BRIGHTER FUTURE

TOWARDS SUSTAINABILITY

Sustainability Report 2020

Provincial Electricity Authority

PEA
PROVINCIAL ELECTRICITY AUTHORITY
Brightness for Life Quality

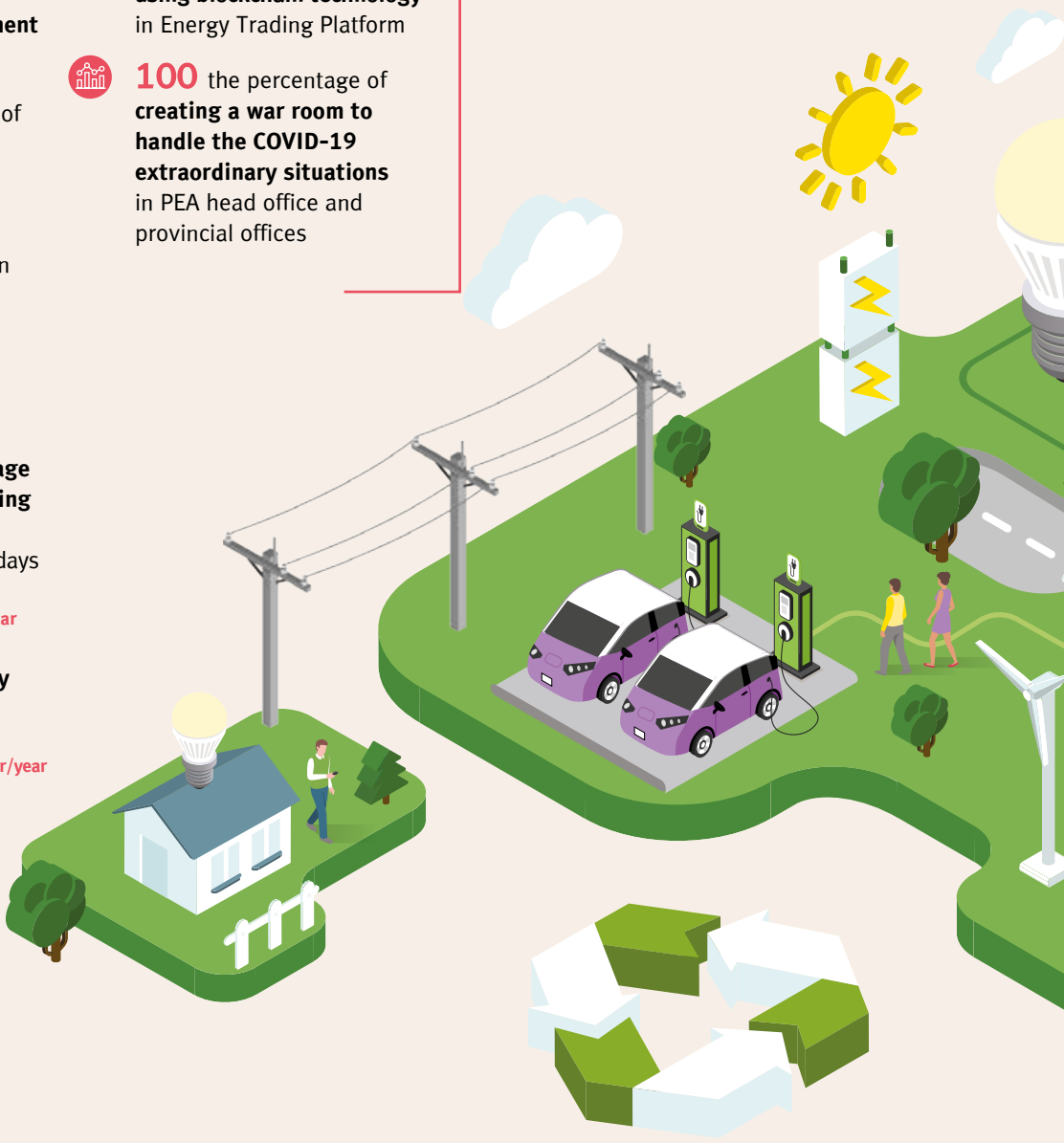
Provincial Electricity Authority

Sustainability Report 2020

Sustainability Highlights 2020

Performance

- **95.24** **the score of the Integrity and Transparency Assessment** (ITA) by NACC in 2020
- **100** the percentage of **the success of PEA Customer Journey** development plan
- **AAA** the organization **credit rating** by TRIS Rating Co., Ltd.
- **2.96** **the profit margin ratio**
- **98.24** **the percentage of the average of solving complaining issues address** within 30 workdays
- **2.65** times/customer/year the **System Average Interruption Frequency Index (SAIFI)**
- **57.52** minutes/customer/year the **System Average Interruption Duration Index (SAIDI)**
- **5.47** the percentage of the **distribution system loss**
- **97.50** the percentage of the success of **the Smart Grid plan**
- **100** the percentage of **using blockchain technology** in Energy Trading Platform
- **100** the percentage of **creating a war room to handle the COVID-19 extraordinary situations** in PEA head office and provincial offices



Brightness for Life Quality

People

- **4.32** the average of **employee commitment**
- **4.34** the overall employee **sense of belonging**
- **4.3945** the scores of the customers overall **satisfaction in products and services**
- **100** the percentage of the success of **developing the potential in human resources** in the digital age
- **55,929 households** **expanding power distribution systems** to the residences
- **0 complaints** of unfair personnel **recruitment and selection nor discrimination**
- **89 places** **were fixed and improved power lines** close to buildings or structures
- **0.1166** **the Disabling Injury Index: $\sqrt{DI}$**

Planet

- **Level 4** the success of the **Corporate Innovation System Plan** in 2020
- **2,000 liters/day** **the technology of processing plastic garbage and biomass** in community garbage to be biodiesel
- **1,543 units** of a Fixed Speed split air condition system were **replaced with an Inverter type split air condition**
- **2.07%** **the energy consumption of PEA was decreased** in the year 2020
- **200,000 kg CO_2eq** **the reduction of greenhouse gases** from the operating of green offices

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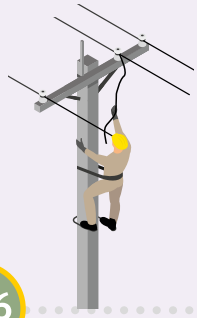
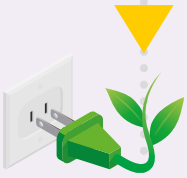




Message from the Governor of the Provincial Electricity Authority [102-14]

> “Striving towards becoming an excellent organization
> in the electric power business
> Responding to the customer expectations
> Together with building value for society and the environment
> With digital technology”

Moving into our 7th decade with a focus on stability and sustainability through B.E. 2563 (2020), the Provincial Electricity Authority has progressed from receiving "Confidence" to "Trust" from our customers. Throughout these years, we have sought to improve the quality of life of the Thai people through electrification. Nevertheless, planning power distribution development with the goal of becoming a "Digital Utility" entails challenges. To bring out the employees' full potential such as increasing hard and soft skills, systematically strengthening and extending the implementation of innovation and enhancing the organization's productivity, PEA relies on these seven factors driving the values and culture of the organization, namely "TRUSTED":

T – TECHNOLOGY SAVVY: Up-to-date, learn, understand, and apply technology and new knowledge;
R – RUSH TO SERVICE: being service-minded, rapid, fair, modernized and attentive to customers;
U – UNDER GOOD GOVERNANCE: being honest, responsible, transparent, and anti-corruption, complying with the Philosophy of Sufficiency Economy;
S – SPECIALIST: building expertise, practicing generosity, being open to diversity, and sharing;
T – TEAMWORK: Determination, work as a team, generosity, open-mindedness, and passing work techniques;
E – ENGAGEMENT: showing devotion and dedication to the organization, exerting full potential, and preparing for changes; and
D – DATA DRIVEN: learning, understanding, and implementing information to accomplish the organization's missions.

Throughout the past year's Coronavirus outbreak (COVID-19), the Provincial Electricity Authority has been preparing itself for all emerging situations by adapting strategic plans for its operations, and using digital technology to increase operating efficiency: for instance, providing service to customers and stakeholders in various sectors on the foundation of sustainability and risk management in order to face changes. Well aware of the need to assist its customers during the pandemic, the Provincial Electricity Authority has implemented measures to relieve the customer's expenses through the reduction of electricity fee for households. The Provincial Electricity Authority has also made both short-term and long-term financial support plans to maximize the benefits for customers.

In addition, the Provincial Electricity Authority placed importance on obtaining the social license to operate through managing the expectations of stakeholders and applying corporate governance in operating the business, concurrently with environmental management, relationship building with communities, and ensuring customers' safety. Acknowledged domestically and internationally, the Provincial Electricity Authority's success is confirmed with awards of pride, specifically Outstanding State Enterprise Award of the year 2563 (2020), Award for Outstanding Management, Award for Outstanding Business Operation for Society and Environment, Award for Creativity and Outstanding Innovation (in the field of innovation; Type: Outstanding), and the Green Office Award, consisting of 70 awards (66 G-Gold awards, four G-Silver awards).

The Provincial Electricity Authority is proud to work side-by-side with the Thai people in order to ensure our common well-being. We are ready to be a leader in the power industry, which has proved a vital source of sustainable development of the economy, the society, as well as the environment of the country.

"Striving towards becoming an excellent organization
in the electric power business
Responding to the customer expectations
Together with building value for society and the environment
With digital technology"

(Mr. Sompong Preeprem)
Governor of Provincial Electricity Authority

Awards of Pride

02 The 2nd Prize Popular Vote for the Best Store Competition of the Red Cross Online Fundraising 2020

03 The Sustainability Disclosure Award 2020

01

PEA received the 1st Prize for Most Beloved at the Red Cross Fundraising 2020

PEA received the 1st prize in the competition of Most Beloved at the Red Cross Fundraising 2020. Miss Kornvipa Indamra, Administrative Officer, Level 4, Policy and Special Affairs Division, Governor Affairs Department, was the representative of the PEA at the competition, together with the representatives of other various departments, and received the monetary award of 50,000 baht as well as the trophy from Red Cross Thailand.

02

PEA received the 2nd Prize Popular Vote for the Best Store Competition of the Red Cross Online Fundraising 2020

PEA designed a store for the Red Cross Online Fundraising 2020, under the theme "Giving without limits by PEA", which shows giving to the community, society and environment in the "New Normal" era in a way that reflects that PEA gives more than "bright light" to the community through six projects of PEA. The projects have been focused on giving help to the people in areas of responsibility in 74 provinces all over Thailand for 60 years, for instance, by providing a good quality of life, opportunities to create jobs, safety, consistent bright light and clean energy, and reducing the use of energy that will be eradicated in the future. In addition, modern services and easily accessible electricity will also be provided in all areas.

03

PEA received the Sustainability Disclosure Award 2020

PEA received the Sustainability Disclosure Award 2020 at the State of Corporate Sustainability in 2020 exhibition, organized by Thaipat Institute in order to support the upgrading of disclosure of information about sustainability, which is beneficial to stakeholders of the organization and responds to the Sustainable Development Goals (SDGs) to bring sustainability practices for use and integration, emphasizing information about sustainable development in the report process, at the Auditorium, 5th floor, Bangkok Art & Culture Centre, Pathumwan intersection, Rama 1 Road, Bangkok.

04 PEA Notebook Received the 2nd Prize of the 40th Suriya Sasithorn Calendar Design Awards 2020, with concept "Brightness for Life Quality - Bright Light Everywhere, Creating Quality of Life all over Thailand"

04

PEA Notebook received the 2nd Prize of the 40th Suriya Sasithorn Calendar Design Awards 2020

H.E. Air Chief Marshal Chalit Pukbhasuk, Privy Councillor, was the chairperson of the Prize Giving Ceremony of the 40th Suriya Sasithorn Calendar Design Awards 2020. PEA Notebook received the 2nd prize with the concept "Brightness for Life Quality - Bright Light Everywhere Creating Quality of Life all over Thailand", in which Mr. Panumas Limsuwan, Associate PEA Governor, received the prize on behalf of the organization at the Ajarn Sa-Art Tansuppapol Meeting Room, 2nd floor, The Institute of Public Relations, The Government Public Relations Department (PRD).

05

PEA received certification acknowledging that the Information Technology Management System was in accordance with ISO/IEC 20000-1:2018 Standards

PEA received certification acknowledging that the information technology management system was in accordance with the ISO/IEC 20000-1:2018 standards of PEA at the Meeting Room of the Committee of PEA, 23rd floor, LED building, PEA Head office. The two areas of the PEA that received certification were

1) Support and provision of the Computer and Network Equipment Service, and
2) Smart Customer Service: SCS.

Meeting the international ISO/IED 20000-1 standards this time has given confidence to the organization in its determination to maintain the quality of giving service related to technology with sustainability.

06 Eight Outstanding State Enterprise Awards 2020

06

PEA received 8 Outstanding State Enterprise Awards 2020

General Prayut Chan-o-cha, Prime Minister, was the chairperson at the Award Giving Ceremony for Outstanding State Enterprise Awards 2020. The committee, the governor and the executives of PEA received the awards at the Santi Maitri Building, the Government House, Bangkok. PEA received the following awards:

1) Outstanding State Enterprise (3 consecutive years);
2) Outstanding Committee in State Enterprise (3 consecutive years);
3) Award for Outstanding Management (3 consecutive years);
4) Award for Outstanding Corporate Social and Environmental Responsibility (4 consecutive years);
5) Award for Creativity and Innovation in Innovation of an Outstanding Type (3 consecutive years);
6) Award for Outstanding Cooperation for Development in Upgrading Management of the Organization (Honorable Mention) from the Project Supporting State Enterprise in Organizational Management (Mentor Project);
7) Outstanding Cooperation for Development in Strategic Cooperation in honorary type; and
8) Award for Outstanding Service, which was a new award established in 2020.

07

PEA received the “HR Asia Best Companies to Work for in Asia 2020” (Thailand Edition) Award from Business Media International in Malaysia

PEA received the "HR Asia Best Companies to Work for in Asia 2020" award. This award was given at a human resources management award ceremony organized by Business Media International (BMI), Malaysia, at Bangkok Marriott Marquis Queen's Park, Bangkok.

08 The "Government Easy Contact Center: GECC" Awards (164 Places) in the Year 2020

10 Asia Responsible Enterprise Awards (AREA) 2020 from the "Scrap Wood for Wealth" Project

08

PEA received the "Government Easy Contact Center: GECC" Awards in the Year 2020

Mr. Anucha Nakasai, Minister Attached to the Prime Minister's Office, was the chairperson in the trophy-giving ceremony and certification of the standards of providing services by the Government Easy Contact Center: GECC in the year 2020. 164 PEA Offices were certified at the Conventional Hall, 4th floor, Convention Center, Rama Gardens Hotel Bangkok.

09

PEA received an Honor Award in the Zero Accident Campaign 2020

PEA received an Honor Award in the Zero Accident Campaign 2020 from Thailand Institute of Occupational Safety and Health (Public Organization) which included 1 office with platinum level, 1 office with gold level, 6 offices with silver level, 76 offices with bronze level, and 242 offices with basic level. Mr. Pakorn Nuthboonlert, Deputy Governor and Executive of PEA, received the award from General Apichart Sangrungruang, Chairman of the Board of Directors of Thailand Institute of Occupational Safety and Health (Public Organization), who presented the plaque of honor at the Multi-Function Room, 1st floor, Tien Achakul Building, Occupational Safety and Health Division, Department of Labour Protection and Welfare. The awards were given to the organizations that are able to reduce no-lost time injury accidents in their workplace.

10

PEA received the Asia Responsible Enterprise Awards (AREA) 2020 from the "Scrap Woods for Wealth" Project

PEA received the Asia Responsible Enterprise Awards (AREA) 2020 in the category of Social Empowerment for the "Scrap Woods for Wealth" project, which emphasizes the growth of the organization aligned with society; sharing experiences related to society and the environment in operating the project, building networks, and strengthening cooperation and positive relationships in CSR in government agencies and private agencies at the provincial level in Asia; becoming one of the channels used for conducting the public relations of the organization; and upgrading to be well-known for competing at the national level.

11 Plaque of Honor for "1 Tambon 1 Electrician Project"

11

PEA received a Plaque of Honor from the Worker's Skills Development Networks for "1 Tambon 1 Electrician Project"

PEA received a plaque of honor from the worker's skills development networks for "1 Tambon 1 Electrician Project" from Mr. Thawat Benjatikul, the Department of Skill Development (DSD) Director-General, at Pakorn Angsusingha Meeting Room, 10th floor, Department of Skill Development.

12

PEA won the Royal Cup bestowed by H.M. King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua in the 44th State Enterprises Sports Competition (2020)

PEA received the Royal Cup bestowed by H.M. King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua, as the 1st prize for the highest overall points in the 44th State Enterprises Sports Competition (2020). Mr. Prinya Yamasamit, Governor of the Metropolitan Waterworks Authority (MWA), was the chairperson in presenting the award and the opening ceremony of the competition. In this year, the MWA was the host of the opening ceremony at the Indoor Stadium Huamark, Sports Authority of Thailand.

13

PEA received the Highest ITA Points Total in Seven Years, in 2020

PEA earned the highest overall evaluation points, with an average of 95.24 at the AA level, which was the highest in seven years, moving up into the 5th place overall of all state enterprises that had been evaluated. The organization received first place among all state enterprises in the category of energy and utilities.

14 The 9th NACC Integrity Awards 2020 for Transparent Management

16 Anti-Corruption Awards 2020

14

PEA earned an Award for its Transparent Management from the NACC

PEA earned an award for its transparent management at the 9th NACC Integrity Awards from Pol. Gen. Watcharapol Prasarnrajkit, President of the National Anti-Corruption Commission (NACC), who presented the award at the Office of the National Anti-Corruption Commission, Nonthaburi Province.

15

PEA earned G - Green Awards in Excellence (G - Gold) Level for 47 offices

PEA earned G - Green Awards (Green Office) of the year 2020 in "excellence" (G - Gold) level for 47 offices and maintained its standard for renewal in 23 offices, including "excellence" (G - Gold) level in 19 offices, and "very good" (G - Silver) level in 4 offices.

16

PEA earned an Award at the "Anti-Corruption Awards 2020"

PEA earned an award at the "Anti-Corruption Awards 2020" for promoting anti-corruption in the year 2020 in a type of organization that has clear accomplishments regarding anti-corruption. Mr. Chuan Leekpai, President of the National Assembly of Thailand, was the chairperson of the award presentation ceremony at the Kamonthip Room, Sukosol Hotel.

PEA's Business:
Brightly Move

While the world is constantly changing, PEA is well-prepared to adapt to keep up. Entering new markets, we conduct business for continuous business development through careful management and monetary policy. We aim to become a modern utility service provider well-equipped with digital innovation. We strive for excellence in power system development and play a role in steering the country towards a stable and sustainable future.

As a result of promoting efficient use of energy, the number of accumulated **electric power saving units was**

85.84 GWh

(million units)

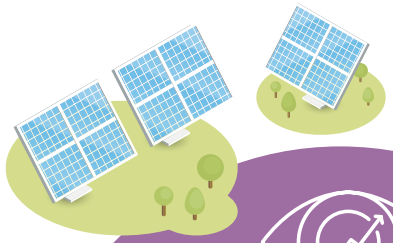
95%
the success of the **Smart Grid plan** in Pattaya City

The Year
2022
the goal of becoming a **"Digital Utility"** service provider

57.52
minutes/customer/year
the System Average Interruption Duration Index (SAIDI)

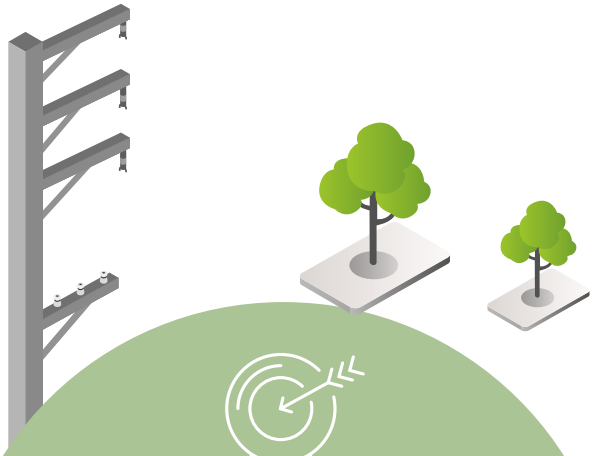
PEA's Business

PEA [102-1], is a state enterprise in the energy sector, under the Ministry of Interior [102-5]. PEA mainly focuses on procuring and providing electric power service, including other related business in terms of power distribution service and PEA's customer support service, such as construction work for users, inspection, repair and maintenance work, and asset rent or utilization [102-2].



Vision

PEA is a modern leading organization in the region, which focuses on providing efficient, reliable electricity services, as well as related businesses, for developing quality of life and the sustainability of economics and society.

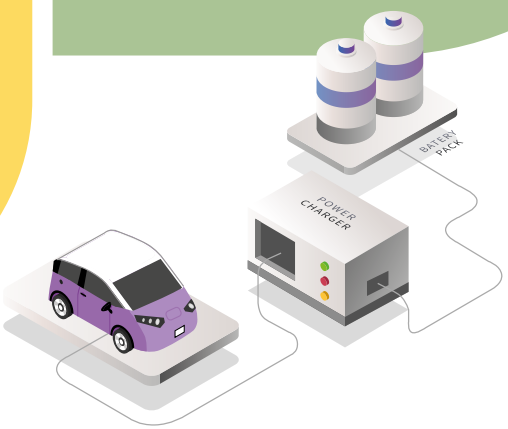


Mission

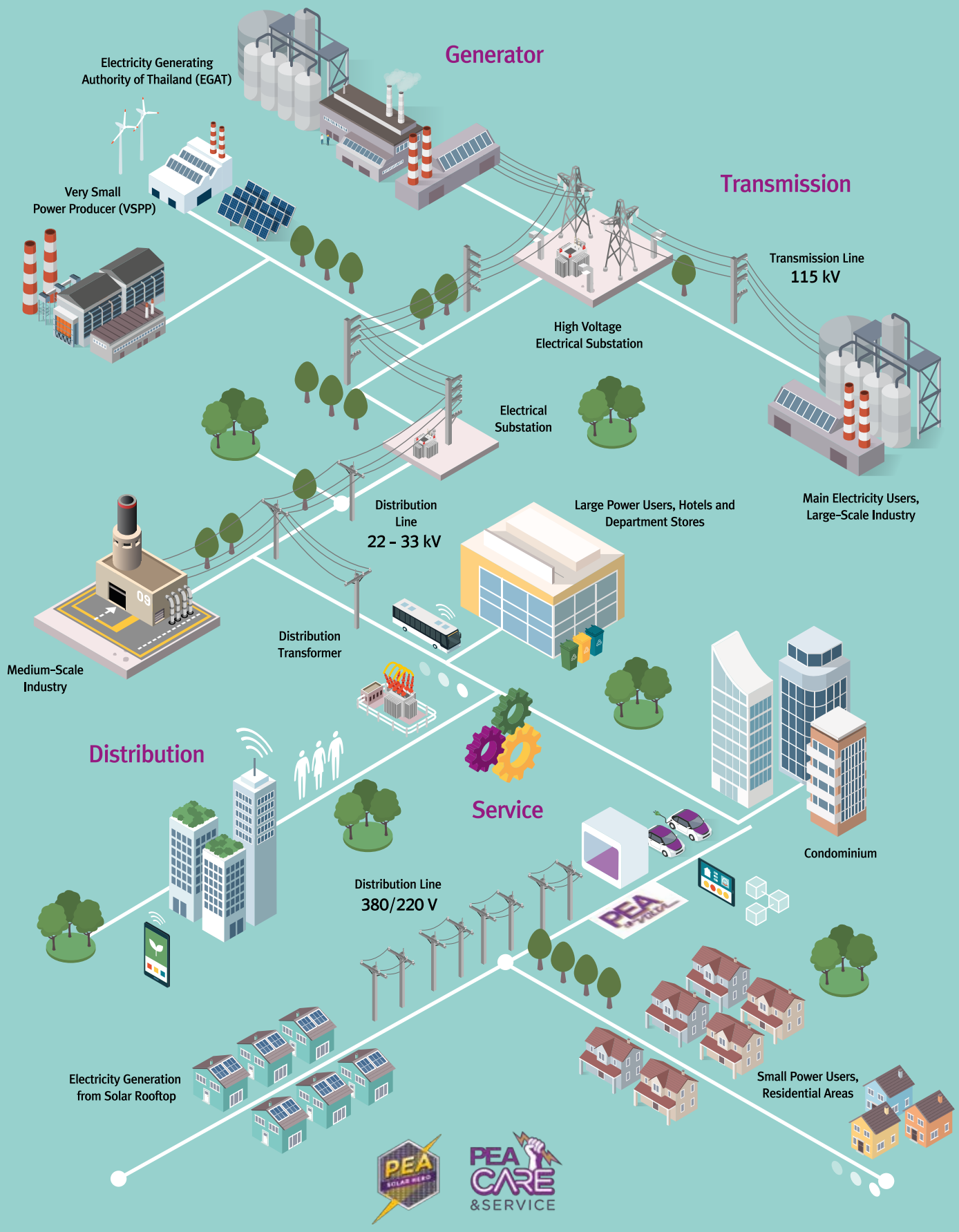
To supply and provide electricity services as well as related businesses in order to attain customer satisfaction with products and services through PEA's continual corporate development planning with the recognition of social and environmental responsibility.

