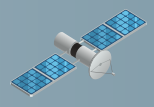
THAICOM



CONNECTIVITY FOR SUSTAINABILITY

THAICOM SUSTAINABILITY
REPORT 2019

THAICOM PUBLIC COMPANY LIMITED





SUSTAINABILITY

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Message from our CEO

Without a doubt, 2019 was another challenging year for Thaicom. Therefore, I would like to thank everyone for their continued support of the Company during this time which helped us remain focused on our responsibility to all stakeholders. We evaluated the impact on all areas of our operations, including the global economic, social, and environmental changes in order to develop and improve our strategies and business operations to grow our organization sustainably.

Our new vision, **"An Asian leading provider of space-air-ground-maritime enabled platforms and smart solutions for a better future"**, seeks to integrate all aspects of technology, including satellites (space), unmanned aerial vehicles (air), and ground communication systems, such as the Internet of Things (ground), which will generate vast amounts of data. Artificial Intelligence (AI) is applied to analyze this "Big Data" using smart solutions to the benfit of our customers.

Our sustainability program remains committed to the concept of "**Connectivity for Sustainability**", thus using technology to the benefit of all people and a connected world that is more in line with sustainability goals.

In addition, we are pursuing new business opportunities in cooperation with our business partners, customers, and other stakeholders, to achieve our goals.

In 2019, the Company invested in the development of new businesses and start-up projects. Although some of these projects are still in their initial phase, I feel confident and proud that we continue to carry out our mission of using technology for a more connected, sustainable world in areas other than our satellite core business.

In light of the above, we continue to pursue corporate values that help us to remain committed to the development of products and services of technological excellence, enabling us to deal with challenges. We are dedicated to the pursuit of new approaches and methods that support innovative thinking. At the same time, Thaicom remains firmly committed to conduct business responsibly in order to create benefits for a sustainable economic, social, and environmental development under the principles of good governance.

Without question, a healthy environment has become an important sustainability goal that all global businesses nowadays need to be aware of. Thaicom, therefore, continues its commitment to being involved in the global warming mitigation efforts by way of our energy management program and the use of renewable energy in our operations. Although the Company is not a direct polluter, we have started evaluating our emissions of greenhouse gases in 2017. As a result, we can set long-term carbon dioxide reduction goals and can improve the sustainability of our business operations.

With regards to our fleet of satellites, it was necessary to deorbit Thaicom 5 in February 2020, after the satellite experienced an anomaly in late 2019. In the process, the Company complied with the guidelines of the International Telecommunications Union (ITU), dictating to maneuver inactive satellites 300 kilometers above the original orbital slot where it finally becomes space debris. However, to this day there is no viable method or technology available to precisely and completely manage and eliminate space debris. We are pleased to witness that in the past few years there has been an increasing awareness of the space debris issue—especially in the context of several projects that invest in the launch of mega satellite constellations with some consisting of thousands of satellites. There are several projects in the satellite industry proceeding to develop concepts to eliminate space debris. Thaicom is closely following this development and complies with international guidelines on space debris mitigation.

With regards to economic sustainability, we continued to focus on the development of services in non-satellite business areas launched in 2018. One example is "Chao Aiang", a smart drone for agriculture business and service portfolio that is dedicated to help improve the efficiency and quality of life of Thai farmers. Furthermore, with "MoreSai", we launched a mobility-as-a-service business. The innovative electric motorcycle service targets a young generation of users who pay more attention to the environment and climate change than ever before.

With regards to 'health' and sustainable development, especially the well-being of employees, the Company appointed an ad-hoc committee to implement a business continuity management plan and evaluate possible risks of the COVID-19 Corona Virus crisis. While measures of the government were still unclear, the Company issued its own preventive measures,

including a 14-day quarantine for employees traveling back from foreign countries, abstaining from traveling for business meetings in foreign countries, wearing a mask in the workplace, cleaning working areas more than usual, measuring temperature of all persons entering the office, providing hand sanitizer, etc. In terms of operations and the management of satellite stations, the Company has increased emergency backup measures and introduced strict guidelines, such as limiting the number of people working in the same workplace, mandating many employees to work from home and at the same time not allowing third parties to enter the offcice except in urgent cases. On-site staff was split into separate groups to work without risk of infection through contact. Digital applications were used for meetings, operations, approvals and job assignments. Due to these measures, the Company has been able to continue operating its business virtually as usual and keep our employees safe and healthy during the COVID-19 crisis.



Anant Kaewruamvongs
Chief Executive Officer





A Path to Sustainability

VISION

An Asian leading provider of space-air-ground-maritime enabled platforms and smart solutions for a better future

Mission

- To create new revenue streams based on the Space-Air-Ground-Maritime Integrated network & solutions.
- To leverage our partnerships and local market knowledge to grow our business.
- To become an agile organization to support organization transformation and business diversification.
- To operate the business that creates benefits for the shareholders under the principle of corporate governance.
- To create social value for sustainable development.

Our Values: E P I C

E

Excellence in technology
We strive to develop products and services that will answer the needs of tomorrow, leveraging our skills and knowledge to achieve technological excellence.

P

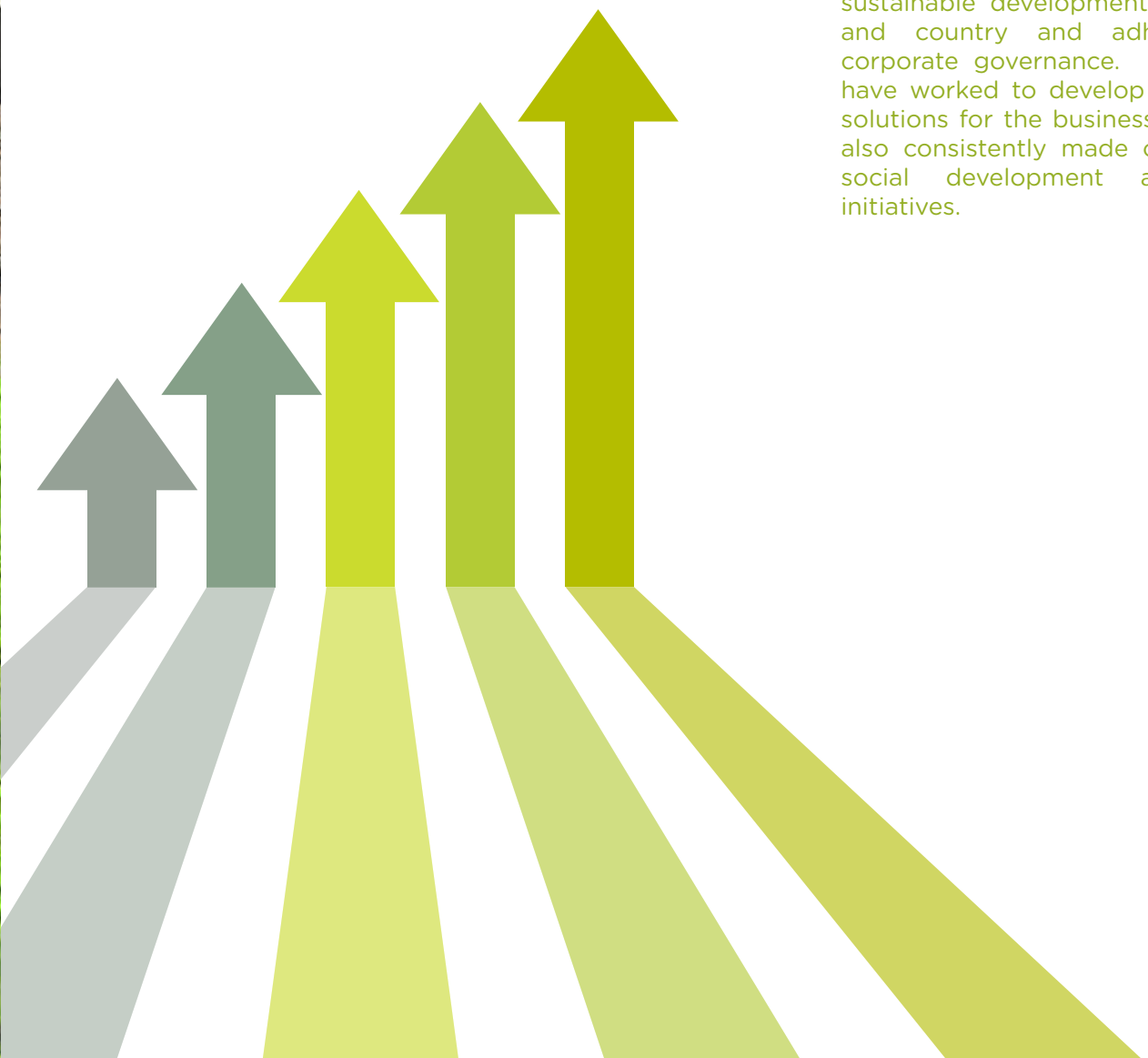
Passion to challenge
We are passionate about the work. we do, and about overcoming obstacles; we challenge the limits to turn ideas into reality.

I

Initiative in innovation
We believe in taking the initiative to develop innovative solutions to meet our stakeholders' needs.

C

Commitment to contribute
We remain committed to employing our skills and resources in contributing to the sustainable development of our society and country and adhere to good corporate governance. As hard as we have worked to develop innovative new solutions for the business, THAICOM has also consistently made contributions to social development and education initiatives.



A Sustainable Business Operation

Vision, mission, and values that will create sustainability for the organization are always in the direction attempting to promote the business operation that is consistent with the environment and society. They are adhered to as the corporate culture. However, amidst the rapid fluctuations and changes of technology nowadays, Thaicom therefore has to adjust its vision and mission to be suitable for the situation in order to set goals and strategies and seek for guidelines on business operations that will promote positive impacts so that the organization can grow sustainably, and also approaches to reduce negative impacts on society, economy and environment as well as stakeholders.

Path to Sustainability of Thaicom

Thaicom realizes that successfully and sustainably achieving and maintaining the goals in accordance with the vision and mission requires commitment and attention to the business operations that respond to and reduce impacts on the economy, society and environment. As a result, the Company determines the path to sustainability that still creates value and economic growth and also values for society and environment in order to cover and respond to all groups of stakeholders and achieve Thaicom Sustainability Goals under the concept of "Connectivity for Sustainability". The Company establishes the policy to promote sustainability as a framework for representing corporate social and environmental responsibility for continuous and stable growth and being accepted and trusted by stakeholders on the basis of good corporate governance so that the society and community can grow together with the Company, leading to sustainability.

Sustainable Development Policy:

1. The Company adheres to the principles of good corporate governance as laid out in the Corporate Governance Policy.
2. The Company operates its business fairly and ethically, promoting free trade competition and corporate social responsibility throughout the value chain.
3. The Company is against corruption of all kinds. Our expectations in this regard extend to relationships with all relevant stakeholders, which we take into consideration for collaborations and the development of our business network as a matter of risk management.
4. The Company respects human rights and protects human dignity without discrimination.
5. The Company regards its employees as its main resource. The Company employs people without discrimination, supporting their training and knowledge development.
6. The Company delivers quality products and services and provides continuous customer and consumer relations management, with a focus on respect for consumer rights.
7. The Company believes in and implements the idea of creating shared value between business and social sectors as a guideline for business conduct to promote mutual sustainable growth. The Company has a focus on providing educational support and access to technology and learning, career and skill building, and developing potential and investment for the benefit of society.
8. The Company believes in its potential and ability to innovate, which is an essential component for business operations and sustainable growth. The Company encourages employees to develop products and services and to participate in technological, work process, and business model innovation, either to create change or to bring about further development. Our objectives are to achieve positive creativity and product improvement.
9. The Company conducts its business with an emphasis on environmental sustainability and the conservation of resources by nurturing a corporate culture which encourages environmental restoration and care activities and behavior.

Thaicom Sustainability Goals

Economic Goal

Creating income and economic value for the nation by supporting the growth of the satellite communication and telecommunication business, including related business opportunities to promote the expansion and growth throughout the business chain, by adhering to the compliance with the principle of good corporate governance and Code of Conduct, supporting anti-corruption, promoting the creativity of innovations for the future in terms of product and service development, business process development, and strategic innovation.

Social Goal

Respecting for human rights, providing good human resource management to ensure fair treatment and benefits according to labor laws, promoting progress and personnel development according to business strategy, mainly paying attention to health and safety of personnel; Regarding the external society, aiming to create an opportunity to access information and communication thoroughly in all events, promoting opportunities for fair education and quality learning, supporting creation of career, improving quality of life in remote areas which is an important foundation of the livelihood of people in the community, leading to the creation of sustainability for society.

Environmental Goal

Reducing and mitigating the environmental impact caused by business operations, determining and perform operations according to pollution reduction measures as well as promoting energy conservation, reduction of greenhouse gas emissions, effective water management, and sustainable use of natural resources.

Strategy to Sustainability

Thaicom focuses on the development to sustainability in order to achieve Thaicom Sustainability Goals under the concept of "Connectivity for Sustainability". The Company therefore operates its business by taking economic, social and environmental dimensions into consideration. Strategies in 3 areas are applied to be in line with sustainable development as follows;

1. Responsible Business

The Company has an intention to responsible to society and stakeholders by offering products and services which meet the needs of customers, creating advantages of competition and sustainable growth, adhering to the compliance with the principle of good corporate governance and Code of Conduct. We are also focusing on the creation of added value and investment in businesses promoting sustainability, including the development of innovation with social and environmental responsibility.

2. Environmental Responsibility

The Company pays attention to environmental protection by focusing on the responsibility of reducing and mitigating environmental impacts caused by the Company's operations. We also sustainably conserves good resources and environment conditions, such as efficiently using measures on energy and water resources conservation and wastewater management in organization, including reducing the amount of greenhouse gas emission.

3. Responsibility to People and Society

Thaicom is aware of responsibility for human rights and labor laws, management, and treatment of employees and stakeholders by taking these matters into consideration with equality and fairness, development of personnel and promotion of career progress, including promotion of activities and projects building employee engagement and caring for society. Products and services of the Company provide access to data and communication in all areas and situations, as well as innovations that meet the expectations of the stakeholders. The Company has supported activities and projects that promoting the education and career development, especially in remote areas, so that the community can live sustainably.

Materiallity

Thaicom has identifed key sustainability issues based on data analysis, trends, business direction and goals for sustainable development both in national and international domains, while also taking into account the business plan of the Company. This ensures that the Company generates economic value in its business operations, benefiting both society and the environment while also appropriately meeting the expectations of the stakeholders under the Company's Materiality principles, as per the GRI guidelines as follows:

Step 1: Identication of key issues relevant to the organization and its stakeholders Thaicom compiles important information and data from a variety of sources and factors: internal (business goals and plans), which are gathered from management brainstorming, operational meetings, strategic meetings and analysis of risks associated with the sustainability of the organization; and external (trends in sustainability and expectations of shareholders), which are gathered by reviewing global Sustainable Development Goals, polls, meetings and seminars as deemed appropriate.

Step 2: Prioritization Issues and topics compiled in step 1 are compared for consistency with issues and indicators as per the GRI guidelines and are considered, tested, and prioritized accordingly.

Step 3: Validation Thaicom has reviewed the materiality issues in order to be in line with the business direction strategy and in line with the expectations of the stakeholder groups. It was found that the key issues that have been analyzed, considered and approved by the Sustainable Development Committee (SDCOM), there are some issues accelerating urgent to be processed, some issues are not important to the company's current situation and some issues require continuous response for a period of time. Thaicom therefore selects key sustainability issues as follows.



Materiality Issues to Thaicom







Economic

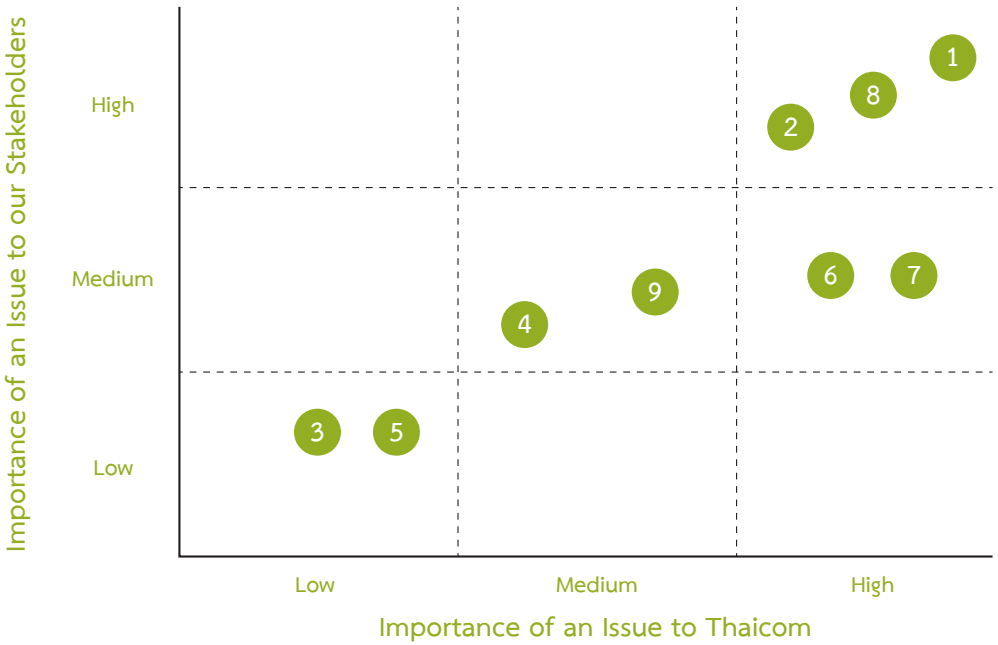
1. Sustaiable profitable growth/Economic performance
2. Ethicals business practices & Good Governance

Environmental

3. Emissions
4. Energy Management
5. Effluents & Waste

Social

6. Employee Satisfaction & Engagement
7. Employee Training & Development
8. Occupational Health & Safety
9. Data/Cyber Security & Customer Privacy
10. Community Contribution



Stakeholder Engagement

Thaicom realizes that all stakeholders are, directly or indirectly, important. Classification of stakeholders is based on the impact caused by the Company's business operations on each group of stakeholders to ensure that the actions and responses of the Company to expectations of all stakeholders are fair and reasonable. The Company establishes rules and procedures regarding stakeholder engagement by specifying them in the Code of Conduct, the manual on good corporate governance, and the Company's manual on ethics, which are distributed to all employees and published on the Company's website, for the rights of all stakeholders. The Company also promotes the stakeholder engagement to understand the needs and responses to each group of stakeholders.



