations to placing an order for setting the daily administrative fine at 80,000 baht due to the plaintiff failed to collect data and details of prepaid mobile phone users which is considered a violation of the NTC Notification on Criteria for Telecommunications Numbers Allocation and Management B.E.2551 (2008), Articles 38 and 96 according to the Undecided Cases No. 1867/2011 (780/2016) with capital of 34.96 million baht in which the case is in the process of determination of ending date of fact findings of the Supreme Administrative Court, and according to the Undecided Case No. 818/2013 (510/2016) with capital of 21.20 million baht and according to the Undecided Case No. 3117/2012 (1607 - 1608/2015) with capital of 94.56 million baht which is in the process of determination of ending date of fact findings of the Supreme Administrative Court.

2.3 The Office of the NBTC was the defendant for the offence in relations to the issuance of the order for setting the daily administrative fine at 100,000.00 baht due to the plaintiff has defined the usage duration for prepaid mobile phone services which is considered a violation of the NTC Notification on Standard of Contract for the Provision of Telecommunications Service B.E.2549 (2006), Article 11, according to the Undecided Case No. 75/2013 (173/2017) with capital of 24.40 million baht according to the Undecided Case No. 56/2013 (660/2016, the Decided Case No. 717/2016) with capital of 24.00 million baht, and the Case No. 55/2013 (1720/2016) with capital of 23.30 million baht which is in the process of determination of ending date of fact findings of the Administrative Court.

2.4 The Office of the NBTC was the defendant for the offence in relations to the issuance of the Order of the Secretary-General of the NBTC for setting the daily administrative fine at 140,000.00 baht and according to the TC's Resolution in the Meeting No. 13/2015 on 30 June 2015 and the pronouncement on the Undecided Case No. 1927/2015 (100/2018) with capital of 58.94 million baht which is in the process of determination of ending date of fact findings from additional testimony of the defendant of the Administrative Court, and according to the Undecided Case No. 53/2019 (which was the Undecided Case No. 1933/2015 and the Decided Case No. 2464/2018) with capital of 62.72 million baht which defendant has already submitted the appeal.

44. Major Events, Disputes and Lawsuits (continued)

2.5 The Office of the NBTC was the defendant for the offence in relations to exercising power under the law on the rights to use spectrum in the frequency band of 1800 MHz and requesting for the withdrawal of the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013), according to the Undecided Case No. 2128/2013 with capital of 275,658.36 million baht which is in the process of submission of request for a certificate of judgement of absolute execution of the Administrative Court as the plaintiff did not submit an appeal within the period and, as a result, the case is absolute execution.

2.6 The Office of the NBTC was the defendant for the offence in relations to unlawful conduct by a state administrative agency or state officials in case of issuance of the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013), and the NBTC Notification on Users Protection in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision according to the Order of the NCPO No. 94/2014 regarding the Suspension of Operation under the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services. The plaintiff has demanded the defendants to share liabilities or cover for a payment of 24,291.86 million baht with interest at the rate of 7.5 percent per year to the plaintiff according to the Undecided Case No. 1651/2015 which is in the process of determination of ending date of fact findings and preparation of explanation including additional amendment of the amount of the capital.

2.7 The Office of the NBTC was the defendant for the offence in relations to the request for damages payment caused by the operation of the plaintiff under the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) in the case that the cost of expenditure is higher than income and demanding for the reimbursement of telecommunications numbering fees that the plaintiff has already paid at the amount of 190.97 million baht according to the Undecided Case No. 2013/2015 with capital of 16,074.10 million baht which is in the process of determination of ending date of fact findings of the Administrative Court and the Administrative Court has the order to consolidate the Undecided Case No. 1712/2016 and the Undecided Case No. 2392/2018.

2.8 The Office of the NBTC was the defendant for the offence in relations to the issuance of the order to the plaintiff to deliver the revenue from the provision of service according to the Measure for Protecting Users in Temporary Period according to the Undecided Case No. 1997/2015 with capital of 627.64 million baht, which is in the process of determination of ending date of fact findings of the Administrative Court.

2.9 The Office of the NBTC was the defendant for the offence in relations to the issuance of the order for setting the daily administrative fine at 210,000.00 baht on the plaintiff until the plaintiff has already submitted the completed report of accounting separation in telecommunications services in 2012 according to the NBTC Notification on Criteria and Methods for the Preparation of the Report of Accounting Separation in Telecommunications Services according to the Undecided Case No. 215/2018 (Case of the Central Administrative Court No. 59/2016 and 1517/2018) with capital of 22.89 million baht which is in the determination of ending date of fact findings of the Court.

44. Major Events, Disputes and Lawsuits (continued)

2.10 The Office of the NBTC was the defendant for the offence in relations to the disputes on revenue and expenditures in the temporary period for users protection according to the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) and the NBTC Notification on Protecting Users in Temporary Period in Case of the Termination of Concession or Contract according to the Order of National Council for Peace and Order No. 94/2014 regarding the Suspension of Operation under the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services according to the Undecided Case No. 741/2016 with capital of 5,778.00 million baht, which is in the process of preparing the appeal.