Core Values

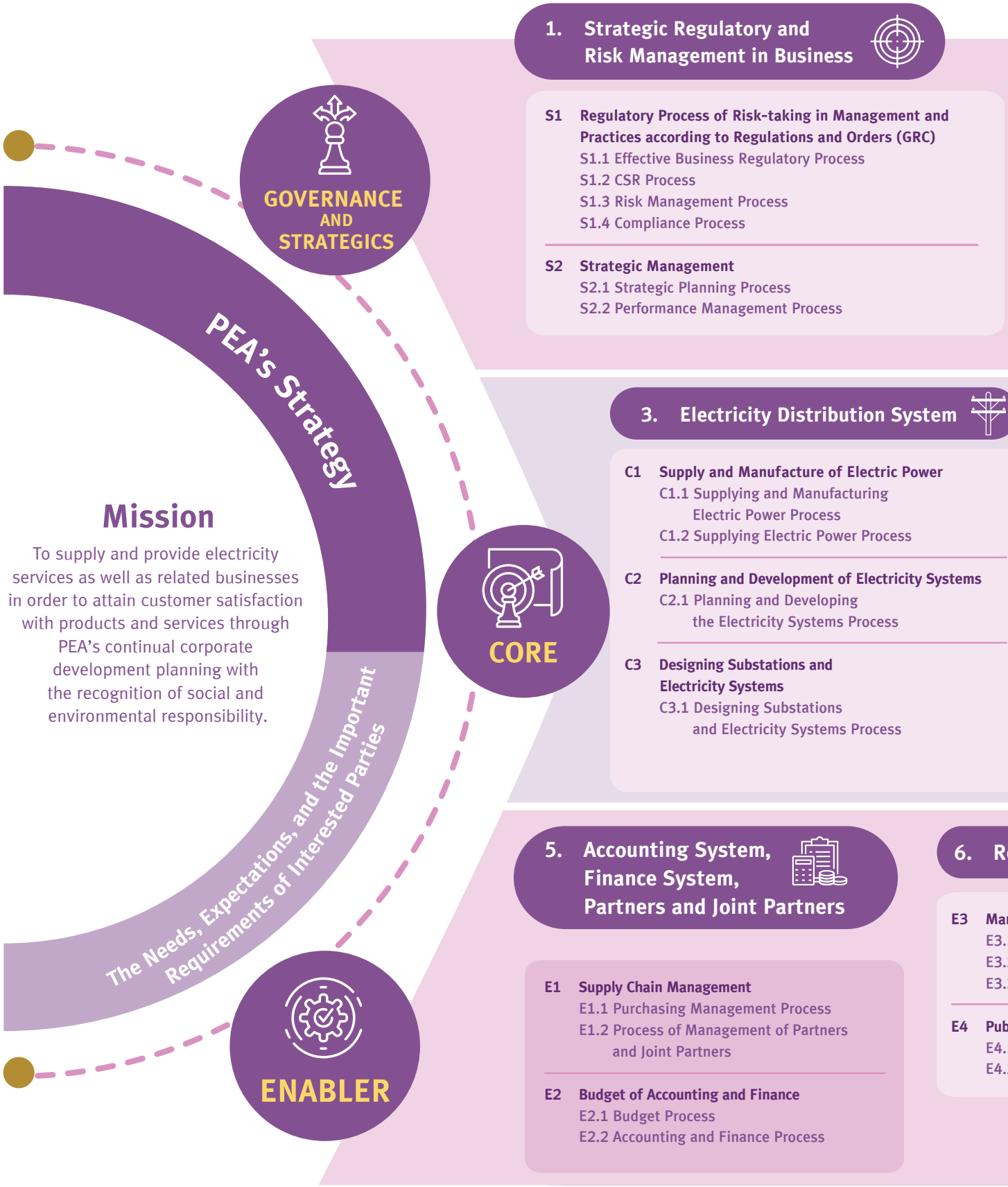
Modernization,
Excellent Service,
Good Governance



Value Chain of PEA's Business [102-9]



Overall Work System of PEA (According to the Value Chain) [102-10]



2. Value-Added System

S3 Knowledge Management and Innovation
- S3.1 Knowledge Management Process
- S3.2 Learning and Innovation Management Process

S4 Portfolio Management
- S4.1 Subsidiaries and Joint Ventures Process
- S4.2 Asset and Investment Management Process
- S4.3 Business Continuity Management Process

C4 Construction of Substations and Electricity Systems
- C4.1 Construction Process of Substations and Electricity Systems

C5 Maintenance of Substations and Electricity Systems
- C5.1 Maintenance of Substations and Electricity Systems Process

C6 Overseeing the Electricity Distribution System
- C6.1 Overseeing the Electricity Distribution System Process

4. Customer Relations System and Marketing

C7 Marketing and Building Customer Relations
- C7.1 Using Customer Information Technology Process
- C7.2 Building Customer Relations Process
- C7.3 Customer Complaints Process

C8 Customer Service
- C8.1 Customer Service and Support Process

Stakeholders Satisfaction

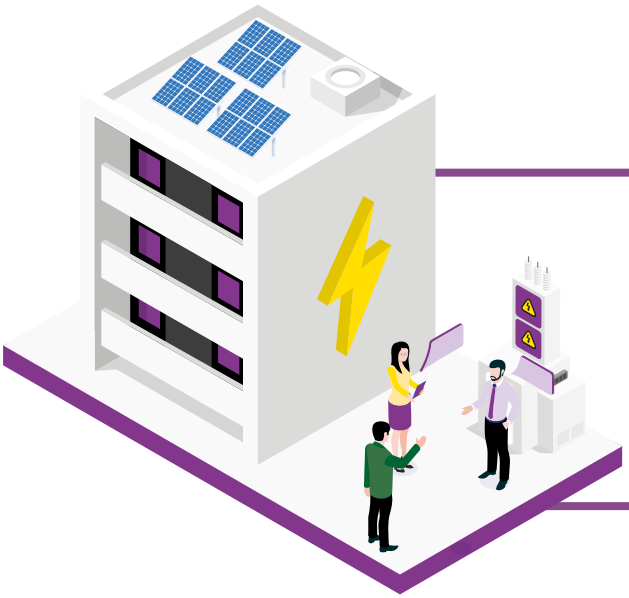
esource Management System

nagement and Development of Human Resources
1 Management of Manpower Process
2 Human Resources Development Process
3 Upgrading Human Relations Process

lic Relations and Corporate Image
1 Public Relations Process
2 Communication for Corporate Image

7. Information Technology Management System

E5 Management of Information Technology
- E5.1 Management of Information Technology Process
- E5.2 Hardware and Software Management Process



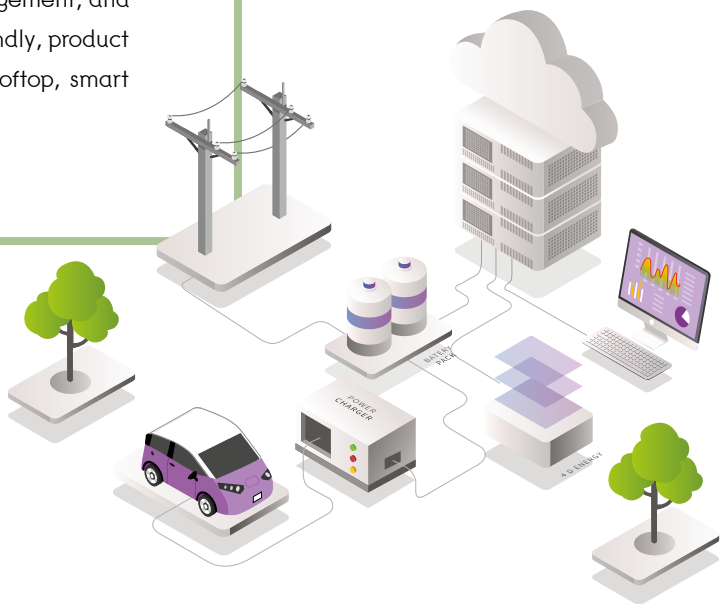
Power Procurement and Distribution Business

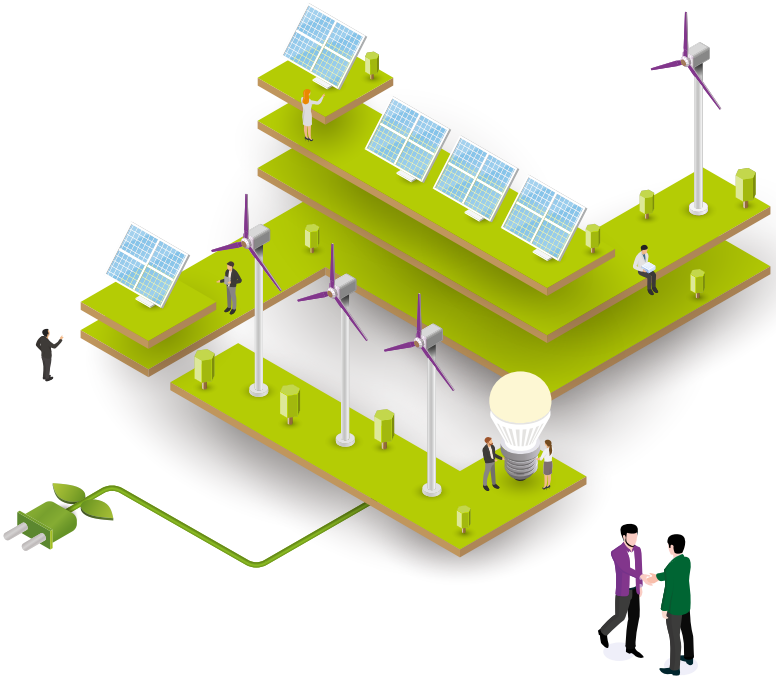
Procuring power supply from power producer network system and distributing to various groups of electric power users through four regional agencies in North, Northeast, Central, and South regions. [102-2]

Power Service Supportive Business

Related Business: supportive business that enhances PEA's power distribution service both domestically and internationally or support PEA's customer service such as construction work for users, inspection, repair and maintenance work, and asset rent or utilization. [102-2]

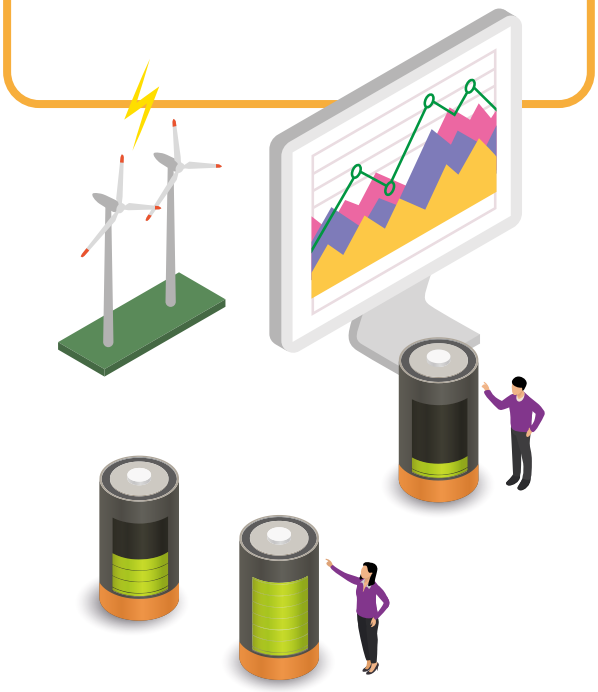
New Business: service business in response to rapidly changing technologies. Firstly, the service business through digital platform service in power distribution, power management, and software development for equipment controls. Secondly, product and service development business such as solar rooftop, smart home, electric vehicle and charging station. [102-2]





Power Trading Management Business

PEA uses its expertise in power distribution system to operate businesses in power trading management business, develop and provide channel in power trading, develop and monitor power system that connect power production source, prosumer and energy storage in various areas, as well as provide balanced and effective power management under appropriate cost. [102-2]

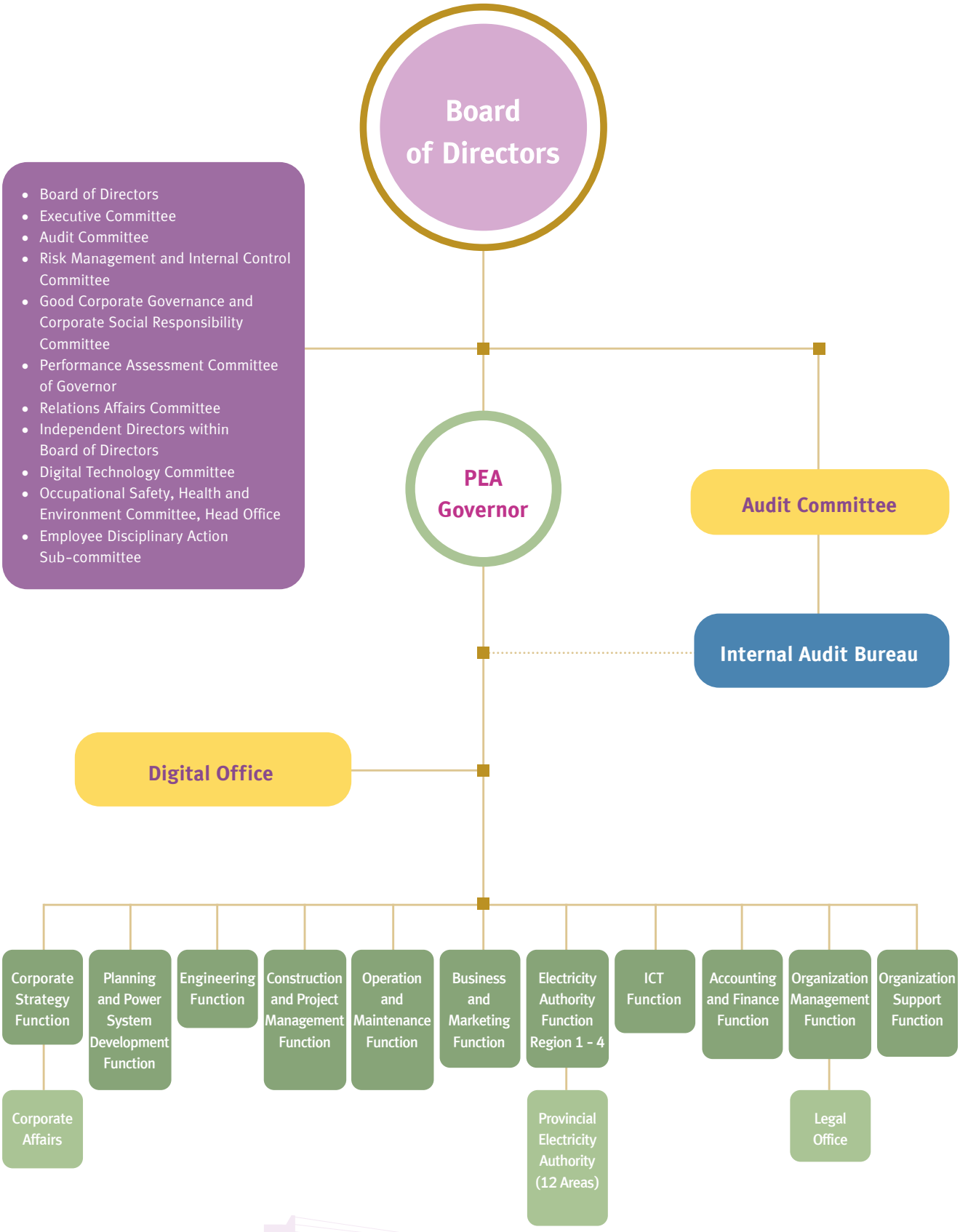


Power Business Investment by Subsidiary [102-45]

An investment in power business including renewable energy power plant and small commercial power producer firm operated by PEA ENCOM International Co., Ltd. Or PEA ENCOM which invests in stocks of power business as minor shareholder. Its main responsibilities are setting strategy in investment, operational, and investment portfolio management. PEA ENCOM was founded by cabinet resolution dated 3rd June 2009 to invest in power supply and provide workshops on electric power system for public and private sectors both domestically and internationally. PEA was the sole shareholder with initial registered capital of 100,000,000 baht. At present, its registered capital is 2,451,283,750 baht.

Structure of the Operation for Sustainability [102-18]

In the year 2020, PEA modified the structure of its management by establishing Digital Office Function, Business and Marketing Function, Organization Management Function, and Corporate Strategy Function by combining the areas of Corporate Social Responsibility Function and Corporate Strategy Function, as well as combining the area of Human Resources Function with the Legal Office to become Organizational Management Function [102-10], for suitable management, with readiness towards the development and growth of the new business, aligned with the current PEA's mission.


Board of Directors
Board of Directors
Executive Committee
Audit Committee
Risk Management and Internal Control Committee
Good Corporate Governance and Corporate Social Responsibility Committee
Performance Assessment Committee of Governor
Relations Affairs Committee
Independent Directors within Board of Directors
Digital Technology Committee
Occupational Safety, Health and Environment Committee, Head Office
Employee Disciplinary Action Sub-committee
PEA Governor
Audit Committee
Internal Audit Bureau
Digital Office
Corporate Strategy Function
Planning and Power System Development Function
Engineering Function
Construction and Project Management Function
Operation and Maintenance Function
Business and Marketing Function
Electricity Authority Function Region 1 - 4
ICT Function
Accounting and Finance Function
Organization Management Function
Organization Support Function
Corporate Affairs
Provincial Electricity Authority (12 Areas)
Legal Office

Service Areas

PEA head office is located at 200 Ngamwongwan Road, Lat Yao, Chatuchak, Bangkok 10900 [102-3], and is responsible for providing electricity service in 74 provinces of Thailand, except Bangkok, Nonthaburi and Samut Prakan, which covers 99.98% of the country or approximately 510,000 square kilometers, with 20,732,911 customers. [102-4]

Amount of Service Office [102-4] [102-6] [102-7] [102-10]

NORTH

- 3 PEA Area Offices
- 42 PEA Province/District Offices
- 86 PEA Branch Offices
- 120 PEA Sub Branch Offices
- 17 PEA Shop
- 13 Small Power Producers
- 143 Substations

NORTHEAST

- 3 PEA Area Offices
- 45 PEA Province/District Offices
- 85 PEA Branch Offices
- 189 PEA Sub Branch Offices
- 18 PEA Shop
- 4 Small Power Producers
- 137 Substations

CENTRAL

- 3 PEA Area Offices
- 64 PEA Province/District Offices
- 52 PEA Branch Offices
- 64 PEA Sub Branch Offices
- 27 PEA Shop
- 13 Small Power Producers
- 309 Substations

SOUTH

- 3 PEA Area Offices
- 44 PEA Province/District Offices
- 62 PEA Branch Offices
- 93 PEA Sub Branch Offices
- 23 PEA Shop
- 15 Small Power Producers
- 127 Substations

Electricity Users Sector	2016 (Customers)	2017 (Customers)	2018 (Customers)	2019 (Customers)	2020 (Customers)
Residential Sector	16,739,341	17,095,476	17,450,080	17,815,865	18,308,116
Commercial Sector	1,595,770	1,667,476	1,699,324	1,435,732	1,448,063
Industrial Sector	34,808	35,695	37,370	36,195	37,053
Others	524,000	544,010	579,256	905,298	639,841
Government and State Enterprise Sector	-	-	-	295,208	299,838
Total	**18,893,919**	**19,342,657**	**19,766,030**	**20,488,298**	**20,732,911**

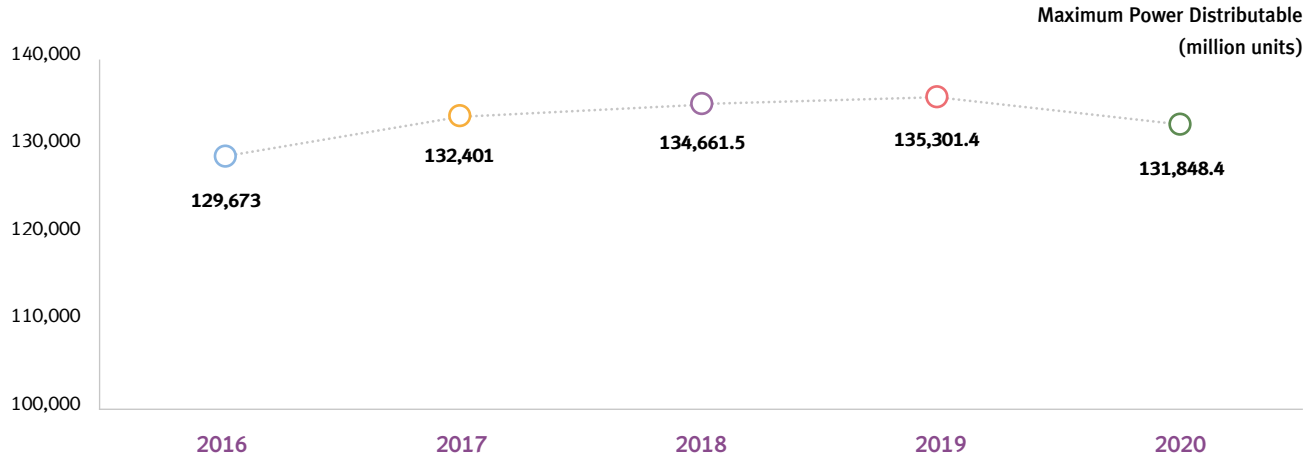
Corporate Information [102-7]

Number of Employees and Workers

28,372
PEA Employees

6,063
Workers
(as at 31st December 2020)

Power Distribution Units



Organizational Membership [102-12] [102-13]

PEA has its license granted according to the PEA Act, B.E. 2503 (1960). Domestic and international requirements, frameworks, rules, standards, and principles have been applied and implemented for the operation to become an effective organization, for example, requirements by the State Enterprise Policy Office (SEPO), Enterprise Risk Management Framework by COSO ERM, Business Continuity Management Systems (ISO/IEC 22301), Information Security Management System (ISO/IEC 27001), Social Responsibility (ISO 26000), Global Reporting Initiative (GRI Standards), United Nations Sustainable Development Goals (UNSDGs), etc.

In addition, PEA has also partnered with both public and private agencies to ensure an effective operation giving value to the community and society, for example, its key mission (power distribution), with the Energy Policy and Planning Office, the Energy Regulatory Commission, the Engineering Institute of Thailand under H.M. the King's Patronage, the Institute of Electricity Supply and Electronics Engineers (IEEE Thailand), Electricity Supply Industry Association of Thailand (TESIA), Heads of ASEAN Power Utilities/Authorities (HAPUA), and the Electricity Reliability Improvement Committee of the three electricity authorities, etc.

Other operations incorporated include the Thai Electrical and Mechanical Contractors Association; Personnel Management Association of Thailand (PMAT); Department of Skill Development, Ministry of Labour; Department of Environmental Quality Promotion; Ministry of Natural Resources and Environment, etc.

Corporate Governance and Anti-Corruption to Create Value for Sustainability

Importance to Organization [103-1]: PEA follows its values over the needs of customers by adhering to good governance and social responsibility to the community, society, and environment. Corporate governance has been implemented in the organization's strategic plan so as to prevent and suppress corruption. The first strategic objective, SO1 has been defined as: business operation conforming to good governance for sustainable growth as prescribed by the SDGs framework and international good practice from the Organisation for Economic Co-operation and Development (OECD) and Dow Jones Sustainability Indices (DJSI) for operational transparency, which is corruption-free with morals and professional ethics in line with the corporate core value "Technology Savvy, Rush to Service, and Under Good Governance", which requires personnel at all levels to strictly and consistently adhere to the drive for value (TRUSTED).

Moreover, PEA is also committed to developing a framework for principles, concepts, and practices to maintain good governance along the lines of international standards. It, therefore, has announced policies on corporate governance and guidelines promoting transparency and preventing corruption [102-16] among management and employees in their work approach. This indicates the organization's commitment to prevention of all forms of corruption, leading to a better awareness of the Corruption Perception Index (CPI), which is vital for the overall national development. The corporate governance and social responsibility board is in charge of the issuing of policies, providing of recommendations, and monitoring of operations to ensure corporate compliance with policies and action plans on corporate good governance and social responsibility with maximum efficiency and effectiveness.

Target [103-2]

To run an enterprise in accordance with good governance towards sustainable growth, free of corruption; attain ethical standards and codes of conduct for directors, executives, and employees as well as the corporate core profession; and create an organization image recognized by the public

Strategy [103-2]

- To raise the level of management intent in accordance with corporate governance principles
- To enhance the body of knowledge, including social and cultural aspects, on corporate governance
- To raise the standards of corporate governance and proactive anti-corruption systems, partaking in processes and mechanisms for effective deterrence, surveillance, monitoring, investigation, and punishment


28

Management Approach [103-2]

- "No Gift Policy" for the 2020 New Year's festival was announced to reflect PEA's intention of running a business with transparency, which was anti-bribery and corruption free.
- Corporate governance and good governance practices and guidelines, promoting transparency and preventing corruption, were announced (7 measures, 20 directions) for executives and employees to use as a framework. This showed the organization's commitment to preventing all forms of corruption.
- The compliance manual adhering to good governance practices, ethics, and codes of conduct was strictly enforced. It covered laws, regulations, rules, orders, and an announcement related to corruption, and was distributed through the corporate media.
- Performance monitoring of master plan and action plan implementation on corporate governance, in order to prevent and fight against corruption, was done by reporting planned operation outcomes to the corporate governance and social responsibility board for its acknowledgment and recommendations on a quarterly basis.

NO GIFT POLICY

- Activities promoting morals, ethics, and transparency in operations (Soft Control) were organized to cultivate the consciousness and promote the value of "Technology Savvy, Rush to Service, and Under Good Governance" as well as applying sufficiency economy principles for executives and employees throughout the organization.
- A compliance unit has been set up and tasked with monitoring, analyzing, reviewing, and establishing/developing rules and regulations related to corporate internal operations in conjunction with the external environment. A consultancy responsible for queries/clarifications, enhancing knowledge for conformity with regulations by executives and employees in order to mitigate organizational compliance risks, was also created. Since October 1, 2020, compliance tasks have been included in the responsibilities of the risk management compliance unit, described in the new organization structure, and supported the "Integrity and Transparency Assessment of Government Organizations" project by the National Anti-Corruption Commission. Results from assessments in the past seven years have been used for gap analysis so as to set up directions for ongoing improvements and developments.[102-25]

- 658 PEA's Electronic Information Centers have been established to utilize the database from the Office of the Official Information, Government House.
- Digital Technology has been applied in the information system for corporate governance (CG e-System), consisting of the following:

CG e-System

1 CG Testing

An awareness assessment system which facilitates corporate governance and cultural values on honesty, morality, ethics, transparency, and anti-corruption in work

2 COI Reporting

A system which reports individual and public conflicts of interest within PEA

3 CG Acknowledgment

A system which acknowledges the corporate governance manual

- The "PEA Sustainable Transparency" work plan focuses on transparent network building, both inside and outside of PEA, as well as collaborating on surveillance, monitoring, caretaking, protection, and reporting on corruption or bribery. In 2020, the performance of the digital technology system was upgraded so that monitoring and evaluation processes on the operation transparency of PEA would be more effective.
- The Integrity Pact for projects worth 1,000 million baht and above was initiated to increase transparency and confidence that fair competition had been created for government procurement projects. PEA has carried this out for the past four years.

2020 Outstanding Performance [103-3]

PEA received a score of 95.24 percent
(rating score: AA)

on the Integrity and Transparency Assessment (ITA) from the National Anti-Corruption Commission, in 2020.

The assessment score on awareness and application of corporate governance (CG Testing) was **97.09 percent** (better than the 95.50 percent score in 2019). The respondents were 99.38 percent of all employees (better than the 25.91 percent in 2019).

Reporting on individual and public conflicts of interest by the board, executives, and employees of PEA (COI Reporting) for the annual report has been **100 percent** for 5 consecutive years (2016 - 2020).

Acknowledgment of corporate governance practice (CG Acknowledgment) by management and employees was **98.59 percent**

The number of participants, executives and employees, in **activities promoting morals, ethics, and transparency in operations (Soft Control)** was **16,790 personnel** (higher than the expectation of 11,790).

Disciplinary action
(severe fraud) was taken with
0.06 percent
of the total number of employees.

Complaint handling

1. General complaint cases were managed within 30 business days **98.24 percent**
2. General complaint cases were managed within 30 days **96.77 percent**
3. General complaint cases were managed within 15 business days **86.68 percent**

The digital technology system used in **monitoring and evaluation processes to increase effectiveness of operations on transparency** of PEA consists of **8 critical systems**, which are as follows:

1. Report and monitoring system for sustainable transparency of PEA
2. Stakeholder' register system (trading partners/ collaborators)
3. Expansion of the transformer installation reporting system
4. Contractors' control system
5. Customers' Smile Feedback assessment system
6. Reporting system for operation management (OM), P2 process: power interruption repair and P3 process: request for power
7. Network control PEA's transparent system
8. Procurement control system, under 100,000 baht

Improvement Plan for Future Operation [103-3]:

1 Analysis on the Integrity and Transparency Assessment (ITA) of PEA and a review on the overall operation in light of the assessment criteria

2 Study on an integration and development approach of the personal database on corporate governance (CG Profile), consisting of data from CG Testing, COI Reporting, and CG Acknowledgment, to be used as a tool for data presentation of individual corporate governance

3 Upgrade on the prevention of corruption

4 Assessment on corruption risk and corruption risk management

5 Practice on promotion of integrity and transparency in departments

Corruption-related Incidents

In 2020, PEA was served with no lawsuits of corruption and there were no fraud cases rendering a business partner to revoke the contract or suspend contract renewal. Only 12 cases of internal fraud were found, i.e., 5 cases of document falsification and 7 cases of property stealing. 6 employees were fired and 6 employees moved to inactive posts by PEA. [205-3]

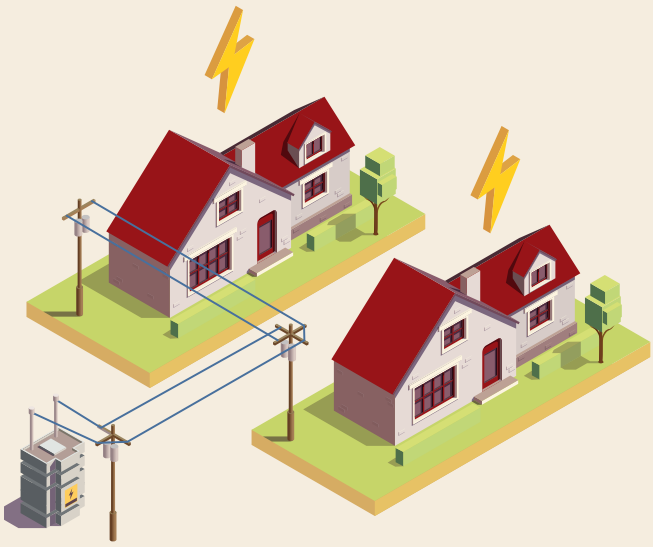
Complaint Management [103-2]

PEA has implemented systematic complaint management to ensure fairness for all stakeholders by developing an information system, the PEA-VOC System, to use for complaint management along with customer feedback management. It facilitates storage, tracking, and performance reporting by using the same database throughout the organization, enabling quick and efficient complaint handling, response, and resolution for relevant stakeholders within the time allocated.

Types of Complaints

Complaints of Services could be classified into 6 categories:

1. Electricity quality
2. Service
3. Electricity unit recording/ billing
4. Electricity cut-off
5. Employee behavior
6. Others



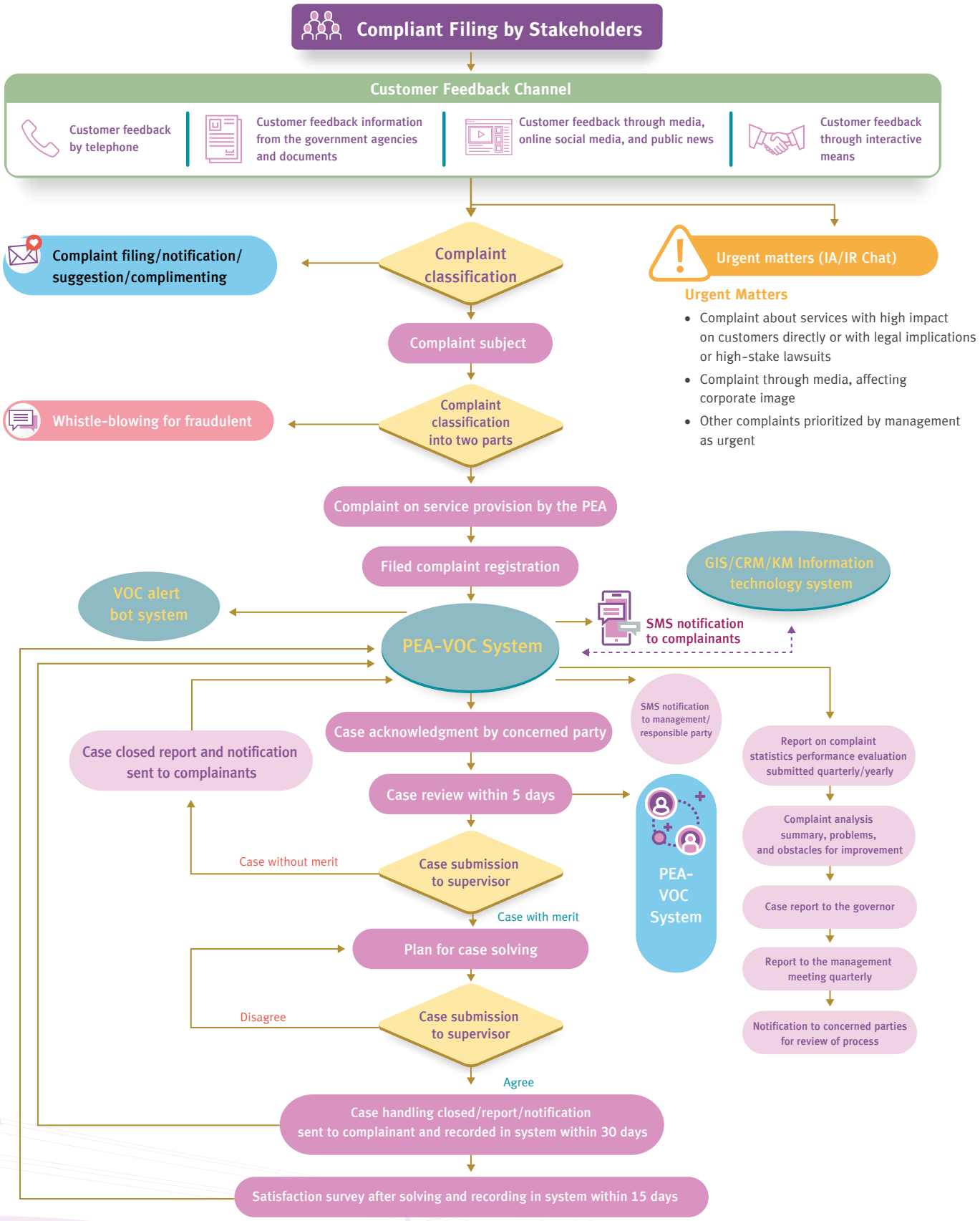
Complaints of Corruption and Misconduct could be classified into 8 categories

Channels of Receiving Complaints and Customer Feedback

Protection of Complainant and Whistle-Blower

PEA has clearly stipulated rules in the manual so as to increase its complaint management efficacy. The manual states that PEA officials responsible for complaints and whistle-blowing must protect the privacy of the complainants and whistle-blowers, and that information must be kept confidential and is not to be disclosed to others. Damage from information leaks as well as reasonable discretion in protecting complainants, whistle-blowers, witnesses, and investigated data must be taken into account. They must be protected from harm or unfairness that may arise from such complaints, testimonies, or information furnished.