Expectation/Needs of the Stakeholder Groups With Responses and Operations of Thaicom in 2019

Expectation/Needs	Response	Operation 2019
Employees		
Suitable remuneration and welfare	Treat employees fairly and respect. Strict on labor law. Provide fair compensation and benefits, which can be compared with other leading companies.	Two (2) Town Hall meetings and CEO Roundtable to meet employees / Employee Engagement Survey 2019 (Annually) / Ethics Hotline/ Welfare Committee.
Standardized and fair performance appraisal	Train supervisor on knowledge and skills necessary for performance appraisal. Encourage performance appraisal that create employee engagement and openness environment to listen to each other's opinions. Encourage feedback between supervisors and employees.	Provided clear indicators on Performance Appraisal methods. Provided at least two (2) times a year on a Performance Appraisal. Promoted 360 degrees performance evaluation.
Job security, career path and personal skill development	Develop employee skills by providing training both inside and outside the Company, integrating training in the classroom as well as online courses to increase knowledge, ability and skills in the workplace as well as create personnel career advancement and learn from other expertises.	Training Roadmap of 2019: Total training hours of 2019 = 16.72%/ person. Total number of courses for employee personal skill development & team management = 88 courses.
Good workplace environment/ friendly work environment	Provide a safe and conducive working environment, which will encourage creativity, innovation and collaboration.	Provided internal communications with employees through various channels including voice announcement via speakers in the company, email, social media (Facebook, YouTube, Instagram), website, intranet, and internal public relations boards. Provided various channels for comments and suggestions such as walk-in, web board, Ethics Hotline. Promoted the use of TC Mobile App. for internal communication which employee will collect points from the "TCMePoint" and exchange to gifts.
Occupational Health & Safety, good health insurance	Strictly follow the human rights principles as well as managing occupational health & safety and working environment with maximum efficiency to create safety of life and property of employees. Adhere to the Policy concerning occupational health & safety and working environment.	Provided projects and activities that promote employee participation both Physical, mental, emotional and intellectual health and creating a happy working atmosphere, such as Wellness program, Sport day, New Year party etc. Conducted risk assessments for safety prevention and control and regularly inspected equipment required and rehearsed emergency response plans.

Expectation/Needs	Response	Performance 2019
Shareholders		
Higher return on investment. Appropriate dividends payment	Conduct business according to Good corporate governance policy and business ethics in accordance with the Sustainable Development Framework.	Organized Annual General Meeting once a year.
Continue growth with good Company's Operating Results	Create new business strategies with new products and services to strengthen business opertions. Business Continuity Management Systems (BCMS) - ISO 22301	Joined "Opportunity Day" (by Stock Exchange of Thailand) = four (4) Times/ 2019. Organized "Analyst/ Investor Meeting" (for Analysts, investors, Fund Managers) = two (2) Times / 2019.
Respect shareholders' rights.	Welcome all recommendations and feedbacks through various channels. Disclose of company information transparently and verifiable.	Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, YouTube, Instagram), and Ethics Hotline.

Expectation/Needs	Response	Performance 2019
Regulators		
Conduct business in accordance with laws and regulations.	Comply with the laws and regulations, conduct business in accordance with good corporate governance policy, and adherence to business ethics and Code of Conduct.	Attended meetings to clarify related issues: 48 meetings in 2019.
Cooperate in providing information and support government programs or activities as requested	Cooperate in the projects or assignments of government sectors, which will benefit the general public/ country. Share knowledge and experience with the government on satellite technology or related.	Cooperated and supported in various government projects =16 Times/ 2019. Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, YouTube, Instagram).
Transparent and verifiable information disclosure. Support Anti-Corruption in all forms.	Cooperate in supporting Information and expertise as requested. Provide assistance to the government such as during disaster. Adhere to Anti-Corruption Policy.	Organized activities such as training the government agency one (1) Time, two (2) business visits, and six (6) lecture speakers on various occasions. Employees joined Thai CAC's activities in 2019 to reinforce the spirit of being a member of Private Sector Collective Action against Corruption.

Expectation/Needs	Response	Performance 2019
Customers		
Products and services creating value and worth for investment.	Offer products and services that meet the needs of customers with quality, reliability, and reasonable price.	Built relationships, educated and provided updated Information to customers regularly through various activities such as meeting / seminar, annual training, friendly sports competitions: 2019 Thaicom Golf Day.
Competence and speed in problem-solving / Ensure continuity of service	Develop work processes within the organization for employees to develop their skills and serve customers efficiently. Have a quality control policy and ISO 9001:2008 Quality Management System to create maximum satisfaction for customers and Business Continuity Management System (BCMS)/ ISO 22301 to guarantee our services.	Regarding the incident of Thaicom 5 satellite, Thaicom were able to solve the problems for the customers, according to the BCMS plan and were able to continuously provide customer service.
World-class quality of products and services for maximum customer satisfaction	Customer satisfaction survey annually, and take the result obtained for our improvement on product and service to meet customer needs.	Our Annual Customer Satisfaction Survey was equal to 85.9%.
Business Ethics and Customer Privacy & Data Security	Promote business ethics that show responsibility to customers in many areas such as confidentiality of customers, anti-corruption policy that employees must strictly comply with. Adhere to IT Security Policy.	Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, YouTube, Instagram), and Ethics Hotline. Provided Cyber Security Training for employees and ISO 27001 Training.

Expectation/Needs	Response	Performance 2019
Lenders/Creditors		
Compliance with terms and conditions	Strictly comply with the terms and conditions of the loan agreement / credit facility. Adhere to Policy on fairness and responsibilities towards business partners and/or creditors.	Paid on-time and provided related information as requested. Organized Analyst/Investor Meeting (4 times/ 2019)
Risk and Crisis Management and Business Continuity	Business Continuity Management System (BCMS)/ ISO 22301. Adhere to Enterprise Risk Management Policy and Business Continuity Policy.	Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, YouTube, Instagram).

Expectation/Needs	Response	Performance 2019
Suppliers		
Equality, fairness, transparency in business operations, Transparent and verifiable procurement system	Communicate business practices according to Good Governance to suppliers thoroughly and consistently. Follow the sustainable development policy In dealing with business partners, which has established guidelines for fair treatment in terms of selection Partners shall In accordance with trade partners' practices and maintain lasting relationships taking into account on mutual benefits and business growth. Adhere to Human Rights Policy.	Adhered to the "Supplier Chartered Guide" for existing and new suppliers to follow the same guidelines and for fair treatment across the supply chain. Opened up for comments and suggestions directly from suppliers. Visit suppliers' office / manufacture (Human Rights). Complaint / whistleblowing via Ethics Hotline.
Compliance with the terms of the contract or agreement for payment of product and service.	Adhere to the contract and abide in oder to maintain the credibility of the company and follow company's Code of Conduct. Adhere to Policy on fairness and responsibilities towards business partners and/or creditors and Intellectual Property Policy.	Paid on time. Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, Youtube, Instagram).

Expectation/Needs	Response	Performance 2019
Partner		
Ethical and transparent In conducting business together	Support and exchange knowledge as well as communicate to see the trend and direction in Satellite industry sector in order to stimulate and develop the satellite service industry in the country.	Participated in events and activities which provided an opportunity to meet with business partners for business opportunities and future cooperation, such as business negotiations, Joining conferences with the International satellite industry operators including Satellite 2019 (U.S.A.), APSCC 2019 (BKK).
Compliance with the terms of the contract or agreement between them	Adhere to the contract and abide in order to maintain the credibility of the company and follow company's Code of Conduct. Adhere to Policy on fairness and responsibilities towards business partners and Intellectual Property Policy.	Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, YouTube, Instagram), and Ethics Hotline.
Seek opportunities In doing new business together.	New business cooperation by using the strengths and expertise of each company. Collaboration for the development / improvement of products and services.	Collaboration in our new businesses, i.e. NAVA Project, Digital Life Box Project, Drone Project

Expectation/Needs	Response	Performance 2019
Communities		
Helping communities for better living	Continuously carry out activities to provide opportunity in "education" in many forms which is our primary goal in contributing to society, through the Thai Kid Thaicom project and other projects.	Continued projects and social activities, such as the Thai Kid Thaicom project, in 2019, giving 150 sets of satellite dishes to schools and the Non-Formal and Informal Education Centers (NFE), Run for School Project, a project to promote the quality of life and the environment to communities, granting 100 scholarships (48 projects) to NFE students and 6 activities by the Thaicom Volunteer Staff.
Conducting business with transparency, verifiable and without fraud	Promote and raise awareness of participation in Social and community development of employees with various company projects which focus on creating sustainability for the community.	Provided communications channels via Annual Report, Sustainability Report, Website, Social Media (Facebook, YouTube, Instagram), and Ethics Hotline.
Environmentally business	Continue promote energy conservation, electricity and water use, Greenhouse gas management and raising awareness among employees / communities to create a better environment. Adhere tp the Policy Concerning Energy Conservation and Environmental Policy.	Continued project / campaign including such as iSAVE for promoting Energy and Water Saving Campaign, Thaicom Loves Earth Campaign to raise awareness on global warming (reducing the use of plastic in the office, promoting 3R) and Carbon Footprint Report.
Satellite Knowledge Sharing Center	Build knowledge on satellite technology by sharing knowledge and experience by employees to inspire people for future development.	Provided opportunity for a Company visit to learn about the space and satellite with Thaicom engineers and at the Thaicom Space & Satellite Pavillion. Provided lecture and keynote speech by Thaicom executives and employees in many occassion.





Thaicom's Operation Guidelines in line with SDGs

SDG	UN Goals	Thaicom's Operation Guidelines to SDGs	Performance 2019
	**Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**	Support education in remote areas to reduce the educational gap and opportunity to those children/youth. Provide learning management for improving the quality of life to Community for sustainability	1. Thai Kid Thaicom Project to promote distance learning education via satellite 2. Knowledge sharing in Technology and satellites 3. Social Fund for career education and development in remote area with collaboration and use of learning mechanisms of Non Formal and Informal Education Office
	**Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**	Provide communication network thoroughly and available in all circumstances such as disaster. Increase access for information and technology	1. Provide Satellite communication network which is a broadcast service and Broadband Internet service to end users 2. Create innovative services with platform connecting towards communication and Digital technology via satellite with an internet network such as Nava® Service 3. Developing apps in space technology and unmanned aircraft together with partners to create a platform of New service that will connect Big Data from the space network to the ground and sea for thorough data access and in remote areas
	**Goal 13. Take urgent action to combat climate change and its impacts**	Manage resources and mitigate Environmental impact especially the Climate Change	1. Conservation and reduction of energy use and promote the use of alternative energy such as solar energy by setting goals and measures 2. Water resources management and waste water treatment by setting goals and measures 3. The detection and evaluation of emissions of greenhouse gas and setting goals and measures for reducing carbon emissions from our operations 4. General waste management such as plastic waste and paper waste by setting goals and measures

Economic Performance



Reponsible Business

Economic Growth	
Net profit	-2,250 million baht
Total revenue	5,000 million baht
Income tax expense	374 million baht
EBITDA	1,766 million baht

(Please see Financial Information in Thaicom's Annual Report 2019)

Business Strategy

Business strategy reflects the intent that the Company is responsible for society and stakeholders. The Company defines the business strategy as a framework for offering products and services that can meet the needs of customers and creating competition advantages and sustainable growth. The business strategy is divided into three parts as follows;



1. Strategies for Main Services:

Broadcasting Service (Satellite television broadcasting service):

Thaicom pays attention to the development of satellite television broadcasting service in order to upgrade the broadcasting industry in Thailand. The Company offers quality services to support the broadcasting of television programs with High Definition and Ultra-High Definition systems and any additional services to help increase the competency of entrepreneurs and deliver the quality of broadcasting programs with high definition to people in Thailand and countries in the Greater Mekong Region and South Asia. In addition, the Company also aims to continuously strengthen our satellite broadcasting platform with a high audience base and number of television channels at 78.5 degrees east. For the Africa region, the Company has a strategic plan to differentiate itself from its competitors by clearly focusing on the target country. The Company will apply experiences and expertise, including build partnerships with alliances, and provide services of ground stations in Europe for broadcasting video and audio through satellites from countries in Europe to Africa.

Broadband Service (Satellite Internet service):

Thaicom focuses on increasing the efficiency of bandwidth usage on the IPSTAR platform and platforms of its business alliances to create opportunities to increase the amount of usage of Thaicom 4 satellite bandwidth. The Company integrates the services of large bandwidth for networking entrepreneurs in the business sector and the government sector in the region and the services of Internet broadband for small-scale users in potential countries. In addition, the Company plans to increasingly expand the Nava® service or high-speed mobile maritime satellite communications services to international markets.

Regarding the long-term plans, Thaicom has cooperated in business with alliances to implement Next Generation High Throughput Satellite project with low cost structure and price per unit for future broadband services.

2. Strategies for New Innovative Service

Thaicom aims to develop services that will be a platform for connecting the communication by integrating the advantages of satellite communication and digital technology systems that are accessible anytime and anywhere with the use of the Internet network. Plus, the Company also uses its strengths in technological innovation to create new Smart Solutions services to meet the needs of customers, such as high-speed Internet services for vessels, NAVA platform, and integrated TV solutions (LOOX TV and TV Head-end platforms). Such services are provided to customers in Thailand and regions.

3. Strategies for Business Expansion

Thaicom emphasizes on vertical and horizontal business expansion in the regional level. Regarding the vertical expansion, satellite services will be expanded in a downstream manner to the business chain and integrated with other service systems, including space, air and ground. It is to provide broadband Internet services to end users and maritime Internet services.

Regarding the horizontal expansion, it will focus on business relating to digital, technology and main businesses, such as remote sensing, data linking or transmission with the Internet of Things (IOT), and data analytics, etc., for using in the business operations of the Company and customers. The Company plans to continuously expand businesses in 2 dimensions in order to develop competitiveness and create sustainable growth for the Company. The Company also realizes the fast-changing technologies, so it initiates the plan to expand its business to a new business that is not related to the satellite business, such as innovation of unmanned aerial vehicle or drone for agriculture by emphasizing on its features of design with proper and easy functions and reasonable price for farmers. The Company aims to enhance the efficiency of Thai agricultural sector to solve the problem of labor shortage, improve agricultural production, reduce the cost for farmers, and provide benefits to overall Thai economy system. Moreover, Thaicom has developed applications for unmanned aerial vehicle technology (UAV), electric motorcycle project under the income proportion scheme to provide transportation services in universities and protect good environment, etc.

TAX POLICY

In 2019, Thaicom announced the tax policy as a framework for tax administration in accordance with the laws and regulations by disclosing information in accordance with relevant reporting requirements and standards. The Company also notified subsidiaries and offices located in foreign countries to comply with this tax policy strictly. This policy will be regular reviews and improvements.

Please see Thaicom Tax Policy on the website https://www.thaicom.net/corporate-governance/other-policy/

Awards & Recognition

One of the listed companies in “Thailand Sustainability Investment (THSI) 2019” (Group 4, according to the market value of securities in 2019)	CGR 2019 received the "Excellent" status or 5 Stars for the seventh year in accordance with good corporate governance standards.	"Sustainability Disclosure Recognition Award 2019"	Drive Award 2019: Excellence Environment and Sustainability (Technology)
By Stock Exchange of Thailand	Corporate Governance Survey of Listed Companies By Thai Institute of Directors	by Office of the Securities and Exchange Commission And Thaipat Institute	By MBA Alumni Association, Faculty of Commerce and Accountancy, Chulalongkorn University





Innovation of Communication and Data Connection Network for Sustainable Development

In the age of digital economy and society, rapid changes in communication and technology play an important role in lifestyle, data access, as well as behavior and needs of people that keep changing. Thaicom pays attention to strengthen the communication and data connection network and telecommunications along with innovations and seek for new business approaches and also offers high quality products and services that can meet the needs and lifestyles of consumers. In 2019, the Company developed products and services, collaborated with business alliances, and created innovations based on new business approaches as follows;

Communication network to stay connected anywhere, anytime...on the sea

Nava® Service Platform

In 2018, Thaicom launched **Nava®** onboard communication network for basic communication for those who have to work at sea. It is important to help them perform duties safely and happily with good mental health because they can communicate with their family members at all times. It also promotes a quality of life.

Nava service is the result of applying satellite technology to develop services that meet the needs of customers. They can stay connected although they are at sea. It is to create new business opportunity for Thaicom in a market that has not yet provided any type of communication service. Nava service is a flexible network that supports a wide range of applications. In addition to the satellite connection and communication between officers stationed aboard and officers stationed on the coast, it is also the channel to receive news, entertainment programs and distance training courses on ships, as well as the tool for enhancing the competitiveness of the entrepreneurs with services that help manage the systems and functions of ships, such as monitoring the operation of the engine, providing advices on fuel consumption, or plan maintenance schedules. These are alternative services allowing customers to be able to conduct businesses efficiently. In addition, the Company is mainly aware of the cyber security and customer privacy.



Operating Results
In 2019, there were 90 ships using Nava service, increased by 40% from the year 2018. There were over 4,100 Internet users on such ships, increased by approximately 100% from the year 2018 (as of December 31, 2019).

For further improvement of equipment used for Nava Service, in 2019, Thaicom collaborated with business partners to design and develop satellite dish for installation on ships with the goal of promoting industrial development and domestic satellite equipment production, and reducing the cost of Nava service. Therefore we can expand the service to the group of small fishing vessels to access Nava service at a reasonable price. The comprehensive communication connection is the main mission of Thaicom. As a result, the cooperation in the development of satellite dishes is not only to support our business partners to grow, but it is also to provide comprehensive service to all groups. Currently, the development of such satellite dish is in the process of testing and improving the quality to meet the ITU standard It is expected to complete by 2020.

Thaicom's new business strategy will focus on developing new services by applying technologies of the future

Chao Aiang, Smart Drone for Farmers....

Most areas of Thailand are still agricultural areas. It is one of the main incomes of the national export. However, the application of technology for saving labor and developing products for farmers is still less compared to other industries. The labor used in the agriculture sector has decreased in some areas. Children of many farmers are looking for work in the city. When parents cannot do the agriculture anymore, they will sell the land to the capitalist who may use it for further development. If this current situation is taken into consideration, Thaicom sees the opportunity to integrate technologies for developing the agricultural sector and creating sustainability for children of farmers who are able to generate income from agriculture and own land. They still have enough time to do other jobs as well. This will further build sustainability and strength to their communities.