2.11 The Office of the NBTC was the defendant for the offence in relations to unlawful conduct by a state administrative agency or state officials in case that the TC Meeting No. 32/2015 on 2 December 2015 had its Resolution to assign the universal service obligation on the plaintiff based on the revenue from telecommunications business operation (after cost deduction) of telecommunications licensees at the rate of 4 percent per year according to the Undecided Case No. 14/2019 (Undecided Case No.1545/2016 and Decided Case No. 2342/2018) with capital of 86.96 million baht which the defendant has already submitted the appeal to the Court.

2.12 The Office of the NBTC was the defendant for the offence in relations to issuing an order for setting compulsory administrative measures due to the plaintiffs was unable to completely provide the Mobile Number Portability service within the specified period according to the Undecided Case No. 792/2011 (439/2015) with capital of 13.50 million baht which is in the process of determination of ending date of fact findings from the plaintiff's appeal and the Undecided Case No. 793/2011 (105/2015) with capital of 13.50 million baht, which is in the process of determination of ending date of fact findings of the Administrative Court.

2.13 The Office of the NBTC was the defendant for the offence in relations to the disputes of unlawful conduct by a state administrative agency or state officials (the Order which requiring the payment of unpaid telecommunications service fees with interest and surcharge) according to the Undecided Case No. 439/2008 (1122/2010) with capital of 747.42 million baht, which the public prosecutor has already submitted a statement to the Court (the Supreme Administrative Court considers that the lawsuit has no complicated laws and facts, it is not necessary to set a first hearing, both parties do not wish to have a first hearing).

2.14 The Office of the NBTC was the defendant for the offence in relations to the disputes of unlawful conduct by a state administrative agency or state officials (the unlawful Order which requiring the payment of special telecommunications number fees) according to the Undecided Case No. 397/2011 (Decided Case No. 2112/2015, (123/2015) with capital of 656.51 million baht which is in the process of determination of ending date of fact findings from the plaintiff's appeal of the Administrative Court and the filing an appeal of the defendant.

2.15 The Office of the NBTC was the defendant for the offence in relations to unlawful conduct by a state administrative agency or state officials (requesting for the revoke of the NTC Notification on Criteria for Mobile Number Portability Service, the Order of the Secretary-General of the NTC prescribing that the plaintiff must provide the mobile number portability service, and the Order for setting the administrative fine in case that the plaintiff failed to carry out the provision of mobile number portability service) according to the Undecided Case No. 777/2011 (445/2015) with capital of 13.50 million baht which is in the process of determination of ending date of fact findings from the appeals of the plaintiff and the defendant of the Administrative Court, and according to Undecided Case No. 778/2011 (430/2015) with capital of 13.50 million baht which is in the process of determination of ending date of fact findings from the appeals of the plaintiff and the defendant of the Administrative Court.

44. Major Events, Disputes and Lawsuits (continued)

2.16 The Office of the NBTC was the defendant for the offence in relations to the disputes of unlawful conduct by a state agency or state officials and the violation of the administrative authorities or government officials resulting from the execution of legal power (requesting for the revoke of the Resolution of the NBTC Meeting No. 8/2010 on 2 April 2010 revoking the order for setting daily compulsory administrative measures at 166,666.67 baht) according to the Undecided Case No. 894/2014 (Case of the Central Administrative Court No. 1113/2010, Decided Case No. 1177/2014) with capital of 13.50 million baht which is in the process of determination of ending date of fact findings of the Administrative Court.

2.17 The Office of the NBTC was the defendant for the offence in relations to placing an order for setting the daily administrative fine at 20,000.00 baht due to the plaintiffs failed to sign the telecommunications network access contract which is considered a violation of the Telecommunications Business Act B.E.2544 (2001) Section 26 and Section 64 according to the Undecided Case No. 1033/2010 (1065/2012) with capital of 43.60 million baht, which is in the process of determination of ending date of fact findings and consideration of a provisional petition before judgment of the Administrative Court.

2.18 The Office of the NBTC was the defendant for the offence of the remuneration of use of telecommunications equipment and telecommunications network in the users protection temporary period under the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) according to the Undecided Case No. 918/2015 with capital of 24,117.04 million baht, which is in the process of testimony preparation.

2.19 The Office of the NBTC was the defendant for the offence in relations to the TC Meeting No. 32/2015 on 2 December 2015 that had its resolution to approve the assignment of the universal service obligation (USO) on the telecommunications licensees type 2 with having own network, and type 3 according to the Undecided Case No. 8/2019, 9/2019, 18/2019, 17/2019, 12/2019, 11/2019, 13/2019, 10/2019, 19/2019 with capital of 4 percent of the revenue from telecommunications business in which the defendant has already submitted additional testimony to the Administrative Court and the Administrative Court has sentenced to withdraw the order in the excess of 3.75 percent per year, which the defendant has already submitted an appeal to the Administrative Court, and the disputes regarding the issuance of orders on the plaintiff to allocate revenues from telecommunication business operation (from 1 January 2012 - 30 May 2012) at the rate of 4 percent per year to the USO Fund, and the NBTC resolution in the Meeting No. 13/2017 on 4 October 2017, Agenda 5.2.13 (resolution on disputes) agreed to uphold with the Order of Secretary-General of the NBTC and the letter No. 5011/35609 dated 24 October 2017 issuing under the Resolution of the Meeting No. 13/2017 on 4 October 2017 according to the Undecided Case No. 182/2018, 183/2017, 119/2018, 174/2018, 175/2018, 161/2018, 270/2018, 176/2018 and 181/2018 with capital of 4 percent of the revenue from telecommunications business operation (1 January 2011 - 30 May 2012) with an additional amount equal to the sum of the unpaid amount multiply by the loan interest rate of MLR+2, which the defendant has already submitted the testimony to the Court.