Management of Complaints of Services

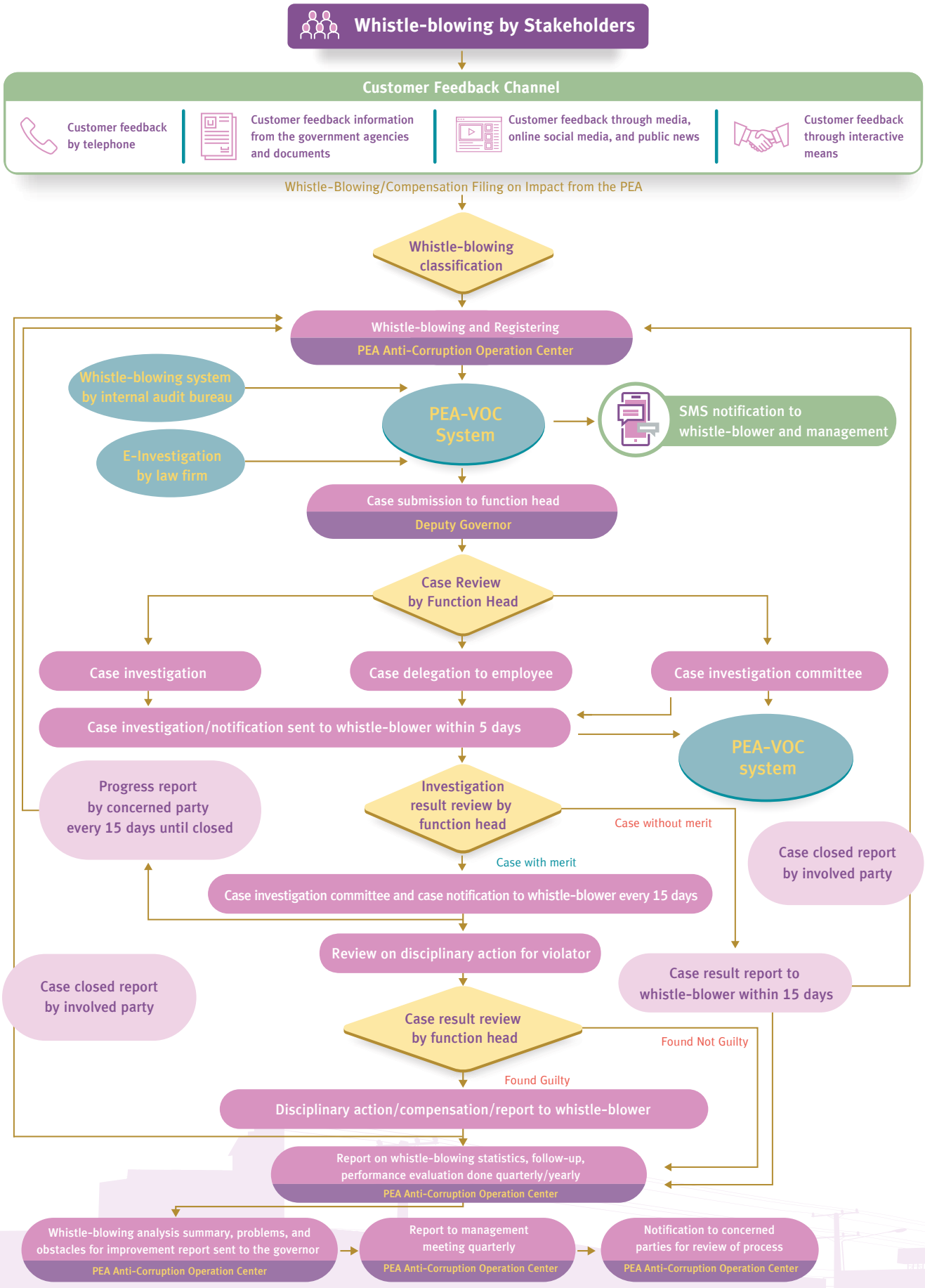


Notes:

* For case handling (service quality) on power quality in the PEA-VOC System, data can be filled in on the system for an additional 120 days after the case has been closed.

** Satisfaction survey is conducted only on Code I and Code M (no survey on Code C by Call Center).

Whistle-Blower



Trend and Direction on Business Change [102-15]

Importance to Organization[103-1]: PEA is aware of economic, social, and environmental changes that may affect the sustainability of the organization as well as the phenomenon of rapid emergence of new technology leading to disruptive innovation in business. Costs and energy prices also define the success of the business. PEA hence prioritizes corporate risk management by managing operational activities and processes to prevent or mitigate damage to the organization. This is to ensure that PEA will adapt to changes and sustainably run its business. Since the start of the COVID-19 virus epidemic, PEA has adjusted many measures within the organization to accommodate the situation. For example, an emergency response center has been established to administrate the COVID-19 situation with the governor as the center director. Internal operating guidelines for Work from Home (WFH) have been set up. Also, the flexibility of working time has been implemented, utilizing the LINE PEA COVID-19 application for employees to assess their health and risk of contracting COVID-19 every day. Working times and customer service venues are posted and publicized in electronic channels in order to reduce the presence of people at PEA's offices, etc.

Target [103-2]

PEA has implemented a risk management process that is linked to the organization's strategy prescribed in the strategic plan. It ensures that operations follow the vision in the strategic plan each year. The defined strategic objectives are aimed at driving the operations to meet targets and follow the strategic direction.

Strategy [103-2]

PEA has implemented a corporate risk management process in accordance with an international risk management system, the COSO ERM 2017 standard, which is proactive risk management with defined risk management policies, organizational objectives, risk assessment through opportunity and impact perspectives, determination of risk management measures, and follow-up of risk management reports. PEA has created an organizational risk management plan for the year 2020 to mitigate the likelihood and impact of risks that can cause damage and used it as a tool for adding value to the organization. The attainment of the organizational goals prescribed in the strategic plan must be taken into account when considering the risk management plan. That leads to long-term efficiency development of PEA management and results in achievement of goals and strategies as specified by the organization.

Additionally, in 2020, PEA developed an information system to report risk impact analysis along with an early warning system to alert it of severe-impact events or risks that are likely to lead to failure of the organization in achieving its goals. As such, the relevant agencies can review the measures or quickly adjust operation plans in keeping with changing circumstances to better achievement of goals.

Management Approach [103-2]

- PEA has applied the COSO ERM standard, the risk management guidelines set by the State Enterprise Policy Office, and the ISO 22301 standard in risk management and operation development at all levels of the organization. Risk management policy and internal control policy [102-16] have been defined for the board of directors, executives, and all employees to practice.
- Communication to employees at all levels was conducted for their understanding and awareness in participation of risk management.

Risk Management and Strategic Challenges

PEA has appointed the Risk Management and Internal Control Committee to take charge in supervising, controlling and implementing the risk management policy and framework, including monitoring the risk management and internal control processes adequately for important risk management and reporting to Board of PEA every quarter. [102-31] The Risk and Safety Management Division is the main agency to coordinate with the Risk Management Sub-committees of all functions, in which the deputy governor of each function acts as the chairperson and risk owner, and operates in accordance with the process specified in the Risk Management Policy and Manual.

Corporate Risk Management Structure

The PEA Board

Monitors the PEA risk management

Good Corporate Governance and Social Responsibility Committee

PEA Risk Management and Internal Control Committee

Audit Committee

Internal Audit Bureau

* Supervises integration between good corporate governance, risk management and regulatory operations

* Supervises and provides policies and guidelines; monitors and reports risk management results; and communicates with the audit committee and the PEA's committee

* Calibrates the PEA's risk management and internal control, and provides opinions to the risk management committee and the PEA board

* Calibrates risk management and internal control as required in the audit plan prepared from the risk base

Governor

PEA Risk Management and Internal Control Sub-Committee of All Functions

Deputy Governor – Corporate Strategy/ Risk Management Department/Risk Management Plan Division and Internal Control Coordination Division

PEA Internal Control Committee

Affiliated Sections/ Divisions/ Departments

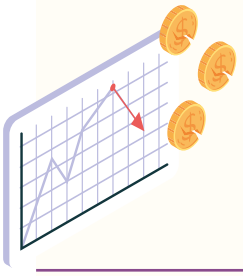
* Conducts risk assessment and risk management of its function
* Makes a risk management plan of its function
* Performs operations as specified in the corporate risk management plan under the responsibility of its function
* Monitors and reports performances as required in the corporate risk management plan under the responsibility of the section and function

* Specifies the Risk Management and Internal Control Guideline/Manual
* Coordinates with the PEA committees and sub-committees in preparing plans and monitoring risk management and internal control results
* Organizes meetings for the PEA Risk Management and Internal Control Committee
* Communicates, publicizes and creates understanding of risk management and internal control results
* Conducts risk assessment and risk management of the organization

* Facilitates evaluation of the PEA internal control
* Specifies approaches to evaluating the PEA internal control and supervising the PEA regulatory operations
* Consider the preparation of the PEA internal control plan and the report of its performance
* Summarizes the PEA performances of internal control and regulatory operations

The Economic, Social, and Environmental Risk Management of PEA [102-15]

Economic [102-15]

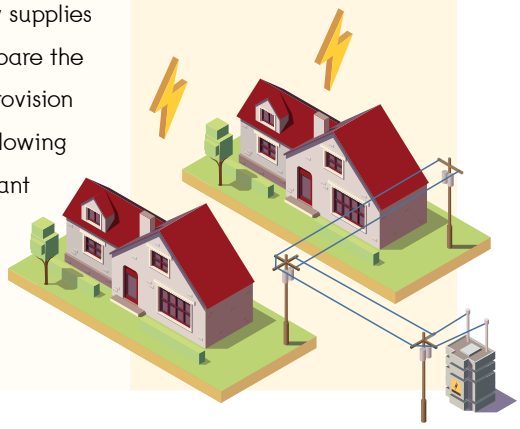
Economic Risk Issues	Significance to the PEA	Risk Reducing Measures	Results [103-3]
Non-compliance between investment and related business development and the goals set (Business Model) 	Related business helps develop the capability of generating overall corporate income in the future, including providing business opportunities in business investment in renewable energy conservation, both in Thailand and other ASEAN countries.	• The operational plan according to the Smart Grid Project emphasizes creation of ecosystems by the private sector. • The Competency for Business Model is prepared as required by the PEA's Strategic Plan.	• The Related Business Operational Plan was 100% successful, equal to BSC level 5. • The income from related business (January - December 2020) was 6,352.50 million baht.
Non-compliance between asset management to provide ultimate efficiency and the goals set	Asset management for utility will be the approach used to promote and adjust the modernity and efficiency of the processes, stages, and maintenance methods to extend the lifetime of the assets, providing quality materials and equipment to reduce unnecessary investment as well as generating income for the PEA.	• The plan of monitoring LDCAD software implementation aims to provide training in 12 PEA area offices.	The operation in accordance with the strategic plan of asset management in 2020 was 89% successful, equal to BSC level 4.45.

Economic [102-15]

Economic Risk Issues	Significance to the PEA	Risk Reducing Measures	Results [103-3]
Failure to develop the personnel's skills for generating added value to the organization in the future	In the near future, due to a large number of retiring staff, the PEA needs to accelerate corporate knowledge management and prepare their successors for operating the business. However, development of the personnel's potential must support and modernize the organization.	• Create a culture to support transformation into the PEA digital utility and create business viewpoints for the target groups.	The plan to develop the personnel's skills of PEA, to support business and digital mindset technology, was 90.51% successful.

Social and Environment [102-15]

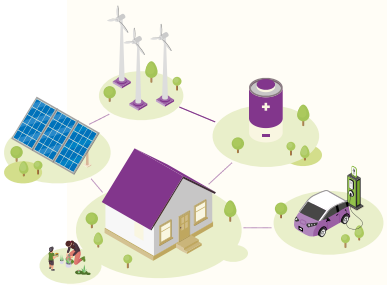
Economic Risk Issues	Significance to the PEA	Risk Reducing Measures	Results [103-3]
Non-compliance between the management of unit loss in the overall picture and the goals set	The power loss units can affect PEA's revenue and cost of the investment. Moreover, this is part of its Strategic Objective SO2, the aims of which are to become an excellent organization in electricity distribution by applying digitalization for integrating all work systems.	• Set guideline for the operation units and job description to support U-Cube system. • Lesson Learning is used for supplying and analyzing the figures on main yearly supplies in order to prepare the Main Supply Provision Plan for the following year and relevant workshops.	The total losses (January - December 2020) were 5.47%, equal to BSC level 5.



Social and Environment [102-15]

Economic Risk Issues	Significance to the PEA	Risk Reducing Measures	Results [103-3]
The PEA's inability to provide continual electricity services and distribution	Continual quality services and electrical current distribution are the main factors affecting the PEA's ability to meet stakeholders' needs and expectations so that it can ensure achievement of specified operational objectives.	• Operate PEA's procurement by following Procurement and Administration Act, B.E. 2560 • Monitor implementation by following PEA's Knowledge Management Plan (KM Plan) • Review the Electrical System Maintenance Plan • Have a Manpower Analysis Plan in response to future operations.	• The SAIFI (January - December 2020) was 2.650, equal to BSC level 5. • The SAIDI (January - December 2020) was 57.52, equal to BSC level 5.

Management of the 2020 Internal Risk Issues

Economic Risk Issues	Significance to the PEA	Risk Reducing Measures	Results [103-3]
Delay in the PEA Smart Grid Project (Pilot Project) 	The PEA Smart Grid (Pilot Project) was slightly delayed. Therefore, the PEA paid close attention to accelerating and monitoring such work plans so that they could be operated in accordance with the National Smart Grid Development Master Plan, including definite integrated collaboration among the three electrical authorities.	• Application of a backup plan in case that the connection between the Advanced Metering Infrastructure (AMI) and SAP system and approval of the Design Change Request did not comply with the OM2.2 Plan. • The action plan of the smart grid project (focused on the private sector to create ecosystem).	The PEA Smart Grid (Pilot Project) was 97.5% successful, equal to BSC level 5.
Lack of appropriate, adequate and systematic information management to be utilized for adding corporate business values (Data Analytics)	Corporate database was appropriately specified for driving each important strategic aspect and conducting an adequacy survey and a corporate data distribution to be used for corporate systematic data analytics operations and database management. As for structured data ready for utilization, data analytics is operated to assure that the PEA can utilize data for efficiently adding corporate business values.	• The existing control measures were adequate. 	The database analysis and preparation of potential customers (Strategic and Star) for marketing strategy specifications in related business groups were 100% successful, equal to BSC level 5.

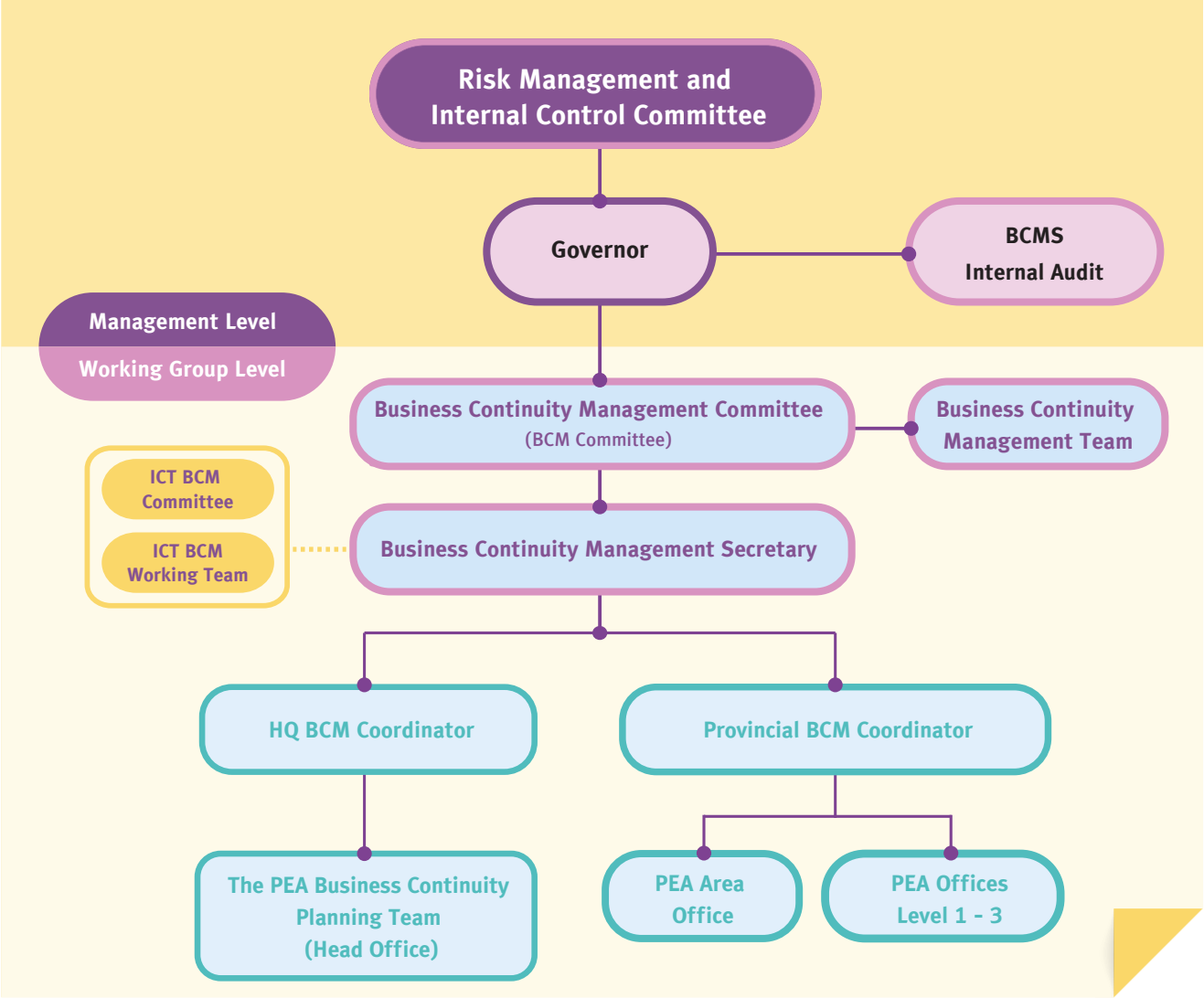
Management of the 2020 Internal Risk Issues

Economic Risk Issues	Significance to the PEA	Risk Reducing Measures	Results [103-3]
Lack of implementation of integrated knowledge and innovation management for developing products, services and processes, increasing opportunities and generating commercial income.	Corporate knowledge and innovation management was an important aspect to be systematically managed and clearly integrated for good management starting from the innovative thinking process, use of innovations to innovation management and utilization (Corporate Innovation System: CIS) leading to higher productivity.	• Create knowledge management and innovation plan for business and marketing function • Use of information technology for increasing potential of the corporate innovation system	• The knowledge management and innovation plan was 99.5% successful. • The number of products generating commercial income is 100%.
The Data Transition and Electricity Distribution Command Center System Adoption Plan (SCADA/ TDMS) affecting electricity distribution command control	Since work on the Electricity Distribution Command Center System consisted of complicated technical details, each operational stage took a long time and become delayed. Therefore, the PEA focused on accelerating and closely monitoring the work plan so that provision and installation of the Electricity Distribution Command Center System would be completed as scheduled, efficiently promoting electricity system command control, increasing reliability of electric systems and continually distributing electric currents.	• The Consultant Supervision Plan • The Progressive Report Delivery Monitoring Plan and work monitoring meetings • A clear test procedure specification plan for cut-over operations • On-the-Job Training Plan (OJT)	The Data Transition and Electricity Distribution Command Center System Adoption Plan (SCADA/ TDMS) affecting electricity distribution command control was 100% successful.

Business Continuity Management and Emergency [former EU21]

Significance to the Organization [103-1]

The PEA manages the Business Continuity Management System (BCMS) under the following business continuity management supervision structure.



The PEA conducts business continuity management and crisis management based on the ISO 22301:2019 International Standard in preparation for possible disasters and crises arising which impact the work system and workplace by using planning, plan analysis, plan preparation, plan practices/tests, and systematic process efficiency assessment as well as continual process improvement. This equips the PEA with abilities of efficient prevention, preparedness, and disaster and crisis responses, and also helps relieve the severity of and correct unexpected situations and recover within an appropriate period of time.

Target [103-2]

- The number of agencies which prepare the BCMS system is based on the ISO 22301:2019, international standard, and practices on the ERP and BCP plans.
- The amount of time spent on the ERP and BCP practices will be as specified.
- The Recovery Time Objective (RTO) will be as specified.

Strategy [103-2]

- Prevention, reduction in possibilities of occurrence, preparedness, crisis responses and recovery.
- Continuity of electric energy operations and services.
- Rapid business re-operation in case of crises.

Management Approach [103-2]

The PEA business continuity management system consists of:

- **Prevention and Preparedness for Disasters**
  All the PEA agencies use their past and present disaster or crisis data for assessing possibilities and effects. In case of very high and average risk levels, an Emergency Response Plan (ERP) must be conducted and additional control measures will be provided for risk management and reduction in possibility of effects to acceptable (low) levels;
- **Crisis Management**
  All the PEA agencies are required to prepare their business continuity plans for the Recovery Time Objective (RTO) in case of severe situations (including cross-border epidemics) and extensive effects on electricity users. PEA set the Help and Support Center to be operated in accordance with the Emergency Response Plan (ERP), Business Continuity Plan (BCP) and Business Resumption Procedure (BRP) in case of unusual situations, and ask related agencies to improve the operational plan to be in accordance with situations, monitor and analyze the performance, and keep high-ranking executives continually informed of the results; and
- **Rehabilitation and Reconstruction**
  When situations have returned to normal, the BCM team of each agency will consider the damage caused and provide rehabilitation approaches and methods to damaged workplaces or systems for fast recovery.

Improvement Plan for Future Operation [103-3]

- Extend the ISO 22301:2019 accreditation to regional areas.
- Improve the process of Business Impact Analysis (BIA) to set a scope in the accreditation of the ISO 22301 that covers all the electricity distribution system, which is the main service of the Provincial Electricity Authority.
- Improve the administrative structure to manage business continuity to be consistent with the organization structure adjustment plan.

2020 Outstanding Performance [103-3]

BCMS ISO 22301:2019

Certification of the PEA BCMS system as required by the ISO 22301:2019 Standard and maintenance of annual certifications by external assessors

Improvement of the PEA business continuity administration policy in accordance with current threats, focusing on prevention and preparedness for

COVID-19 and Cyber Attack

PEA CST

PEA Cyber Security Team

Establishment of the PEA Cyber Security Team (PEA CST) to control and manage the PEA information system for its safety from cyber attacks and preparedness for the PEA's continual service promotion

Construction of the Crisis Response Center for COVID-19

at the PEA head office and all its branches enabled to control and manage the spread of COVID-19 for safety and service continuity

BCMS system

provided by all the agencies, as specified by

the ISO 22301:2019 standard

and practices on the ERP and BCP plans

Agreement between

The ERP and BCP Plans

and the specified Recovery Time Objective (RTO)

Increase 2.21

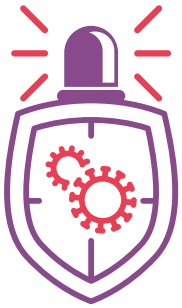
in creating PEA staff awareness of the BCMS system, regarding perception, understanding, prioritization and implementation, compared with last year

Development of the Information System

for data collection and crisis monitoring

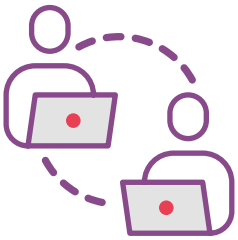
PEA's COVID-19 Response Measures

Set up the Emergency Administration Center in response to the situation of COVID-19 with the PEA Governor as the director



The Emergency Administration Center announced the measures and procedures to prevent and handle the spread of COVID-19.

Set up working from home and overlapping work periods



Decreased the number of meetings, canceled meetings, and avoided setting up activities and meetings which would gather crowds based on priorities; if a meeting was necessary, it should be conducted via the Unified Communication System (UC) using video conferencing.

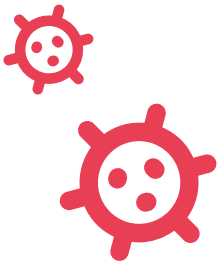
Employees were not allowed to join conferences or observe activities in countries with high risks, and overseas staff were not invited to join cooperation programs.

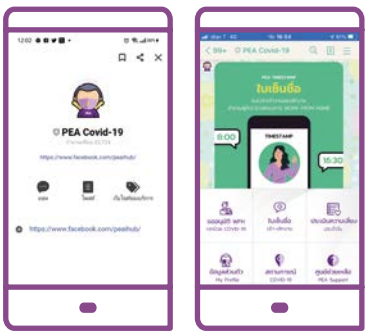
Set up points of risk assessment for employees, visitors, and the general public who may ask for services as well as set up measures for social distancing

Regularly cleaned and disinfected frequently used areas and service areas

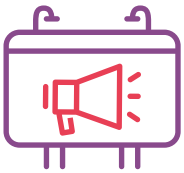
Provided masks, disinfectant alcohol spray and gel, thermometers, counter shields, and other preventive devices to prevent COVID-19 within the office

VIRUS





Used the LINE PEA COVID-19 application so the employees could assess their health and their risks of COVID-19 infection every day and to record the time of work, which aided the work-from-home practice



Published electronic customer service channels to decrease the number of services performed at PEA offices

Planned and practiced ERP and BCP to cope with the spread of COVID-19

Bright Innovation,
Happy People

While the world is constantly changing, PEA places a high value on service development through innovation and modern technology to provide excellent electrical services to people throughout Thailand. We promote clean energy and alternative energy of the future while addressing concerns and care for one another. We create happiness, a brighter smile, and a more sustainable future. We fulfil every dream and light up hope for everyone so they can grow and have a sustainable quality of life and long-lasting smile.

4.58

out of 5 points the level of satisfaction in the personnel recruitment and selection process

Training course of solar rooftop installation was provided to PEA technicians in 12 PEA area offices with the total of

117 personnel

100 percent
the success in advancing social and environmental programs, with the goal at 95 percent

100 percent
the success in human resources technology system development, with the goal at 100 percent

12
PEA offices
were certified by TIS 18001 standard

Corporate Strategies

The PEA has reviewed the 2020 – 2024 PEA strategic plan, setting a 10-year long-term goal, focusing on becoming a leading, modern organization in the region and intending to provide electricity power and service related business in an effective and dependable manner in order to sustainably improve the quality of the economy and society, according to the UNSDGs (United Nations Sustainable Development Goals) as well as using the frameworks of the DJSI (The Dow Jones Sustainability Indices). The important goal is to achieve the target economically, socially, and environmentally. Moreover, importance will also be given to analyzing and setting up the sustainability-driving factors as well as setting up a communication plan for the organization's sustainability.

This also includes focusing on the development and support of proper management, leading to meeting the standards of the OECD Principles (the Organisation for Economic Co-operation and Development) by the end of 2020, as well as developing the PEA into an organization with sustainable development. Proper guidelines will be modeled, including those of ISO 26001, the UNSDGs and the DJSI. That, along with the supervision of the State Enterprise Policy Office, Ministry of Commerce, will lead to a model of a transparent electricity authority and be extended to other branches of electricity authority. Operating with transparency, without corruption, and with standards concerning morals and occupational ethics will be the norm to strive for, along with aiming to be accepted by the public. In addition, importance will be given to responsibilities to the society, community, and environment by keeping to the standards of ISO 26000 and acquiring the social license to operate. The aforementioned issues will not only cover community expectation but also be extended to ethical business conduct and transparency, environmental performance, community relationships, and workers' rights and safety.