Thaicom launched **"Chao Aiang ... Smart Drone for Farmers"** at the end of the year 2019. **"Unmanned aerial vehicle or drone"**, the new and state-of-the-art technology, is operated under Thai Advance Innovation Company Limited (Thai AI), an affiliate of Thaicom and AI and Robotic Ventures Company Limited (ARV), a subsidiary of PTT Exploration and Production (Public) Company Limited or PTTEP. They jointly design and develop such product under the name of **"Chao Aiang, Agricultural Drone"** to meet the needs of new generation farmers who want to reduce costs, such as fertilizer and labor costs, and also help save time in spraying chemicals. The use of Chao Aiang is more accurate than human labor because it can be controlled to fly at low and horizontal level throughout the target area, avoiding the diffusion of chemicals, which may be harmful to sprayers or farmers.



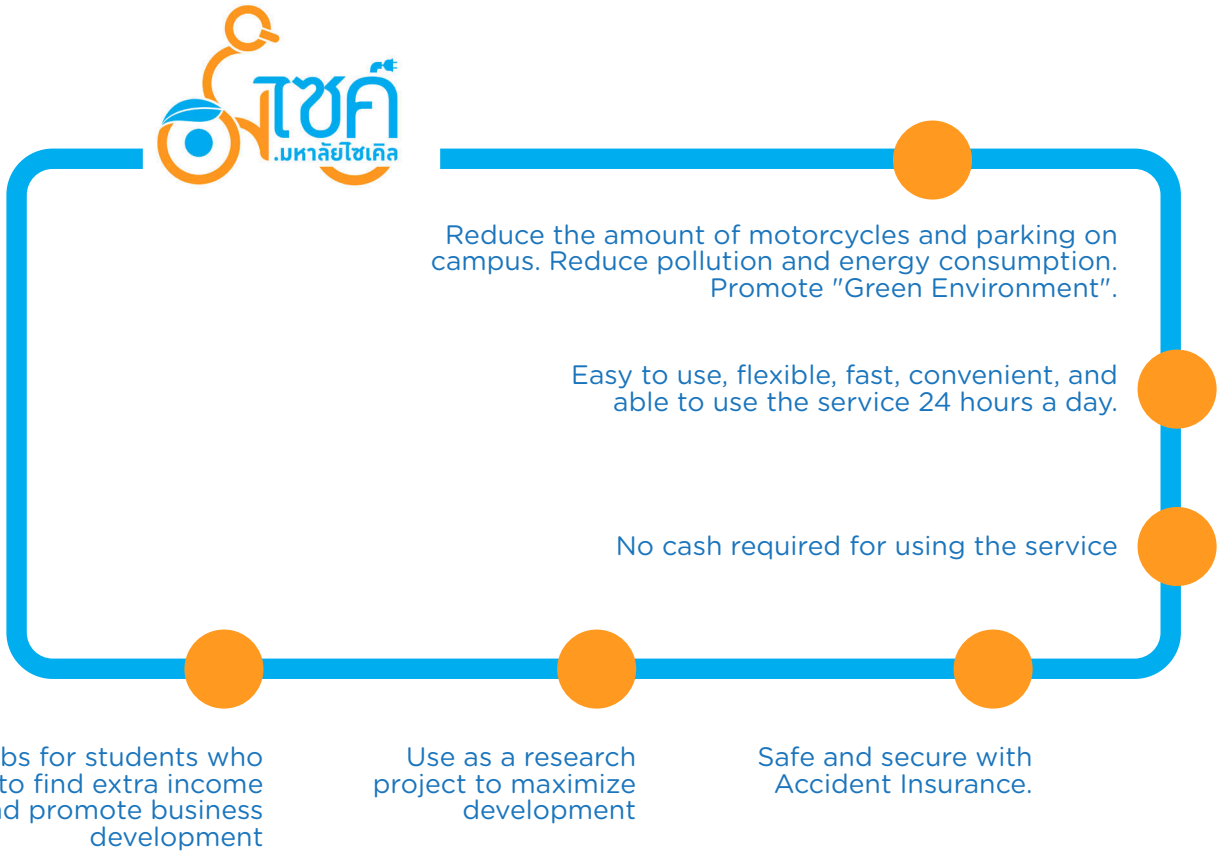
In 2020, Thaicom will add more platforms and services which will use analysis from satellite images and an exploring drone to monitor the fertility of agricultural plots, such as detecting plant abnormality, warning of disease and pest epidemics, or comparing the height of plants in the plot. These operations cover more area and are more accurate than human labor. For the service of Chao Aiang and the platform, farmers can assess the worthiness of the service or gather a group to buy Chao Aiang and use it together. It can be compared with human labor, the cost saving of fertilizer or chemicals, spraying accuracy, reduction of diffusion, and avoidance of stepping on crops. As a result, farmers can obtain more products than the traditional method of spraying. However, Thaicom has also attempted to encourage farmers to use organic fertilizer instead of chemicals for good environment and safety of consumers and farmers in the future.

Intelligent Electric Motorcycle Service... for the new generation who cares the environment

MoreSai: Motorcycle as a Service

According to new business concept of Thaicom, **"MoreSai: Motorcycle as a Service Project"** is developed from our concept and surveyed the needs of students in the universities with large area where is necessily to use vehicles inside the campus. In addition, the university also wants to support "Green Environment". If everyone uses cars or motorcycles that use oil or gas, it will cause the university to become an important source of greenhouse gases emission. As a result, the new business development team has the idea to develop "Intelligent electric motorcycle" or "MoreSai: Motorcycle as a Service Project" as the service business for students and personnel in the university. Professors and students of Suranaree University of Technology provide cooperation to participate in developing "MoreSai" service by performing the test with students and personnel of Suranaree University of Technology at the end of 2019. Currently, the satisfaction assessment is still in process in order to improve the service to meet the needs of users as much as possible. It is planned to launch trial services for 30 “MoreSai” at Suranaree University of Technology in 2020 and will expand the number of intelligent electric motorcycles by evaluating from the actual use of such students and personnel.

For the service model, **"MoreSai"** is to borrow intelligent electric motorcycles through the application. Service fees are charged each time according to the actual period and distance.



Creating business continuity ...
Creating sustainable growth together

Thaicom and True Visions signed a long-term contract

In early 2019, Thaicom and True Visions signed a long-term contract for the use of Thaicom 8 satellite instead of Thaicom 5 satellite to support the provision of long-term service to True Visions with the MPEG 4 broadcasting technology, from standard definition (SD) to high definition (HD) and 4K (Ultra HD) systems in order to create premium viewing experiences for True Visions' customers.

Developing a maritime satellite communication network...Connecting Asia and Russia
First step of cooperation for the success of becoming sustainable business alliances

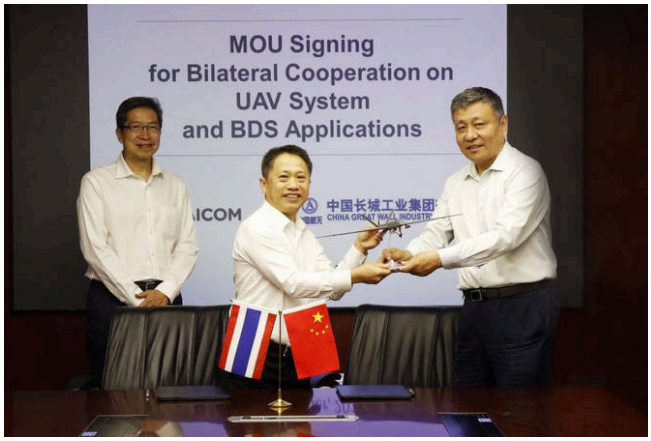
Thaicom cooperates with Russian Satellite alliance

Thaicom cooperates with Russian Satellite Communications Company (RSCC), the Russian satellite leader, to jointly develop the "Roaming network" for high-speed maritime Internet connection. Both parties will jointly develop a roaming network to increase efficiency and expand the area of marine satellite communication service so it can be used together in the territorial waters. As for Thaicom, roaming will be operated on "Nava® service platform" to link Asia and Russia by connecting the seamless communication signal on the roaming network, allowing customers to use high-speed broadband without interruption throughout the routes in the territorial waters of Europe and Asia. In the meantime, RSCC's maritime broadband network, which is considered the largest network in Russia, can connect to more than 300 vessels operating in the territorial waters of Russia and Europe. RSCC will use technical expertise and experiences in the maritime broadband communications business to support the operations of the crew, including operations of vessels in the territorial waters of Asia, Europe, the Middle East and the Russian Far East to be more efficient.

Cooperating with international business alliances... Developing new service platform

Thaicom cooperates with China Great Wall to develop for space and unmanned aerial vehicle technology Application.

In the previous year, Thaicom collaborated with China Great Wall Industry Corporation or China Great Wall (CGWIC), the leader creating and launching satellites into orbit from China, to jointly develop the Application for Unmanned Aerial Vehicle or "UAV" technology and BeiDou, which is the satellite navigation system developed and owned by China (BDS). This partnership is the part of Thaicom's business strategy for new businesses that are more diverse. In addition, it is the step towards the integration of technologies of space, air, ground and maritime networks in order to expand the business operations and support the rapid growth of the huge amount of data available in the digital age. In the future, there will be the integration of space, air, and ground technologies, creating a new service



platform which will connect big data from space to air, ground and maritime networks. This will help the development in agriculture, maritime navigation, telecommunications, and services of both public and private sectors.

Jointly develop and expand the business with technology of the future ... to upgrade Thai agriculture

Thaicom cooperates with PTTEP to develop drone innovation for agriculture

Thai Advance Innovation Company Limited (Thai AI), an affiliate of Thaicom, has collaborated with AI and Robotics Ventures Company Limited (ARV), a subsidiary of PTT Exploration and Production Public Company Limited or PTTEP, to develop the innovation of Unmanned Aerial Vehicle or "Drone" for agriculture by emphasizing on its features with simple and easy functions and reasonable price to meet the needs of farmers. Expertise in design of hardware and software combined with knowledge and experience in the development of this unmanned aerial vehicle or drone technology are applied for developing this smart agriculture. It is the development of technology to meet the needs of businesses in the new age and the one-stop service platform. Thailand is an agricultural nation where the agricultural products are exported the most and generate a large amount of income for the country. However, Thai farmers have to face with problems of high production costs and labor shortage. Such challenge is therefore the beginning of the cooperation of two organizations that want to see the sustainable development in Thailand, especially in agricultural sector. As a result, they cooperate to develop and improve the "drone" technology, to help solve the problem of labor shortage, improve agricultural products, and reduce the cost of farmers. This will cause a positive effect on overall Thai economy.



Customer Engagement

Customer Satisfaction

Apart from the commitment to delivery and maintain the excellent quality of services, Thaicom has built good relationships in order to create a strong network of customers through communication and activities. This will lead to the development of services to meet the needs of customers. In addition, The Company determines the customer satisfaction assessment in various areas every year. The assessment results are analyzed to set improvement plans of the excellent services to the customers.

In 2019, the Company assigned BMRS ASIA to conduct the survey and evaluate the satisfaction results of Thaicom's customers who use transponder services, broadcast services, broadband services, and new service - Nava. According to the survey, the satisfaction score of Thaicom's customers was 85.9%, which was 2.7% higher than 2018.

According to the comments, most customers have positive views towards Thaicom, such as providing services with new technologies, and sharing new technology knowledges and trends to customers. In addition, they also mention about our improvement on the general services and solutions from last year. Price is not the main factor to use the services of Thaicom.

Our responses to Customer Satisfaction Survey 2018

Customer Group	Implementation	Performance 2019
Broadband Services	Proactively send our technical support personnel to support customers on new satellite projects both domestically and internationally and ensure the success and completion of said projects. Realize customers on new business/project opportunities arising from satellite technology usage for maximum benefit.	• Organized annual customer training. • Visit customers for direct feedback. • During training / visiting customers, Thaicom shared information on new technology.
Broadcast Services	Support customers' operations by sending techinical support personnel experienced in broadcasting technology to give an advice on business expansion and plan for adopting appropriate broadcasting technology, and technology in line with the developments and changes in the digital age. Provide technical data support and invite customers to visit Thaicom for knowledge sharing and understanding of technological changes, which will benefit to their business operations.	• Organized annual customer training. • Visit customers for direct feedback. • During training / visiting customers, Thaicom shared information on new technology such as the development on 4K Technology.
Transponder Services	Thaicom strives to communicate and share up-to-date technology with the customers, in particulary since satellite technology and service has changed substantially. Thaicom thus helps enabling customers to adapt accordingly and to grow and develop their businesses sustainability. The Company continues to share new technology, both related and unrelated to satellite, through our training sessions held for the benefit of customers.	• Organized annual customer training. • Visit customers for direct feedback. • During training / visiting customers, Thaicom shared information on new technology.
New Services - NAVA	With improvements to the development of new products and services, Thaicom sends technical support personnel to give advice and check customers' usage regularly. Systematically manage problem and quickly solve that problem (if any). Present new technology to support a wider variety of applications. Oversee the operations of our suppliers regularly to maintain the quality of products and services.	• Improved product quality and the service of NAVA • Arranged regular meetings with customers and partners to get direct feedback on their usage/ problems or suggestions. • Organized training for local and overseas customers. • Provided training for our Customer Care Personnel (Call Center) • Organized Satisfaction Survey in 2019 for NAVA Customers for the first time.

Strengthen Customers' Relations

Other than the customer satisfaction survey, Thaicom focuses on proactive operations in order to understand the business operations of customers, which will benefit to apply satellites and current technologies. In 2019, the Company developed and searched for innovative products and services that would support customers' businesses in the midst of rapid technological change. So as to the customers and Thaicom can overcome the obstacle and grow sustainable together.

In addition, the Company also supported any activities which promoting and retaining the customer satisfaction, creating customer engagement, as well as increasing the efficiency of communication to understand the business directions of Thaicom that have improved for sustainability. Thaicom have built an appropriate relationship with each group of customer such as "Thaicom Golf Day 2019" which is held annually and continuously for over ten years, customer trainings and technological knowledge sharing as mentioned in the above table, etc.

Communicates with Customers

Thaicom keeps in touch with customers through various channels, such as telephone, website, Line and e-mail, in order to facilitate customers for comments or complaints. In addition, the Company also pays attention to "Information security and customers privacy" strictly by establishing related policies and measures. The Company also updates systems to ensure that information systems will be protected according to the acts/laws of Thailand or the country in which we operate businesses without the violation of privacy of customer data.

In addition, customers can make a complaint or report clues of offences or fraud through Ethics Hotline on the website, www.thaicom.net.

Contact Numbers for Customers:

Phone: +66 2596 5060 (HQ) /
+66 2599 5009, +66 2599 5010
(Technical Support)
Email: cnd@thaicom.net
Website: www.thaicom.net
Customer Service Department:
http://tcns.thaicom.net

Contact Numbers for Nava Customers

Line: @ soc-nava
Email: nava@support.ipstar.com



Suppliers Engagement

Fair Business Operation throughout the Value Chain

Suppliers and business partners are one of the important stakeholders of Thaicom who contribute to sustainable growth. Because of this, the Company has set up guidelines for communication with and the support of suppliers and partners in accordance with Company business operations. The "Supplier Charter" was created in order to support the business of suppliers and partners and to clearly demonstrate our responsibility to society and to our stakeholders in the following areas:

- Business Ethics
- Human Rights
- Environmental and Safety Standards
- Business Sustainability Standards, such as Commitment and Responsibly
- Risk Management
- Communication and adherence to various other laws and legislations

Please see more inforamation on "Supplier Charter" on the website: https://www.thaicom.net/corporate-governance/other-policy/

Suppliers Management

Thaicom has managed a database system of suppliers that are constantly audited and updated for considering and prioritizing who are key suppliers to mitigate risks. Users from various departments will jointly assess the satisfaction, and also comment on products and services from suppliers. The results are analyzed quickly through the Company's procurement process to screen the performance of suppliers or to be a guideline for suppliers to improve products and services that will benefit both parties.

In 2020, Thaicom will conduct a survey on suppliers' ESG (Self-Assessment) in accordance with the guidelines on compliance with corporate governance. Environmental, social, and corporate governance issues of suppliers will be considered. These ESG results will be disclosed in the next year report.

Suppliers Relationship Management

Thaicom provides the channel for any complaints from suppliers via the website. They can also directly contact the Procurement Department or the Internal Audit Department, which is ready to accept comments and coordinate with relevant parties for responding any issues to suppliers. In addition, the Company jointly developed some products with suppliers, such as satellite dish for installing on ships. It is not only to develop satellite dishes to meet the requirements of the Company and the domestic market and share knowledge and expertise with each other for product development, but it is also to support the development of local labor skills in order to compete with other countries, especially reduction of production costs. This will enable Thaicom to expand the market to small fishing vessels, connect communication to cover all groups of users which is the main purpose of service of Thaicom, and also support the business of suppliers and business partners to grow together with Thaicom.

Risk Management for Sustainability

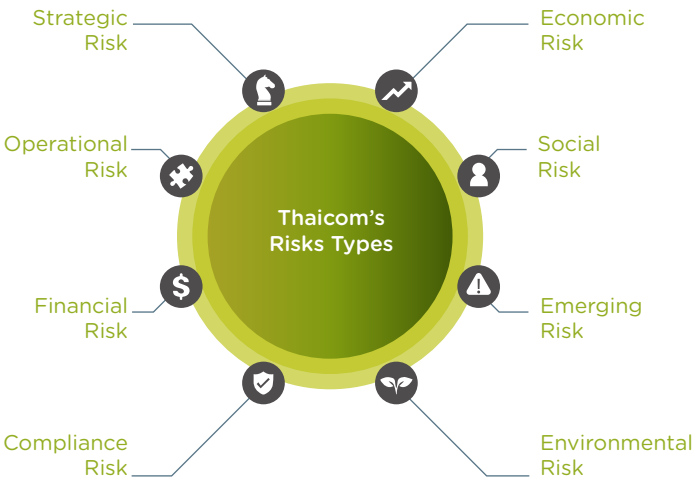
Under turbulence situation from around the world which affects the economy and creates complex and risk, Thaicom recognizes the importance of efficient risk management which will help the Company adjust and prepare for new challenges and achieve its business objective. Thaicom has implemented Enterprise Risk Management (ERM) according to international COSO ERM and ISO 31000 standards under the Risk Management Committee (RMC), which reports directly to Executive Committee. This committee is responsible for considering the risk factors and establishing guidelines for risk management, including policies, monitoring and supporting various departments as the owner of Risk to effectively manage risk factor in their responsibilities. In addition, there is Risk Management and Revenue Assurance Department (RMRA) at the operational level which is responsible for assessing risk management and coordinating the risk owner agencies. RMRA will then report and/or propose the organization's risk management to Risk Management Committee, Board of Directors Audit Committee, and Board of Directors to consider/ approve accordingly.