2.20 The Office of the NBTC was the defendant for the offence in relations to the request for the delivery of the revenue from the provision of mobile phone service in the frequency band of 900 MHz in the temporary period of users protection under the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013) and its amendment according to the Undecided Case No. 661/2017 and the Undecided Case No. 736/2017 with capital of 7,221.00 million baht, which is in the process of fact finding of the Administrative Court and the plaintiff has submitted a letter to inform the Central Administrative Court that the plaintiff has not wished to make an objection to the testimony.

44. Major Events, Disputes and Lawsuits (continued)

2.21 The Office of the NBTC was the defendant for the offence in relations to placing a resolution and/or an order for setting the daily administrative fine at 1,239,538.88 baht due to the violation or failure to comply with the NTC Notification on Criteria of Mobile Number Portability and the practical guideline condition on the portability of mobile phone service providers according to the Undecided Case No. 1361/2017 with capital of 21.07 million baht, which is in the process of fact finding of the Administrative Court.

2.22 The Office of the NBTC was the defendant for the offence in relations to placing a resolution and/or an order for setting the daily administrative fine at 169,244.00 baht due to the violation or failure to comply with the NTC Notification on Criteria of Mobile Number Portability and the practical guideline condition on the portability of mobile phone service providers according to the Undecided Case No. 1370/2017 with capital of 7.33 million baht, in which the defendant has submitted additional testimony to the Court.

2.23 The Office of the NBTC was the defendant for the offence in relations to placing a resolution and/or an order for setting the daily administrative fine at 5,400,591.64 baht due to the violation or failure to comply with the NTC Notification on Criteria of Mobile Number Portability and the practical guideline condition on the portability of mobile phone service providers according to the Undecided Case No. 1357/2017 with capital of 221.42 million baht, which the Court has set the date of 11 July 2019 as the end date of the fact findings.

2.24 The Office of the NBTC was the defendant for the offence in relations to the breach of duty or delay on duty in the transition to digital TV according to the Undecided Case No. 574/2016 (the Decided Case No. 1923/2018) with capital of 321.77 million baht which the Court had granted the motion of the plaintiff to withdraw the lawsuit and struck the case out of the case-list according to the Undecided Case No. 1539/2015 (Decided Case No. 1884/2019), with capital of 1,875.86 million baht, the Undecided Case No. 1961/2015, with capital of 3,015.67 million baht, and the Undecided Case No. 1962/2015, with capital of 941.35 million baht, which are in the process of consideration of the Court.

2.25 The Office of the NBTC was the defendant for the offence in relations to placing the Order to revoke the license for broadcasting business operation according to the Undecided Case No. 1163/2015 (159/2019) with capital of 15.00 million baht which is in the process of consideration of the Court.

2.26 The Office of the NBTC was the defendant for the offence in relations to the request for damages arising from the operations under the NBTC Notification on Measure for Protecting Users from 1 November 2015 to 3 December 2015 according to the Undecided Case No. 1712/2016 with capital of 709.65 million baht which is in the process of determination of ending date of fact findings of the Court.

2.27 The Office of the NBTC was the defendant for the request of withdrawing the NBTC's resolution on the payment of the administration fee for the extension of the license of radio broadcasting (trial operation) according to the Undecided Case No.195/2019, with capital of 42.59 million baht, which is in the process of consideration the Central Administrative Court.

2.28 The Office of the NBTC was the defendant for the offence in relations to the disputes of the NBTC's resolution in the Meeting No.20/2018 on 31 October 2018 approving the criteria and results of the consideration of the network usage of the plaintiff for the provision of mobile phone service in the frequency band of 900 MHz during the temporary period of protecting consumer under the NBTC Notification on Measure for Protecting Users in Temporary Period in Case of the Termination of Concession or Contract for Mobile Phone Service Provision B.E.2556 (2013), according to the Undecided Case No. 1775/2019, with capital of 5,564.87 million baht, which is in the process of proposing an agenda for delegation of power and preparing a testimony.