DJSI The Down Jones Sustainability Indices

Three Dimensions of the Goal Achievement

Responding to the UNSDGs

Goal [103-2]

SO1 Business Operation with Good Governance for Sustainable Growth

Related UNSDGs

Strategy [103-2]

- S1 Create a PEA with sustainable growth according to the framework based on the SDGs and the international guidelines of the OECD and DJSI
- S2 Giving importance and responses to groups of stakeholders

Tactics [103-2]

- OC1 Analyze GAP and guidelines to push the organization toward sustainability
- OC2 Analyzing and setting guidelines to answer the needs, expectations, and concerns of stakeholders
- RS1 Support effective use of energy

2020 Operation Guidelines [103-2]

OC1.1 Program for maintaining Integrity and Transparency Assessment (ITA)

OC1.2 Program to advance safety operation to an international standard level

OC1.3 Program to set up standards and process to support the PEA Safety Management System (PEA-SMS)

OC1.4 Program to advance work operations to fit OECD standards and governance criteria of the SEPO

OC1.5 Program to sustainably advance operations on social and environmental responsibility to international standards

OC1.6 Program to assess results of social and environmental programs

OC2.1 Program to assess and prioritize stakeholders according to the PEA process

OC2.2 Program to integrate the advancement of stakeholders

RS1.1 Program to increase efficiency of electrical use and save energy in all sectors.

2020 Outstanding Performance [103-3]

ITA score was at 95.24

which was number one of all agencies under the Ministry of Interior, **number one** of all agencies in the energy and utilities state enterprise sector, and **number five** of all state enterprises entered for assessment. Reached the goal of 85 - 100 points (level A - AA), or being in the top three energy and utilities state enterprises.

Disabling Injury Index: $\sqrt{DI}$ was at
0.1166
with the goal at 0.0978

The success of safety and occupational health operation
was rated at 100%,
with the goal at 100%

The success in operating in order to advance the sustainability
was rated at 100%,
with the goal at 95%

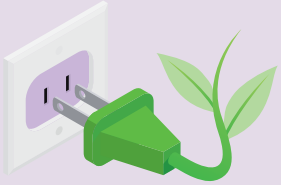
The success in advancing operation levels to fit the standards of the OECD and DJSI, and the governance criteria of the SEPO
was rated at 100%,
with the goal at 95%

The success in advancing social and environmental programs
was rated at 100%,
with the goal at 95%

The satisfaction survey result on whether the PEA operation had met the expectations of the state, business partners, employees, and customers
was 4.28
with the goal at 4.00

The success in operating according to the integration program in the advancement of stakeholders
was rated at 100%,
with the goal at 100%

The number of accumulated electric power saving units (kWh) was
85.84 million units,
with the goal at 80 million units



Responding to the UNSDGs

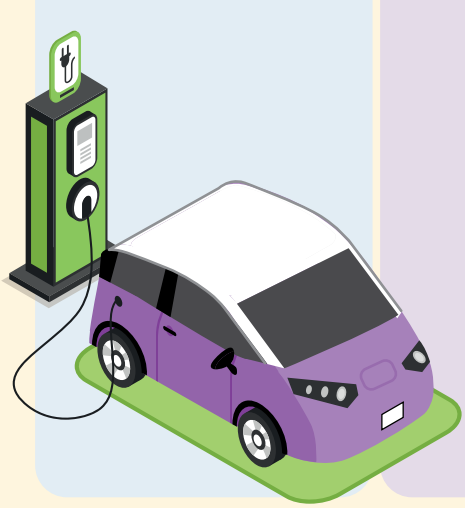
Goal [103-2]

SO2 Becoming a top-ranked organization in distributing electricity, integrating every system with digitalization

Related UNSDGs

Strategy [103-2]

- S3 Supplying electricity with top-ranked quality in the regions
- S4 Asset management and allocation, and creating financial security
- S5 Adjustment of the organization structure to have greater agility suitable for business demand by benefiting from existing alliances



Tactics [103-2]

- OM1 Increasing effectiveness and reliability of the distribution system
- OM2 Empowering the distribution system by use of the Smart Grid
- OM3 Increase effectiveness in asset management
- OM4 Improve operation processes to be more effective, covering the entire supply chain

2020 Operation Guidelines [103-2]

OM1.1 Program to support effective use of energy in every part
OM1.2 Project to develop logistics and distribution systems, phase 1 (Engineering function)
OM1.3 Project to increase electricity system reliability, phase 3
OM1.4 Program to develop the Strong Grid
OM1.5 Project to develop electricity systems to support the establishment of special economic zones, phase 1
OM1.6 Project to develop electricity systems to support the establishment of special economic zones, phase 2
OM1.7 Project to develop electricity systems in large cities, phase 1
OM1.8 Program to control unit loss (technical/non-technical)
OM2.1 Program to develop geographic information system for electric utilities, phase 3
OM2.2 Program to develop electricity systems to support the Smart Grid
OM2.3 Program to develop technology and communication to support the development of the Smart Grid
OM2.4 Program to operate according to the Smart Grid program (placing importance on the private sector in order to create an ecosystem)

OM2.5 Program to create regulation on the distribution of electricity power through the PEA grid system for electricity suppliers and their customers

OM2.6 Program to develop blockchain technology to use in the Energy Trading Platform

OM2.7 Program to improve pricing structure to be consistent with the Pricing Model

OM3.1 Program to develop the PEA electricity system asset management system

OM4.1 Program concerning success in following SLA and QA for SLA according to the PEA Supply Chain

OM4.2 Program to improve digital operational excellence

2020 Outstanding Performance [103-3]

The SAIFI
was **2.65**,
with the goal at 2.74 times/customer/year

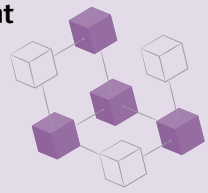
The SAIDI
was **57.52**,
with the goal at 57.58 minutes/customer/year

Loss was at
5.47%,
with the goal at 5.54%

Satisfaction with PEA product
quality was at
4.4172,
with the goal at 4.39

The success of the Smart Grid Project
was rated at 97.50%,
with the goal at 100%

The success of blockchain technology development
to use in the Energy Trading Platform
was rated at 100%,
with the goal at 100%



The success in operating according to the Asset Management Roadmap
was rated at 100%,
with the goal at 100%

The success in operating according to the Service Level Agreement (SLA)
stated in the supply chain, integrating at the agency level,

The success in digital operational excellence

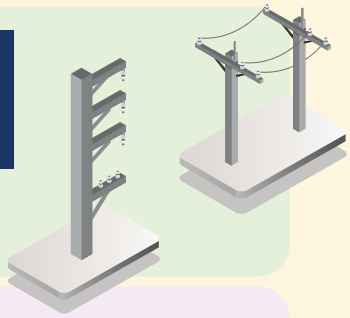
was rated at level 5

Responding to the UNSDGs

Goal [103-2]

SO3 Focus on responding to the needs of every customer group

Related UNSDGs



Strategy [103-2]

- S6 Increasing effectiveness in customer service
- S7 Building relationships and maintaining the high-value customer base

Tactics [103-2]

- CR1 Advance the product and customer service standards with digital technology
- CR2 Building long-term relationships with customers and maintaining the high-value customer base (CRM)
- CR3 Create a positive customer experience

2020 Operation Guidelines [103-2]

CR1.1 Program to use digital technology to set goals and proceed, according to the SLA, in a way that is beyond customers' expectations and superior to that of other competitors

CR1.2 Program to develop a digital service (PEA Smart Plus)

CR1.3 Program to develop business service processes by following the method of doing business of the World Bank

CR1.4 Program to improve the organization's database (as well as the customer database and information analysis in the channel) leading to data-driven execution

CR1.5 Program to develop methods which benefit from customer analytics in order to develop service quality or create related business opportunities

CR2.1 Program to build relationships to maintain the high-value customer base and bring digital CRM into use in order to support customer service

CR2.2 Program to increase effectiveness in complaint management

CR2.3 Program to develop employee potential in creating customer relationships

CR3.1 Program to develop the PEA Customer Journey

2020 Outstanding Performance [103-3]

Customer satisfaction
level was at 4.3945,
with the goal at 4.37

Customer service costs
decreased by
82%, with the goal at 100%

The success of analyzing and compiling a database of potential customers (Strategic and Star) in order to set up marketing strategies in related business groups
was rated at level 5

Satisfaction of key accounts and high-value customers was rated at
4.4248,
with the goal at 4.34

The success of the PEA Customer Journey Development Plan
was rated at
82%,
with the goal at 100%

Responding to the UNSDGs

Goal [103-2]

SO4 Increasing the business value of the organization by creating an advantaged portfolio

Related UNSDGs

Strategy [103-2]

- S8 Seeking opportunities in related business investment

Tactics [103-2]

- NM1 Support investment and take advantage of the cooperation to develop related business
- NM2 Push for turnover and establish the brand image of affiliates
- OC3 Change management
- RS2 Review the law, rules, and regulations to support operations in related business as well as operation management of affiliates in order to create synergy

2020 Operation Guidelines [103-2]

NM1.1 Program to create portfolio mix planning & implementation and establish policies in related business investment in order to increase the turnover of the PEA in consolidated form

NM1.2 Program to create a follow-up system for affiliates using the Early Warning System

NM1.3 Program to set cost accounts according to the types of income for the part of non-regulated businesses

NM2.1 Program for success in establishing policies, management frameworks, and the proper operation format of the entire portfolio

NM2.2 Program to operate related businesses

OC3.1 Program to adjust organization structure and establish the role of the agency, focusing on business alignment

RS2.1 Program to improve the process of rule and regulation operation and methods to operate with agility in conducting related business

RS2.2 Program to verify the law, ministry law, cabinet resolutions, and new law, and improve the process of operation, law, rules, regulations and work operation to support the PEA and related business operation

2020 Outstanding Performance [103-3]

The success of the related business operation plan was rated at

100%, with the goal at 100%

The success of the operation of the affiliates and policy analysis in management was rated at

100%, with the goal at 100%

The income of related business

was 6,352.50 million baht,

with the goal at 4,200 million baht

The success of **adjusting the organization structure** by focusing on business alignment

was rated at level 5

The success of **creating or improving the law, rules, and regulations,** both inside and outside the organization, in order to support operations in related business

was rated at level 5

The success of **reviewing the laws to operate** the PEA's related business

was rated at level 5

Responding to the UNSDGs

Goal [103-2]

SO5 Driving the organization to be up-to-date on human capital, digital technology, and innovations

Related UNSDGs

Strategy [103-2]

- S9 Advance the management and human capital potential
- S10 Promote and develop capabilities with digital technology to drive digital transformation effectively
- S11 Strengthen sustainable and secure digital technology
- S12 Develop the Corporate Innovation System (CIS)

Tactics [103-2]

- HR1 Promote human capital management by using digital technology to perform Human Resource Management (HRM)
- HR2 Develop a learning and development system to improve and enhance staff performance (HRD)
- DT1 Develop digital technology capabilities to reflect efficiencies in cost management and operations
- DT2 Develop cyber security capabilities and digital technology management according to international standards
- IP1 Develop innovative structures and processes

2020 Operation Guidelines [103-2]

HR1.1	Program to develop a Performance Management System (PMS) and bring in technology to help with development
HR1.2	Program to adjust organizational structure and manpower to support digital utility
HR1.3	Program to develop digital technology systems to support the advancement of management and human capital development
HR2.1	Digital Workforce Potential Development Plan to support business operations and develop digital promotion
HR2.2	Knowledge Management (KM) Development Plan to support and prepare for business operations
HR2.3	Human Resource Development Plan to create innovations and utilize them
HR2.4	Skills Promotion System Development Plan, which was consistent with changes in business, technology and competition (New Skill/Up Skill/Re Skill)
DT1.1	Digital Platform Development Plan to support organization management
DT1.2	Data Governance Upgrading Plan
DT1.3	Data Management & Data Analytics Plan
DT1.4	Work plan for the development of governance standards for information technology management

DT1.5	EA Governance & Development Roadmap (Enterprise Architecture capability development)	IP1.2	System Development Plan to scale up innovation to deliver benefits and generate income
DT2.1	Digital Security System Development Plan	IP1.3	Knowledge and competency in the use of Creativity and Innovation Development Plan
IP1.1	Innovation Management System Development Plan		

2020 Outstanding Performance [103-3]

The success in developing an operation assessment that is systematic and effective as the main way to drive forward the organization **was rated at 100%,** with the goal at 100%

The success in human resources technology system development **was rated at 100%,** with the goal at 100%

The success of the implementation of the plan to increase employee capacity **was rated at 100%,** with the goal at 100%.

The competency of the target group in developing New Skill/Up Skill/Re Skill **was rated at 81.03%,** with the goal at 80%

The success of the PEA Digital Action Plan **was rated at 97%,** with the goal at 100%

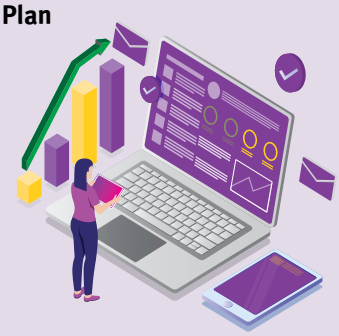
The success of the Implementation of the Plan to Improve Data Governance **was rated at 100%,** with the goal at 100%

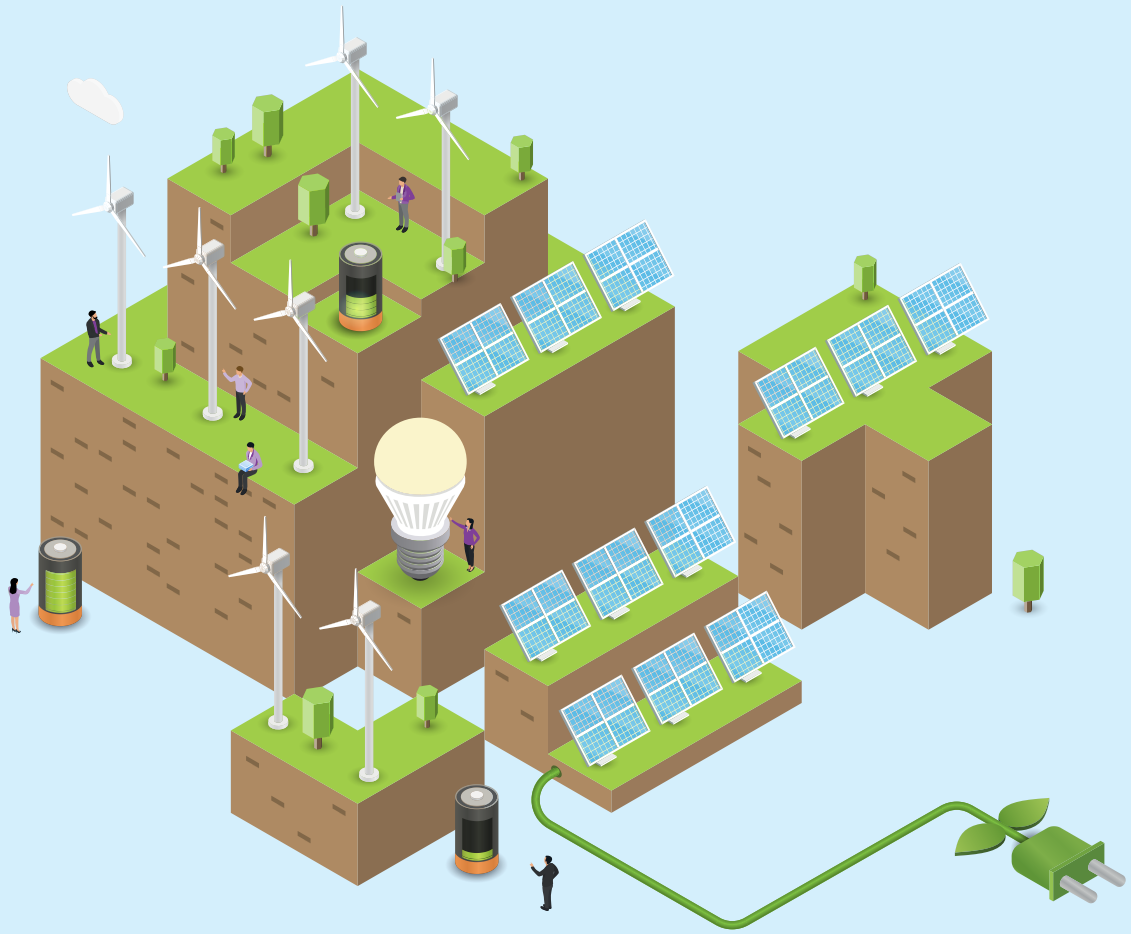
The success of developing good governance and information management standards **was rated at 98%,** with the goal at 100%

The success of implementation of the EA Governance & Development Plan **was rated at 100%,** with the goal at 100%

The success of the Security Standards Development Plan (ISO 27001) **was rated at 100%,** with the goal at 100%

The success of the implementation of the Corporate Innovation System Development Plan **was rated at 99%,** with the goal at 100 percent



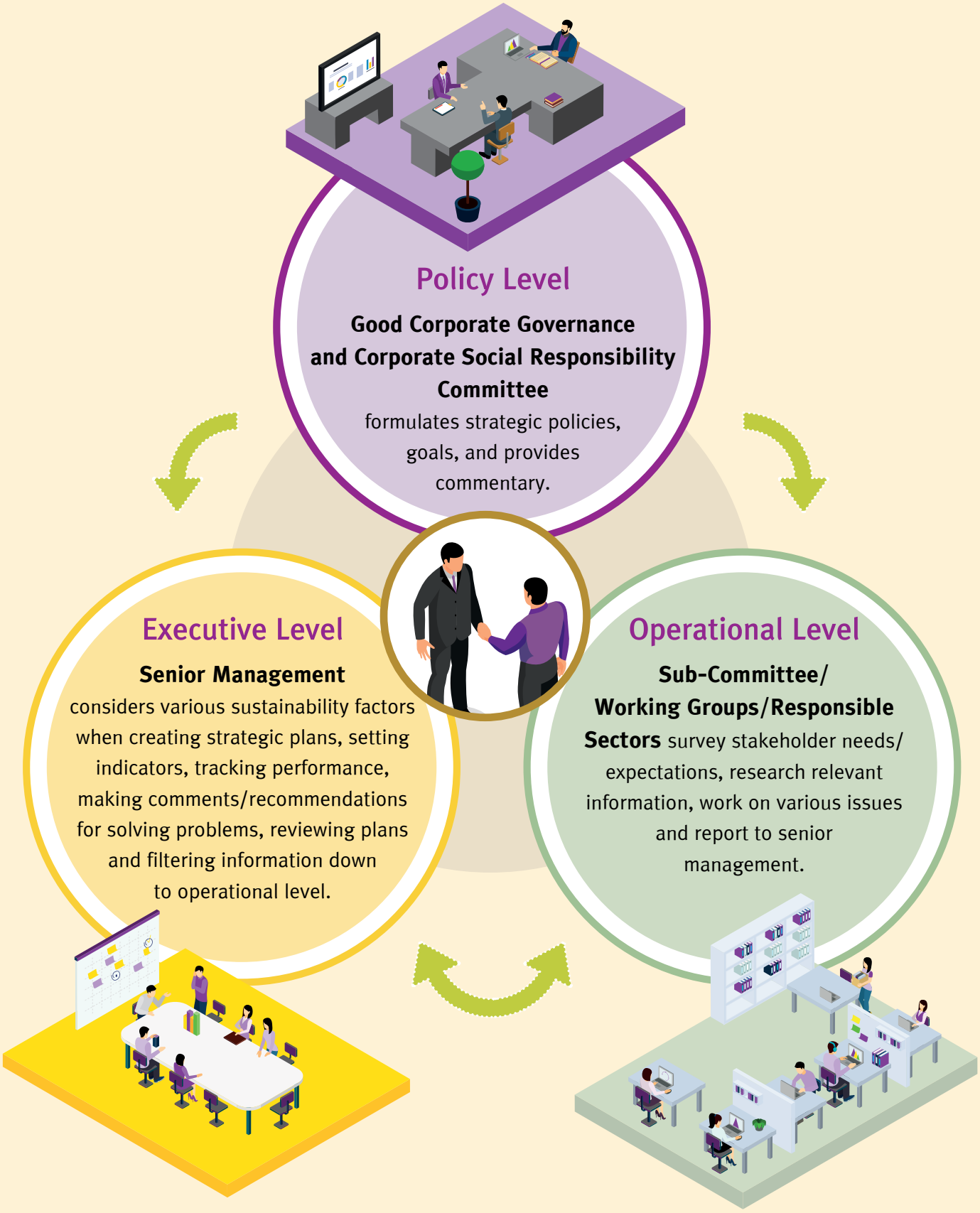


Sustainability Management [102-26]

The PEA aims to support the goals of the Corporate Strategic Plan in managing the business in accordance with the principles of good governance for sustainable growth. It has adopted guidelines based on ISO 26000, the international standard for social responsibility, and the Sustainable Development Goals (SDGs) as a framework for formulating social and environmental responsibility policies for the organization's development towards sustainability and the formulation of a master plan for sustainable development through the process of creating the master plan. The PEA emphasizes analyzing the sustainability context relevant inside and outside the organization and giving stakeholders the opportunities to participate and express their opinions in order to formulate sustainability strategies from these inputs and filter them down hierarchically to the operational level. The board and senior management have roles and are involved in each process [103-2], according to the following structure of sustainability management.

Sustainable Development Goals: SDGs

Sustainability Management Structure [102-19][102-26]



Stakeholder Engagement

The PEA identifies stakeholders according to the entire work system of PEA, according to the value chain which categorizes the stakeholders by considering the impacts and benefits that the stakeholders receive, in both government and the private sector. These stakeholders include regulators, customers, communities, media, suppliers, trading partners, collaborators, and employees. They are identified according to the following guidelines. [102-42]

1) Analyze and identify relevant stakeholders according to the entire work system and according to the value chain, work system analysis, and work processes of all departments/work areas, both in the context of work done today and work to be done in the future.
2) Identify all stakeholders of each function/department through an analytical questionnaire, where each department writes down the steps taken to complete their own key tasks and each step has a relationship with stakeholders in two dimensions:
   2.1) People affected due to the processes of PEA, in both positive and negative ways; and
   2.2) People who have an impact on the processes of PEA in both positive and negative ways. By considering economic, social, and environmental impacts, these guidelines are in line with the organizational strategy and allow the stakeholders to be divided into the following groups. [102-40]

People Affected Due to the Processes of PEA

- Positive Effect
- Negative Effect

People Who Have an Impact on the Processes of PEA

- Regulators
- Customers
- Community, Society, and Environment
- Suppliers/ Trading Partners/ Collaborators
- Employees

In regard to stakeholder engagement, PEA has designated the agencies responsible throughout the process. The frequency of operations and the clear aggregation of key stakeholder needs/expectations are used as inputs to formulate guidelines on how to respond to those needs/expectations in both organizational strategy and work plan.

Sustainability Communication Channel to Stakeholders

Website: https://sustainability.pea.co.th/

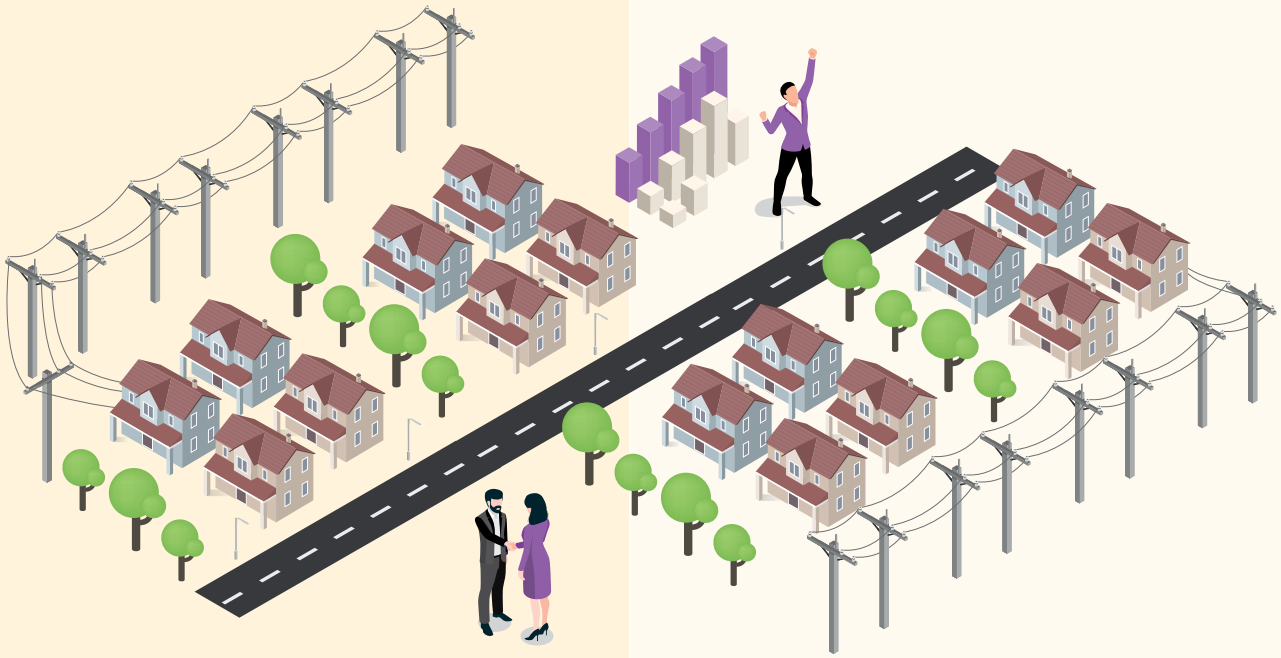
YouTube: PEA CSR

Facebook: PEA CSR


CONNECTION

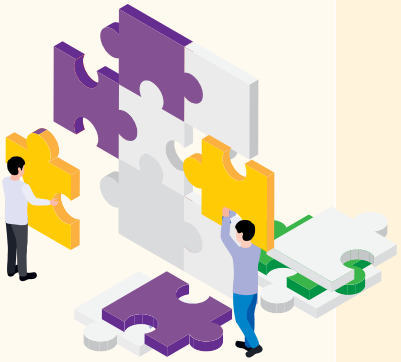
Stakeholder Group [102-40]	Stakeholder Engagement Guidelines and Frequency [102-43]	Stakeholder Needs/Expectations [102-44]
Regulators	• Annual stakeholder satisfaction survey on the operation of the PEA • In-depth interview with regulators once a year	• Continuous upgrade of the power distribution system for new users, and improvement of the electrical system to be operational, available, reliable, and safe • Proactive approach to renewable energy and energy efficiency, by developing the Micro Grid and Smart Grid • There should be indicators that reflect operational efficiency, such as Return on Capital Employed (ROCE), which reflects investment efficiency, or Full-time Equivalent (FTE), to reflect employee performance. • Transparency in procurement and disclosure of information • Preparation of a strategic plan of the organization in accordance with government policy • Promotion of a transparent and fair governance system • Development of a roadmap to meet stakeholder needs and expectations

Processes for Meeting Stakeholder Needs/Expectations	Key Outcomes in 2020
• Prepare an integrated work plan to raise the level of stakeholders (government group). • Prepare a PEA's strategic plan in response to the energy policy/strategy or development plan/promotion of the regulators.	• Satisfaction of regulators with the operation of the PEA in 2020 had an average rating of **4.35.** *Note: The PEA already had a plan in place to support the needs and expectations of regulators. But due to the impact on operations from the economic slowdown caused by the COVID-19 situations, the average satisfaction score was decreased. • There were 74,301 households with electricity, out of a total of 74,317 households, which was **99.98%.** • The System Average Interruption Frequency Index (SAIFI) was **2.65** times/customer/year. • The System Average Interruption Duration Index (SAIDI) was **57.52** minutes/customer/year.



Stakeholder Group [102-40]	Stakeholder Engagement Guidelines and Frequency [102-43]	Stakeholder Needs/Expectations [102-44]
Employees 	• Executives meet (meetings/visits/ joining activities) with staff. • Communicate important news in executive decision making. • LINE@PEAfriends • PEA Governor's meetings with employees • Release of operating results through internal media • PEA Executive meeting with each PEA's function • Announcement of the Governor's Management and Organizational Development Policy. • Seminar on clarification of the annual strategic plan by PEA executives • Meeting to communicate the strategic plan/review annual action plan	• Good quality of life at work, and opportunities for career advancement • Communication of management direction so that employees are aware of the changes and develop the organization together • Salary, welfare, compensation and benefits derived from PEA
Suppliers 	• Communicate important news that plays a role in decision making or affects stakeholders and the PEA. • Newsletters/journals/news and scoops on radio and television, and in newspapers and magazines • LINE Official Account • Organize activities together with suppliers, trading partners and collaborators. • Organize a meeting to share opinions on PEA's strategic plan.	• Transparency in joint business in compliance with contractually agreed obligations • Fairness in competition • Support of domestically manufactured equipment and cables, focusing not only on price but also on quality.