Risk Strategy

Thaicom simultaneously evaluates and set Risk Appetite, Risk Assessment Criteria and Risk Tolerance at an appropriate level to uniformly create a standard for risk mitigation in various situation. However, the Company is also fully aware that today's rapid pace of changes could affectively alters certain risk factors. As such, the Company has updated efficient risk management system to tackle these Emerging Risks.

Risk Management Procedures: Consist of the 4 steps;

1. Risk Identification by evaluating possible scenario from Key Risk Indicators,
2. Risk Analysis by dual analysis of quantitative data and qualitative data in terms of impact factors,
3. Risk Assessment by standard procedures throughout the organization to assess the impact of risks and to sort out risk priorities level,
4. Countermeasure and Risk Reduction with support and review in each process and reports to the Risk Management Committee, Executive Committee, Audit Committee and the Board of Director respectively.



Risk Management 2019

Risk	Effects	Mitigation Plan
Strategic Risk		
1. Business risks associated with management the satellite before and after the concession by the government and the NBTC has not been completed. 2. Risks associated with the status of THAICOM 7 and THAICOM 8	Effect of revenue due to the process after the concession has not been finalized. There may be an impact on service continuity that the company provides to both domestic and foreign customers.	1. To sustain the business, Thaicom has prepared to cooperate with the government for the Public Private Partnership (PPP) model. 2. Thaicom is also finding a partnership with some satellite operators in the form of using license from foreign countries. 3. Thaicom also considers and prepares some new businesses such as NAVA, drone as a service, Unmanned Arial Vehicle (UAV), etc.
Operational Risk		
1. Risks from the Shorter Service life of satellites caused by some factors that may decrease their service life.	Thaicom might lose customers and revenue if the Company's satellites have shorter service lives than expected and cannot launch replacement satellites in a timely manner.	1. Thaicom's satellite engineering team regularly calculates the remaining service life of our satellites. 2. If a satellite nears the end of its service life, the relevant departments will be informed to consider preventive and corrective action plans, which include transferring satellite users to other satellite, leasing satellite services from other satellite operators, and investing in a replacement satellite.
2. Risks from In-orbit failure. The satellite is a state-of-the -art piece of technology and engineering which, once launched into orbit, is subject to risk from possible system failure, solar discharges, or collision with other objects in space.	These damages can affect Thaicom's services to its customers, temporarily or permanently degrading the satellite's ability to uplink and downlink signals. We may lose current customers and/or may not acquire new customers while replacing the damaged satellite.	1. All satellites are designed to withstand a certain amount of adverse environment. The probability of satellites suffering severe damage to the point of complete failure is very low. 2. Thaicom maintains a contingency plan to minimize the adverse effects on customers in the case of severe damage to the satellites. These plans include transferring our customers to available transponders on the remaining Thaicom satellites or temporary leasing of transponders from other satellites for service continuity for our customers. 3. Thaicom minimizes such risks by fully insuring the Thaicom satellites. Under the Domestic Communications Satellite Operating Agreement, the Ministry of Information and Communication Technology (currently Ministry of Digital Economy and Society, MDES) and Thaicom are co-beneficiaries on the insurance policy for Thaicom satellites under the agreement.
Financial Risk		
1. The Risk of Currency exchange rate fluctuations.	These fluctuations could affect the Thaicom's financial state-ments and cash flows.	1. Thaicom has reduced this risk by netting off cash inflow and outflow as the natural currency hedge. 2. Thaicom may manage such risk by controlling the net exposure of foreign-currency-dominated transactions by using several hedging approaches such as foreign exchange forward, foreign exchange options and cross currency and interest rate swap.

Risk	Effects	Mitigation Plan
Compliance Risk		
1. Domestic Communications Satellite Operating Agreement (A) Shareholding ratio (B) Back-up satellite	Damage to the business in finance but not insignificant.	1. The Ministry has since appointed a committee under Article 72 of the Private Investment in State Undertaking Act B.E. 2556 to consider the most appropriate course of action. Thaicom has coordinated with the Ministry and the recently established committee regarding further procedure.
Economic Risk		
1. Risk from having few suppliers who can deliver products and services	Products / services may not be of good quality, but we cannot choose or compare quality / price, causing high costs which impact to business operation and income. If a crisis occurs and affects to this supplier, the products and services we need, may not be delivered.	1. Acoording to Supplier Charter, it needs to be compared Product quality and price, and will not to monopolize only one supplier. 2. Having evaluated suppliers after delivery product and services for screening quality supliers to be in our supplier list. 3. There is a Purchasing Policy as the operational framework.
Social Risk		
1. Risk of Health & Safety for working	Unforeseeable accidents from work or violation of safety relevant legislations.	1. Act in accordance with occupation health and safety protocol and also regularly conduct assess safety risk. 2. Situation rehearsal of potential emergency, training and lectures related to occupational health and safety, such as training on fire evacuation drills every year, training Electrical Safety and Basic First Aid.
Environmental Risk		
1. Risk from Radio Emission and High Frequency Signal	Leakage of radiation or high frequency in hazardous level impeding work safety or the safety of near communities.	1. Routine equipment maintenance, transmission tower and annual radiation measurement.
2. Risk from climate change, such as flooding.	Effect business operations because employees may not enter to the office; or Thaicom Satellite Station is damaged and unable to provide service to customer continuously.	1. Prepare rehearsal plans for business continuity, especially core operations departments which must enter the area to provide service to customers. 2. Preparation of IT systems to be ready to work from home or back-up locations with data security. 3. Implement Safety management of Thaicom Satellite Servce Stations such as a water barrier around the service station, fire protection equipment, oil reserves for generators.
Emerging Risk		
1. Technology - 5G Risk from regulatory changes of the national frequency allocation to accommodate additional spectrum for 5G technology	Effect on revenue. The Domestic and foreign customers need continuity in services.	1. As the time frame for recalling the 3400 - 3700 MHz spectrum for 5G is still not clear, Thaicom has evaluated the impact in order to request appropriate compensation from the NBTC 2. Thaicom has prepared an action plan to reduce the impact on C-band satellite users. 3. Change business strategies such as developing new businesses, finding business alliances.

Risk	Effects	Mitigation Plan
2. Risks as a result of the use of information technology (Cyber Security Threats)	Thaicom may be exposed to risks if its satellite control system receives cyber security threats from outside due to its computer system and internet connection, which could be detrimental to its business.	1. Thaicom sets up a committee to manage IT risks. The committee is responsible for prescribing guidelines and policies, and assessing and managing IT risk and also assesses Thaicom's IT system's environment, status, and risk management in order to be flexible enough to keep up with changes in information technology and communication. 2. Designs the satellite control system with minimum connection to the outside world, and to lower risks to an acceptable level at an appropriate cost. 3. Prepares Business Continuity Management Plan and be certified with ISO 22301: 2012 Business Continuity Management. 4. Thaicom has insured both Commercial Crime Insurance to prevent financial damage and Cyber/Technology Professional Indemnity Insurance to reduce the damage either from cyber threats or from a third party lawsuit in case of corporate or personal data breach.
3. Risks from Pandemic Decease: Corona virus COVID-19*	Employees' occupational health and life threat. If employees, especially Satellite Operations team have an infection from the outbreaks, it will be an obstacle to serve the customers.	1. Act on the Business Continuity Management by establishing a special Crisis Management Team to manage various preventive measures Related. 2. Set up intense measures for all employees and third parties who enter to the offices for prevention and screening, such as temperature measurement, quarantines, social distancing and working from home.

Note: *Coronavirus COVID-19 is Thaicom's Emerging Risk in which we have managed this risk according to the BCM plan in early 2020. The epidemic of Coronavirus COVID-19 had occurred in late December; therefore we disclosed in the Sustainability Report 2019 in the matter of "Emerging risk" because it is an urgent matter that affected worldwide and has a direct impact to all stakeholders of Thaicom.

Anti-Corruption

Thaicom opposes all forms of corruption and be aware that corruption is a serious threat that undermines free and fair competition and causing damage to economic and social development. You can see Thaicom's Anti-Corruption Policy on the website: https://www.thaicom.net/corporate-governance/anti-corruption/ This policy is a guideline for employees to follow and in addition to notifying our customers, suppliers, business partners and those who are doing business with Thaicom to acknowledge the said Anti-Corruption Policy. We are expecting those in Thaicom's business value chains to follow.

In 2019, Thaicom joined forces in the annual activity of the Thailand's Private Sector Collective Action Coalition Against Corruption (CAC), in order to emphasize the company's intention to fight against corruption. By 2020, Thaicom plans to invite suppliers and business partners to join CAC.

Environmental Performance



Resource Management and Environmental Impact Mitigation

Our Responsibility to the Environment

Thaicom focuses on the management of impacts to the environment caused by business operations both directly and indirectly in order to prevent and reduce those impacts to our stakeholders. For many years, the Company has promoted 'Energy Saving', especially electrical power, and announced the Policy on energy management in order to set the direction in doing so in 2009. The Company continueously set up goals of the reduction of the energy consumption and the enhancement of efficiency of energy conservation. In addition, the "Environment Policy" was announced to promote environmental conservation and the compliance with environmental laws and standards on environment. This includes the prevention of the impact on all related parties, employees, communities and stakeholders, especially the guidelines on efficient prevention and reduction of "Greenhouse Gases" emissions.

In addition, the water-saving and water resources consumption, including wastewater management, are also important issues that the Company is aware of the potential impact on the environment if neglected. The Company therefore establishes measures to prevent the discharge of wastewater without treatment into the public sewer or canal.

Thaicom has implemented environmental activities through the "iSAVE Project" to promote measures to save energy and water resources. Plus, SD Green Project, which has a "Thaicom Loves Earth" campaign, is also organized for other environmental activities and campaigns within the organization, such as greenhouse gas management, global warming reduction campaign, 3R campaign, reforestation, and the reduction of plastic and paper use.

This is to strengthen Thaicom's intention in business operations that pays attention to the environmental impacts. It requires the cooperation of "employees" who are the important mechanism to drive environmental operations to achieve sustainability goals.

Please see
The Environment Policy at
https://www.thaicom.net/corporate-governance/other-policy/

Support the global warming reduction

With the commitment to the environment protection, in 2018, Thaicom applied to be a pilot organization in the "Carbon Offsetting Program for Promotion of Thailand Voluntary Carbon Market Scheme Year 5" conducted by the Faculty of Environment, Kasetsart University and funded by Thailand Greenhouse Gas Management Organization (Public Organization) (TGO). Its goal is to be a part of the business organization that helps reduce global warming for sustainable growth. In 2019, Thaicom had therefore prepared "Reports of Greenhouse Gas Emissions of 2018" for the second consecutive year. These reports disclosed information of the amount of greenhouse gas emissions and sources of Thaicom Satellite Station in Nonthaburi Province and Thaicom Teleport & DTH Center in Pathum Thani Province, and used as a guideline to further reduce the greenhouse gas emissions of the organization. Both reports were reviewed by Water and Environment Institute for Sustainability, the Federation of Thai Industries, and were certified by TGO in early 2020.

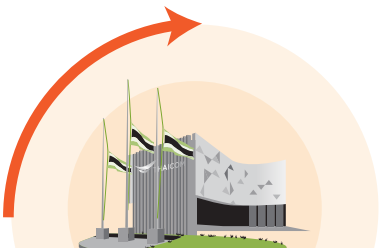
According to the "Reports of Thaicom Greenhouse Gas Emissions of 2018" as mentioned above, the Company emitted greenhouse gas from "Thaicom Satellite Station in Nonthaburi Province" in an amount of 1,261.00 tons of carbon dioxide equivalent, decreased by 6.31% from the base year (2017) and from Thaicom Teleport & DTH Center in Pathum Thani Province in an amount of 2,920.00 tons of carbon dioxide equivalent, decreased by 0.89% from the base year (2017), due to the increase in electricity usage in 2018 caused by the testing of some devices in that year. With respect to activities and measures implemented by the Company for the reduction of greenhouse gas emissions, one of them is the "Power Energy Saving and Conservation" measure. Electricity consumption is the main cause (in Scope 2) of greenhouse gas emissions of Thaicom.



Thaicom Satellite Station, Nonthaburi:

1,261.00

tons of carbon dioxide equivalent,
a decrease of 6.31% from 2017



Thaicom Teleport & DTH Center, Pathum Thani:

2,920.00

tons of carbon dioxide equivalent,
an increase 0.89% from 2017

The goals of reducing greenhouse gas emissions of Thaicom (Scope 1 & Scope 2)			
Station	2022 (Target)	2018	2017 (Base year)
Thaicom Satellite Station, Nonthaburi:	2%	1,261 (tonCO2e)	1,346 (tonCO2e)
Thaicom Teleport & DTH Center, Pathum Thani	3%	2,920 (tonCO2e)	2,894 (tonCO2e)



2018 Thaicom Greenhouse Gas Emission Table: Scope 1, 2 and 3			
Thaicom Satellite Station, Nonthaburi:		**Thaicom Teleport & DTH Center, Pathum Thani**	
Scope	Thaicom Greenhouse Gas Emissions (tonCO2e)	Scope	Thaicom Greenhouse Gas Emissions (tonCO2e)
Scope 1	291.00	Scope 1	28.00
Scope 2	970.00	Scope 2	2,892.00
Scope 3	11.00	Scope 3	-
Others	65.00	Others	105.00
Total of Scope 1 & 2	**1,261.00**	**Total of Scope 1 & 2**	**2,920.00**

Activities Contributing to Reduction of Greenhouse Gas Emissions of Thaicom

Regarding activities operated by Thaicom for the reduction of greenhouse gas emission to meet the Company's goals and support the national goals, there are a total of five activities as follows;

1. Energy conservation in iSAVE Project to reduce energy consumption and/or increase energy efficiency
2. Supply of renewable energy to be the alternative energy by generating electricity from solar panels
3. Water resources conservation and management, such as wastewater treatment
4. Promoting the green office for solid waste management, such as a campaign to reduce the use of paper and plastic waste in the office
5. Planting trees to reduce global warming

iSAVE for Energy Saving and Conservation

Thaicom, as part of society, needs to demonstrate our responsibility and pay attention to environmental issues. The Company focuses on the concrete management to reduce environmental impacts possibly caused by its business operations, which may affect the environment directly and indirectly in order to prevent and reduce such impacts on stakeholders. The Company's products and services as well as processes require a large amount of electrical energy consumption. As a result, Thaicom set goals to continuously reduce energy consumption and increase energy efficiency under the iSAVE Project. This Project has driven various measures and activities through the Energy Management Working Group and related parties (Please see the table of operating results for energy saving and conservation of iSAVE project in 2019),

Alternative Energy, Clean Energy

Thaicom has continuously allocated budgets for expansion of "Renewable Energy Supply" since 2016 for use in the office of Thaicom Teleport & DTH Center in Pathum Thani Province by installing more on-grid solar cell panels each year. This year is the third year according to the action plan. The Company can produce renewable energy in the amount of 92,151.87 kWh/year, an increase from 73,500 kWh/year at the end of 2018. Such renewable energy does not only reduce the costs, but it is also the clean energy allocation which helps reduce the carbon dioxide emissions, the cause of the greenhouse effect, affecting the climate changes.

According to Thaicom's renewable energy consumption plan, we set the goal within 5 years to complete the installation of on-grid solar cell panels with the maximum of 100 kilowatts. This will make the Company to produce up to 180,000 kWh/year of renewable energy.

Thaicom Electricity Consumption and Saving in 2019

Thaicom Satellite Station, Nonthaburi

Electricity Consumption

1,678,000.00 kWh
(= 6,040,800.00 MJ)

Total Energy Saving in 2019

27,195.00 kWh (= 644,314.72 MJ) or 1.64% (Compare to 2018 Electricity consumption: 1,666,000.00 kWh/5,997,600.00 MJ)

Thaicom Teleport & DTH Center, Pathum Thani

Electricity Consumption

4,590,840.00 kWh
(= 16,527,040.00 MJ)

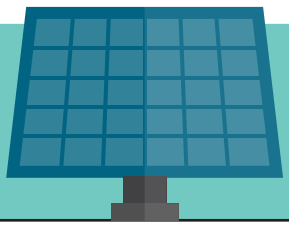
Total Energy Saving in 2019

178,976.31 kWh (= 644,314.72 MJ) or 3.61 % (Compare to 2018 Electricity consumption: 4,967,100.00 kWh/17,881,560.00 MJ)

The amount of electricity produced from solar cells

2019
92,151.87
kWh

2018
73,500
kWh



2019 Performance of the iSAVE Project for the Conservation and Energy Saving of Thaicom

Project	Measure	Investment (Baht)	Goals (Reduced amount)		Performance (Reduced amount)		% of saving
			Kilowatt-hour / year	Baht / year	Kilowatt-hour / year	Baht / year	
Thaicom Satellite Station, Nonthaburi							
1	Installed heat-resistant canvas at the 3rd floor roof deck	12,380.00	5,066.21	19,200.93	5,610.00	21,260.08	0.34
2	Installed a cooling pad system for 7 air conditioners.	186,915.00	28,053.02	106,320.96	21,585.00	81,805.79	1.30
	Total	**199,295.00**	**33,119.23**	**125,521.89**	**27,195.00**	**103,065.87**	**1.64**
Thaicom Teleport & DTH Center, Pathum Thani							
1	Cleaned 22 air conditioners in the office zone	100,000.00	21,980.42	77,590.89	0.00	0.00	0.00
2	Installed Cooling pad system for 21 Air Conditioners in the operation zone	467,460.00	127,082.19	448,600.15	123,956.51	437,566.48	0.17
3	On grid Solar cell 20kWp Phase I	962,358.00	36,500.00	128,845.00	35,222.24	124,686.73	0.40
4	On grid Solar cell 20kWp Phase II	875,000.00	36,500.00	128,845.00	19,797.56	69,885.38	2.50
	Total	**2,304,818.00**	**222,062.62**	**783,881.04**	**178,976.31**	**632,138.60**	**3.60**

Water Consumption

Thaicom Satellite Station, Nonthaburi
7,383 cubic meters, an increase of 54.05%, compared to 2018

Thaicom Teleport & DTH Center, Pathum Thani
5,357 cubic meters, a decrease of 12.48% compared to 2018

Wastewater Treatment

Saving Water

Regarding the tap water consumption in both offices in 2019, Thaicom Satellite Station, Nonthaburi had a total of 7,383 cubic meters of water consumption, increased by 54.05% compared to 4,780 cubic meters of tap water used in 2018, due to the landscape improvement in front of the station where trees are planted along the outer fence and pipes are installed for watering plants at such location. In addition, one large pond located next to the station was disappeared because we returned that area to the Royal Property Office. There was only a small pond remained at the back area where water could not be pumped to sufficiently water plants and lawns. Therefore, tap water is required in some areas. In addition, water is used in the cooling pad to help transfer the heat.