45. Others

The necessary burden of the Office of the NBTC for the efficient operation under Section 65, Paragraph Two of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E. 2553 (2010) and its amendments are as follows:

	<u>2019</u> <u>The office</u> <u>Section 65 (1-2)</u>	<u>2018</u> <u>The office</u> <u>Section 65 (1-2)</u>
Reserved fund for overlapped disbursement in 2018-period extension		4.23
Reserved fund for overlapped disbursement in 2019-period extension	84.89	1,465.86
Reserved fund for overlapped disbursement in 2019	1,025.23	-
Creditors and notes payables (excluded the reserved fund in 2019 and 2018)	556.87	367.42
Other current liabilities (excluded from the reserved fund in 2019 and 2018)	306.72	194.47
Revenue in transit to the Digital Economy and Society Development Fund	312.07	147.76
Trust money, contract guarantee deposits, security deposits of loss	<u>2,902.84</u>	<u>2,631.03</u>
Surplus of trusted money payables, and others		
Total	<u>5,188.62</u>	<u>4,810.77</u>



Internal Audit Report of the Office of the NBTC in the Fiscal Year 2019

According to the Order of the National Broadcasting and Telecommunications Commission (NBTC) No.41/2015, dated 6 May 2018, appointing the Internal Audit Committee for 5 persons consisting of:

(1)	General Kamol Saenissara	Chairman
(2)	Mr. Wallop Nitatkanchananon	Committee
(3)	Mr. Somyos Sriwanich	Committee
(4)	Mr. Atthawut Vikitsreth	Committee
(5)	Mr. Weerapong Kriengsinyos	Committee

General Kamol Saenissara had vacated the office upon having attained the age of seventy years on 28 January 2019 according to the prohibition qualification under the Act on Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services B.E.2553 (2010), Section 7 (2) and Mr. Weerapong Kriengsinyos had resigned from the post on 27 May 2015, therefore 3 committees have remained in the office at present which is in accordance with the law and regulation of the NBTC regarding the Internal Audit B.E.2554 (2011)

The Internal Audit Committee has operated under its powers and duties under Section 3 of the NBTC Regulation regarding the Internal Audit B.E.2554 (2011) with its policy focusing on the operation based on the good governance principle, good internal auditing system, and independent operation under its powers and duties without intervention from the NBTC, the Office of the NBTC, or any other departments.

The operation under its powers and duties and responsibilities of the Internal Audit Committee in 2017 had been focused on the preventive audit and providing advice for the improvement of a systematic working under the good governance including giving the importance on the follow-up of issues found at risk and having impacts on the performance of the NBTC and the Office of the NBTC regularly. The Internal Audit had organized 12 meetings in which the executives, officials of the relevant bureaus, and the auditors were invited to attend the meetings as appropriate.

The important operation can be summarized as follows:

1. Having reviewed the efficiency and the appropriateness of risk management process arising from both internal and external the organization, policy on risk management, workplans and risk management guidelines that significantly affect the operation of the Office of the NBTC, including following-up the implementation under the risk management plan continuously, along with providing suggestions for better improvements.

2. Having reviewed the effectiveness of the Internal Control System of the Office of the NBTC, evaluated the sufficiency of the existing controls in each activity of the Office of the NBTC related to the custody of assets, protection or reduction of errors, damages, spills, wastage or corruption including supervising the operation to be in accordance with the specified criteria and rules through recommendations given to the personnel of each bureau concerned about the issues observed in order to continuously improve the internal control system of the Office of the NBTC.

3. Having reviewed the operating system in all areas under the good governance to ensure of the compliance with the laws, regulations, rules, orders prescribed by the NBTC, and the operational standard that can make the operation achieve targets, objectives and be in line with the NBTC's policies.

4. Having reviewed the correctness and accountability of the financial report of the Office of the NBTC by reviewing accounting entry, financial statement, as well as the operation on accounting, finance, and procurement with the officers of the Office of the Auditor General of Thailand (auditor) and relevant officials, proceeding according to the advice of the Office of the Auditor General to ensure that the preparation of financial report is in accordance with the legal requirements and accounting standards in accordance with generally accepted accounting principles, and having disclosed adequate information to be useful to users of financial reports.

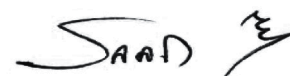
5. Having reviewed and evaluated the performance of the Office of the NBTC in areas of accounting, finance and procurement, as well as proposing recommendations for the most efficient improvement.

6. Analyzing and evaluating the efficiency, cost savings, and worthiness of resources usage by verifying the implementation and evaluation of the projects expenditure of the Office of the NBTC.

7. Reviewing the strategic plan of the Office of the NBTC annual audit plan and long-term audit, the compliance with the plan, and the inspection results, as well as proposing recommendations and following up the improvement according to the internal audit report in the significant issues in order to encourage the good governance and the sufficient internal controls.

The Internal Audit Committee is of the view that the overall operation of the Office of the NBTC in the year 2019 had been in line with the good governance, transparency, risk management and internal controls without any weakness or significant irregularities. In addition, the preparation process of financial reports had been complied with the generally accepted accounting standards with the appropriateness, reliability and sufficiency of the disclosure of adequate information on financial reports.

The committee had focused its operation on the oversight and proposed observations and recommendations to the Management and the operating units in a frank and fair manner, and the report of auditing and recommendations had been prepared and submitted to the NBTC in every 180 days for the improvement of the Office of the NBTC, as well as followed-up the result of the improvement upon the recommendations for the most efficient of the performance.



(Mr. Wallop Nitatkanchananon)
Internal Audit Committee

6

Workplan and Budget Expenditure Plan in the year 2020



Workplan in the year 2020

The NBTC and the Office of the NBTC has announced the direction of operation to be used as guideline for carrying out the tasks on regulating the broadcasting, television, telecommunications and satellite services, including building confidence in the performance of the NBTC and the Office of the NBTC in driving the country towards the digital economy era. The workplan of the year 2020 are as follows:

1. 5G Spectrum Auction. The Office of the NBTC will conduct a spectrum auction of four frequency bands with a view to enable the use of the spectrum for the provision of 5G service in Thailand in 2020, increasing the potential of country's infrastructure to be able to compete with other countries, and preparing readiness to support the relocation of production bases in the United States, Japan, and China, increasing the opportunities to access technology and capability to compete in trade, the opportunity to access information, medical service and applying technology to agriculture, trade, transportation and service.