Processes for Meeting Stakeholder Needs/Expectations	Key Outcomes in 2020
• Communicate management direction so that employees are aware of the changes and develop the organization together. • Prepare career development plans and develop a screening system and encourage readiness of those to be promoted based on competency. • Manage employee perceptions of compensation. • Develop a work environment that promotes health, safety and happy workplace. 	• The overall level of employee satisfaction score was **4.18.** • The average employee engagement score was **4.32** out of 5, the details as the following: An average employee well-being score of **4.25,** A sense of pride in being part of the organization score of **4.34,** A desire to work hard score of **4.37.**
• Encourage executives and employees at all levels to act with transparency, fairness and accountability, including fairness to stakeholders inside and outside the organization. • Do not solicit, receive, or pay for unfair advantages in trade with suppliers, trading partners, and collaborators. Discuss and find out the solution together, if there is information (a demand, receipt or payment) for unfair advantages. Disclose details to suppliers, trading partners and collaborators, and together resolve the issues fairly and quickly. • Expect all of the partners to strictly comply with conditions which agreed together. Discuss and find out the solution together, if there are requirements that cannot be observed.	• Integrity and Transparency Assessment (ITA) results of the NACC, the PEA had a rating score of **95.24%.** (Level AA rating score). 

Stakeholder Group [102-40]	Stakeholder Engagement Guidelines and Frequency [102-43]	Stakeholder Needs/Expectations [102-44]
Trading Partners 	• Communicate important news that plays a role in decision making or affects stakeholders and the PEA. • Newsletters/journals/news and scoops on radio and television, and in newspapers and magazines • LINE Official Account • LINE@PEAfriends • Organize a meeting to share opinions on the PEA's strategic plan.	• Development of guidelines for effective complaint management • Transparency in joint business • Fulfillment of contractually agreed obligations 
Collaborators 	• Communicate important news that plays a role in decision making or affects stakeholders and the PEA. • Newsletters/journals/news and scoops on radio and television, and in newspapers and magazines. • LINE Official Account • Organize activities together with suppliers, trading partners and collaborators. • Organize a meeting to share opinions on the PEA's strategic plan.	• Exchange of information together in a timely manner • Transparency in doing business together • There is a fair contract.

Processes for Meeting Stakeholder Needs/Expectations	Key Outcomes in 2020
• Develop an information system (PEA-VOC system) to be used for managing complaints along with management of listening to customers so that outcomes can be stored, monitored and reported across the organization in the same database. This will enable fast and efficient handling, response and resolution of complaints from relevant stakeholders. • Encourage executives and employees at all levels to act with transparency, fairness and accountability, including being fair to stakeholders inside and outside the organization. • Do not solicit, receive, or pay for unfair advantages in trade with suppliers, trading partners, and collaborators. Discuss and find out the solution together, if there is information (a demand, receipt or payment) for unfair advantages. Disclose details to suppliers, trading partners and collaborators, and together resolve the issues fairly and quickly. • Expect all of the partners to strictly comply with conditions which agreed together. Discuss and find out the solution together, if there are requirements that cannot be observed.	• Response to complaints 1) General complaints could be closed within 30 business days (98.24%) 2) General complaints could be closed within 30 days (96.77%) 3) General complaints could be closed within 15 business days (86.68%) • Integrity and Transparency Assessment (ITA) results of the NACC, PEA had a rating score of **95.24%.** (Level AA rating score). 
• Encourage executives and employees at all levels to act with transparency, fairness and accountability, including fairness to stakeholders inside and outside the organization. • Do not solicit, receive, or pay for unfair advantages in trade with suppliers, trading partners, and collaborators. Discuss and find out the solution together, if there is information (a demand, receipt or payment) for unfair advantages. Disclose details to suppliers, trading partners and collaborators, and together resolve the issues fairly and quickly. • Expect all of the partners to strictly comply with conditions which agreed together. Discuss and find out the solution together, if there are requirements that cannot be observed.	• Integrity and Transparency Assessment (ITA) results of the NACC, PEA had a rating score of **95.24%.** (Level AA rating score).

Stakeholder Group [102-40]	Stakeholder Engagement Guidelines and Frequency [102-43]	Stakeholder Needs/Expectations [102-44]
Customers/Users 	• Communicate important news that plays a role in decision making or affects stakeholders and PEA. • Newsletters/journals/news and scoops on radio and television, and in newspapers and magazines • LINE Official Account • PEA Smart Plus Application • Organize a meeting to share opinions on PEA strategic plan. • Visit the customers/seminars for key account customers to analyze complaint behavior and needs/ expectations. • Surveys of customer satisfaction and loyalty	• There is a thorough supply of electricity to run the business continuously without power failure. • The electrical system is safe. • Compensation for damage caused by a non-standard power supply • Ease of notification/remedy of power outages, and friendliness in providing services to customers, with a service mindset • Easy access to various support services, quick accessibility and a short corrective action time • Transparency and fairness in service
Community, Society and Environment 	• Communicate important news that plays a role in decision making or affects stakeholders and PEA • Newsletters/journals/news and scoops on radio and television, and in newspapers and magazines. • LINE Official Account • LINE@PEAfriends • PEA Smart Plus Application • Public hearing • Organize a meeting to hear opinions on the PEA strategic plan.	• The electrical system is safe. • PEA's operation does not harm the environment. • PEA supports the sustainable social and environmental activities. • Good maintenance of electrical distribution line such as trimming of trees along the line. • Providing good management of electric billing to the customers to prevent the case of not receiving or lost the bill. • Electric pole stability which prevents accidents or natural disasters

Processes for Meeting Stakeholder Needs/Expectations	Key Outcomes in 2020
• Maintain electrical systems to be ready for efficient supply, manage technical losses, and repair power outages to restore power as required with safety. • Facilitate customers to access various services quickly, such as by accessing remote communities, providing services that support various operating systems (smart phones), providing a one-touch service, etc. • Continuously develop and maintain quality of service while providing service to all customers/electricity consumers with equity and to the same standard.	• There were 74,301 households with electricity, out of a total of 74,317 households, which was **99.98%.** • The System Average Interruption Frequency Index (SAIFI) was **2.65** times/customer/year • The System Average Interruption Duration Index (SAIDI) was **57.52** minutes/customer/year • The impact of uncertainty in the system on electricity consumers was equal to 0.0075, which was at level **5**. • Customer satisfaction with PEA's operation had an average score of **4.3945.**
• Organize regular activities/public relations exercises to disseminate knowledge about electrical safety. • Top management supervises the implementation of social and environmental responsibility in accordance with the ISO 26000 standard and encourages personnel at all levels to acquire knowledge and understanding of the principles and practices of social and environmental responsibility in process (CSR in process) in order to focus on reducing negative impacts on society to achieve concrete results.	• Stakeholder satisfaction with CSR operations decreased by 0.08 compared to the year 2018. This score was at a **very good level** of **4.42**, or **88.40%.**

Assessment of Material Sustainable Development Topic of PEA [102-46]

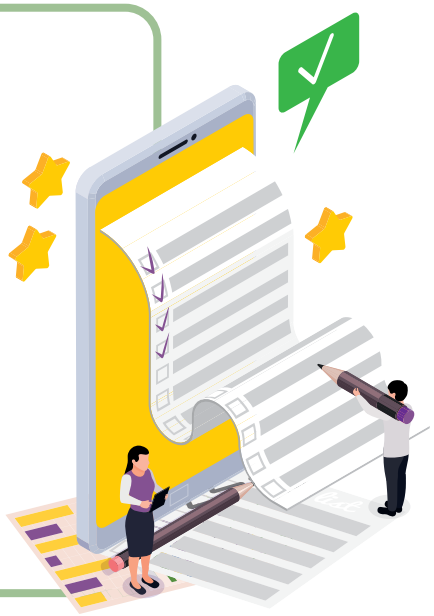
1. Identification of Sustainable Development Topics

PEA considered significant information from both internal and external factors, as well as the scope of both positive and negative impacts, which might have an influence on sustainability of the organization, and analyzed such significant information based on the stakeholder inclusiveness and sustainability context principles covering economic, social, and environmental dimensions as follows:

- **Significant information from internal factors:** Organizational goals and strategic plans, short-term and long-term business threats and opportunities.
- **Significant information from external factors:** Major or urgent demands/expectations of the stakeholders, National Economic and Social Development Plan, tendency of changes in the energy business, and the Sustainable Development Goals (SDGs).

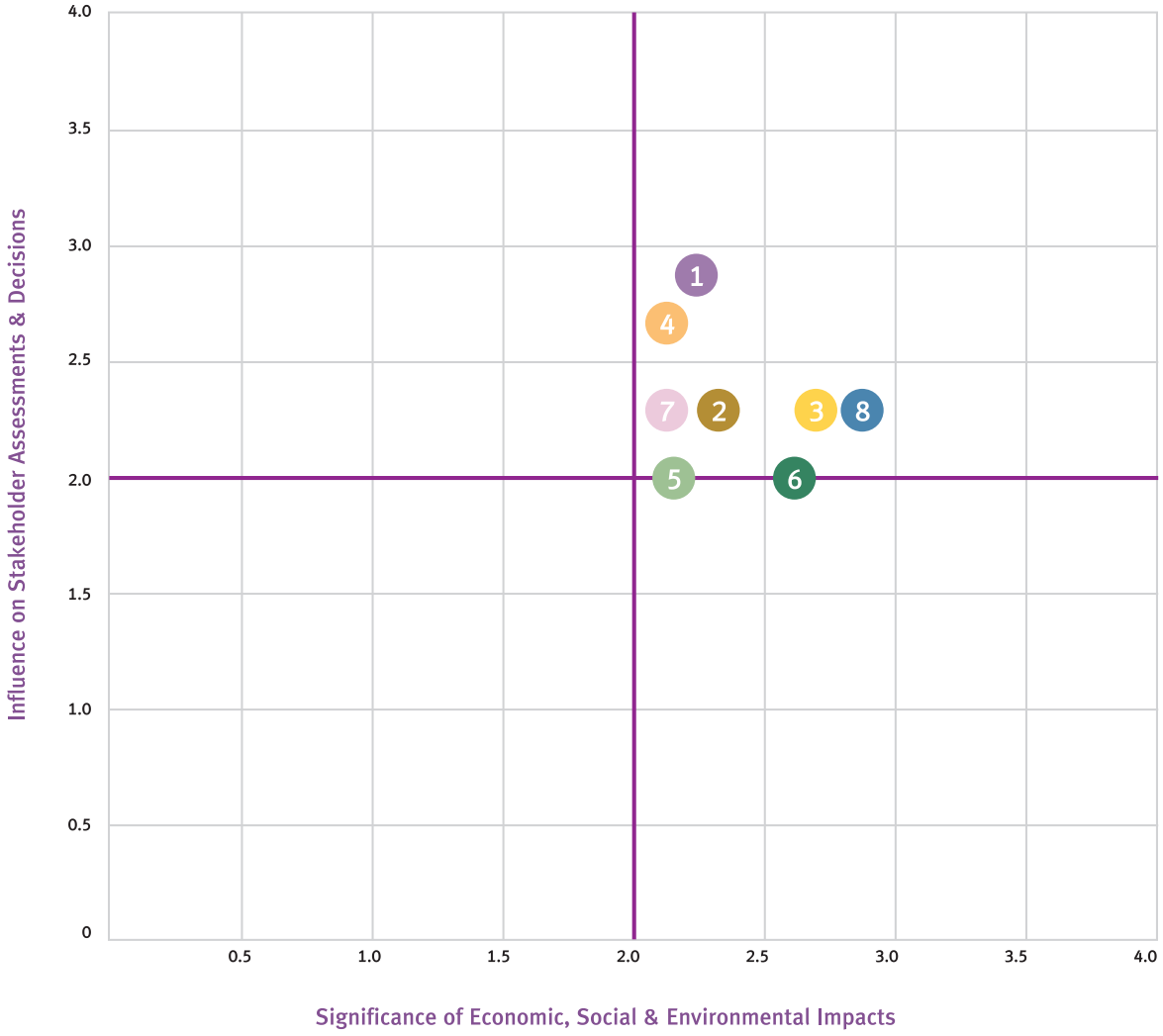
2. Prioritization of Sustainable Development Topics

PEA compared the derived sustainable development topics with the GRI topic-specific standard. After that, such topics were prioritized based on the materiality principle, which took into account organization's significant of economic, environmental, and social impacts (horizontal axis), and influence on the stakeholder assessment and decisions (vertical axis) through a workshop attended by relevant department representatives.



3. Validation of the Important Sustainable Development Topics

The sustainable development topics derived from the prioritization were considered and approved by the Good Corporate Governance and Corporate Social Responsibility Committee [102-32] based on the completeness principle to ensure that they were correct, complete, and consistent with the demands/expectations of the internal and external stakeholders.



The Sustainable Development Topics of the PEA Include 8 Topics as Follow [102-47] [102-49]

1 Availability and Reliability
(EU: Availability and Reliability)

2 Research and Development
(EU: Research and Development)

3 Customer Health and Safety
(GRI 416: Customer Health and Safety)

4 Access
(EU: Access)

5 Anti-Corruption
(GRI 205: Anti-Corruption)

6 Demand-Side Management
(EU: Demand-Side Management)

7 Reduction of Energy Consumption
(GRI 302-4: Reduction of Energy Consumption)

8 Economic Performance
(GRI 201: Economic Performance)

Creating a Brighter
Future & Sustainability

While the world is constantly changing, PEA puts a focus on environmental responsibility. We focus on the efficient use of natural resources in the operation process to reduce the direct and indirect environmental impact of production and service. We use ecological efficiency assessment as a tool to increase operational efficiency and environmental and natural resources responsibilities.

579,962 kg CO_2eq

the improvement and enhancement of chiller system efficiency and reduction of greenhouse gases.

13 innovations

were created, and budgets were pending for approval.

5

stages specification of measurement and assessment approaches to eco-efficiency as specified in the ISO 14045 approach.

Upgrade the occupational health and safety process to the **ISO 45001** standard in the year 2022.

Performance

Improving Electric Power System to be Excellent by Using Digital Technology

Organizational Performance [103-1]: PEA focuses on the continuous development of its regional-acknowledged distribution system standard, by developing Smart Grid using digital technology. It helps in supporting the efficient utilization of electric power, connecting all electric industry activities together, and supporting the changing structure of utility and industry in the future. The purpose of this development is to provide stable, safe, reliable, and sufficient electricity to present users and potential users in the future. The development of PEA's distribution system in 2020 was conducted according to electric power system development plan under the 12th National Economic and Social Development Plan (2017 - 2021).

Target [103-2]

- Stable, safe, reliable electric power system.
- Quality and sufficient electric power system for the demand of present users and potential users in the future.
- Continuously distributed and efficient electric power system.

Strategy [103-2]

- Increase efficiency and reliability of distribution system.
- Improve and connect distribution system in business area, industrial area, industrial estates, and other important areas to cope with the expansion of economic area and strategic area of the country.
- Develop Smart Grid infrastructure to support renewable energy and energy management technology that will happen in the future.
- Set policies/measures to mitigate stability impact and loss in the distribution system.
- Support the efficient use of electricity.

Management Approach [103-2]

- PEA Region 1 - 4 functions have operated its Strong Grid developmental plan by installing good quality electrical equipment and applying the highest power system standard in business and industrial areas, industrial estates, and other important areas, such as improvement of the 115 kV transmission line with load dispatching of more than 150 MW to be a closed loop, systematization of preventive maintenance every quarter, along with readiness to review and improve the load shedding plan for critical situations in the area, and so forth. This has been done to add confidence and reliability to the transmission and distribution systems.

- The Planning and Power System Development Function has started to operate in accordance with the electricity system development plan to support the Smart Grid system, for instance, the Smart Grid Development Project in Pattaya, Chon Buri Province. By focusing on technology, and testing the design and use in different areas to support the Smart Grid system in other areas in the future, the PEA has improved efficiency and security to the distribution system, created more connection capability for small power producers, and reduced problems and expenses in various practices, as well as arranging a working plan that supports the efficiency of electricity usage of all parties. In addition, the organization has proceeded to verify and fix point-to-point contact in electric stations, transmission lines, and distribution systems.

2020 Outstanding Performance [103-3]

System Average Interruption Frequency Index (SAIFI) was
from the target of 2.74 times/customer/year.

2.65 times/customer/year

System Average Interruption Duration Index (SAIDI) was
from the target of 57.58 minutes/customer/year.

57.52 minutes/customer/year

System Average Interruption Frequency Index (SAIFI) in 12 major cities was
from the target of 1.036 times/customer/year.

0.893 times/customer/year

System Average Interruption Duration Index (SAIDI) in 12 major cities was
from the target of 13.364 minutes/customer/year.

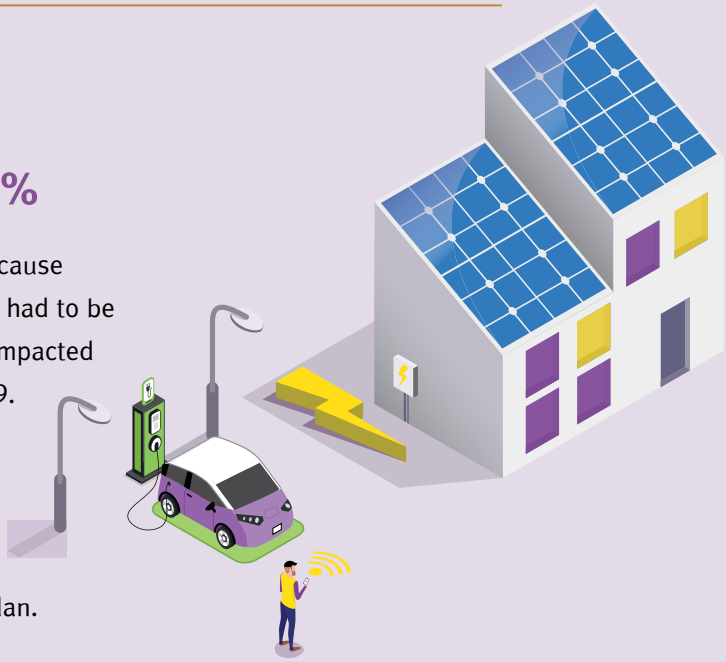
10.558 minutes/customer/year

Percentage of loss in distribution system was
from the target of 5.54.

5.47

The success of Smart Grid Project
in Pattaya, Chon Buri Province,

was rated at **95%**

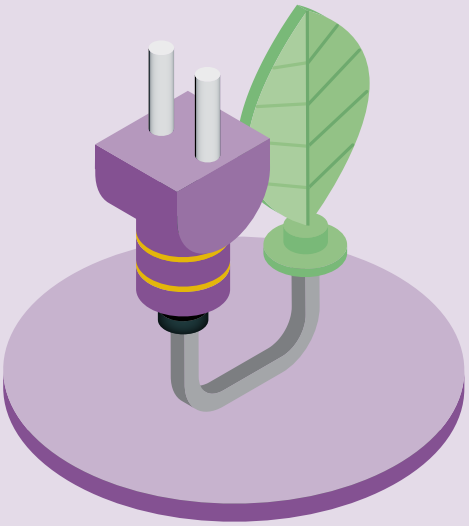


which was lower than the target of 100% because pieces of equipment in the meter production had to be imported from overseas, and this had been impacted by the outbreak of Coronavirus, or COVID-19. For instance, the metrology board factory was in China and the network interface card factory was in the USA, which resulted in slow meter production and a disbursement which was not according to the prescribed plan.

PEA supported efficient electric power utilization in all organizations, which resulted in energy saving accumulated to

85.84 GWh (million units) from the target of 80 GWh (million units),

based on the amount of electricity saved from 2017 - 2019 (31.86 + 11.75 + 24.37) = 67.98 GWh (million units), and the energy saving in the year 2020 was 17.86 GWh (million units) according to the following:



5.02 million units

Promotion and Conservation of Energy in the Governments

12.69 million units

Promotion and Conservation of Energy in the Industries

0.15 million units[302-4]

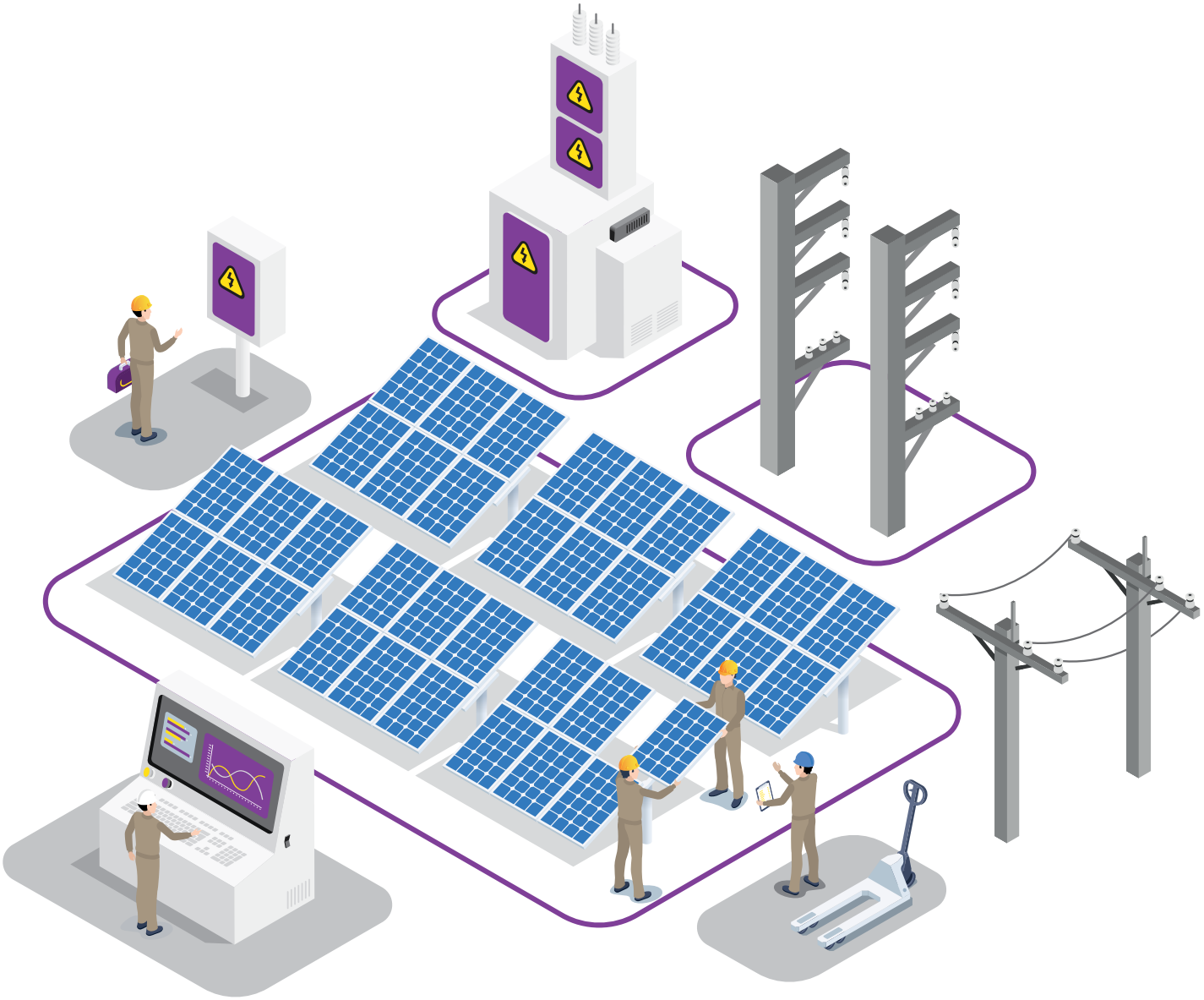
Promotion and Conservation of Energy within PEA's Offices

Improvement Plan for Future Operation [103-3]

- **Plan for Grid Modernization of Transmission and Distribution System** to support future electric power system technology.
- **Development of blockchain technology** for use in an energy trading platform.
- **Arrange the work plan to support the effective energy use** with the goal of saving **100 GWh (million units)** of electricity by the end of 2021.

Economic Performance [201-1]

Importance for the Organization [103-1]: The rapid changing technology enables electric power users to become power producers for their own uses. This trend might affect PEA's power distribution which is its main source of revenue. In order to adjust itself to the change and maintain continuous business operation, PEA applies conservative financial policy and prepares itself to expand to new business outside its core business. PEA sets target to become a service provider for digital utility services within the year 2022, to distribute economic values to all stakeholders and create sustainable values to community and society.

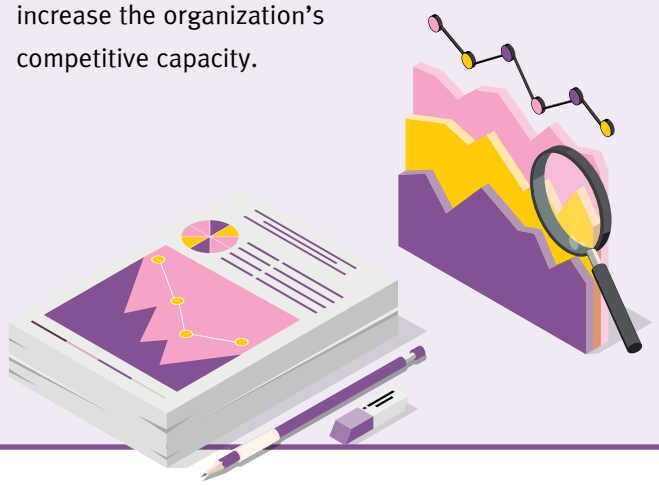


Target [103-2]

- Increase rate of return from operation.
- Decrease operating expense.

Strategy [103-2]

- Increase efficiency of asset utilization and operating expense, by applying efficient asset management.
- Mitigate loss in electric power system.
- Increase business value to the organization in order to increase the organization's competitive capacity.



Management Approach [103-2]

- Create and operate according to Asset Management Roadmap, which clearly identified policy framework, objectives, strategies, and guidelines in corporate asset management operation, from acquiring process, application, maintenance, and distribution to keep the expenses in the appropriate level.

- Set assessment for corporate asset management to create the right solution for any asset management issue and invest in the revenue-generated asset for PEA.
- Develop corporate electric power database (IT/OT Integration) for management decision making, as well as application readiness assessment or asset health assessment in order to plan the appropriate maintenance system.
- Set policies for potential portfolio strategies investment and design in managing overall business investment through PEA's and affiliates' operations to create maximum value for the organization and sustainable business development.
- Promote investment and create cooperation among partners in operating related businesses that benefit PEA.

2020 Outstanding Performance [103-3]

Got corporate credit rating at

AAA
level

with stable outlook from TRIS Rating.

The ratio of the Return on Assets (ROA)

was **4.41**

Profit Margin

was **2.96**

Current Ratio was **1.45**

Total Asset Turnover was **73.94**

Due to process adjustment, **operating expense reduced to**

40.10 million baht.

Percentage of loss in distribution system

was **5.47**

Revenue from related business

was **6,352.50** million baht.

Improvement Plan for Future Operation [103-3] :

- **Improve efficiency and capability in creating revenue from asset,** by setting target to get certification on Asset Management Standard (ISO 55000) in the year 2022.
- **Integrate database and customer support system** (Fully Completed CRM) to provide customer service, marketing, customer data analysis, and other services that respond to customer demand/ expectation in the future, to create revenue for PEA.

People

Employee Care

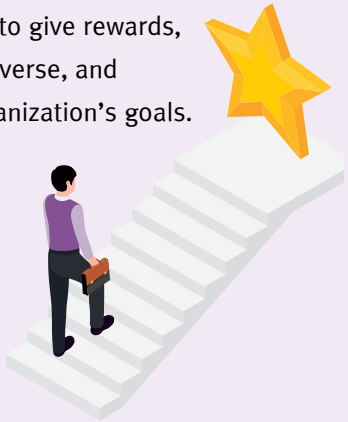
Organizational Importance [103-1]: Employees were very important for steering the organization's operations. PEA treated its employees fairly without discrimination, and attached great importance on manpower planning and recruitment, compensation management, employee retention, career path management, and safe environment to promote employees' good quality of life and work morale until their retirement in response to the demands/ expectations of all the employees for their job happiness, resulting in their commitment to the organization and sustainable growth and development.

Target [103-2]

- Having personnel with knowledge, abilities, and determination to work for PEA.
- Reducing complaints of the personnel recruitment and selection process.
- Reducing the employee turnover rate.
- Promoting employees' sense of belonging and commitment to the organization.

Strategy [103-2]

- Developing the recruitment and selection criteria in response to the needs across various groups of personnel and in line with the organization's strategies.
- Improving the criteria for employee annual promotion to ensure fairness and consistency with individual performance.
- Developing the system to give rewards, which were valuable, diverse, and consistent with the organization's goals.
- Promoting employee career development.



Management Approach [103-2]

- Allowing opportunities for fair employment, with a transparent recruitment process based on knowledge, abilities, and qualifications as required by the organization.
- Giving the disabled opportunities to work under various operation policies and guidelines, and giving those fair employment, rights, and welfare similar to general employees to promote the disabler's better quality of life.
- Promoting employees based on qualifications, free from decisions based on race, complexion, sex, religion, or other restrictions.
- Creating a succession plan for employees to acknowledge their career path and for promoting more learning.
- Performing management according to the principles of good governance, with an emphasis on the rule of law, integrity, transparency, participation, responsibility, and cost-effectiveness in development and improvement of relevant regulations or practices.
- Carrying out supervision, training, notification, and communication to ensure the same human resource management standards throughout the organization.
- Allowing opportunities for employees to gather and organize the Labor Unity of PEA to act as a representative for the employees to negotiate with the employers so as to protect their welfare and benefits, and to provide advice to the members who were not treated fairly, with 100% of employees under the care of the Labor Unity of PEA according to the agreement. [102-41]

2020 Outstanding Performance [103-3]

There were no complaints of unfair personnel recruitment and selection nor discrimination.[406-1]

The level of satisfaction in the personnel recruitment and selection process

was **4.58**

out of 5 points,

at the high level.