For Thaicom Teleport & DTH Center, Pathum Thani, Thaicom has canceled the use of underground water sources since late 2018. As the Provincial Waterworks Authority set up the water pipe system in the area, the Company changed to use tap water in 2019. With the water saving measures implemented continuously, this station has the total water consumption of 5,357 cubic meters, decreased by 12.48% compared to the year 2018 from 6,121 cubic meters. In addition, recirculating water is also used regularly by pumping water from the front excavated pond that contains wastewater, already treated by the internal system, for watering plants and lawns instead of tap water.

Although Thaicom does not directly use water resources in its main business operations, the Company is well aware that the water resources are important and necessary for every life. The use of water for consumption in buildings or offices must be implemented with social and environmental responsibility. In many years, the Company has focused on "management of wastewater treatment" from buildings before releasing to public sewer systems. Therefore, effluent quality was inspected and analyzed since the beginning of the Thaicom Loves Earth Campaign in 2017 in order to improve the wastewater treatment system in the building to be more efficient. In this regard, the Company has continuously received assistance from the Water Quality Management Department, Public Works Office, Nonthaburi Municipality, for inspecting the effluent quality from Thaicom Satellite Station in Nonthaburi Province and Thaicom Teleport & DTH Center in Pathum Thani Province.

In 2019, according to the effluent quality inspection by testing the water samples collected from the **Thaicom Satellite Station** in Nonthaburi Province with a usable area of approximately 4,000 square meters, it was found that there were 3 testing parameters which were "lower" than the standard criteria prescribed by laws, as follows;

- BOD Value = 42.8 (It shall not exceed 42.8.)
- Total Dissolved Solid Value = 798 (It shall not exceed 500.)
- Sulfide Value = 5.8 (It shall not exceed 3.0.)

Regarding the cause, it is estimated that in 2019 Thaicom returned the rental area of a large pond on the west side to the Royal Property Office, Nonthaburi Province, which previously was the receiving point of wastewater treated by the internal treatment system before releasing to this pond. Air is admitted into the pond by using the paddle wheel aerator, including sunlight before releasing wastewater into the public drains. Although we have the efficient Zeptic Tank and the regular inspections of functional quality, including waste sorting campaign, especially organic waste in the offices, that may help reduce the problem of accidentally disposing food leftover into the sink which is the origin of microbes in wastewater, it is still unable to treat the wastewater efficiently compared to the use of a large pond containing it. However, the Company will find solutions and appropriate measures to manage the effluent quality prior to releasing it into the public drains.

According to the results of effluent sample quality analysis in 2019 at **Thaicom Teleport & DTH Center**, Pathum Thani Province, with a usable area of less than 5,000 square meters, it was found that all items, such as BOD, pH, Suspended Solid, or Settleable Solids, which were collected from the pond in front of the station, were within the standard range as specified by laws. This is possibly because the Company has added oxygen to such pond so that the microbes can decompose organic waste better, compared to the year 2018. This pond was excavated to receive internal effluent since this station has opened for service in 2002. Currently, there is still no public sewer system in such area because the area is mostly used for agriculture. Thaicom therefore pays attentions to wastewater management before releasing to excavated pond. Such effluent is already treated through the treatment process from the internal system and a paddle wheel aerator is installed in the pond. In addition, the Company changed to use solar energy instead of electricity by installing the solar panel on the water pump for watering plants and lawns. This is to maintain a good environment for employees and community in that area.

Promoting Green Office

Thaicom continuously focuses on promoting good environment within the company to reduce the global greenhouse gas problem. The Company campaigned to stop producing plastic water bottles for use in the office, encouraged employees to sort garbage before disposal, and promote the proper disposal based on each type of garbage. These are to promote Thaicom to be a "Green Office" in the future. Since there is no waste resulting from production and service processes and most of them are general waste in the office which may cause the company's greenhouse gas emissions, last year, we began to collect statistics on the amount of plastic waste and paper waste. Although both types of waste may be recycled after being processed, it will be more concrete and sustainable if we reduce and stop from the main causes of these wastes.

Reducing Plastic Waste, Mitigating Global Warming

In 2019, Thaicom performed the measurement of waste generated in the office in order to set the more concrete goal of waste "reduction" campaign by starting from the "plastic waste", which has the highest amount in the group of "Recyclable Waste". Data was collected by weight measurement when this type of waste is collected each time. According to the statistics of plastic waste collection and weight measurement prior to sales, in 2019, the total amount of plastic waste of Thaicom Satellite Station, Nonthaburi Province and Thaicom Teleport and DTH Center, Pathum Thani Province was 199.6 kilograms, accounting for an average of 0.53 kilograms/person. Most employees bring this type of waste into the office. After the collection of such data, in 2020 there are plans to reduce such amount to 5% from the average amount of both stations through the campaign of "Thaicom Green Bag & Box", which is the project for borrowing bags and food containers. This campaign will be implemented in the canteens of the Company, where a foam box and food plastic bags are originally used. In addition, there is the campaign to refrain from using foam boxes, plastic bags, and single-use plastic cups in the Company as well. We have set a big goal that we must reduce the amount of plastic waste in Thaicom by 20% within four years.

Target of 2023

To reduce plastic waste at Thaicom offices to 20% from the base year 2019, which had the amount of plastic waste 199.6 kilograms, or an average of 0.53 kilograms/employee/year.



Reducing Paper Use, Reducing Deforestation

In addition, Thaicom also collects the statistics of paper use within the office to set the goal of "Reduction of Paper Use" in the office because paper is made of trees which are important resources to help mitigate the greenhouse effect. In the past, there were campaigns to raise awareness on the paper use, such as asking for cooperation to print out paper as less as possible, using both sides of the paper, setting default duplex printing for the copier, requiring the use of employee cards for copying/printing out documents. In the meantime, the internal document system was developed to be an online document system as much as possible. In 2019, the Internal Memorandum used for requesting for an approval was developed and changed to online system, which helps reduce a large quantity of printed paper. However, some departments still need to print out documents, such as Finance and Accounting Office, using for the process of verifying and auditing the data by internal and external auditors. We will attempt to find ways to reduce the quantity of paper use as much as possible from this process.

Regarding the statistics of the quantity of paper use of Thaicom in 2019, the data was as follows;

- The quantity of paper use was 429,764.50* sheets or equivalent to 1,133.94 sheets/ employee. The expenses were 740,979.46 Baht, decreased from the year 2018 (609,084.50 sheets) by 29.44% or accounting for 179,320 sheets.
- The quantity of paper used both sides of the sheet or shredded documents from both stations was accounted for a total weight of 3,921** kilograms or 74.3% of the total amount of paper waste disposed in the office, totaling 5,277 kilograms.
- In 2020, the Company aims to reduce the use of Print & Copy paper in the office by 4% based on the quantity of paper use in 2019, which is the first year that Thaicom will set as the base year. The goal is set within four years by the year 2023 to reduce the paper use by 20% of the base year.

Remarks

* The quantity of paper copied/printed is extracted from the data recorded from the copier which is connected to the data of employee cards. It will be recorded every time the document is printed or copied.

** The quantity of paper used both sides of the sheet or shredded document is extracted from the weight measure ment before selling to the paper buyer.

If employees help reduce the paper use in the office to show the simplest social responsibility of everyone, it is not only to conserve the environment sustainably on the global warming, but also save the Company's expenses.

The Comparison of of paper used inThaicom offices from 2017-2019

Year	Total Print & Copy (Sheet)	Total Expenses (Baht)	Consumption Paper / Person / Year (Sheet)	Cost / person / year (Baht)
2019*	429,764.50	740,979.46	1,133.94	1,955.09
2018	608,084.50	991,736.48	1,604.44	2,616.72
2017	560,287.00	1,057,641.92	1,478.33	2,790.61

Note: Total of 379 employees in Thailand offices only, as of 31 December 2019.
* 2019 is the base year that Thaicom uses for setting goal to reduce paper consumption in the offices.

Target of 2023

To reduce paper waste by 20% from the base year 2019 which Thaicom consumed paper of 429,764.50 sheets / year (two-sided printing) or equal to 1,133.94 / employee/ year.



Planting trees to help reduce global warming

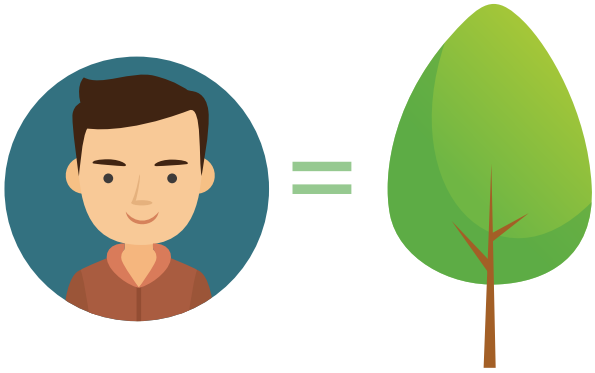
Forests are the source of recovery and storage of "Carbon dioxide gas" which is an important cause of global warming nowadays. Naturally, trees help absorb carbon dioxide for photosynthesis and store it in the form of timber. As a result, planting trees to increase forest area is the easy, convenient and cost-effective way to help reduce the global warming. In addition, it causes positive results in terms of environment, such as conserving the life cycle of animals, preventing soil erosion, protecting light and heat from the sun, trapping particles of pollutants, dust, smoke, and toxic vapor. The water that evaporates from the transpiration of leaves helps absorb heat from the atmosphere and reduce the temperature by 3-5 degrees Celsius. Moreover, throughout the life cycle of a tree, it can store an average of 1-1.7 tons of carbon dioxide equivalent.

According to the business operations of Thaicom, Thaicom Satellite Station in Nonthaburi Province released carbon dioxide to the environment in 2018 in the amount of 1,261.00 tons of carbon dioxide equivalent per year. Although it is not a large amount, Thaicom is aware of potential impacts. As a result, the Company organizes activities, including paying attention to its business operation processes to protect the good environment, reducing carbon dioxide gas emission, and increasing the number of trees to absorb carbon dioxide gas. There are several activities that support tree plantation, such as Thaicom We Share for the Mangrove Plantation, Thaicom We Share for planting trees for the forest, and planting trees on employees' lands or friends' lands.

In 2017, Thaicom began promoting tree plantation to increase green areas by using seeds from the Ratchaphruek tree, which **His Majesty King Bhumibol Adulyadej the Great** planted in front of the Thaicom Satellite Station building in Nonthaburi Province during the grand opening ceremony in 1994. The Company has cultivated more than 300 trees and distributed them to employees and visitors. The Company continues cultivating this seedling for distribution. Ratchaphruek tree is the perennial plant that has the ability to store greenhouse gases up to 1.21 tons of carbon dioxide equivalent/Rai/year. (Refer to the data in the document, "How Trees Can Help Reduce Global Warming" of Thailand Greenhouse Gas Management Organization (Public Organization), July 2018)

In 2019, Thaicom organized Thaicom We Share activity for employees to voluntarily plant the mangrove forest to conserve the ecosystem and reduce global warming. "Mangrove trees" have the ability to store greenhouse gases up to 2.75 tons of carbon dioxide equivalent/Rai/year. This activity received positive feedback from employees. In addition, it fosters the consciousness of protecting the environment and mitigating global warming as well as supporting the goal according to Thailand's strategies on increasing forest area by 40%. Although Thaicom has only hundreds of employees, if many companies/organizations cooperate, the national goal will be achieved easily. (Currently, Thailand has 102.4 million Rai of forest area, or accounting for 32% of the country. The 20-year national strategy is established to increase the forest area to 40% or 128 million Rai.)

In 2020, Thaicom has set an important goal to increase the number of trees per year at least equivalent to the number of the Company's employees of 379 persons (Data as of December 31, 2019) and will continue operating this plan for a period of 5 years (2020-2024) in order to obtain at least 1,895 trees. If the trees that we plant fully grow, they will be able to absorb approximately 1,895 tons of carbon dioxide equivalent throughout their life cycles and trap 2,653 kilograms of particles of pollution from smoke per year. In addition, trees emit at least 379,000,000 liters of oxygen per year, which can support the human needs of 2,915 persons per year (1 person needs 130,000 liters of oxygen per year, www.sustainablelife.co). Thaicom will continuously strive to increase the number of trees in order to further increase green areas.



Target of 2024

Planting trees to increase the "green space" for at least 1 tree / year / employee*.

Within 5 years (2020-2024) = 1,895 trees

*Total of 379 employees in Thailand only, as of 31 December 2019

Biodiversity

Measurement of Radio Frequency Transmissions

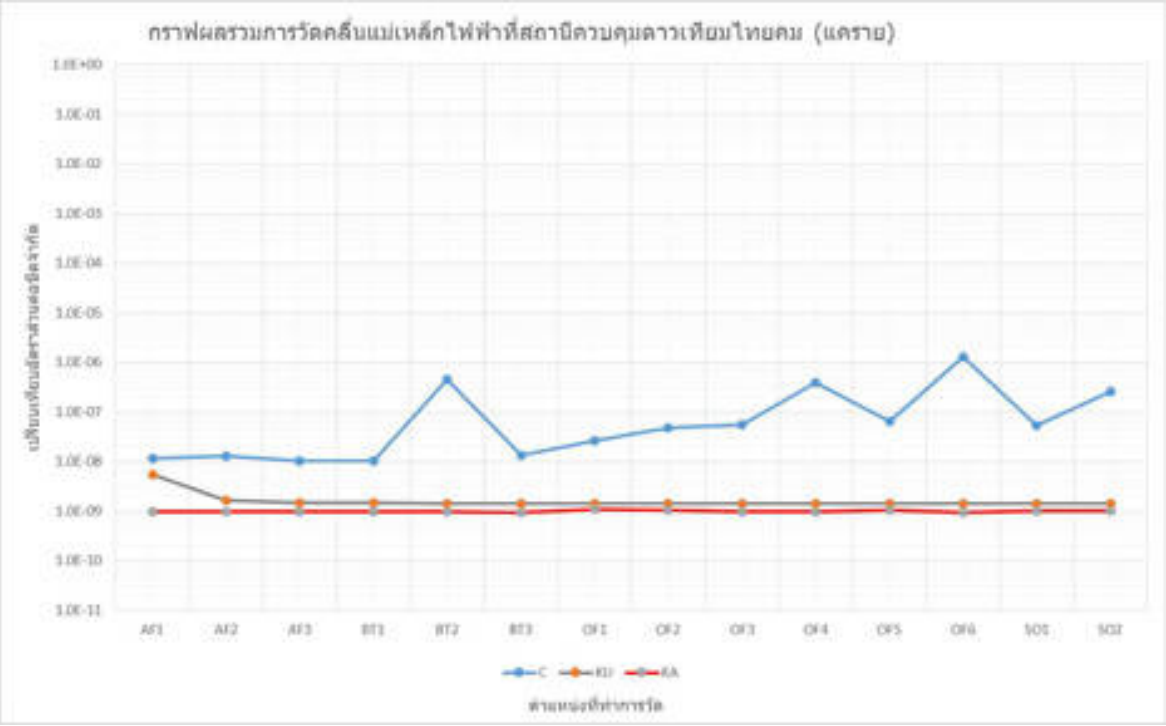
Since the satellite service involves with the frequency from receiving and sending satellite signals to ground stations, the Company emphasizes on the frequency concentration measurement and the assessment on radiation and high frequency waves that may be harmful to organisms on a regular basis every year. It is the measure that responds to "Environmental and electromagnetic wave risk management" from the signal transmitter within Thaicom Satellite Station every year. This will help the Company to assess, control, and prevent potential impacts within the satellite stations and surrounding communities. It is one of the missions regarding responsibilities to environment, society, and employees working at two satellite service stations of Thaicom.

Thaicom has established procedures and models for the measurement of electromagnetic field levels based on international testing standards established by the World Health Organization (WHO). The frequency measurement that the Company applies is the "Standard of International Commission on Non-Ionizing Radiation Protection: ICNIRP" which specifies the threshold values of electromagnetic field strength, such as C-band, Ku-band, and cellular frequency band. Limit Line of Electromagnetic Field is divided into two groups; those who receive the electromagnetic wave from work (Worker) and those who receive the general electromagnetic wave (Public). It is used for considering and determining impacts on humans receiving electromagnetic waves in the workplace or residential areas in accordance with the above mention standards.

Operating Results

In 2019, the results of satellite frequency measurements in three types, C-Band, KU-Band, and KA-Band, of **"Thaicom Satellite Station, Nonthaburi Province" and "Thaicom Teleport and DTH Center", Pathum Thani Province"** showed that the sum of all values compared to the threshold values of both stations was all "below 1". As a result, it can be considered that the inside of both service stations and their surrounding areas have an electromagnetic wave signal level that is "below the threshold causing an impact on humans" according to ICNIRP standards. (Please see the table of the total value of frequency measurement below.)

Thaicom Satellite Station, Nonthaburi



Thaicom Teleport & DTH Center, Pathum Thani



Future Environmental Challenges (in Space) "Space Debris"

Since Sputnik, the world's first satellite, has been launched into orbit in 1957, it was the beginning of the space pioneering era. Until now for more than 60 years, there were many expired satellites floating in different orbits. In addition, the number of objects, such as transportation rockets, spacecraft, or other debris relating to the space missions, is increasing day by day. Currently, only in the Low Earth Orbit, there are only 23,000 objects that we can track and there are ten-thousands of objects that are small and unable to be tracked. These debris are "Electronic waste" that can affect the environment in the space above the Earth's atmosphere and may cause collision. It is not different from the tremendous amount of "plastic waste" dumping in the sea that we still can't find the solution to eliminate it effectively. However, the space debris is an important issue that the space and satellite industry has attempted to find ways to eliminate them. Many projects are still in the experimental stage, for example;

"RemoveDEBRIS Project" led by the research team of the Surrey Space Center, University of Surrey, England, with financial support from the European Commission and its project alliances who are space operators in Europe, such as Airbus. In 2018, RemoveDEBRIS was sent to the International Space Station (ISS) together with experimental devices, such as net, harpoon, guided cameras, and two CubeSats, in order to carry out the experiments for space debris cleanup in the Low Earth Orbit. For example, it carried out the tests by shooting the net to capture the target debris and shooting harpoons at target debris. When the mission is completed, the vehicle will spread a large drag sail that acts like a brake to bring the target into the atmosphere, where it will burn up before reaching the earth. See more information at https://en.wikipedia.org/wiki/RemoveDEBRIS; or https://www.surrey.ac.uk/surrey-space-centre/missions/removedebris.