2. Having allocated spectrum in advance in the frequency band of 3500 MHz to be used in the 5G spectrum auction and setting up the criteria relevant to the licensing and regulation as the frequency in the band of 3500 MHz is another frequency band that is suitable to be used for 5G service provision; however, because the frequency in this band has been used for the Microphone service, which will end of service in March 2021 and some part of the frequency band have been used for the satellite service. Therefore, to prepare the spectrum to be ready for use, the Office of the NBTC will set up various criteria in advance for the auction so that when the time comes, it can be used immediately.

3. The announcement of licensing for the right to access the satellite orbit (not under the concession). According to the Act on the Organization to Assign the Frequency and to Regulate the Broadcasting and Telecommunications Services (No.3) B.E. 2562 (2019), it authorizes the NBTC the right to manage the satellite orbits

remaining from the THAICOM satellite concession by issuing licensing criteria and conditions in order to get new entrants of satellite operators.

4. All overhead telecom and Broadcast cables organized and installed underground is another issue that the Office of the NBTC has been continuously working in cooperation with other organizations, such as the Metropolitan Electricity Authority, Provincial Electricity Authority, Bangkok Metropolitan administration, telecommunications operators, broadcasting operators, and television operators, in order to ensure the safety of people's life and property including building a beautiful scenery especially in Bangkok area. This will support the government's policy to make Bangkok become the ASEAN Capital.

5. Raising awareness on the safety of mobile phone tower (Cell Site) in order to disseminate the study results of the ITU regarding cell sites do not affect the health of people living nearby the areas that the cell sites have been installed to the public for acknowledgement and understanding of the facts.

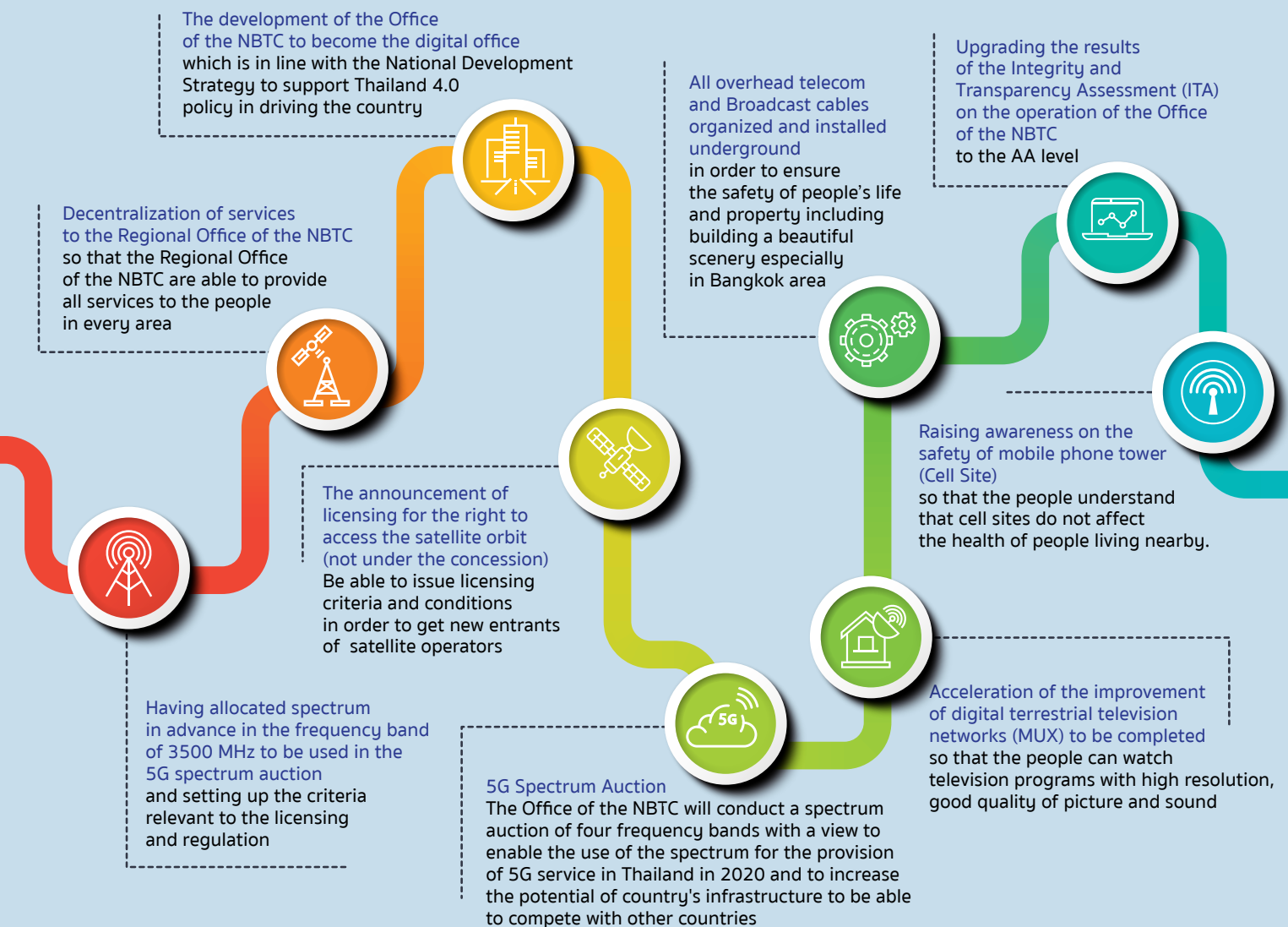
6. Acceleration of the improvement of digital terrestrial television networks (MUX) the Office of the NBTC will push forward the improvement of networks to be completed as planned so that the people can watch television programs with high resolution, good quality of picture and sound, including supporting the improvement of network system to be appropriate with the frequency bands adjusted in order to use the rest of the spectrum for the provision of 5G services and other technologies.