The employee turnover rate accounted for 0.14%

with a decrease from 0.08% in 2019.

The worker turnover rate was 3%

with a decrease from 5% in 2019.

The satisfaction in the gifts

from PEA to employees working at the organization for 20, 25, 30, 35, and 40 years, and to retired employees at the age of 60

was at **a high level.**

The overall employee satisfaction was 4.18

The average of employee commitment

was **4.32**

out of 5 points.

The average well-being was 4.25

Sense of belonging

was **4.34**

The willingness to do the best for work was 4.37

Improvement Plan for Future Operation [103-3] :

- **Upgrading PEA as one of the employers of choice in the job market.**
- **Upgrading employment in response to the needs of the organization to become a digital utility business.**
- **Adopting digital technology to enhance work efficiency.**
- **Improving the resignation process** by having a process or channel for supervisors and employees to talk before taking resignation decisions and by allowing collection of resignation information for analysis and solutions.

Producing Personnel of the Future

Importance to the Organization [103-1]: PEA aimed to develop and increase personnel's capabilities by promoting development for innovations, new businesses, and excellent services to enable all the employees to work effectively in consistent with the organization's goals in becoming an organization with high competency and ready to handle business changes. PEA has outlined a human resource development plan covering 4 groups of competencies, including Core Competency, Management Competency, Functional Competency, and Strategic Driven, to enable the development of Human Capital Management (HCM) in response to its strategic drive and state policies, rapid technology changes, and the needs of internal and external stakeholders as well as to comply with the Core Business Enablers criteria for state enterprise performance evaluation systems, as prescribed in the State Enterprise Assessment Model (SE-AM).

Target [103-2]

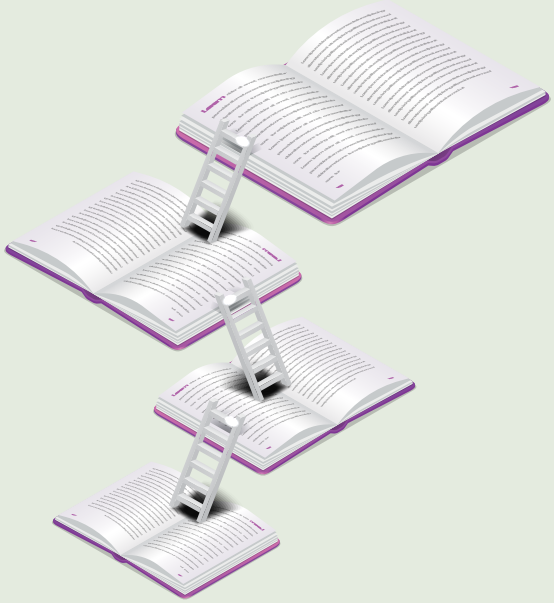
- Developing the learning system of personnel competency development and improvement.
- Developing the potential in human resources so that they are ready to work and ready for changes in the digital age.
- Developing the group of personnel to work as the HR business partner with necessary competence.

Strategy [103-2]

- Developing the competency system to be in line with the organization's strategies for personnel development.
- Increasing capabilities of talents to possess skills as expected by the organization.

Management Approach [103-2]

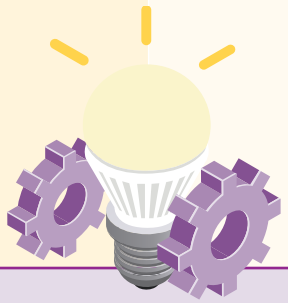
- Analyzing topics being developed, and the title and scope of training courses based on functional competency and digital competency.
- Determining the 3 levels of the expected Key Behavior Area (KBA) (the employees level 2 - 4).
- Determining the course and content of the individual development plan (IDP) under the 70:20:10 learning model method as well as directions for assessment and follow-up.
- Developing the PEA Certification Center for Solar Rooftop Design and Installation, which prepares personnel development to support a full service for the supplementary solar rooftop business as well as establishing the electrical installation standard of the charging station.



2020 Outstanding Performance [103-3]

The success of the plan to upgrade human resource development was 100%. All employees received personnel competency development, for example, in Core Competency, Functional Competency, Managerial Competency, Digital Competency, as well as Strategic Driven. In 2020, the details of the competency development courses described earlier were as follows: [404-2]

Core Competency	Functional Competency	Managerial Competency	Digital Competency
Courses 1. Risk Management/ Internal Control 2. Ethics Promotion in Work	**Courses** 1. KM in Action 2. KM Facilitator	**Courses** 1. Smart Directors 2. Smart Leadership 3. Executive Development Program	**Courses** 1. Online – Virtual Classroom (a substitute for the personnel training and development course for employees in 2020)



Remark: Due to the COVID-19 pandemic in 2020, some courses were canceled or held online.

Personnel development was also provided to those with specific control duties, as follows:

Personnel development for **117 employees** overseeing solar rooftop installation for PEA offices in **12 districts** of the Authority, which represented **95.12%**

Training sessions for **60 employees** responsible for inspecting the installation standard of the electrical systems of the EV charging stations were held in **12 districts.**

Improvement Plan for Future Operation [103-3] :

- **Pursue functional competency and strategic driven** for employees so that they can lead and expand new businesses for the organization and strive for market competition.
- **Expand the Learning Management System** (LMS) via e-learning and produce digital training media for key work groups tasked with management in order to drive the systematic personnel development model as per the assignment.
- **Speed up the expansion of design and development of competency-based training courses**, hence establishing a practical corporate-wide design and development process in line with the performance evaluation criteria of the State Enterprise Assessment Model (SE-AM).
- **Accelerate employees' knowledge and competency development on solar rooftop design and installation** as preparation for business ventures.
- **Extend training to employees responsible for inspecting the installation standard** of the electrical system and charging stations, covering more areas.

Promoting Occupational Health and Safety [403-6]

Importance to the Organization [103-1]: PEA is committed to curbing threats to health and the environment, which affect employees' lives and properties. A master plan covering a strategic safety framework has been established in line with the internal and external environment, and includes aspects such as laws, regulations, and strategies from organizations related to safety in Thailand along with international work safety standards.

Therefore, PEA's safety framework from now to 2024 consists of 4 strategic objectives and 11 strategies that can drive the Authority toward achievement of key safety goals, i.e. those related to safety awareness, the disabling injury index of PEA, and impacts on electricity consumers. Moreover, strategies on safety have been put into practice by implementing action plans to support the execution of goals for each strategy. Persons in charge, goals, and time frames are also fully specified in all activities. PEA Occupational Health Safety and Environment Master Plan 2020 – 2024 consists of 11 strategies, 27 action plans, and 24 indicators. The developed PEA Safety Management System (PEA-SMS) also conforms to the Safety, Occupational Health, and Environment at Work Act, B.E. 2554 (2011) in pursuit of occupational health and safety management system certification (TIS 18001/BS OHSAS 18001). [403-3]

Target [103-2]

- Reducing the number of fatalities caused by accidents compared with the previous year.
- Reducing the number of accidents causing absence from work in 2020.
- Continuously reducing work-related rates of sicknesses and diseases every year.
- Carrying out TIS 18001 certification in 12 locations.

Strategy [103-2]

- Developing digital technology as a tool to conveniently and quickly monitor the operations to reduce risks of accidents.

Management Approach [103-2]

- Imposing the ongoing performance assessment of safety tools in accordance with PEA's regulations.
- Organizing the training and developing courses on safety promotion as well as following up and evaluating them for improvement.

2020 Outstanding Performance [103-3]

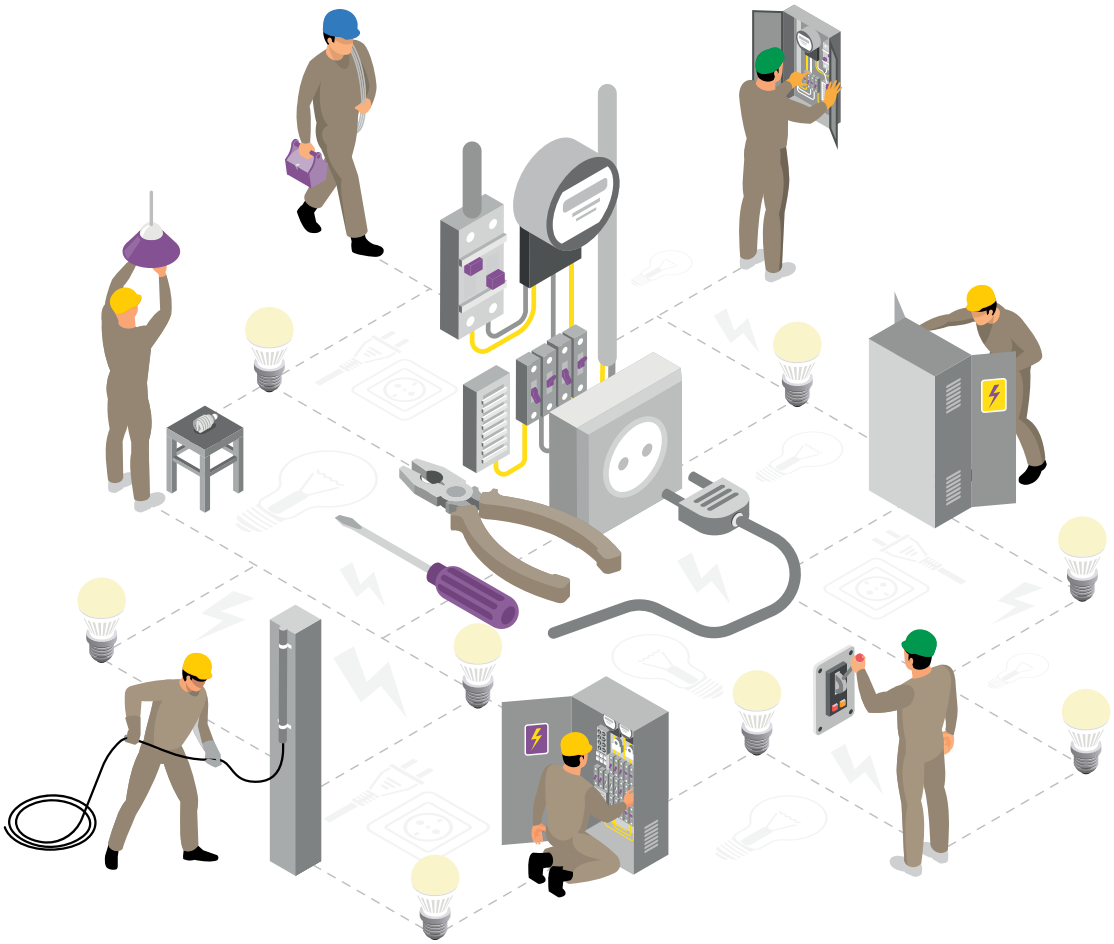
TIS 18001 standard
has been certified for the
12 additional PEA offices.

Improvement Plan for Future Operation [103-3] :

- **Upgrading the occupational health and safety process to the ISO 45001 standard in the year 2022.**

Electric Power User Safety

Importance to the Organization [103-1]: As electrical hazards caused damages to both lives and properties of electric power users, PEA highly regarded electric power user safety and carried out survey, improvement, and inspection of electric power systems, as well as educating electric power users on safety in electric power use to minimize possible damages caused by electricity, and promoting better quality of life of electric power users.



Target [103-2]

- Reducing user accidents from PEA electric power systems.

Strategy [103-2]

- Adopting the occupational health and safety management system (TIS 18001) to monitor, inspect, and improve operations on safety matters continually.
- Solving problems of close spacing between power lines and buildings or structures in accordance with the PEA standards.

Management Approach [103-2]

- Assessing points at risk with 100% tendency to affect electric power users, which was found that the operations with high risks to the trading partners and electric power users were those close to the power lines.
- Requiring inspections and assessments in terms of design standards, quality, and safety standards in installing equipment related to power distribution and transmission systems, reconstruction, reinstallation, and maintenance, which accounted for 100% of all the products and services [416-1] to ensure electric power user safety and receipt of quality products and services.
- Setting a work plan to survey and improve high-voltage electric power systems close to buildings and structures, and disseminating knowledge about how to use electric power to minimize possible impacts.
- Requiring all electricity authorities to inspect spacing between power lines and buildings or structures in accordance with the standards on safe spacing for construction of power lines. Requiring all electricity authorities to be strict and always inspect the electric power systems in their responsible areas.

2020 Outstanding Performance [103-3]

Power lines close to buildings or structures of **89** out of 155 places were fixed and improved. The details of operations to improve power lines close to buildings or structures in accordance with PEA standards were summarized as follows:

Particulars	Number (place)	Operation Budget (baht)
1. Improvement was done.	89	14,072,076.12
2. Budgets were approved, and operations were being carried out.	12	7,818,377.94
3. The plan was created, and budgets were pending for approval.	13	3,418,178.21
4. Under the process of creating a plan	41	15,806.72
Total	**155**	**25,324,438.99**

The impact from PEA electric power systems on electric power users was 0.0075 points, which **was at Level 5, accounting for 27.17%** of Level 5.

Improvement Plan for Future Operation [103-3] :

- **Urgently completing the improvement of power lines close to buildings or structures** in accordance with PEA standards and work plan.

Cyber Security, Data Storage, and Customer Privacy

Importance to the Organization [103-1]: According to the Thailand 4.0 policy, the government has developed digital technology to use as key infrastructure for national economic development. At the same time, a cyber threat targeting infrastructure may lead to national economic damage. PEA cyber security operations were in accordance with the PEA strategic plans and digital action plans to upgrade cyber and information system security management to meet the international standards, monitor and handle cyber threats, and raise PEA employees' awareness of cyber and information system threats. This would enable PEA to perform its missions smoothly and build confidence among stakeholders and related sectors both in the public and private sectors that PEA had standard cyber and information system security management and observed the information technology laws, such as the Cyber Security Act, B.E. 2562 (2019), and the Personal Data Protection Act, B.E. 2562 (2019), etc.

Target [103-2]

- Being certified with ISO/IEC 27001 for key ICT infrastructure to cover the head office and 12 areas.
- Establishing a Security Operation Center (SOC).
- Raising employees' awareness of cyber and information system security, as well as data storage and customer privacy.

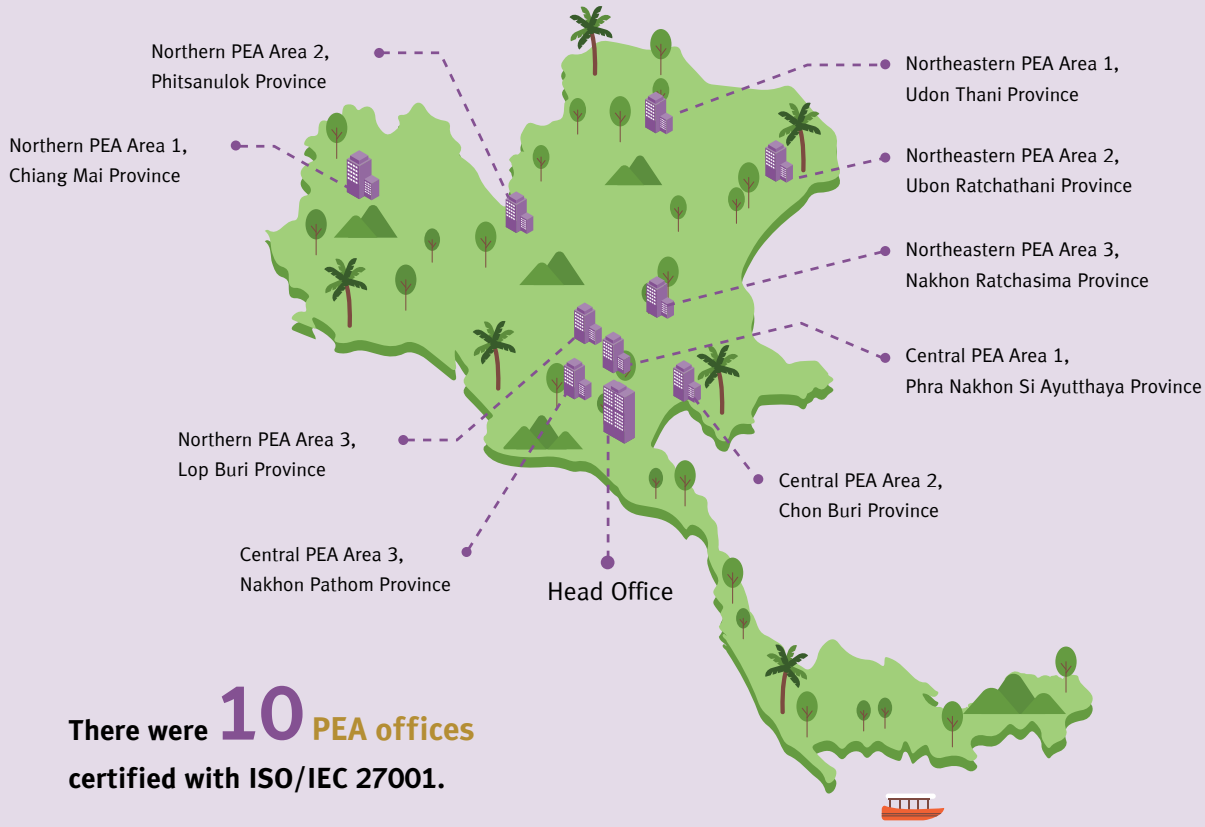
Strategy [103-2]

- Developing the information technology security systems according to the standards and applying for certification of ISO/IEC 27001 international standard.
- Monitoring cyber security 24 hours and 7 days a week (24/7) and reporting unusual incidents for relevant personnel to take corrective actions and reporting to high-level executives for acknowledgment and giving orders.
- Encouraging system administrators and users of all levels to receive education in cyber security and customer personal data storage.

Management Approach [103-2]

- Establishing a security management structure for information technology in the head office and district offices so as to operate in accordance with the PDCA cycle as well as to carry out appropriate personnel training and development so that it was capable of acting in accordance with the ISO/IEC 27001 standard.
- Establishing a log collection system and Security Information and Event Management (SIEM) system, and reporting monthly to the supervisors.
- Creating e-learning and infographics related to safe data retention along with knowledge dissemination on awareness. Setting up a device-control policy through the ITSM system.
- Carrying out operations under the Work Management and Public Services through Digital Systems Act, B.E. 2562 (2019) and the Personal Data Protection Act, B.E. 2562 (2019). Appointing a working group to provide information services and pilot management of data in the customer management and support system.

2020 Outstanding Performance [103-3]



There were 10 PEA offices certified with ISO/IEC 27001.

There was no complaint of customer privacy violation and loss of customer data.

Surveillance officers were on duty to monitor for cyber attacks for 24 hours and 7 days a week (24/7) and to alert parties involved.

Improvement Plan for Future Operation [103-3] :

- **ISO/IEC 27001 certification for PEA offices** in all 12 areas.
- **Assessing and developing cyber security capabilities and ensuring the Security Operation Center (SOC)** covers information technology and operations technology.
- **Operating under the Cyber Security Act, B.E. 2562 (2019).** [418-1]

Access [former EU23]

Importance to the Organization [103-1]: PEA took into account the equality and inclusiveness of all people in accessing basic utilities like electric power systems. Therefore, it focused on allocating electric power systems to the general public continuously to support the growth of the business and industry sectors, upgrade the quality of life for Thai people, especially in remote rural areas, and pave the way for country development.

Target [103-2]

- Expanding power distribution systems to cover every household.

Strategy [103-2]

- Expanding power distribution system in all areas to meet the public demands.
- Enhancing the distribution system capacity by using smart grids.

Management Approach [103-2]

- Implementing the New Rural Household Electrification Project and Remote Rural Household Electrification Project continually to allow access to electricity for all households and in remote areas.
- Creating renewable energy (RE) or micro-grid utilization plan to generate electricity for households in restricted areas or remote islands, where general pole installation and conductor stringing could not be applied.

2020 Outstanding Performance [103-3]

Electrification was done for **55,929 new rural households.**

Electrification was done for

13,390 remote rural households

while the target was 11,600 households.

Electrification was done for

61 islands (there were 700 islands according to the survey, 61 of which consisted of residents).

Improvement Plan for Future Operation [103-3]:

- **Electrification will be done** for 141,960 new rural households by the end of the year 2022.
- **Running the Micro Grid project** on Phaluai Island, Surat Thani Province to increase capabilities and stability in electric power distribution in response to the increasing demands in the future as it is an important tourist attraction with a high rate of economic growth.

Planet

Research and Innovation for Environment

Importance to the organization [103-1]: PEA focuses on using research and innovation as an important driving force in conducting its core and related businesses. Research and innovation are being utilized to enhance efficiency for products, services, and business operations. The research result should be able to commercialize and comply with organizational change, new business model, and the changing electric power industry structure.

Target [103-2]

- Improve the roles of research and innovation to operation process development and commercialization with both short-term and long-term of the Corporate Innovation System Plan, by including two innovations which increase operational potential and one income-generating product.

Strategy [103-2]

- Develop research and innovation that enhance security, excellent standard, modernization, and sustainable growth for PEA.

Management Approach [103-2]

- Researchers and innovators join in creating research work that benefits overall society. There should be business feasibility study for commercialization in the future, as well as intellectual property protection and management plan.

- Allocate budget of 3% of net revenue, or annual average at 100 - 130 million baht to support research development and innovation fund.

- Support research fund to domestic research organizations or academic research institutes in 4 types as follows:

1. Full fund
2. Co-research
3. Co-funding
4. Other agree-upon format

- Support research fund to PEA's internal research unit, by providing fund of not exceeding 300,000 baht per project.
- Support fund to startup (startup is an enterprise that uses technology or innovation as an important part in business operation or as required by law) for commercialization. There are 3 phases as follows:

Support Fund to Startup for Commercialization

1st Phase: develop concept and conduct feasibility study of the research work for commercialization, for the duration not exceeding 6 months, funding within 10,000,000 baht.

2nd Phase: develop research prototype, for the duration not exceeding 12 months, with no funding limit.

3rd Phase: develop research prototype and expand its scope to be used throughout the organization or to production test stage at industry or commercial level, for the duration not exceeding 12 months, with no funding limit.

- The research and inventions/innovations of the PEA inventors are collected and their potential is accessed via the Technology Readiness Management System (Technology Readiness Level: TRL).

The process of application of prototypical innovations for production of commercial inventions includes the following criteria:

1

Consideration of an invention's (TRL 6 - 7) potential work/research projects.

2

Consideration of selection from the target groups (inside and outside the organization) without any previous commercial operation and corporate management.

3

Consideration of scoring by the team; the score of each selected piece of work must be at least 80%.

2020 Outstanding Performance [103-3]

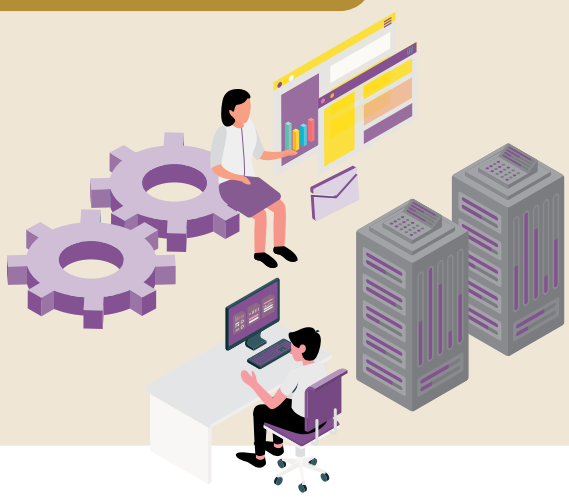
The success of Corporate Innovation System Plan in 2020 was at level 4
rising from 2019 by 1 level.

The inventions and the loss reduction process were integrated in the PEA low-force distribution system. Also,

13 innovations
were selected, based on the criteria for application of prototypical innovations for production of commercial inventions.

Improvement Plan for Future Operation [103-3] :

Improve Corporate Innovation System Plan
that leads to new product and service creation, as well as new business model within the year 2021.



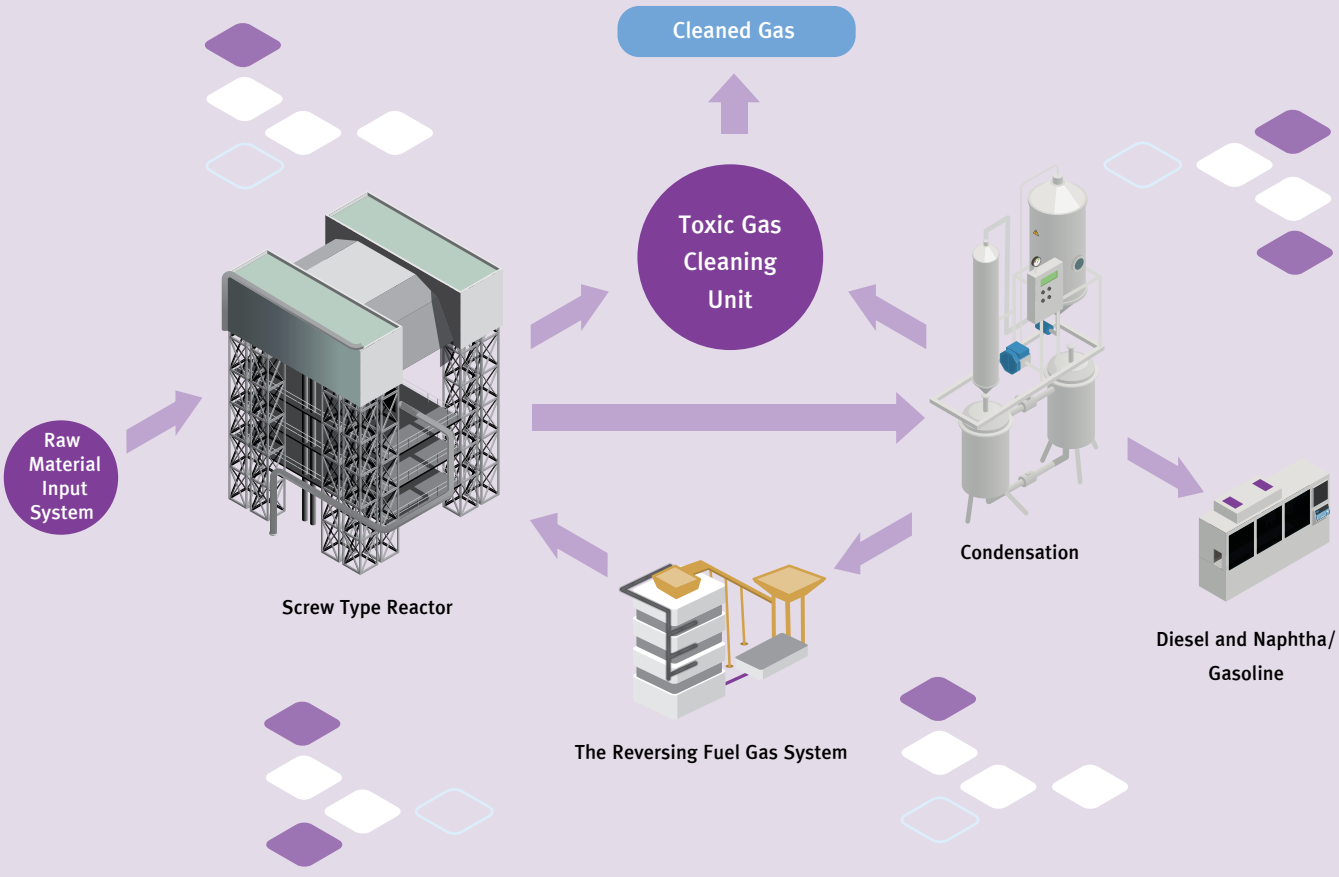
Samples of Research and Development Project in 2020

(Renewable Energy Technologies) [former EU8]

Research Project on "The Study of Waste Energy Electricity Generation Technology and Development"

PEA and Chulalongkorn University (Academic Service Center) conducted a research project on "The Study of Waste Energy Electricity Generation Technology and Development". It aimed to present recent innovations of producing electric energy from liquid fuel in place of diesel. The product was obtained from plastic garbage and biomass found in community garbage by means of recent innovations. The technology of processing plastic garbage and biomass found in community garbage could produce approximately 2,000 liters/day from 3.5 tons of plastic garbage per day. Also, it could produce approximately 200 liters/day of liquid biofuel from 0.5 tons of biomass per day. The amount of electricity produced from renewable fuel for diesel had a production capacity of 200 kW. This technology also sustainably helps reduce garbage problems and electricity production.