Another project from the United States with the test of the method of satellite debris removal from the low earth orbit is carried out by Tethers Unlimited, Inc., which designs a device called **"Terminator Tape"**, a notebook-sized module weighing less than two pounds with low costs. It was attached to Prox-1 satellite of the Air Force Research Laboratory's University Nanosatellite Program and launched into space in mid 2019 to test the operation of the terminal tape. According to the experiment, when the satellite expires, the terminator tape will start working, causing it to deploy a 230-foot-long strip of tape. Once the terminator tape interacts with the space environment, creating a drag force on the satellite that lowers its orbit far more rapidly than it would if it were simply abandoned in orbit. If this experiment is successful, the satellite will deorbit over 24 times faster. However, further experiments are still in process according to the plans. (See more information at, https://www.tethers.com/term-tape/)

In addition to the concept of space debris cleanup, there is an idea to use the method of **"life extension of satellite"** or **reuse of "expired satellite"**. Normally, satellites in Geosynchronous Orbit (GEO) that is approximately 36,000 kilometers above the earth have the average useful lifetime of approximately 15-20 years. In 2019, there was a **"Space Tug Project"** that launched a small robotic satellite, named **"MEV-1" (Mission Extension Vehicle-1)**, of Northrop Grumman (U.S.A.), which contained fuel. The mission of MEV-1 is to travel to the expired satellites of the United States at the Satellite Graveyard. When it reaches about 1 meter away, the mechanical fingers will pull the target satellite to connect to the MEV-1. If it is successful, the useful lifetime of satellites can be extended for another 5 years. The MEV-1 will then drag this satellite to the required orbit for further service. After the expiration of 5 years, MEV-1 will drag the satellite back to the satellite graveyard. Then MEV-1 will continue to perform other missions. This method is the experiment which the expired "Electronic waste" will be recycled and reused. Although it is for a short term reused, it will slow down the use of resources and save the investment for the launch of new satellite. In the future, there may be a better technology in doing so. According to the recent news, in early 2020, the MEV-1 satellite successed to drag this expired satellite and extended its useful lifetime to another five years as planned. (See more information at, https://www.northropgrumman.com/space/space-logistics-services/)

What does Thaicom do when the satellite expires?

When Thaicom 1, 2, 3 and the latest one, Thaicom 5, expired or retired, the Company has complied with the requirements of the International Telecommunication Union (ITU) by using the last set of fuel to fire the rocket and drift the expired satellite out of the orbit around 300 kilometers above. So that it does not cause any harm to active satellites. Although Thaicom does not own satellite technology, the Company are not restless and continue following up the news of development on this matter. We hope that there will be a successful solution for space debris removal in the near future because this is the responsibility of space industry and operators to the space environment.



Social Performance

Our Responsibility to People and Society

Based on our principle by using technology to connect the world to create sustainability, Thaicom focuses on the business operations with social responsibility. The Company adheres to the principles of good governance and maintaining the Code of Conduct together with transparent and fair organization management without violating human rights or regulations on labor and employees. In addition, the Company also promotes the engagement of all stakeholders and offers opportunities to communicate and exchange information through various channels to meet their needs. Thaicom social dimension covers the responsibility to People (Employee) and Society with the operating results of the previous year as follows;

Our People

Organizational Development for Sustainability

When the world transforms into the Global Disruption age, all organizations must adapt their business operation to cove with it. Moreover, the business competition is more severe, complicated and challenging. According to this, Thaicom has realized the urgent and necessity to change the organization, improve work processes, and adapt the way of thinking of its employees to be open and ready to change themselves for the future.

Thaicom Management has focused on Digital Disruption and studied the trend of new technologies continuously, including conducted the organization diagnosis to analyze and understand the factors within the organization through the processes that are open and accept opinions from employees at all levels. Both data are used to determine the strategy to drive Thaicom. In addition, the vision of leaders in organizations also focuses on Digital Transformation. The Company's business operations are transformed from traditional satellite business to the "Smart Solution Provider" by using digital technology that will integrate Space, Air, Ground and Maritime through the use of Big DATA. It will be consistent with the vision and mission set forth by the company. With the above reasons, Thaicom Management has therefore restructured the organizational structure to be in line with the new strategy by clearly defining the roles, duties and responsibilities of departments and adding the working model of a sub-unit. "Agile Team" is assigned to speed up the improvement of the main business operations and promote new business development projects. This requires a fast and agile teamwork that is able to work and meet customers' needs and changes more efficiently.

Strategy on Human Resources

1. Strengthening organizational culture to create sustainability

Thaicom Management emphasizes on strengthening the organizational culture by encouraging all employees at all levels to participate in the development of organization. Leaders of the Company regularly communicate the expectation on working behavior to employees. All executives have the duty to act as a role model, support the team by means of empowerment, encourage employees to be aware of continuous learning, emphasize on the team to participate in all processes, such as planning, work improvement, and decision making, focus on Two-Way Feedback, which is the important basic for creating an agile organizational culture. Employees are open to accept and listen to opinions, pay respect to and trust each other. They have a sense of ownership and focus on delivering values to stakeholders for sustainable business results.

2. Organizational restructuring to be consistent with future business operations

In 2019, Thaicom restructured its organizational structure to create flexibility in management. Departments and sections were adjusted and newly created. Responsibilities and structural relationships were determined to create holistic accountability for work achievement. Agile Concept is used to manage the organization, build and adapt the mind set of employees, focus on cross functional teamwork, adhere to common goals to meet customers' satisfaction and needs (Customer Focus), create commercial minds for employees, enhance empowerment for employees, including promote and provide opportunities to employees to increasingly participate in all processes (Employee Involvement).

3. Readiness of Our People

Thaicom develops employees to be confidence in themselves and their teams. In 2018, the Constructionism Program was introduced to create new changes together and also launched the "Social Lab" for the employees to participate in the design of the future of the organization. It is an open-minded process for exchanging creative ideas and opinions between employees and executives. In addition, the development of leadership competency was provided to leaders at all levels so that they would have strong capability and be ready to drive the organization. Good leaders will be able to engage the team with the vision, mission, and strategy of the organization and lead the organization to the right direction and create sustainable growth. The Company provides skills Development to employees to support Digital Future by means of Reskill, Upskill and Cross Skill and with the use of technology to perform operations. Digital Literacy development training has also provided, such as Data Analytics, FinTech, Tech-enabled Services, Digital Media, Cyber Security, Entrepreneurship, and Internet of Things (IOT), etc.

People development to be in line with new business strategies

"Employees" are the important driving force of businesses. They must be ready to adapt themselves to changing strategies and business trends. Therefore, Thaicom is aware of the promotion of employees to have regular trainings every year, including Reskill or Upskill, to prepare the organization to deal with the changing market competition and technological disruption.

In 2019, Thaicom provided a total of 87 training courses to employees, or 16.72 hours/ person/ year, which included both Mandatory Course and Functional Course. Functional Course is for employees who want to learn additionally to enhance skills in their field of work. The combined learning is used, both traditional classroom training and online training, and provided by lecturers who are well-known and recognized by various industries inside and outside the organization. In addition, Thaicom also encourages employees to participate in trainings with employees of Intouch Group in order to build good relationships among employees for their related operations benefit in the future.

Furthermore, the Company greatly paid attention to the "Personal Data Protection" and required employees to be aware on how important to use information carefully. As a result, the training course on "Cyber Security Act" was provided to employees two times in 2019 by internal and external lecturers to convey knowledge and experiences to employees. Therefore, the employees would understand and act correctly and carefully when using information.

Training Hours

Average training for employees
16.72 hours / 362 people / year



Operational	Manager	Executives	C Level
PG 3-9	PG 10-12	PG 13-15	
16.32	**16.56**	**24.19**	**3.75**
hours / 206 people / year	hours / 131 people / year	hours / 21 persons / year	hours / 4 people / year

Every year, Thaicom will plan to develop employees at all levels for the progress in their career paths and all skills in order to cope with the changes and be consistent with the directions and strategies of the Company through trainings as well as voluntary rotation of work. This will cause the development and creation of a learning organization. Plus, employees will share and help each other as well. The Company continues preparing the human resource development plans to support the succession plan. This is to prepare personnel with capability for leadership and be ready to be responsible for tasks in higher positions through various human resource development courses. These training courses are designed to be a one-year course for continuously learning, practicing and integrating it into daily operations. The details of these training courses for the year 2019 are as follows;

Course	Target Group	Objectives	Learning Style
Group Talent Development Program – Executive Learning Sustainment Harvard Business Publishing	FIve employees in the Next Generation Leader group, executives of Platinum and Diamond PG 15 - UC group.	• To develop the potential Leadership by applying the knowledge gained from training for organization management • To develop team manage ment skills	• Learned from lectures by experts • Learned from the Expert experience • Organized discussion groups, exchange opinions • Online Learning
Group Talent Development Program – Leadership Development Harvard Business Publishing	Four employees in the Next Generation Leader group, executives of Diamond and Gold PG 13-14 groups.	• To develop the potential Leadership by applying the knowledge gained from training for organization management • To develop team management skills	• Learned from lectures by experts • Project-Based Learning • Online Learning
Group Talent Development Program – Strategic Leadership University of Manchester	Four employees in the Next Generation Leader group, and executives of the Gold PG 11 - 12 group	• To develop the potential Leadership by applying the knowledge gained from training for organization management • To develop team management skills	• Learned from lectures by experts • Project-Based Learning • Online Learning
Group Talent Development Program – Leading People for Corrective Results SEAC	15 employees in the Next Generation Leader group, and in the Emerald PG 7 - 10 group	• To develop the potential Leadership by applying the knowledge gained from training for organization management • To develop team management skills	• Learned from lectures by experts • Project-Based Learning • Online Learning
Agile Project	Employees in the Thaicom Talent Development Program group	• To create an understanding of the changing role of leaders for creating change in the organization. • To practically apply concepts and methods of working as an Agile Team within the organization by learning through various projects of Thaicom	• Learned from lectures by experts • Used the group activities to exchange Management perspectives and methods • Organized discussion groups for exchange opinions and give examples of correct practices. • Project-Based Learning
High Impact Presentation	Target employees who need to present their work to the team, internal departments, executives, and customers	• Learn how to analyze audience groups and preparation before presentation • Topic and contents selection techniques for the presentation and Essay • Good personality in being a professional speaker.	• Learning process, taking action, and training directly with presentation experts • Learn presentation techniques and personality practice by professional speakers

In addition, Thaicom focuses on the environment reponsibility by providing environmental training courses to employees. It is the in-house training and public training. Environmental training course must be included in the Company's training plan on an annual basis. In 2019, Energy Saving Training Course was organized to raise awareness of energy conservation. There were 38 employees participating in this course.

Fair and Equal Opportunities of Employees

Thaicom has a total of 400 employees (as of December 31, 2019). The Company has the policy to look after employees thoroughly, equally and fairly without any discrimination of gender, religion or race. In addition, the Company also hires employees derived from diverse nationalities and countries based on Thaicom's satellite service areas. Therefore, "principles on human resources management" are the important framework of operations for all employees to ensure no violation of such rights of employees. Such principles are disclosed on the Company's website. However, if unfair practices are found or employees do not receive the appropriate benefits as specified by the rules, the Company offers opportunities to express comments and complaints through various channels in case of anonymity, such as Welfare committee, internal web board, Ethics Hotline on the Website and Intranet, comments during the annual employees' meeting, and on special occasions. Morepver, employees are able to discuss directly with their supervisors or discuss it during the performance appraisal and employee engagement evaluation.

Total number of employees			
Total number of employees (only Thaicom, TCB, Thai AI)			
Office	**Male**	**Fenale**	**Grand Total**
Thailand	249	130	379
Overseas	16	5	21
Grand Total	**265**	**135**	**400**

Proportion of employees	
Number of employees in Thailand and the number of employees overseas	
Workplace	**Total**
Thailand	379
Overseas:	21
Expat	2
Local	19
Grand Total	**400**

- 7 new employees based in Thailand, an equivalent to 1.75 % of all employees.
- 58 employees based in Thailand resigned, an equiva lent to 14.50% of all employees.
- 6 employees on maternity leave and 6 employees returning to work after maternity leave.

Proportion of employee classified by job position			
Job Position	**Thailand**	**Overseas**	**Grand Total**
Operating	314	17	331
Manager	40	2	42
Executive	21	2	23
Senior Management	4	0	4
Grand Total	**379**	**21**	**400**

Proportion of employees classified by workplace			
Workplace	**Thailand**	**Overseas**	**Grand Total**
Overseas	0	19	19
Hua-Hin	4	0	4
Nonthaburi	246	2	248
Pathum Thani	124	0	124
SJ Infinite I Bldg., Bangkok	5	0	5
Grand Total	**379**	**21**	**400**

Proportion of employee classified by Age			
Age	**Thailand**	**Overseas**	**Grand Total**
< 30 years	17		17
30-50 years	310	19	329
>50 years	52	2	54
Grand Total	379	21	400

Average working years of employees			
Thailand	**Overseas**	**Average**	
13.33	9.67	13.14	

(As of 31 December 2019)

Employee Recruitment

Thaicom operates its business domestically and internationally. The Company realizes the value and how importance of its employees. We believe that qualified employees are the factors leading the organization to sustainable growth and success. As a result, the Company is committed to seeking for good, moral, skilled and talented people, who is suitable for jobs and can be developed all the time, in order to support the business expansion in the future. With this confidence, Thaicom has therefore established the policy on human resource management to demonstrate its strong intention of recruiting personnel to be in line with its business strategy. Plus, anti-corruption measures are also used as the criteria on recruitment process, along with qualifications, knowledge, capabilities and proper attitude for jobs. The Company offers equal opportunity without any discrimination of gender, race, religion, and educational institutions. Since many positions require specialized skills, the Company will announce the job recruitment based on job vacancies through internal communication channels and the website, www.thaicom.net. Interested persons can apply for job via email or submit an application form through online channel.

Employee Engagement Scores of 2019

3.57/5

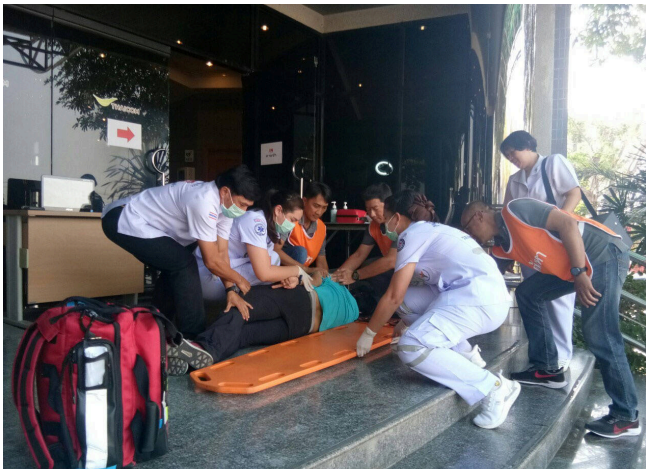
Employee Engagement

Thaicom focuses on the development of operations. Listening to employee opinions is another channel enabling the Company to perform operations efficiently. The Employee Engagement Survey is conducted to listen to employee opinions openly for the improvement plan and improve the human resource management every year.

In 2019, Thaicom still uses the survey method, "Q12" of Gallup Company to survey its employee engagement. The engagement level of Thaicom employees based on Gallup's assessment criteria was **3.57/5.** One out of 12 issues that employees scored the most was **"I have the best friend in the organization".** Employees participating in the Q12 survey accounted for **92%** of the total number of employees in the domestic and international organization.

After conducting such survey, Thaicom has set up a focus group by randomly sampling 3 groups of employees with relatively low engagement scores in order to find the root cause and use it as a guideline for solving problems and creating engagement development plans in the following year.





Occupational Health and Safety, and Work Environment

The management system of employees' occupational health and safety, and work environment is very important to the Company. Consequently, Thaicom has established the policy to be the guideline for implementation and development as wll as communicated to employees at all levels. The Company assigned Safety officers in professional level, supervisor level, and management level in order to cover the safety supervision of employees in all operating areas. In addition, there is the Committee on occupational health and safety and work environment, which consists of representatives from the Management and employees, to ensure that the plans and measures for preventing any potential harm will be inspected and supervised according to the specified annual plan and subject to legal regulations.

See the policy on occupational health, safety and work environment at, https://www.thaicom.net/corporate-governance/other-policy/

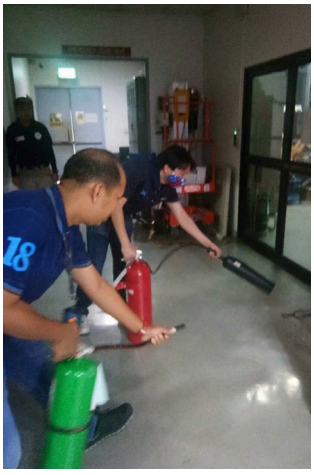
Operating Results of 2019

In 2019, the Occupational Health and Safety Committee holds the meeting on a monthly basis. Risk assessment is conducted for control and prevention, such as the measurement of "radio frequency radiation" to be in the international standard level, the inspection of the availability of equipment and tools for safety, and the arrangement of emergency drills.

Trainings and lectures relating to occupational health and safety, and work environment in 2019 include;

- Training on "Electrical Safety and Basic First Aid" to make employees aware of safety for working with electricity, prevention of potential hazards, including first aid methods
- Training on "Fire Evacuation Drills" for all employees. For Thaicom Satellite Station, Nonthaburi Province, employees took 3.49 minutes to gather at the meeting point, while the Thaicom Teleport & DTH Center, Pathum Thani Province took 3.03 minutes. Virtual drills will increase our confidence in safety measures.
- Training on "First Aid and Rescuers" for employees at both stations in Nonthaburi Province and Pathum Thani Province in order to increase their knowledge and skills to be ready to deal with potential emergencies.

  In 2019, there were 2 employees injured at work, but no employees died at work.