7. Decentralization of services to the Regional Office of the NBTC so that the Regional Office of the NBTC are able to provide all services to the people in every area and to facilitate the people in the provincial areas by reducing time and traveling expenses in applying for a license, renewing a license, testing for standard, requesting for a service or advice, making a complaint or contact for other services at the Office of the NBTC (the Head Quarter) in Bangkok.

8. Upgrading the results of the Integrity and Transparency Assessment (ITA) on the operation of the Office of the NBTC to the AA level in the year 2019 with a score of 94.71, which is considered the first rank among other government agencies and is ranked at 40 of Thailand among 8,299 government agencies participating in the assessment.

9. The development of the Office of the NBTC to become the digital office which is in line with the National Development Strategy to support Thailand 4.0 policy in driving the country by having applied technology to the work and facilitated the people.

Work Plan of the office of the National Broadcasting and Telecommunications Services in the Year 2020



Budget Expenditure Plan in the year 2020

The Office of the NBTC has allocated the budget expenditure in the year 2020 by taking into account the importance and necessity of the implementation of the key missions of the organization in order to drive the strategies under the Spectrum Management Master Plan, Broadcasting Master Plan, and Telecommunications Master Plan which are in line with the 20-Year Plan of National Strategy, and Development Plan for Digital Economy and Society, by having aligned to the 2nd Strategic Plan of the Office of the NBTC under 4 strategic issues, 19 strategies including urgent crucial missions that comply with the NBTC's policies and the Office of the NBTC

which have announced the directions, policies and operational plan in the year 2020 to drive the 9 urgent missions for supporting the government's policies. The NBTC Meeting No.21/2019 on 11 December 2019 had approved the budget expenditure in the year 2020 at the amount of 6,548.329 million baht consisting of the operational expenses of the NBTC and the Office of the NBTC, the project expenses, the operational expenses of the Performance Follow-up and Evaluation Committee and the budget allocation to the Fund which had already been approved by the National Digital Economy and Society Commission, details are as shown in Table 41.