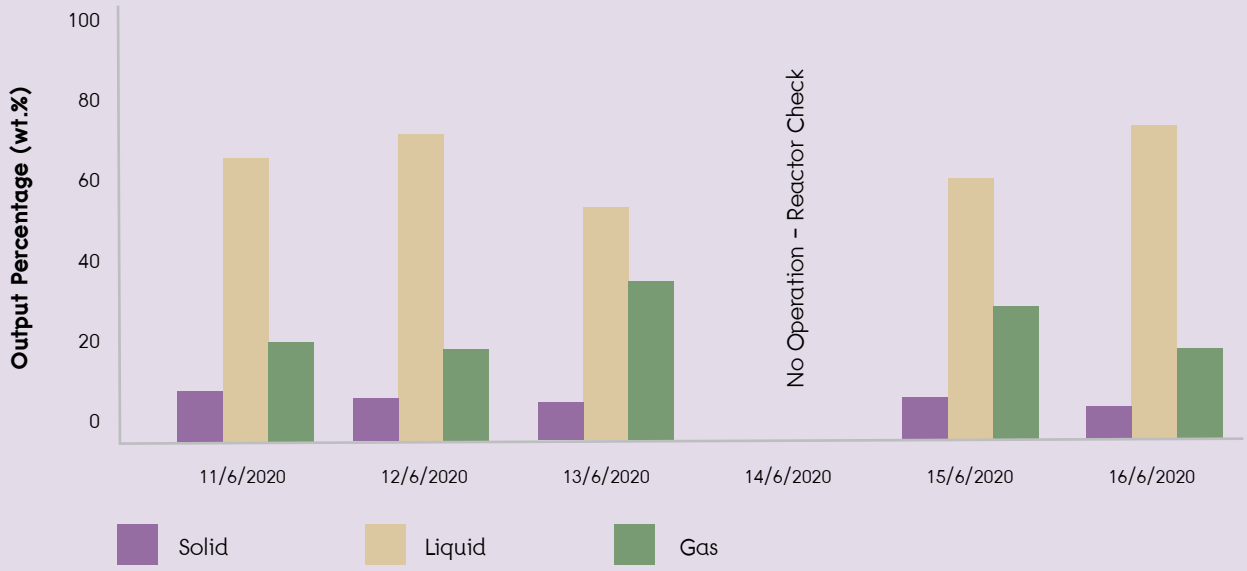
Chart of the System of Processing Plastic Garbage into Renewable Fuel for Diesel

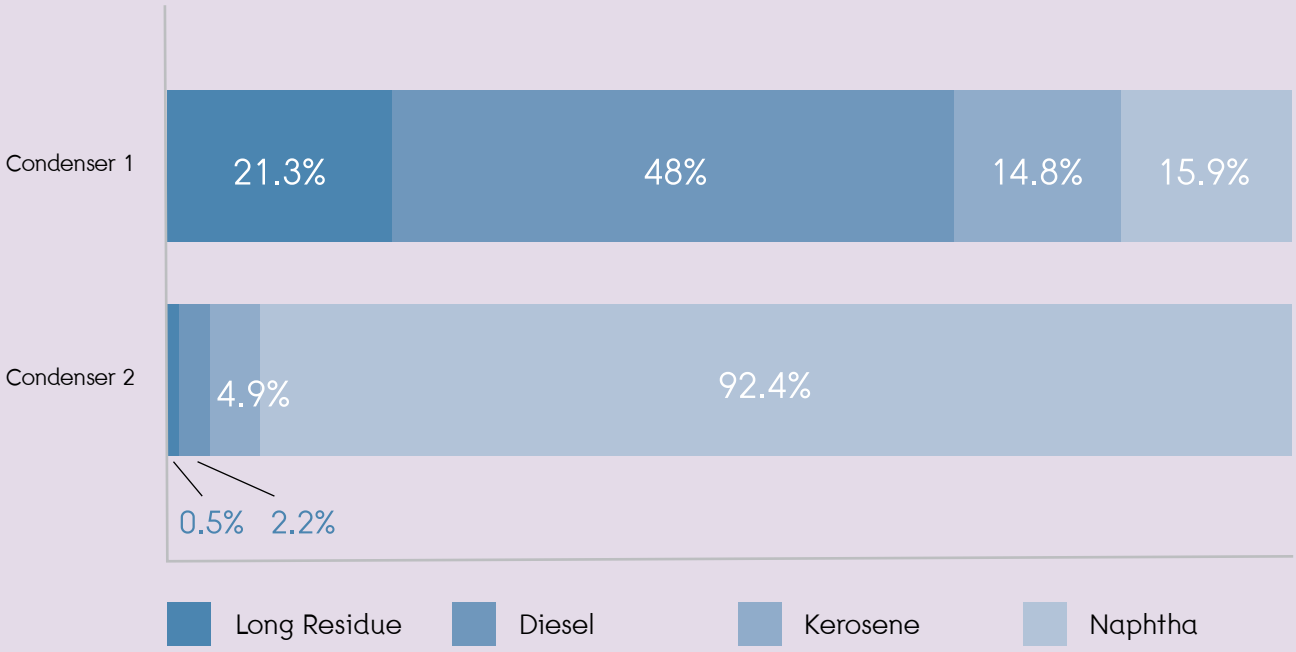


Experiment Date	Operation Time Ignition + Feeding Time (hour)	Fed Raw Materials (kg)	Feeding Rate (kg/hr) (kg/min)	Radiator Temperature (°c)	Pyrolysis Oil Liter (% wt)	Solid Residue kg (%)
11/6/2020	3+7	630	90 (1.5)	385	460 (65.7)	70.5 (11.2)
12/6/2020	3+5	400	80 (1.3)	380	310 (69.7)	38.0 (9.50)
13/6/2020	3+5	300	60 (1.0)	380	180 (54.0)	24.5 (8.16)
14/6/2020	No Operation - Reactor Check					
15/6/2020	3+4	300	75 (1.25)	400	195 (58.5)	32 (10.6)
16/6/2020	3+4.5	337.5	75 (1.25)	425	265 (70.6)	30.5 (9.0)

Table 1 Results of garbage energy electricity production system operation by processing plastic garbage into renewable fuel for diesel

The results of the garbage energy electricity production system operation test from July 11 - July 16, 2020, during which raw materials (300 - 630 kilograms of plastic garbage and biomass) were fed at the rate of 75 - 90 kilograms/hour at a temperature between 380 and 425 degrees Celsius. It was found that 1,269 kilograms of fuel oil products, 195.5 kilograms of solid residue, and 503 kilograms of fuel gas were obtained. The fuel oil obtained in the first condenser consisted of 48% diesel, 15.9% naphtha (benzene), 14.8% kerosene, and 21.3% long residue (heavy oil). In the second condenser, naphtha (92.4%) was mainly obtained.





Solid

Bleached and Unbleached Diesel

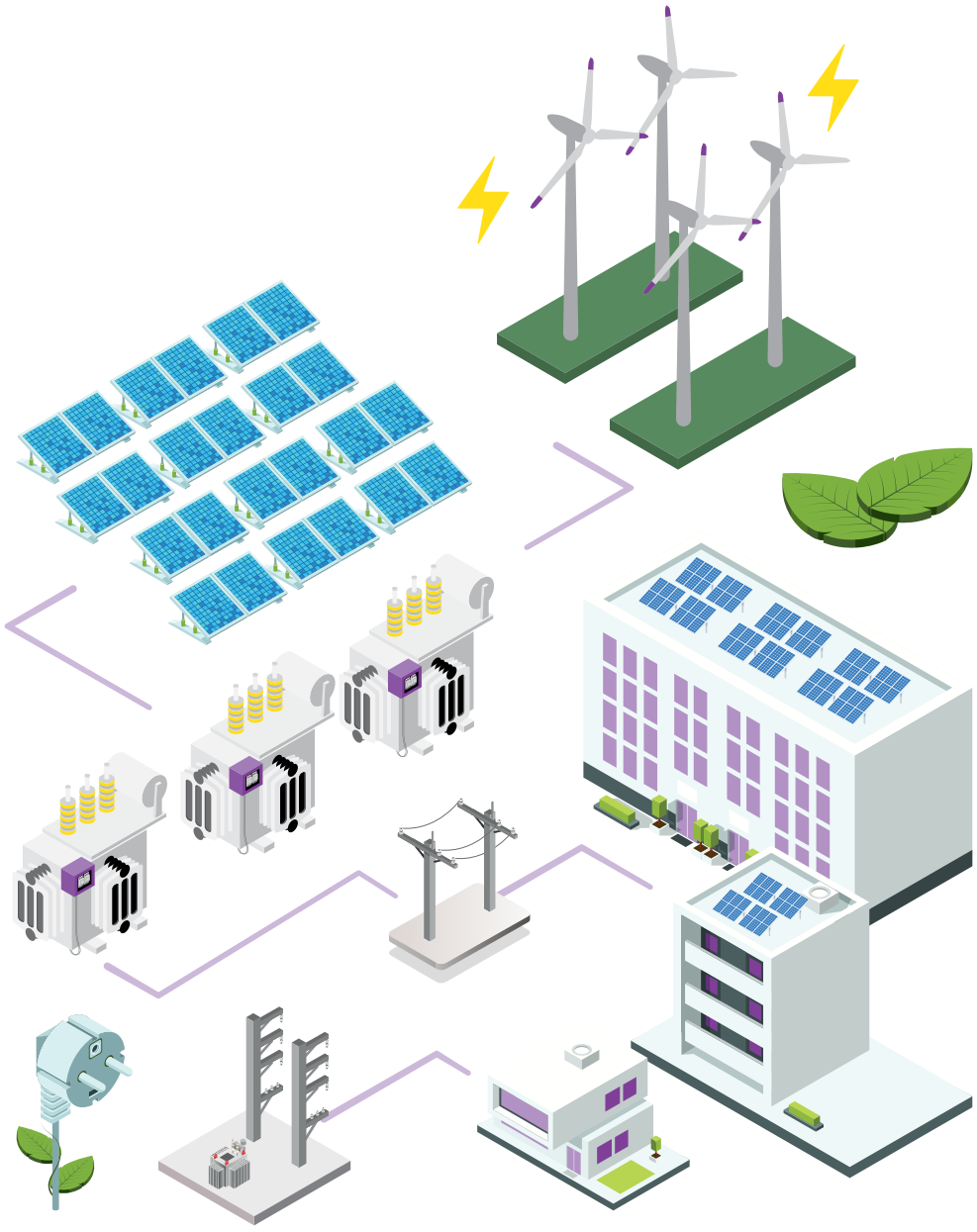
Bleached and Unbleached Gasoline

Picture 2 Components of products and proportions of renewable fuel oil produced in place of diesel

The success in "The Study of Waste Energy Electricity Generation Technology and Development" enabled the PEA and Chulalongkorn University (Academic Service Center) to develop an innovation of 200 kW electric energy production from liquid fuel in place of diesel obtained from plastic garbage and biomass found in community garbage. This technology will be a sustainable prototypical innovation model appropriate for extension to areas without electric system accessibility.

Resource Utilization and Environmental Quality Management [102-11]

Importance to the Organization [103-1]: The PEA realizes the significance of environmental care, so it therefore focuses on natural resource use for efficient operational processes in order to reduce both direct and indirect environmental impacts caused by production and comply with the national policies and strategies, covering the OEA's direct operation of providing electrical services in 74 provinces nationwide. These services include electricity production, distribution, and sale, based on the eco-efficiency assessment criteria, which helps enhance the operational potential of the organization and take responsibility for natural resources and the environment.

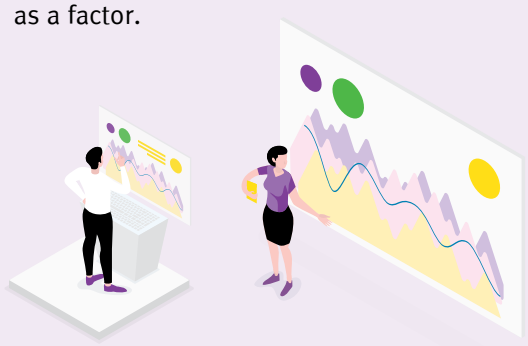


Target [103-2]

- To improve the economically and environmentally appropriate indicators of PEA service provision and specify the work plan of increasing corporate eco-efficiency in accordance with the national policies and strategies; This plan covers the PEA's direct operation of providing its electrical services in 74 provinces nationwide, which include electricity production, distribution, and sale.

Strategy [103-2]

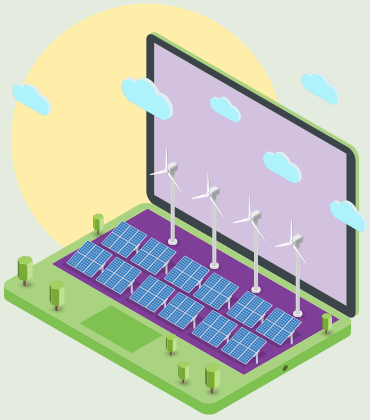
- Consistently improving the organization's operation capabilities based on the results of eco-efficiency assessment.
- Preparation of economic and environmental lists by collecting base-year data and comparing them with the PEA operational eco-efficiency improvement results by collecting the 2020 environmental data as a factor.



Management Approach [103-2]

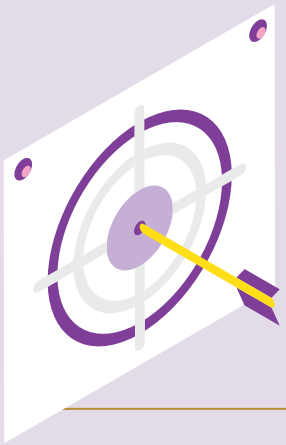
- Specification of measurement and assessment approaches to eco-efficiency as specified in the ISO 14045 approach, which consists of 5 stages:

1. **Goal setting and operational scopes**
2. **Environmental and economic value assessment**
3. **Eco-efficiency assessment**
4. **Interpretation of the study results**
5. **Application**



The three-year (2019 - 2021) medium-range eco-efficiency assessment approaches and plans are specified in order to reduce the environmental effects of resource and raw material use for production and service, and continually improve operational efficiency by using data obtained from the eco-efficiency assessment results.

2020 Outstanding Performances [103-3]

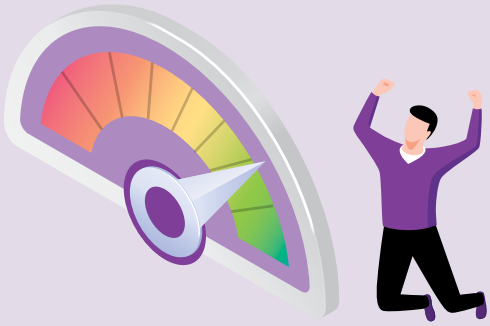


The PEA activity operations between 2018 (base year) and 2020: It was found that the PEA eco-efficiency assessment in 2020 could be conducted more efficiently than in 2018, which was the base year, or

1.0666 times as much

The operation, as specified in the ISO 14045 approach regarding the goal-setting approach and environmental and economic value assessment scope, including eco-efficiency assessment, enabled the PEA to operate, as required by the State Enterprise Policy Committee criteria, at level 5 and with a specified factor X of

1.0636



Changed the Fixed Speed split air condition system to an Inverter type split air condition (uses R-32 refrigerant, which do not destroy the ozone layer, affect global warming 3 times less than R410A refrigerant, and provide 60% more cooling efficiency than R22, 1,543 units) and replaced 15 efficient generators.
Resulting in 2020, the energy consumption of PEA

was decreased 2.07% from 2019

Improvement Plan for Future Operation [103-3] :

- **Improvement and enhancement of chiller system efficiency**
  and reduction of greenhouse gases by 579,962 kg CO_2eq
- **Operation of green offices**
  and reduction of greenhouse gases by 200,000 kg CO_2eq

Appendix

Performance Table

Performance

Information of Committees, Employees, and Business Partners Informed about Anti-Corruption Policy and Measures [205-2]

Group	Number of People Informed about Anti-Corruption Policy and Measures	Percentage
Committees	15	100
Employee by Regions		
Head Office	3,537	94.75
North	5,412	97.30
Northeast	6,547	99.60
Central	6,901	99.64
South	5,284	100
Business Partners		
Trading partners/ Collaborators	1,770	83.33

Information of Committees and Employees Trained on Anti-Corruption Related Courses [205-2]

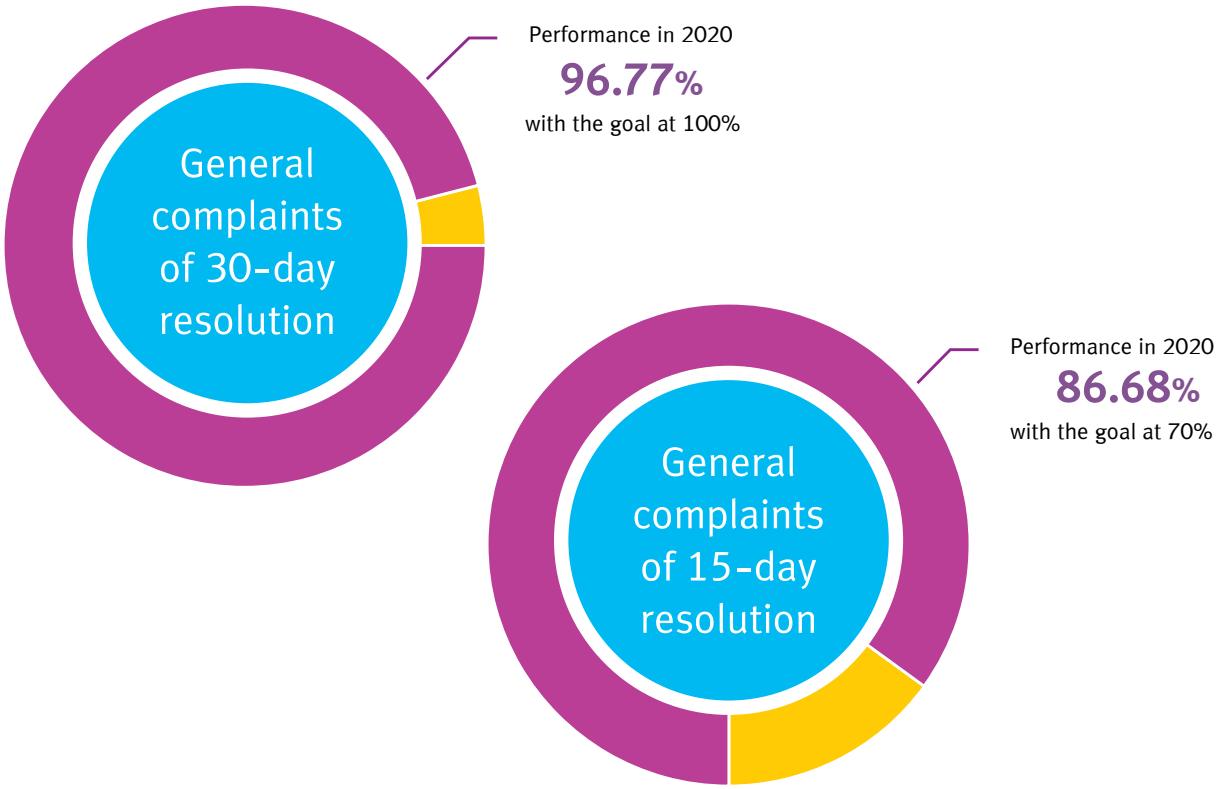
Group	Number of People Trained on Anti-Corruption Courses	Percentage
Committees	9	69.23
Employee by Regions		
Head Office	9,702	100
North	2,234	40.07
Northeast	1,291	19.52
Central	1,464	21.09
South	135	2.55

Complaint Management

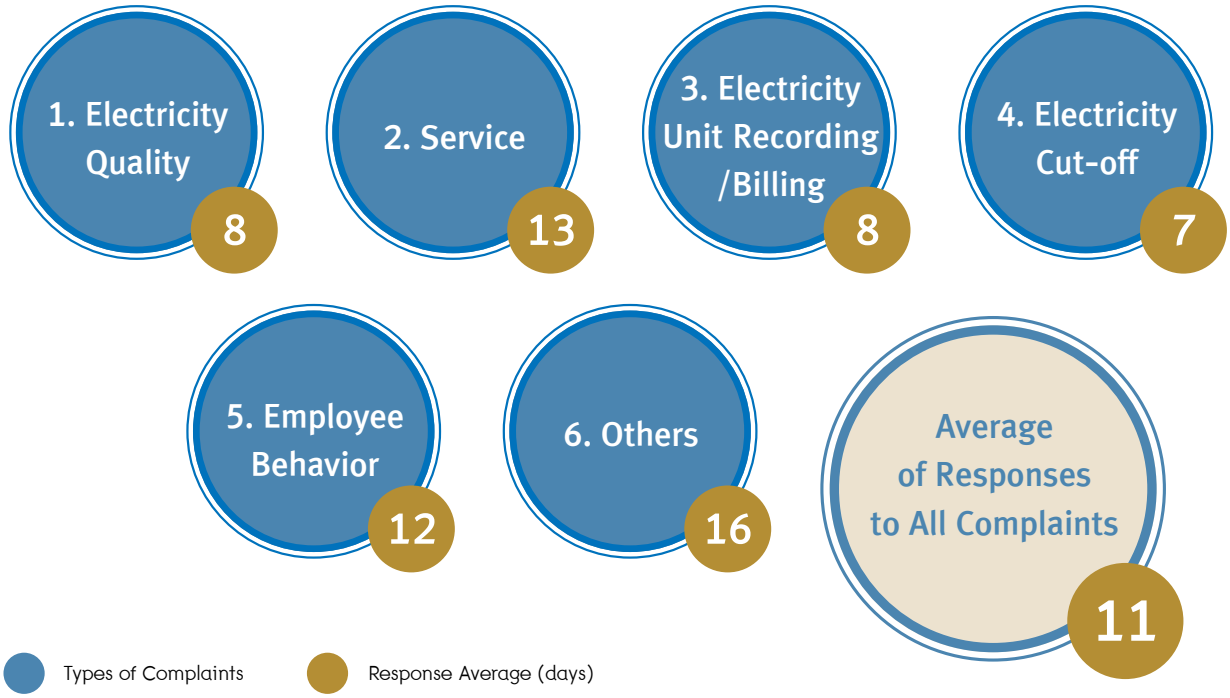
Customer Complaints

	Total number of customer complaints	Number of responses to customer complaints within 15 days	Percentage of customer complaints receiving responses within 15 days	Number of responses to customer complaints within 30 days	Percentage of customer complaints receiving responses within 30 days
2016	1,966	-	-	1,800	91.56
2017	3,689	-	-	3,666	99.38
2018	4,246	3,196	75.27	4,236	99.76
2019	5,036	4,378	86.93	5,028	99.84
2020	4,954	4,294	86.68	4,794	96.77

Percentage of Complaint Management Performance



Average Numbers of Days to Respond to Each Complaint



Remark: Electricity quality includes the average of responses to the complaints of the electricity overload 8 days, electricity flickers 9 days, frequent power outages 8 days, power failure 8 days, electricity leakage 9 days, short circuits 7 days, and others 7 days.

Economic Value [102-7][201-1]

Direct Economic Value Generated and Distributed	2017 (Million Baht)	2018 (Million Baht)	2019 (Million Baht)	2020 (Million Baht)
1) Direct Economic Value Generated				
Revenues	482,963.42	499,253.86	519,767.94	490,109.53
2) Economic Value Distributed				
Operating Costs	428,118.63	451,684.60	475,679.05	453,831.40
Employee Wages and Benefits	24,662.89	23,849.55	27,397.41	22,264.78
Payments to Providers of Capital	3,056.45	2,903.44	2,657.44	2,740.18
Payments to Government	13,857.00	13,350.00	6,715.00	11,343.52
Community Investment	294.54	262.09	739.36	777.17
(1) – (2) Economic Value Retained	12,973.91	7,204.18	6,579.68	(847.52)

Remark: https://www.pea.co.th/เกี่ยวกับเรา/ผลการดำเนินงาน/งบการเงินและผลประกอบการ

Demand Forecast for Electric Power [EU10]

Electric Power Users Number Forecast, Categorized by User Types [EU10]

Information	Existing Values	Forecasted Values (Users)			
	2020	2020	2021	2022	2023
Residences	18,308,892	18,174,859	18,513,412	18,874,388	19,240,538
Increase/(Decrease) Percentage	2.76	2.01	1.86	1.95	1.94
Small Businesses	1,681,395	1,701,308	1,730,643	1,762,139	1,794,952
Increase/(Decrease) Percentage	0.98	2.17	1.72	1.82	1.86
Medium Businesses	82,606	84,525	87,716	90,964	94,204
Increase/(Decrease) Percentage	2.07	4.44	3.78	3.70	3.56
Large Businesses	7,453	7,275	7,438	7,638	7,855
Increase/(Decrease) Percentage	4.35	1.86	2.24	2.70	2.83
Specific Businesses	13,688	14,839	15,631	16,493	17,402
Increase/(Decrease) Percentage	(3.28)	4.85	5.34	5.52	5.51
Non-Profit Organizations	1,063	1,140	1,174	1,214	1,257
Increase/(Decrease) Percentage	(1.21)	5.96	2.95	3.45	3.49
Water Pumps for Agriculture	5,871	5,906	6,226	6,509	6,803
Increase/(Decrease) Percentage	(0.14)	0.46	5.42	4.55	4.51
Temporary Electric Power	371,422	358,557	367,583	377,260	387,383
Increase/(Decrease) Percentage	5.50	1.85	2.52	2.63	2.68
Total	**20,472,390**	**20,348,409**	**20,729,824**	**21,136,607**	**21,550,393**
Increase/(Decrease) Percentage	**2.66**	**2.03**	**1.87**	**1.96**	**1.96**

Remark: The forecast of all electric power users does not include free electric user types such as street and public lights (based on forecast data).

Power Units Sold Forecast, Categorized by User Type [102-7] [EU10]

Information	Existing Values	Forecasted Values (GWh)			
	2020	2020	2021	2022	2023
Residences	37,167	36,597	38,110	39,722	41,401
Increase/(Decrease) Percentage	6.48	4.85	4.13	4.23	4.23
Small Businesses	13,911	14,591	15,190	15,813	16,459
Increase/(Decrease) Percentage	(1.16)	3.67	4.11	4.10	4.09
Medium Businesses	21,554	23,427	24,221	25,047	25,889
Increase/(Decrease) Percentage	(3.82)	4.54	3.39	3.41	3.36
Large Businesses	54,711	60,492	61,880	63,476	65,013
Increase/(Decrease) Percentage	(5.45)	4.54	2.29	2.58	2.42
Specific Businesses	3,094	4,787	5,020	5,264	5,517
Increase/(Decrease) Percentage	(31.75)	5.61	4.87	4.85	4.81
Non-Profit Organizations	71	77	79	82	84
Increase/(Decrease) Percentage	(7.55)	0.05	3.21	3.24	3.27
Water Pumps for Agriculture	417	483	547	605	663
Increase/(Decrease) Percentage	(10.89)	3.30	13.21	10.51	9.67
Temporary Electric Power	925	994	1,003	1,013	1,024
Increase/(Decrease) Percentage	(5.23)	1.87	0.93	0.98	1.01
Total (Excluded free electric power use)	**131,849**	**141,448**	**146,050**	**151,022**	**156,050**
Increase/(Decrease) Percentage	**(2.56)**	**4.54**	**3.25**	**3.40**	**3.33**
Free Electric Power Use	**3,018**	**3,039**	**3,188**	**3,337**	**3,486**
Increase/(Decrease) Percentage	**5.19**	**5.90**	**4.90**	**4.68**	**4.47**

Remark: Free electric power user types are the electricity used for PEA substations, street and public lights, veteran offices, etc. (based on forecast data).

Purchased Units Forecast [EU10]

Information	Existing Values	Forecasted Values			
	2020	2020	2021	2022	2023
Purchased Quantities from Electricity Generating Authority of Thailand (EGAT)					
Electric Energy (GWh)	131,558	141,633	146,347	151,605	156,997
Maximum Electric Power (MW)	20,001	21,324	22,006	22,763	23,540
Purchased Quantities from Department of Alternative Energy Development and Efficiency					
Electric Energy (GWh)	47	108	108	108	108
Maximum Electric Power (MW)	2	12.3	12.3	12.3	12.3
Quantities Generated by Provincial Electricity Authority of Thailand (PEA)					
Electric Energy (GWh)	90	105	105	105	105
Maximum Electric Power (MW)	7	12	12	12	12
Purchased Quantities from Very Small Power Producers (VSPPs)					
Electric Energy (GWh)	10,982	10,839	11,146	11,299	11,378
Maximum Electric Power (MW)	935	836	874	891	900
Total					
Electric Energy (GWh)	**142,677**	**152,684**	**157,705**	**163,116**	**168,587**
Increase/(Decrease) Percentage	**(2.29)**	**4.57**	**3.29**	**3.43**	**3.35**
Maximum Electric Power (MW)	**20,945**	**22,184**	**22,904**	**23,679**	**24,464**
Increase/(Decrease) Percentage	**(4.08)**	**1.59**	**3.24**	**3.38**	**3.32**

Note: Reference to the discrepancy of forecast data.

Reference to the Discrepancy of Forecast Data

With reference to the discrepancy of forecast data, the 2020 – 2023 forecast is a forecast of short-term electricity demand used to prepare the 2020 – 2021 budget of the PEA.

The scope and assumptions used in forecasting electricity demand are as follows:

1) The cost of the 2019 – 2024 forecast frameworks for preparing the 2020 – 2021 budgets of the three electric utilities;

2) Projection of Thailand's economic development, or Gross Domestic Product (GDP), by the Office of the National Economic and Social Development Council, as of July 25, 2017;

3) Use of the Electricity Demand Forecast Model for Long-Term Energy Conservation, improved by the Faculty of Economics, Thammasat University, which consists of

- 3.1 End-Use Model from the Department of Alternative Energy Development and Efficiency (DEDE), and household appliance and building and controls factory survey data, and
- 3.2 Econometric Model;

4) Load Profile in 2017, which will be determined as the base year;

5) The Power Generation Forecast of Very Small Power Producers (VSPPs) is divided into two parts:

- 5.1 Existing projects and projects with government commitments. These are projects that already have a Commercial Operation Date (COD), projects that have a power purchase agreement and are waiting for a COD and projects that have already accepted the purchase of electricity (excluding the status of submitting a request, but not accepting the purchase) for PEA Self-Generation and the part that has been purchased by DEDE, taking into account the currently available value, and
- 5.2 Alternative Energy Development Plan (AEDP);

6) Representative data of power generation characteristics of VSPPs (typical gen. profile) in 2018 from the results of the Dependable Capacity Factor study conducted by EGAT from March – May, 2014, and the FIT data proposed by the EPPO to the NEPC in 2014; and

7) Determination of the unit loss as 5.4% (five-year average) over the entire forecast year.