In 2019:

- 2 employees injured at work
- 0 employees died at work

Promoting good physical and mental health

Other than the management system for work safety, Thaicom also promotes good physical and mental health of employees through a variety of activities and lectures conducted by internal and external speakers.

Operating Results of 2019

In 2019, Thaicom organized various activities allowing employees to join voluntarily as follows;

TC We Peace
was a lecture on Dharma and meditation on the topic of "Balancing Dharma, Balancing Life" performed by Phra Kkhru Palad Suwatana Vachirakun, a speaker from the webpage, "Dhamma Arom Dee". Total of 47 employees participated.



TC We Run
was an activity that encourages employees to run and exercise with motivation to collect points from TC Me Point as one (1) kilometer of running will get one (1) point from September to December 2019. Total of 94 employees participated.





TC We Strong and Yoga Workshop.
Employees were seperated into two groups: 1) Those joining in Yoga Therapy for Office Syndrome, and 2) Those joining in Yoga Therapy for Sport Injury. Employees had the opportunity to try yoga for body therapy. Total of 39 employees participated in both groups.



TC We Rich
was a program designed to introduce financial planning to employees so that they can plan their finances for the highest benefits at present and in the future. Total of 72 employees participated.



Besides these activities, the Company also encouraged employees to regularly donate blood to Thai Red Cross Society every three months. This was our public charity and good health promotion for employees. In 2019, four (4) blood donation events took placed at Thaicom with total of 151 employees participated.



TC Wellness Program

Thaicom has continuously implemented the TC Wellness Program for the 3rd consecutive year with the main objective of creating well-being in workplace and promoting employees to have good physical and mental health. Activities to promote health and exercise are organized by various sport clubs in the Company, such as bicycle club, running club, badminton club, football club, etc. Therefore, employees can gather to do exercize and plan sport activities based on their interests under the concept of "Plan by Employees for Employees".

In 2019, the Company increased awareness on these activities to employees. Therefore, employees must register before participation due to limited seats, and also given away TC Me Point to those who participated for motivation. The success measurement of each activity used the satisfaction survey for feedback from employees. Such information will be used for organizing activities in the following years. In 2019, total of 403 employees participated (Calculating from all activities).

In 2020, we set target number of employees' participation in all activities and programs to increase by 5%.

TC Me Point to create awareness and engagement of employess

Thaicom has launched the TC Me Point activity in early 2019 to improve the internal communication to be modern and easy to access. The activity emphasizes on employees to receive news and information from the Company and their attention by encouraging them to participate in various activities through **"TC Me Point"** in the **"TC We Link"** system. TC We Link is an Application of Thaicom to use on smartphones. This Application is another way to access the Company's information, making communication easier and faster, and also encouraging employees to receive Company's news and announcements efficiently. In addition, the Company will allow employees to collect points and exchange them for rewards, such as rice, laundry detergent, instant noodles, milk, soft drinks, and snacks. To encourage employees to work with fun and challenges and get motivated in receiving news and information will create a lively environment and a working environment emphasizing on the happiness of employees (Happiness Organization). This results in the sustainable development of capabilities of people in the organization.

Operating Results of 2019

Total of 374 participated in the TC Me Point activity, or equal to 98% of the total number of employees. Total of 207 topics of Company news and information were acknowledged by employees through TC Me Point. In 2020, the Company will continue using the TC Me Point to get attraction from employees to perceive Company's news and information.

Regarding the 2020 goal, 100% of employees must participate in the TC Me Point Activity.

Our Preventive Action for Coronavirus COVID-19

The outbreak of Coronavirus COVID from Wuhan Province, China, has occurred in late 2019 and spread rapidly. Later, infected persons were found in Thailand in January 2020. With concern for all of our employees, whether working in Thailand or at overseas offices, Thaicom has therefore announced various measures according to the intensity level of the changing situation to prevent the spread of Coronavirus COVID-19 to employees. An ad hoc committee is appointed under the Business Continuity Management plan in which the Chief Executive Officer is the chairman of such committee. The examples of Thaicom measures are as follows;

- Cleaning offices with alcohol, especially in the conference room, in the common hall and the door handles, every 15 minutes
- Checking temperature of all persons entering all offices
- Employees must wear a face mask when going outside and wash their hands every time when returning to the offices.
- Providing alcohol hand gels in many locations and all offices of the Company
- During the period of January – February 2020, there were measures for those returning from foreign countries. They were required to self-quarantine at home for 14 + 5 days.
- In March, travelling abroad was suspended in all cases. "Working from Home" was applied to reduce the risk of infection from large group gatherings.

Respect for Human Rights Principles

Thaicom supports and respects the protection of human rights by ensuring that its business is not involved in human rights violation. In addition, the Company also respects and treats all stakeholders fairly based on human dignity without discrimination, such as discrimination of birthplace, race, skin color, age, gender, etc. The Company has established the Human Rights Policy. Thus, the employees of the Company must understand the laws relating to their duties and responsibilities thoroughly and strictly comply with. Since the Company operates business in many countries that have different culture, it is important for employees working in those countries to carefully study the laws, customs, traditions and cultures of that country in order to avoid the violation of such human rights laws.

Please see
The Human Rights Policy at
https://www.thaicom.net/corporate-governance/other-policy/

Cyber Security and Personal Data Protection

Thaicom has been aware of the "Cyber security" since the computers played a vital role in business operations until now. The borderless internet is used and becomes a part of people's daily lives, which can be viewed on many devices anywhere and anytime. As a result, there is a potential danger from cyber threats that are associated with the internet. Thaicom has announced the "Information Security Policy" together with the "Information Security Regulation", which are effective and applied to all employees. In addition, there is the "Regulation on Secret Classification and Data Management". This includes measures and systems for multilevel security of internal data, structure of access to employee information, and control and management of information security regarding internal personnel and those engaging in business with the Company, such as customers, business partners, joint venture partners. The Company want to ensure that personal data or connected transactions relating to business operations are not disclosed to third parties or those with malicious intent.

In 2019, Thaicom appointed the IT Governance Committee consisting of senior executives. There are relevant departments acting as a working group responsible for the overall supervision of IT systems and services (such as IT security and technology) to ensure continuous improvement and service quality, including the management in accordance with international cyber security standards (such as COSO). In additon, the Company announced to employees on "Use of Computer Networks and Use of Software in Organization" as a measure to warn and prevent the use of software in accordance with the law.

Please see
The Information Security Policy at
https://www.thaicom.net/corporate-governance/other-policy/

In addition to policies and measures, Thaicom also provides online training on "Cyber Security Awareness", which is a mandatory course, to all employees on an annual basis. There is a test that everyone, whether executives or employees, must obtain at least 80 points to pass the criteria in order to raise awareness and be alert to cyber threats. The content will be updated to match the trend of cyber threats in that year. Apart from the aforementioned test, Thaicom conducts off-year test for employees during the year, such as sending phishing emails, in order to be create carefulness to employee to avoid opening unrecognized emails. If any employee opens such email, they will have to attend the training again.

To provide knowledge about the "Cyber Security Act", in 2019, Thaicom invited knowledgeable lecturers to lecture the employees to acknowledge and be aware of the substance of the laws relating to information security and efficient cyber security. This is to find preventive measures, handle with this matter, and reduce risks from cyber threats, including personal data and company important information.

In 2020, Thaicom is preparing "ISO 2700: Customer Privacy". It will be reviewed by BSI Company. ISO 27001 is an international standard that global businesses pay attention to. It will be the framework for the Company's operations in such matter to meet international standards and comply with "the Cyber Security Act and the Personal Data Protection Act". ISO 27001 provides the information system security management and guidelines to help secure data storage.

Furthermore, the Data Security management of Thaicom adheres to the standard framework of "ISO 277001" in order to be the guideline on implementation and system management for the highest security of data storage and retention in the Company.

Our Society

Thaicom has taken the social dimension into consideration to promote sustainable society through business processes. The Company is responsible for products and quality service delivery to create the reliability, and value throughout the business chain (CSR in Process), including implementation on social responsibility that is not in the business process (CSR after Process). The Company still promotes social sustainability under three (3) concepts as follows; focusing on education, improving the quality of life of people in the community, and sharing knowledge and experience. This is to meet the requirements of operating businesses that contribute to the society for sustainabiity and be in line with one of Thaicom organizational values, a "commitment to contribute". Such commitment is to use our skills and resources to support the sustainable development of the society and the nation.

In 2019, Thaicom mainly carried out various projects and activities through collaboration with government agencies and local agencies to strengthen several relevant parties. In addition, The Company also continuously promotes volunteer minded and social responsibility for its employees. Many projects are ongoing projects for more than ten years which the Company still realizes the benefits. As a result, the Company attempts to improve them and seek for cooperation to increase the number of beneficiaries as much as possible. We believe that all humans should have equal rights, especially the rights of "education" and "information access". The education is the foundation of human development for a sustainable society. The Company therefore aims to develop and improve the quality of education, including promote "Non-formal and Informal Education (NFE)" to reduce social inequality through various projects. The details of implementation are as follows;

Promoting Long Distance Learning Education

Thai Kid Thaicom Project

The "Thai Kid Thaicom" Project has been conducted since 2009. The Company realizes the benefits of using Thaicom satellites to promote learning and reduce the gap in access to information resources and also increase instructional channels for youth in remote areas and areas with teacher shortage. It also helps encourage Thai youth to develop their own ability equally. In addition to broadcasting television signals via Thaicom satellites to the distance learning channel of the Distance Learning Foundation for effective broadcasting in all areas at all times and continuously, Thaicom also provides the "set of satellite dish and equipment" to schools in remote areas or with teacher shortage. Plus, the Company also dispatches the team to install the satellite dish and equipment and provide the training for effective use. In 2019, the Company provided the installation of such equipment to Border Patrol Police Schools under Border Patrol Police Sub-Division 21, 22, 23 and 24 and schools requested for replacement.

Up until now, Thaicom has donated the satellite dish plus satellite receiver in a total number of **7,861 sets**. There is a total of 786,100 students who have benefited from distance learning through Thaicom satellite.

Aside from being used to manage distance learning and useful information for students, the Company also supports a new set of satellite receiver, "Digital Life for Education", that responds to modern usage and access to all devices, such as television receiver, computer, mobile phone, and tablet. It can be watched during the normal broadcasting time and a rerun through the distribution of Wi-Fi signal, allowing schools to be able to manage the distance learning more efficiently. In 2019, there were 10 schools participating in Thai Kid Thaicom, "Digital Life for Education" Project. Total of 2,462 students will benefit from the project. In 2020, Thaicom plans to monitor such equipment usage.

In addition, the Company also conveys knowledge regarding the installation of satellite television receiver to vocational students. It aims to create professional standards and allow them to apply knowledge and skills for career in the future. In 2019, Thaicom provides training on the installation of satellite dish and Digital Life for Education kits to high vocational students at "Tak Technical College", Tak Povince.

Social Project investment in 2019: 2.065 Mb.

Promoting educational opportunities:

- 1.235 Mb. Thai Kid Thaicom Project
- 0.15 Mb. Thaicom Classroom (Constructionism Concept)

Sustainable Community Development:

- 0.5 Mb. Education Funds for Sustainable Development for Office of the Non-Formal and Informal Education Centers
- 0.18 Mb Thaicom We Share Project

Knowledge and Experience Sharing:

- 1,242 Visitors



Beneficiary

31	Schools under the Border Petrol Police, Unit of 21,22,23,24 and Kanchanaburi
28	Schools under the Office of the Basic Education Commission (OBEC)
10	Schools under Educational Fund Project
11	Centers under Office of the Non-Formal and Informal Education in Chiang Mai, Mae Hong Son, Tak and Phang Nga provinces
8	Mae Fah Luang Hilltribe Community Learming Centers
227	Students (from 6 Classes) entering Thaicom Classroom Project applying Constructionism concept
46	Projects by Thaicom Classroom's students that applied for further education from 2016-2019.

Set of satellite dishes "Thai Kid Thaicom" and beneficiaries (the average of 100 students/ set)

2011-2018: Total of 7,681 sets and 768,100 beneficiaries
2019: Total of 180 sets and 18,000 beneficiaries, resulting to total of 786,100 beneficiaries.



Knowledge and Experience Sharing:

Learning about Satellite with Thaicom

Thaicom is committed to be a satellite and space learning center for youths and the general public in order to inspire them. The Company has established a Thaicom Space & Satellite Pavilion in the Thaicom Satellite Station, Nonthaburi Province since the station opened in 1994 and been renovated for several times. Thaicom engineers will volunteer to be a lecturer and share experiences during the visit (in group). Moreover, the Company also encourages employees to give lectures to students at universities, especially in the faculty of engineering or other faculties and interest entities. Aside from sharing knowledge and experiences, we also provide career guidance since these youths will be a future of the country. In 2019, there were 1,242 students and government agencies in Bangkok and other provinces visiting the Company. It excluded customers and alliances whom we shared our knowledge and experiences. Every year, Thaicom also recruits students for internships, On-the-Job Training, which creates experiences from actual assignments.

Thaicom Classroom Project

Thaicom promoted the new model of learning, Constructionism Theory, by providing the sponsorship at "Wat Khian Khet School", Pathum Thani Province from the year 2014 to 2019. The project began with the preparation of teachers and school administrators to acknowledge the instructional model of Constructionism Theory. After that, one Thaicom classroom was set up as a pilot project and then expanded it to three classrooms from Grade 9-12. Currently, there are three generations of graduating students. The Constructionism program focuses on the learning process based on learners' interests. Learners have to search for information by themselves, work in a group for projects throughout the study period and take the examination in the final semester. For students who have graduated from Thaicom classrooms, they do not only achieve new and practical learning outcomes, but they can use the group project (3 students/project) learned throughout the three-year curriculum to apply for the higher education. The number of projects accounts for 27% (Year 2016-2019) and the success rate of enrollment in higher education of students in Thaicom classrooms represents to 96%. In addition, the Company supports additional training for teachers and advisors in Thaicom classrooms. Teachers in the general class also join every year. The school improves the learning sustainability by applying the Constructionism concept to the general classroom as well, which is successful in terms of the learning development of students when compared to the traditional instructional models. These are our goals and allows the school to improve on its own educational sustainably.

The success of using the Project from the Thaicom Classroom as a reference, to study in higher education

2016, a total of 10 Projects from 37 students, 35 students entrancing to higher education

2017, a total of 12 Projects from 39 students, 36 students entrancing to higher education

2018, a total of 12 Projects from 41 students, all students entrancing to higher education

2019, a total of 12 Projects from 39 students, all students entrancing to higher education

2020, a total of 9 Projects from 29 students are in the process of being announced to entrance to higher education

Promoting Sustainable Community Development:

Thaicom Social Fund for Sustainable Development Project"
As a member of Thai society aiming to develop from the grassroots level, especially in remote and wilderness areas, Thaicom establishes the guidelines for the community and society development to create strength and sustainability. From the creation of a learning and communication infrastructure to the process of creating knowledge from distance learning via satellites, one can apply knowledge gained for careers to improve the economy and society for a better quality of life. With this concept, Thaicom collaborates with "Office of the Non-Formal and Informal Education" (NFE) to expand the learning from "Thai Kid Thaicom" Project to remote areas in the highlands along the border of Chiang Mai, Nan, and Mae Hong Son Provinces. "Thaicom Social Fund for Sustainable Development Project" was initiated in 2016, which aims to support the use of knowledge from distance learning to improve the quality of life as well as enhance the career skills for the community. In addition, Thaicom also initiated "Career Development Fund based on Community Cability" for non-formal educational students for knowledge and systemic fund management. The concept of "Constructionism" combined with the "Mechanisms of Lifelong Learning Philosophy" of NFE are applied to drive this project. Thaicom expects that "Learning for Career Development" will enable NFE students in the marginal area of Thailand with sufficient income and better living and finally strengthen sustainability for their communities.

Target groups for the implementation of Thaicom Social Fund for Sustainable Development Project are as follows;

1. Thaicom satellite service area that covers the target groups in the remote area because Thaicom has the intention in creating the opportunity to receive information and education equally and thoroughly

2. Besides the opportunity to receive news and education, people in remote areas still need the development of quality of life, especially career skills based on geography.

3. NFE is an entity with personnel for promoting community learning in remote areas. It is the location where people gather to learn and receive news via satellite television. In addition, there is the project of forestation for creating income for the highland communities under HRH Somdech Phra Kanishthadhiraj Chao Krom Somdech Phra Debaratanarajasuda Chao Fa Maha Chakri Sirindhorn.

4. Thaicom Social Fund for Sustainable Development Project sets the target group in remote areas in the northern part of Thailand and promote the project of forestation for creating income by using the learning mechanism of NFE and the satellite television as a medium for career information.

In 2019, Thaicom granted scholarships to 100 NFE students in the total amount of 500,000 Baht. These NFE students must propose projects to request for scholarships from Thaicom for learning to create a career based on interests and geography with community participation. There was a total of 48 projects in 2019 and a total of 84 projects under "Career Development Fund based on Community Capability". There were 409 NFE students participating in the project.

The Company has followed up and evaluated results together with NFE in order to expand the support or else continuously, such as the Solar Dried Banana Project (SorSorChor., Ban Pong Khao, Kalyaniwatthana District), Frog Farming (SorSorChor., Ban Huai Wok, Mae Jam District), Goat Raising (SorSorChor., Ban Mae Pa Klang, Sop Moei District) Cultivation of shiitake mushrooms (SorSorChor., Ban Huai Yak, Sop Moei District), Coffee Processing (SorSorChor., Ban Nong Nan, Bo Kluea District), etc. (SorSorChor stands for Mae Fah Luang Hilltribe Community Learning Center)

Regarding the Social Fund for Sustainable Development Project, Thaicom, together with NFE, have just evaluated the achievement on each project, done by NFE students at the end of the year 2019. It took some time to follow up and evaluating results after receiving funds from Thaicom. However, the goals are set in two types as follows;

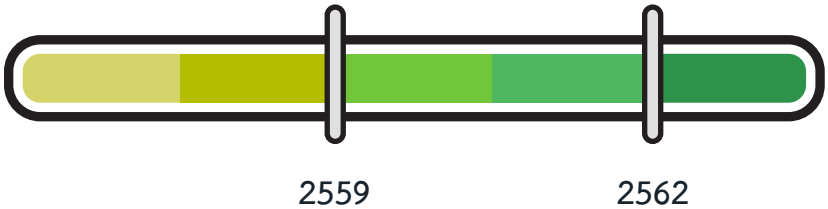
1) Social quantitative goals - The output from the "Social Fund for Sustainable Development Project" is added to the value of the initial capital. It is calculated from the product value, project expansion value, and income from the project.