Table 41 : Budget Expenditure Plan in the year 2020

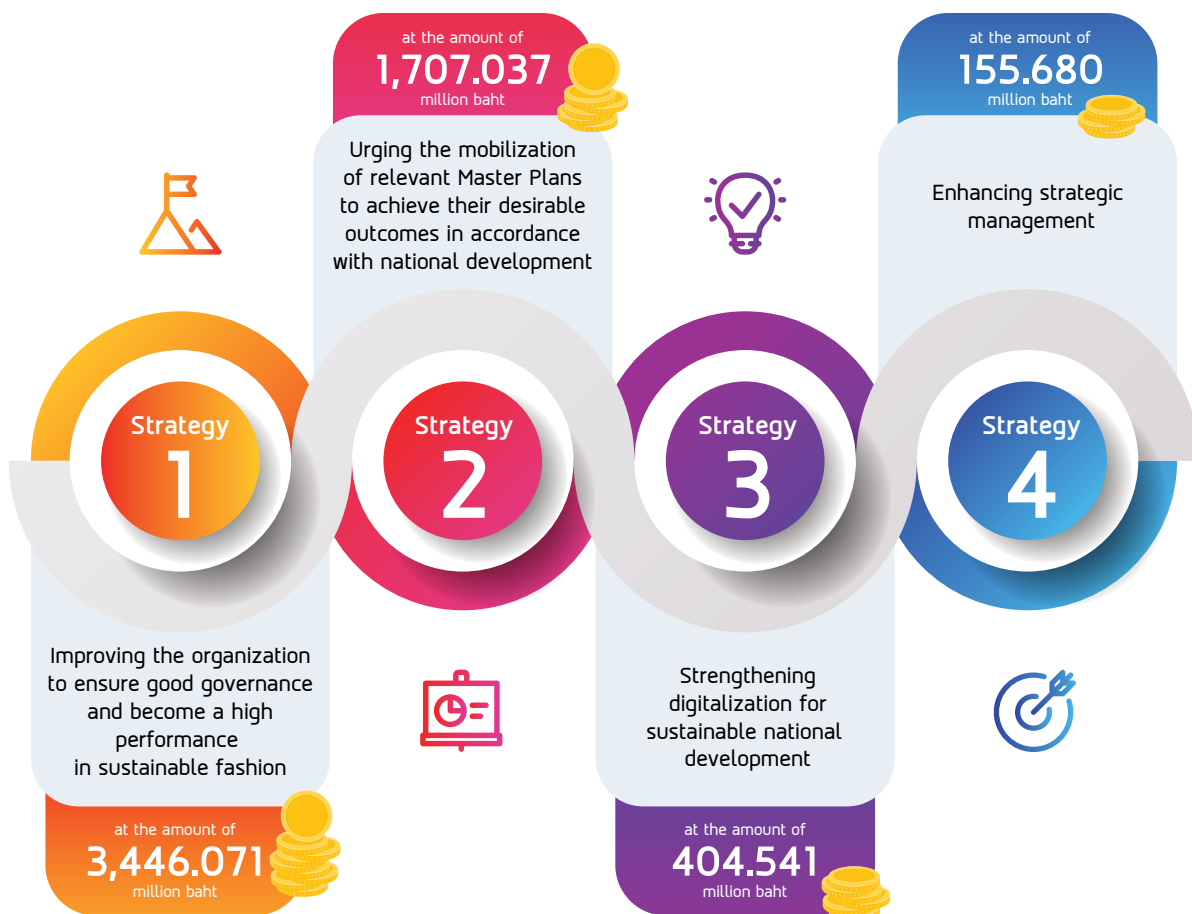
Details	Amount (Million baht)
1. Operational expenses of the NBTC and the Office of the NBTC	3,845.160
1.1 Personnel expenses	1,635.887
1.2 Expenses for organization management and administration	1,443.668
1.3 Expenses for durable articles, land and construction	276.891
1.4 Other expenses	488.715
2. Project expenses	1,647.807
3. Central budget	105.400
4. Operation expense of the Performance Follow-up and Evaluation Committee	114.962
Total (1 - 4)	5,713.329
5. Budget allocation to the Fund	835.000
5.1 The Broadcasting and Telecommunications Research and Development Fund for the Public Interest	625.000
5.2 The Technology Development Fund for Education	210.000
Total (1 - 5)	6,548.329

Source : Strategic and Budget Bureau, Office of the NBTC

The budget expenditure in the year 2020 at the amount of 6,548.329 million baht can be categorized to the Budget allocated to the Fund at the amount of 835.000 million baht, and the budget expenditure according to the Strategic Plan of the Office of the NBTC No.2 B.E.2561 - 2564 (2018 - 2021) at the amount of 5,713.329 million baht, which can be classified into 4 strategies as follows:

- Strategy 1** Improving the organization to ensure good governance and become a high performance in sustainable fashion, at the amount of 3,446.071 million baht
- Strategy 2** Urging the mobilization of relevant Master Plans to achieve their desirable outcomes in accordance with national development, at the amount of 1,707.037 million baht
- Strategy 3** Strengthening digitalization for sustainable national development, at the amount of 404.541 million baht
- Strategy 4** Enhancing strategic management, at the amount of 155.680 million baht

Expenditure Budget in the year 2020 according to the Strategic Plan of the Office of the NBTC



7

Problems and Obstacles
in Broadcasting, Television and
Telecommunications
businesses operation which are
important to the people



Broadcasting business operation

In the past few years, the broadcasting and television businesses have faced significant challenges concerning disruptive technology and access to the internet with a more comprehensive network. This leads to the provision of over the top (OTT) service which has the important role and be able to respond to the needs to view or listen to programs of consumers such as viewing and listening to program contents at anytime and anywhere with interactivity.

In addition, OTT service providers have a competitive advantage when compared to the broadcasting business operators and television business operators who have still provided the services in an original kind of services since the OTT service is not currently regulated as the broadcasting and television services.

It is therefore no regulatory cost. Therefore, the guidelines for regulating the broadcasting and television services related should be considered for improvement to be in line with the ecology and changing situations and the NBTC should find the ways to promote the broadcasting and television business operation in order to create more fair and equal competition, including the promotion and development of creative and quality program contents which can be utilized by OTT service channels in the expansion of the contents to the global market as well as the creation of media literacy that focuses on digital media in order to enhance the potential of people to think, analyze and choose the right content, which will create immunity for people in the long-term.

Telecommunications business operation

Cyber threats

The Thai population has a higher rate of access and utilization of telecommunications services whether the use for searching information, news, data transmission or financial transactions which is one of the main factors that support the national economic and society; and, at the same time, Thailand also faces cyber threats such as data leakage of telecommunication users such as copy of ID card, passport, bank user data, and the spread of malware in IoT devices etc. The Global Cybersecurity Index (GCI) Report in 2019 of International Telecommunications Union (ITU) which is the report showing the levels of cybersecurity of country members had ranked Thailand at the 35th of the country with cybersecurity, and the rank is decreased when comparing to the year 2017 in which Thailand ranked at the 22nd.

The NBTC has recognized the importance of protecting consumers from cyber threats and carried out the operation related as follows:

1. Requiring the licensees to use the frequencies according to the Notification on Criteria and Procedures to Grant a License to Use the Spectrum for the International Mobile Telecommunications Service in the frequency band of 700 MHz, 1800 MHz, 2600 MHz, and 26 GHz bands, to set up the cybersecurity plan and the personal data protection plan as well as the mechanism for protecting personal data.

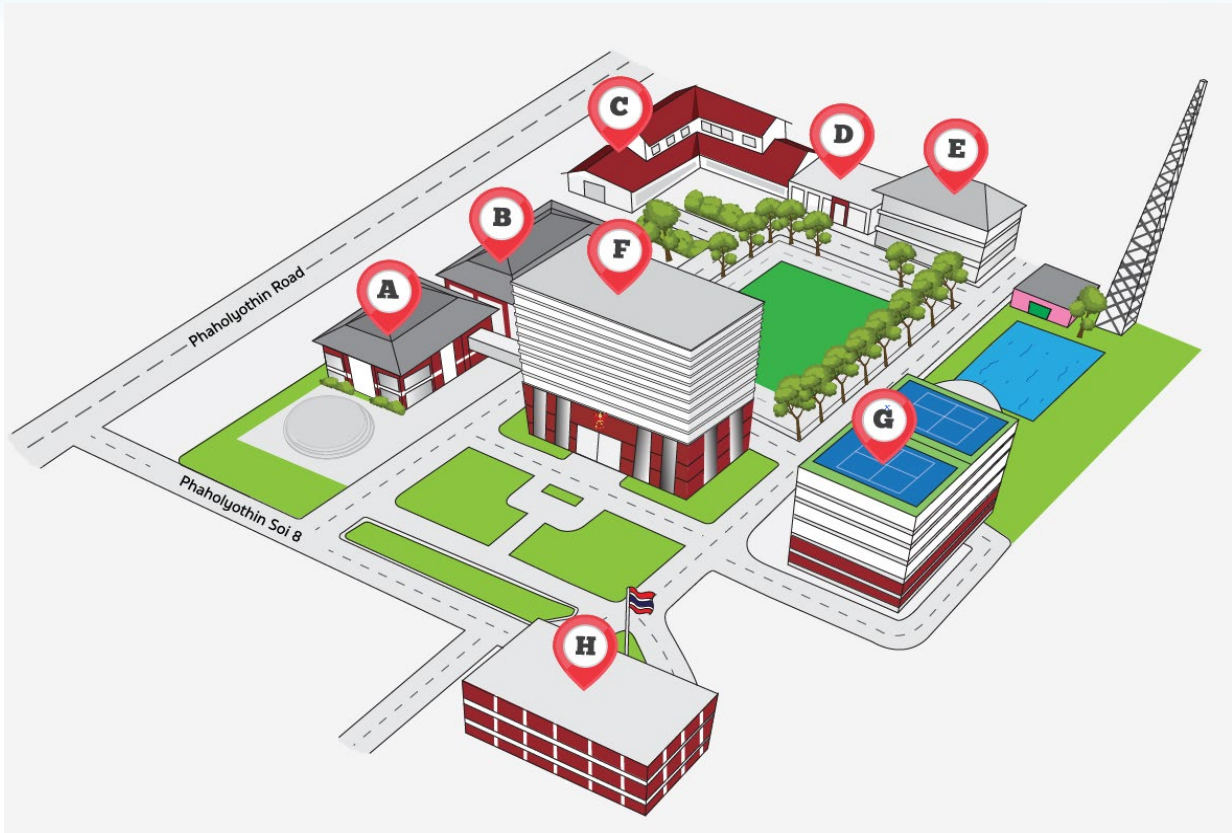
2. Organizing meetings with the Bank of Thailand to prepare for the readiness to handle cyber threats and having established a process of coordination to deal with the severity of cyber threats at various levels including the management in severity conditions that can cause damages to telecommunications network, financial services, and payment through telecommunications technology so that the determination

of the operation plan for coordination between the Office of the NBTC, the Bank of Thailand and those who involved when the cyber threat occurs can be done efficiently. Currently, the Office of the NBTC and the Bank of Thailand are in the process of preparation for setting up the cyber security coordination process of the financial institutions and the telecommunication sector and pushing forward the establishment of TCI-CERT under the support of TB-CERT for the rehearse of the cyber treats.

3. At present, the office of NBTC is in the process of drafting the NBTC Notification on Measure for the Protection of the Rights of Telecommunications Users regarding Personal Data, Rights to Privacy and Freedom.



Internal Lay Out of the Office of the NBTC



A Auditorium Building

B Canteen Building

C Building 4

Story 1

- Providing procurement services (procurement, contracts management, etc.)
- Providing check payment services for outsiders or companies

D Telecommunication Mediation Center

E Building 3

Story 1

- Providing testing and certification services for telecommunication devices and equipment (testing, certification, registration, SDoC, etc.)

F Main Building

G Parking Building

Story 2

- Providing document services for receiving and sending external letters

H Building 2

Story 1

- Providing radiocommunications licensing services and drones' registration
- Providing service for frequency allocation application for radiocommunications service

Story 2

- Providing payment services for license fees
- Providing licensing services for telecommunications business operation (with own network)

Story 3

- Providing licensing services for telecommunications business operation (without own network)



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