2)Number of students' projects meet the criteria on sustainability -The indicators developed from the collaboration between the Company and Office of the Non-Formal and Informal Education.

The objectives of both goals are to track progress and provide further support continuously. Thaicom sets the goal for a period of five (5) years that each project can be sustainable.

Goals	Year of Received Fund	2023	2022	2021	2020 2020	Base Year (Baht)	Total Fund
1) Social Quantitative Aspects.		10%	7%	5%	3%		
Value added from originate Funds	2560					4.82%	315,000
	2561					2.60%	300,000
	2562*					n/a	500,000
2) The Number of students' projects that meet our sustainability criteria.	75%	70%	65%	60%			Total Students' Projects
	2560					100%	16 Projects
	2561					100%	17 Projects
	2562*					n/a	48 Projects

Note: * Since the fund was received at the end of 2019, it has not been calculated in 2019.



The summary of the sustainability indicators of the Thaicom Projects with NFE during 2016-2019 is at 91.66%

The Project evaluation based on the sustainability indicators of "The Social Fund by Thaicom for Sustainable Development" was the collaboration between Thaicom and Office of the Non-Formal and Informal Education, which identified 6 indicators for the first time in 2019. The project performance was summarized as the following:

2019 Performance of Thaicom Social Fund for Sustainable Development Project in accordance with our Sustainability Indicators

No	Indicators	Project Performance (in percentage)										Procedures
						2018		2019		2020		
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
1	Project implementation using learning methods and learning management procedures of NFE.	36 100%	-	3 100%	- -	16 100%	-	17 100%		48 100%	-	Before proposing a project, the requirements, methods, steps and learning management procedures must be prepared.
2	Household accounting with controls and inspections by the NFE teachers who responsible for the project (of the scholarship recipient)	27 75%	9 25%	3 100%	-	11 68.75%	5 31.25%	13 76.47%	4 23.52%	48 100%	-	From 2016-19, some projects were changed the reponsible teachers; and communities did not continue the projects.
3	The Project progress reporting through the Director of NFE Center in each Districts who is the primary inspector.	36 100%	-	3 100%	-	16 100%	-	17 100%	-	48 100%	-	Track the progress of teacher in the Mae Fah Luang Hilltribe Community Learning Centers area closely.
4	Fund management by allocating funds to starting capital and working capital.	31 86%	5 14%	3 100%	-	12 75%	2 12.5%	16 94.11%	1 5.88%	48 100%	-	From 2016-19, some Projects were canceled due to the migration of scholarship recipients and teachers are following up now.
5	Preparation of a plan for funding or products valued from Projects and to continuously expand the Project.	33 92%	3 8%	3 100%	-	14 87.5%	2 12.5%	16 94.11%	1 5.88%	48 100%	-	The 2016 Project has not yet specified plans for the expansion, but NFE teachers are continuously monitoring the operation.
6	Generating income from project operations, which is in monetary or the value of the product.	35 97%	1 3%	3 100%		15 93.75%	1 6.25%	17 100%	-	12 25%	36 75%	Receivied funds in 2019 and reported in 2020, the Projects are in progress. Therefore, we have not seen results on Income or value of the products

Recommedations

- Sent all 6 indicators to the Non-formal and Informal Education Centers for each project evaluation along with tracking the fund that has not been implemented to move to those who needs.
- The summary of the sustainability indicators of the projects between 2016-2019 is at 91.66%
- As for the results of the sustainability indicators of the project for 2020, the assessment is still being conducted.

Overall Thaicom Social Devlopment Project Performance in 2019

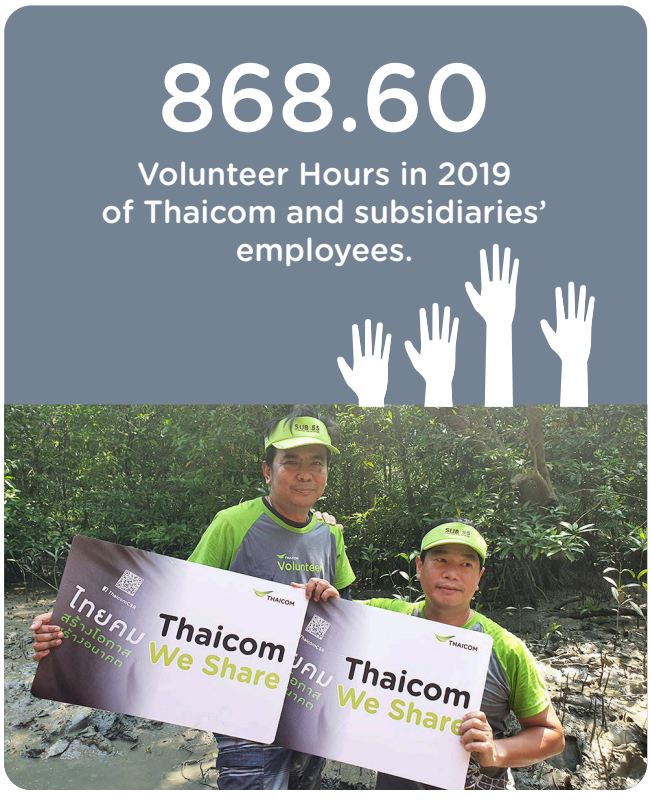
Project	Goals and Action Plans	Performance in 2019
Thai Kid Thaicom	- Promote education and reduce educational gaps among schools in remote area and where is lack of teachers. - Donate satellite dish set with installation for schools in remote areas or where is lack of teachers. - Provide training satellite dish installation and how to use and maintain it, for vocational students, teacher of Border Patrol Police School and the Non-Formal and Informal Education Center's teachers to increase efficiency and open opportunities for addiitonal career. - Support the extention of the project or present new innovation and product developed by Thaicom for education via satellite.	1. Donated and installed Thai Kid Thaicom Satellite Dish Sets to schools as follow: 1.1 Total of 31 Schools under the Border Petrol Police, Unit of 21,22,23,24 in the Northearthern, and the Unit in Kanchanaburi. 1.2. Total of **28** schools under **Office of the Basic Education Commission** (OBEC) 1.3. Total of 8 Centers under the Office of the Non-Formal and Informal Education (NFE) 2. Installed "Digital Life Box for Education" to 10 pilot schools. 3. Trained satellite dish installation course to Tak Technical College, Tak Province. 4. Evaluated the performance of the set-top box to all Border Patrol Police Schools, Unit of 21,22,23 and 24, in total of 52 schools.
Social fund For Sustainable Development	- Promote the concept of setting production fund and revolving fund to create shared values between Thaicom and society as well as interests in sustainability. - Support the Project of Forestation Under the Royal Initiative, the Scholarships project for children in the Highlands and the Carreer Development for Sustainability Project with Office of the Non-Formal and Informal Education, which led to initiatve "Career Development Fund based on Community Cability" by Thaicom. - Install the satellite dish set for NFE Centers and Mae Fah Luang Hilltribe Community Learning Centers for non-formal and informal education and knowledge for their career that suits the geography. - Support budgets or scholarships for "Learning for a Career" in collaboration with NFE. - Support additional knowledge from experts, speakers or coordinate with the government agencies such as the Department of Livestock Development, Department of Land Development, to request for documents and media for broadcasting via ETV channels, etc. - Organize a meeting to discuss the achievement, lessons learn and experience on the projects with Scholarship recipients. - Organize an activity for Thaicom employees to visit the projects funded by Thaicom in Mae Fah Luang Hilltribe Community Learning Centers to build a linkage with the community and create awareness on social responsibility.	1. Granted 100 scholarship funds for career development project (500,000 baht in total) with 48 projects in 11 Districts of Chiang Mai, Mae Hong Son, Tak and Phang Nga provinces, and 8 "Mae Fah Luang" Hilltribe Community Learning Centers. 2. Follow up the progress of the project together with Office of the Non-Formal and Informal Education in order to assess the success of the projects, under two goals: a) Social Quantitative Aspects and b) Number of student projects that meet criteria based on our sustainability indicators. 3. Installed satellite dish sets to 8 Mae Fah Luang Hilltribe Community Learning Centers. 4. Provided Agriculture knowledge for recent scholarships recipients at Office of the NFE Center, Mae Hong Son Province. 5. Organized a seminar to share experience from successful projects for recent scholarships recipients at Office of the NFE Center, Mae Hong Son Province.
Thaicom Classroom (Constructionism Concept)	- Develop and manage three (3) Thaicom classrooms as a learning center and one Constructionism laboratory room. - Manage new learning process for students under Constructionism concept and develop teachers and school administrators in accordance with the Constructionism guidelines. - Develop learners with support Budget for the project, which is a continued project for three (3) years ending in the academic year from 2016-2018 and continued in 2019.	1. Managed three (3) Thaicom classrooms for senior high school levels (Grade 10-12). 2. Supported budget for the procurement of equipment for the project in the amount of 150,000 baht. 3. 227 Students (of 6 high school graduation classes) joined the Thaicom classrooms. 4. 46 projects by students in Thaicom Classrooms who graduate from 2016-2019, were applied for entrancing the universities.

Project	Goals and Action Plans	Performance in 2019
	- Manage project assessment both before conducted and before graduation. - Provide teacher development of "Thaicom Classroom" in order to manage learning under the Constructionism theory.	5. In 2019, 100% of students of Thaicom classrooms can entrance to the university by referencing to their projects, with the total of 39 projects.
Space & Satellite Pavilion	- Share knowledge and experience about space and satellites as the first Thai Satellite Service Provider. - Inspire Thai youth - Provide an opportunity for those interested to visit the company with a lecture from volunteer engineering employee and Satellite Operation Station Tour - Update regulary on content and information inside the room and lecture	In 2019, total of 1,242 visitors from public and private agencies as well as educational institutions, who received knowledge sharing from Thaicom.
THAICOM Run for School 2019	- First organized in 2016 before the THAICOM 10K 2016 running event. - Promote health activity along with providing opportunity for education; combine a running event with the Thai Kid Thaicom project. By recruiting runners from all over the country to run at least 1,000 km per team. The winner team will select the schools they want to donate the satellite dish set with installation. - With our slogan "Just join us for a run, we will give away a satellite dish to school for free". - Expand the Thaicom's Run for School activity by colalboration with other Running Race events to acquire more runners to give away the satellite dish for educational opportunities to students in remote area.	Organized the 4th Thaicom Run for School 2019, but was the first year in collaboraton with other Running Race event which was "The Pinhathai Run - Triam Udom Half Marathon 2019" organized by the Alumni Association of the Triam Udom Suksa School, with total of 388 runners from 49 teams joined us to send 30 satellite dish sets to 30 schools as requested by each team in remote areas around the country.

Thaicom Volunteer

"Thaicom We Share" is the project that encourages Thaicom employees and its affiliates to participate in the development of society and community. The project allows employees to brainstorm for procedures and solutions, and then take action to solve social issues. In 2019, Thaicom employees organized six activities in such model. They can solve social problems in many areas, such as public health, education, underprivileged support, and social assistance in crisis. Ongoing activities are followed up and participated in, allowing employees to develop themselves in other areas besides their duties. It also raises awareness and public mind to be a social developer in the future. We believe that if employees have public mind and are aware of the development, they will be able to become a developer in terms of the role and mission in their duties and careers as well as a developer in the role of a member of the society.

In 2019, there were projects that employees provide a collaboration as follows; providing assistance to create the employment of the deaf and the disabled, helping move the medical equipment to a new Center, promoting the quality of school lunch, assisting victims from floods, and nature learning activity with mangrove forestation. The total number of Thaicom voluntarily participating in Thaicom We Share Project was 126 employees, representing 33.24% of the total 379 Thaicom and affiliates employees (as of December 31, 2019). The number of volunteering hours of Thaicom employees in all activities of 2019, was 868.60 hours / 341 persons.



About this Report

This Sustainability Report is the 7th edition published by Thaicom Public Company Limited. This report was object to disclose significant information including operations regarding economic, social and environment aspects of the Company in Thailand during the period from January 1st to December 31st, 2019 (Fiscal Year 2019). However, the Company reported additional information regarding the Measures during the outbreak of "Coronavirus COVID-19" occurred in early 2020. For this sustainability report, Thaicom cited the choice index according to Global Choice Initiative 2018 (GRI) and presented the consistency of its business operations in comparison to the Sustainable Development Goals (SDGs) of the United Nations. In 2019, the Company prepared the Sustainability Report in an electronic form only.

Regarding the **Sustainability Report** on the Section of "Operations and Financial Statements" of the Company referred in the "GRI Content Index 2019", please see the pages referred in the **"Annual Report 2019"** which the Company communicates with stakeholders, such as investors and shareholders. These two Reports, the Sustainability Report and Annual Report, can be downloaded from the website, www.thaicom.net/Investors/Publications.

For more information and comments on this Sustainability Report, please contact Sustainable Development Section, Corporate Communications.

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GRI CONTENT INDEX

Note: Our GRI Content Index below includes references to 2019 Thaicom Annual Report and 2019 Sustainability Report

General Disclosures			
GRI Disclosure	**Annual Report/ Website TH =Thai version, EN = English version)**	**Sustainability Report**	**Omission/ Note**
GRI 102: General Disclosures 2016			
1. Organizational profile			
102-1 Name of the Organization	Front cover; Part 1: p 41 (TH), 43 (EN)		
102-2 Activities, brands, products, and services	Part 1: pp 10-22 (TH/EN)		
102-3 Location of headquarters	Back cover; Part 1: p 41 (H), 43 (EN)		
102-4 Location of operations	Part 1: pp 41-44 (TH), 43-46 (EN)		
102-5 Ownership and legal form	Part 1: p 8 (TH/EN); Part 2: pp 1-3 (TH/EN)		
102-6 Markets served	Part 1: pp 10-22 (TH/EN)		
102-7 Scale of the organization	Part 1: pp 8-9 (TH/EN); pp 41-44 (TH), 44-46 (EN); Part 2: p 17 (TH), 18 (EN); Part 3: pp 2-4 (TH/EN)	pp 45-46 (TH/EN)	
102-8 Information on employees and other workers		pp 46 (TH/EN)	
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102-14 Statement from senior decision-maker	pp.1-2 (TH/EN); Attachment 5: pp 1-3 (TH), 1-4 (EN); Attachment 6: pp 1-2 (TH), 1-2 (EN); Attachment 7: pp 1-3 (TH/EN); Attachment 8: pp 1-3 (TH/EN)	pp 5-6 (TH/EN)	
102-15 Key impacts, risks, and opportunities	Part 1: pp 23-27 (TH), 23-28 (EN)	pp 29-31 (TH/EN)	
3. Ethics and integrity			
102-16 Values, principles, standards, and norms of behavior	Part 1: pp 1-4 (TH/EN)	p 8 (TH/EN)	
102-17 Mechanisms for advice and concerns about ethics	Part 2: pp 86-90 (TH), 89-93 (EN); Attachment 5: pp 2-3 (TH), 2-4 (EN); https://www.thaicom.net/wp-content/uploads/2019/07/20160913-thcom-cg-whistleblower-2016-en.pdf		
4. Governance			
103-2 The management approach and its components	Part 2: pp 24-27 (TH), 25-28 (EN)		
102-18 Governance structure	Part 2: pp 8-11, 47-45 (TH)/ 9-12, 49-50 (EN)		
102-19 Delegating authority	Part 2: pp 27-49 (TH), 28-52 (EN)		
102-20 Executive-level responsibility for economic, environmental, and social topics	Part 2: pp 47-48 (TH), 49-50 (EN)		
102-22 Composition of the highest governance body and its committees	Part 2: pp 8-11, 27-49 (TH)/ 9-12, 28-52 (EN)		
102-23 Chair of the highest governance body	Part 2: p 8-9, 27-49 (TH)/ 9-10 (EN), 28-52 (EN)		
102-24 Nominating and selecting the highest governance body	Part 2: pp 27-32, 76-77 (TH)/ 28-36, 79-81 (EN)		
102-25 Conflicts of interest	Part 2: p 68 (Th), 71 (Eng)		
102-26 Role of highest governance body in setting purpose, values, and strategy	Part 2: pp 32-34 (TH), 34-36 (EN)		
102-27 Collective knowledge of highest governance body	Part 2: pp 54-58 (TH), 56-60 (EN)		
102-28 Evaluating the highest governance body's performance	Part 2: pp 49-53 (TH), 51-56 (EN)		
102-29 Identifying and managing economic, environmental, and social impacts	Part 2: pp 46-48 (TH), 48-50 (EN)		
102-30 Effectiveness of risk management processes	Part 2: pp 46-47, 73-74 (TH)/ 48-49, 76-77 (Eng)		
102-31 Review of economic, environmental, and social topics	Part 2: p 75 (TH), 78 (EN)		

General Disclosures			
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102-32 Highest governance body's role in sustainability reporting	Part 2: pp 47-48 (TH), 49-50 (EN)		
102-33 Communicating critical concerns	Part 2: pp 66-73, 86-90 (TH)/ 67-77, 89-93 (EN)		
102-34 Nature and total number of critical concerns	Part 1: pp 23-27, 37-40 (TH)/ 23-28, 39-42 (Eng); Part 2: pp 86-90 (TH), 89-93 (EN)		
102-35 Remuneration policies	Part 2: p 12 (TH), 13 (EN)		
102-36 Process for determining remuneration	Part 2: pp 39-41 (TH), 41-43 (EN)		
102-37 Stakeholders' involvement in remuneration	Part 2: p 12 (TH), 13 (EN)		
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102-43 Approach to stakeholder engagement	Part 2: pp 62-65 (TH), 65-67 (EN)	pp 13-17, 26-27, 47 (TH/EN)	
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102-52 Reporting cycle	Front cover page	Front cover page	
102-53 Contact point for questions regarding the report	Part 1: p 46 (TH), 48 (EN)	p 57 (TH/EN)	
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201-3 Defined benefit plan obligations and other retirement plans	Attachment 11: pp 88-89 (TH), 60-61 (EN)		
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General Disclosures			
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305-2 Energy indirect (Scope 2) GHG emissions		p 34 (TH/EN)	
305-3 Other indirect (Scope 3) GHG emissions		p 34 (TH/EN)	
305-5 Reduction of GHG emissions		p 34 (TH/EN)	
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401-3 Parental leave		p 46 (TH/EN)	
GRI 403: Occupational Health and Safety 2018			
403-1 Occupational health and safety management system		p 47 (TH/EN)	
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