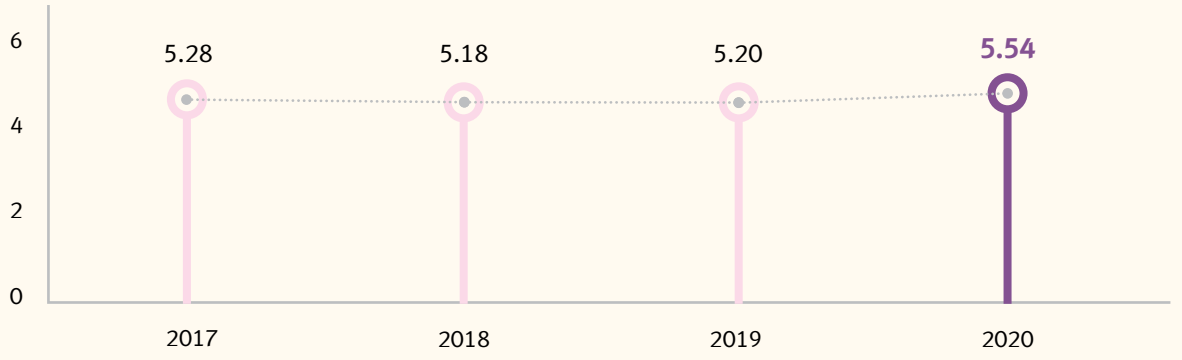
The scope and assumptions used to forecast the number of electricity power users are as follows:

1) Calculation of the historical units of electricity used per user per year;
2) Forecast of units of electricity used per user per year, fixed for the entire forecast year; and
3) Calculation of the forecast value for the number of electricity users with an energy demand forecast per unit per user per year.

These forecast values are based on assumptions that do not take into account the impact of the COVID-19 epidemic situation.

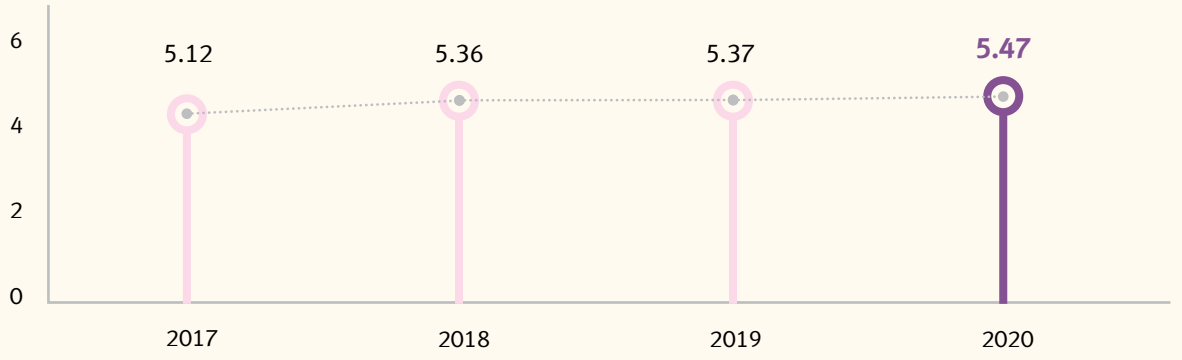
PEA Power Losses [EU12]

Total Target Loss



Percentage of Power Losses in the Transmission and Distribution Systems

Total Loss



Percentage of Power Losses in the Transmission and Distribution Systems

Remark: The data was PEA power losses from the year 2020 (revised February 24, 2021).

Index of Electrical System Stability (SAIFI & SAIDI) [EU28] [EU29]

Type of System Average Interruption Frequency Index (SAIFI) value and the System Average Interruption Duration Index (SAIDI) value	2017	2018	2019	2020
Target Value of SAIFI	4.61	3.86	3.17	2.74
Result Value of SAIFI	4.50	3.81	3.10	2.65
Target Value of SAIFI in 12 major cities	1.314	1.120	1.174	1.036
Result Value of SAIFI in 12 major cities	1.232	1.174	1.036	0.893
Target Value of SAIDI	118.85	87.08	75.78	57.58
Result Value of SAIDI	118.70	89.82	73.82	57.52
Target Value of SAIDI in 12 major cities	18.446	14.784	14.853	13.364
Result Value of SAIDI in 12 major cities	16.528	14.853	13.364	10.558

Remarks:
- Data is from the Electric System Reliability Index Assessment Results Report of 36 major PEA offices which details the electric utility (including all affiliations) with the highest score in 12 cities and industrial areas. SAIFI and SAIDI values are cumulative values over 12 months, as of January 26, 2021.
- The SAIFI and SAIDI indices exclude the three southern border provinces.
- The SAIFI and SAIDI indices of 12 major cities include only electricity interruptions and blackouts, and performance of emergency work caused by the operation of protective equipment at the source station (circuit breaker).
- The target value of SAIFI and the target value of SAIDI come from the evaluation criteria for state-owned enterprises.
- The target value of SAIFI in 12 major cities and the target value of SAIDI in 12 major cities are provided by PEA.

Samples of investment plans that are consistent with the National Development Plan. These plans take into consideration the continuous demand for electricity in the future and financial status of PEA. [former EU6]

Ongoing Projects	Objectives	Operation Details
Transmission and Distribution System Development Project, 1st Stage	1) To develop electric power system to efficiently distribute power supply and serve increasing demand. 2) To create reliable and stable power system. 3) To increase the efficiency of transmission and distribution power system in order to be ready for an effective, safe, and international standard serve. 4) To reduce loss unit in distribution system. 5) To install high quality and high standard power transformer and other electric equipment in order to improve and connect distribution system in important areas.	• Construct transmission lines system (115 kV). • Construct loop lines (115 kV). • Construct 22/33 kV high-voltage distribution system. • Construct low-voltage distribution system.
Micro Grid System Development Project at Mae Sariang District, Mae Hong Son Province	1) To study and develop a micro grid controller system. 2) To plan and operate power systems using various types of small power generation sources, and to maximize the potential of the system to increase the stability, reliability, and quality of the entire power system. 3) To reduce the time and cost of operation and maintenance, and reduce the loss in the production and distribution system with long routes. 4) To support the government's policy to develop the local electrical system into a smart grid with renewable energy power generation.	Operating area: Mae Sariang District, Mae Hong Son Province Amount of work: 1) Install the load brake switch with protection device system for 13 sets. 2) Construct a control building and install 1 micro grid control system. 3) Install a battery energy storage system (3 MW/1.5 MWh). 4) Install a communication system. 5) Install a data link system.
Budgets for ongoing projects		

Investment Budget (Million Baht)	Targets	Operation Results
62,678.71	PEA operates in 4 regions, each region divides into 3 area offices, with the total of 12 PEA area offices. Each PEA area office has its PEA province offices under its responsibility.	Project progress 26.15% as of December 2020
265	1) This project corresponded to the national energy stability plan, benefited people's way of life, and brought security for people's assets. 2) Efficient, stable, and reliable electric power generation and distribution systems which help reduce power interruption problems and increase customers' satisfaction. 3) Promoted electric power generation by using renewable energy, supported power distributed by renewable energy to be more efficient, reduced greenhouse gas emission and its impact on the environment. 4) Lessened operation and maintenance problems, mitigated loss in transmission and distribution system. 5) Developed and improved electric power system in the area by using Micro Grid that could be technologically upgraded to Smart Grid at Mae Sariang District, Mae Hong Son Province.	The Micro Grid project at Mae Sariang District, Mae Hong Son Province was completed in June 2020.
62,943.71 Million Baht		

Planned Initiatives in the Next 3 Years	Objectives	Operation Details	
Transmission and Distribution System Development Project, 2nd Stage	1) To develop transmission and distribution system, and construct a new substation to be an automatic substation (Substation Automation System) based on IEC 61850, in order to efficiently and safely distribute power supply and serve increasing demand. 2) To increase the efficiency, stability, and reliability of the electric power system, reduce problems in maintenance operations, and lessen the unit loss in the distribution system. 3) To improve and connect electricity distribution systems in business areas, industries, industrial estates, and important areas to increase stability in the electrical power system.	• Construct transmission lines system (115 kV). • Construct loop lines (115 kV). • Construct 22/33 kV high-voltage distribution system. • Construct low-voltage distribution system.	
Micro Grid Development Project at Phaluai Island, Surat Thani Province	1) To be able to distribute electric power to people on Phaluai Island, who had no electricity. 2) Efficiently manage the electric power system. 3) Encourage electricity generation that uses renewable energy and energy storage system. 4) Reduce diesel utilization in generating electricity.	Operating area: Phaluai Island, Surat Thani Province Amount of work: 1) 1,000 kWp Solar energy 2) 600 kW Diesel power generation system 3) 500 kW/1,500 kWh Energy storage system 4) Control building with Micro Grid system installed 5) Micro Grid control system 6) Install circuit breaker and communication system in distribution system. • high-voltage (50 SAC) 3.7 circuit-kilometers • low-voltage (50 AW) 2.5 circuit-kilometers 7) 400 kVA distribution transformer	
Budgets for planned initiatives in the next 3 years			
Grand Total			

Investment Budget (Million Baht)	Targets	Operation Results
77,334	PEA operates in 4 regions, each region divides into 3 area offices, with the total of 12 PEA area offices. Each PEA area office has its PEA province offices under its responsibility.	• The cabinet approved the transmission and distribution system development project on 26th May 2020. • Deputy Governor on Construction and Project Management is currently the Project Director.
172	To increase stability on the island, reduce power generation that uses diesel engine, and support economic expansion.	• The cabinet approved the Micro Grid project at Phaluai Island, Surat Thani Province on 21st July 2020. • The suitability of the land is currently being assessed.
		77,506 Million Baht
		140,449.71 Million Baht

Access [former EU23]

Details	(household) 2017	2018	2019	2020
Total households throughout Thailand	21,513,363	21,885,053	22,276,963	22,614,562
Households with access to electricity	21,464,395	21,834,757	22,231,831	22,557,122
• Access by pole installation and conductor stringing	21,400,658	21,772,856	22,171,477	22,499,889
• Access by solar cell systems installation	62,244	59,925	58,418	55,297
• Others (Electric power from other organizations, such as military areas, Petroleum Authority of Thailand, Department of Alternative Energy Development and Efficiency, Royal Irrigation Department, private power, project cancellation due to population migration)	1,493	1,976	1,936	1,936
Households without access to electricity	48,968	50,296	45,132	57,440
• Households in regular areas waiting to join the project	22,296	23,559	20,458	17,484
• Households in restricted areas, but with entry permission from the agencies governing the areas	771	436	-	-
• Households in restricted areas, such as areas with protected forests, national parks, military areas, which need permission from relevant agencies	25,453	25,794	24,170	38,125
• The electrification project not carried out due to failure to meet the PEA criteria	448	507	504	1,831

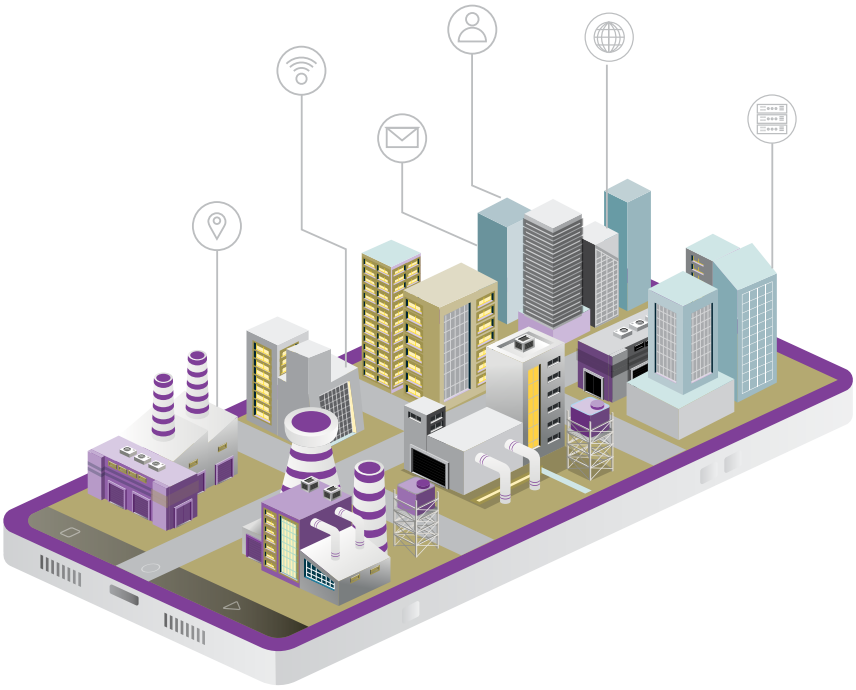
Remark: Data from the Technology Administration and Development on Registration Division, Bureau of Registration Administration, Department of Provincial Administration as of 31st December 2020.

Demand-Side Management [former EU7]

Approach/Measure on DSM (Demand-Side Management)	Objectives	Groups	Target Groups Operated in 2020
Counseling services for power management in business and industrial sectors	To support energy efficiency in business and industry.	Business sector	SAIC Motor-CP Co., Ltd.
			Sri U-thong Grand Hotel
			Vasidtee City Hotel
			Songphanburi Hotel
			Siam Makro Public Company Limited
			Sermthai Complex Co., Ltd.
		Industrial sector	Thai Alcohol Public Company Limited, Sint Ek Panich Co., Ltd.
			Tobacco Authority of Thailand
			Eaknitiphol Grinding Limited Partnership
			Plyngamparawood Co., Ltd.
			AA Rubber Co., Ltd.

Technology/Improvement Guideline	Verification Method	Result in 2020 (GWh)	Budget (Million Baht)
Replace all light bulbs with energy-saving LED bulbs.	IPMVP Option A	1.53	0.15
Change to split type air conditioning.	IPMVP Option A	0.37	0.15
Change to split type air conditioning.	IPMVP Option A	0.1	0.15
1) Change chiller to oil-free magnetic bearing VSD centrifugal chiller. 2) Install a VSD to control motor speed.	IPMVP Option A	0.43	0.15
Install a VSD to control motor speed.	IPMVP Option A	0.07	0.15
Replace all light bulbs with energy-saving LED light bulbs.	IPMVP Option A	0.503	0.15
1) Install a VSD on the cooling tower. 2) Replace the fan blades on the cooling tower. 3) Reduce wind leakage. 4) Replace the defective steam trap.	IPMVP Option A, B	2.589	0.15
1) Change chiller to an oil-free magnetic bearing one. 2) Change air compressor to be more efficient. 3) Change to LED energy-saving lamps.	IPMVP Option A, B	5.9	0.15
1) Install an automatic drain system on the air tank. 2) Turn off the air pump during the lunch break.	IPMVP Option A, B	0.144	0.15
1) Install a VSD to control motor speed. 2) Change to a high-efficiency motor. 3) Replace the belt. 4) Service the belt.	IPMVP Option A, B	0.511	0.15
1) Increase efficiency in the compressed air system. 2) Change to a high-efficiency motor. 3) Reduce wind leakage.	IPMVP Option A, B	0.05	0.15

Approach/Measure on DSM (Demand-Side Management)	Objectives	Groups	Target Groups Operated in 2020	
Counseling services for power management in business and industrial sectors	To support energy efficiency in business and industry.	Institutional sector	Fort Suranari Hospital	
		Total		
Government sector's energy conservation promotion	To promote energy efficiency in the government sector.	Institutional sector	Ramkhamhaeng University	
		Total		
PEA's energy conservation promotion		Business sector	PEA office building	
		Total		
Grand Total				



Technology/Improvement Guideline	Verification Method	Result in 2020 (GWh)	Budget (Million Baht)
1) Install VSDs on the chiller water pump (two sets). 2) Shut down some chilled water pumps with a light load.	IPMVP Option A, B	0.501	0.15
		12.698	**1.8**
Change to high-efficiency chiller (15 units).	IPMVP Option B	5.02	1
		5.02	**1**
Change to split type air conditioning (90 units).	IPMVP Option A	0.15	2.34
		0.15	**2.34**
		17.868	**5.14**

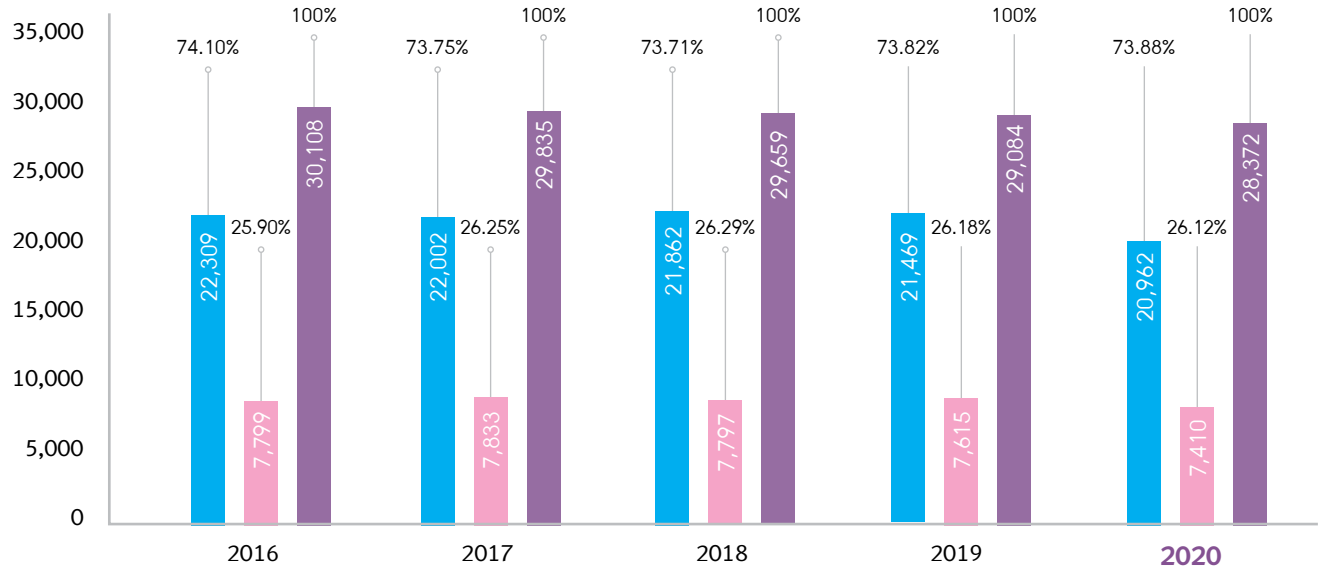
Remarks:
- Information from Pilot Projects Operation Final Report on Energy Efficiency Resource Standards (EERS) Promotion Measures in 2020
- Utilized verification method by measuring energy usage before and after equipment improvement, following Measurement and Verification method by Department of Alternative Energy Development and Efficiency, which referred to the International Performance Measurement and Verification Protocol (IPMVP) developed by EVO (Efficiency Valuation Organization) used to encourage investment in energy conservation projects. There are options as follows:
  - Option A (Retrofit Isolation-Measure key parameters): Measure key parameters that have effects on savings. It can be measured short-term or continuously, depends on whether the variables are constant or not. Parameters not selected for measurement are estimated from historical data, manufacturer's data, or recommendations, but there should be sources and rationality, and uncertainty analysis.
  - Option B (Retrofit Isolation-Measure all parameters): Measure all parameters short-term or continuously, depends on the change of that variable and reporting period.
  - Option C (Whole Facility): Energy consumption is measured for the whole facility from utility bills and measured continuously for the entire reporting period. Baseline is adjusted according to the changing independent variables.
  - Option D (Calibrated Simulation): Savings are determined by using simulation. The simulation is calibrated to ensure its accuracy.
- Variable Speed Drive (VSD)

People

Total Number of Personnel by Gender [102-8]

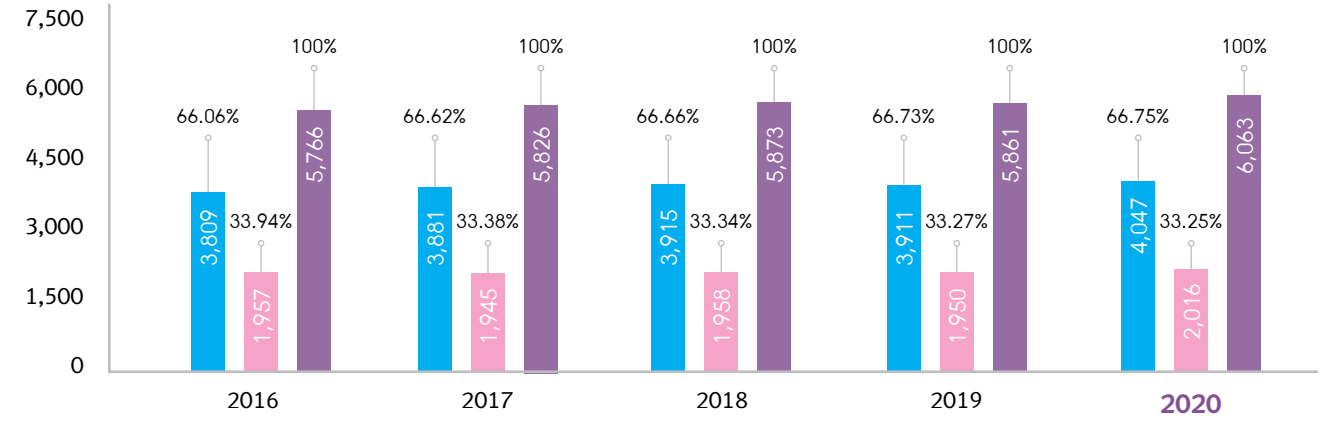
Male Female Total

Employee (persons)



Worker (persons)

Male Female Total



Net Total	35,874	35,661	35,532	34,945	34,435

Remarks: **Employees** refer to (1) Groups of Directors such as PEA Deputy Governor, Assistant Governor/Executive Director of PEA Area/Executive Director of Internal Audit Bureau/Executive Director of Legal Office/Executive Director of Office of the Governor, Director of Department/Senior Manager attached to PEA Area/Manager of PEA Grade 1, Deputy Director of Department, Manager of Division, Director of Center, Manager of PEA Electric Vocational School, Manager of PEA Grade 2 – 3 or those in equivalent positions, Deputy/Assistant Manager of Division, Deputy/Assistant Director of Center, Deputy/Assistant to PEA Electric Vocational School Directors, PEA Deputy Managers Grade 1 – 2, Manager of PEA Branch, Assistant Manager of PEA Grade 3, Chief of Section, Manager of PEA Sub-branch, Assistant Chief of Section (2) Groups of Specialists such as Expert Level 12 – 13, Professional Officer Level 9 – 11, Specialists Level 9, Specialists Level 8, Professional Officer Level 7 – 8, Technical Officer Level 7, and (3) Operational Staff including Professional Officer/Technical Officer Level 4 – 6, Technical Officer Level 2 – 3.

Workers refer to monthly workers, or those contracted to work for employers in order to receive monthly salaries. Their recruitment is based on manpower plans, covering those hired to work for the offices of Governor, Deputy Governor, and Assistant to Governor. They include drivers and maids. [403-1]

Total Number of Personnel by Area [102-8]

Employee

2016 (persons)	2017 (persons)	2018 (persons)	2019 (persons)	2020 (persons)
Head Office 4,137	Head Office 4,105	Head Office 4,128	Head Office 4,040	Head Office 3,917
North 6,099	North 6,023	North 5,926	North 5,769	North 5,572
Northeast 6,980	Northeast 6,912	Northeast 6,944	Northeast 6,786	Northeast 6,610
Central 7,268	Central 7,196	Central 7,103	Central 7,054	Central 6,953
South 5,624	South 5,599	South 5,558	South 5,435	South 5,320
Total 30,108	Total 29,835	Total 29,659	Total 29,084	Total 28,372

Worker

2016 (persons)	2017 (persons)	2018 (persons)	2019 (persons)	2020 (persons)
Head Office 248	Head Office 249	Head Office 167	Head Office 168	Head Office 170
North 1,211	North 1,169	North 1,233	North 1,163	North 1,212
Northeast 1,350	Northeast 1,440	Northeast 1,421	Northeast 1,525	Northeast 1,564
Central 1,723	Central 1,704	Central 1,752	Central 1,693	Central 1,775
South 1,234	South 1,264	South 1,300	South 1,312	South 1,342
Total 5,766	Total 5,826	Total 5,873	Total 5,861	Total 6,063

Number of New Employee Hires and Turnovers [401-1]

New Employee Hires		2017		2018		2019		2020	
Employee criteria and components		(persons)	%	(persons)	%	(persons)	%	(persons)	%
Numeric changes		954	3.20	1,097	3.70	1,133	3.90	843	2.97
Gender	Male	671	2.25	797	2.25	884	3.04	601	2.12
	Female	283	0.95	300	0.95	249	0.86	242	0.85
Age	< 30 years	872	2.92	966	2.92	916	3.15	764	2.69
	30 - 50 years	82	0.27	131	0.27	213	0.73	79	0.28
	> 50 years	0	0.00	0	0.00	4	0.01	0	0.00
Area of operations									
	Head office	228	0.76	306	0.76	232	0.80	145	0.51
	North	189	0.63	172	0.63	226	0.78	152	0.54
	Northeast	165	0.55	259	0.55	218	0.75	162	0.57
	Central	188	0.63	198	0.63	273	0.94	240	0.85
	South	184	0.62	162	0.62	184	0.63	144	0.51

Employee Turnovers [401-1]

Employee criteria and components		2017		2018		2019		2020	
		(persons)	%	(persons)	%	(persons)	%	(persons)	%
Numeric changes		1,234	4.14	1,466	4.94	1,704	5.86	1,545	5.45
Gender	Male	253	0.85	1,131	3.81	1,275	4.38	1,098	3.87
	Female	981	3.29	335	1.13	429	1.48	447	1.58
Age	< 30 years	30	0.10	30	0.10	39	0.13	24	0.08
	30 - 50 years	50	0.17	51	0.17	50	0.17	34	0.12
	> 50 years	1,154	3.87	1,385	4.67	1,615	5.55	1,487	5.24
Area of operations									
	Head office	196	0.66	219	0.74	225	0.77	208	0.73
	North	287	0.96	339	1.14	418	1.44	354	1.25
	Northeast	253	0.85	321	1.08	415	1.43	376	1.33
	Central	266	0.89	326	1.10	329	1.13	335	1.18
	South	232	0.78	261	0.88	317	1.09	272	0.96

Number of Employee Turnovers [401-1]

Causes of Employee Turnover

- Retirement before 60 years of age: 300 Persons
- Retirement at 60 years of age: 1,123 Persons
- Death: 66 Persons
- Dismissal: 10 Persons
- Resignation: 37 Persons
- Lay-off: 8 Persons
- Discharge or forced resignation: 1 Person
- Termination of employment: - Persons

Total 1,545 Persons

Benefits and Welfare of PEA Employees and Workers [401-2]

Benefits and Welfare for Personnel	Personnel		Remarks
	Employee	Worker	
Compensation or retirement fund	✓		Only for retired staff/based on salary
Overtime and working on holidays payments	✓		Based on salary rate
Aid fund	✓		Only for employees who are union members
Funeral funds	✓		Based on salary rate
Medical care expenses and compensation for lost income	✓		-
Child support aid	✓		-
Paid leave as required by law	✓		-
Contribution fund	✓		Only for employees who are union members
Per diem for domestic and overseas travel for temporary duty assignment (TDY)	✓		Only for approved employees
House rental fee	✓		Must be approved for rental fee approval
Employee uniforms expenses	✓		Only for employees of certain positions
Compensation for employees on duty during power outages	✓		-
Extra payment for employees on work shifts	✓		Based on salary rate

Benefits and Welfare of PEA Employees and Workers [403-6]

Benefits and Welfare for Personnel	Personnel		Remarks
	Employee	Worker	
Overtime and working on holidays payments for employees who worked at the station that distributes electricity from small plant	✓		Based on salary rate
Extra payment for hotline operators	✓		Only for hotline operators
Extra payment for drivers of passenger vehicles or trailers	✓		-
Extra payment for drivers	✓		Only for mechanic staff
Salary promotion	✓		-
Compensation for special area	✓		Only for approved area
Medical care expenses (for employees including parents, spouse, and children)	✓		For workers including spouses and children
School expense support for children	✓		-
Child delivery expense support	✓		For female staff
Ordination expense support	✓		For male staff
Expense support for fire and other disasters	✓		-
Electricity expense support	✓		Based on salary rate
Payment for risk taking (Southern region)	✓	✓	Only the three southern border provinces

Benefits and Welfare for Personnel	Personnel		Remarks
	Employee	Worker	
Loans	✓		-
Funeral expense support	✓		Only for employees who are union members
Transportation service for staff	✓	✓	-
Loans for children's school fees	✓		-
Medical care within PEA medical institutes	✓	✓	-
Phone expense support for executive staff	✓		According to position
Employer-provided cars	✓		According to position
Combat pay	✓		The payment is given before joining the PEA
Extra payment for special professions	✓		According to position
Aid for staff who face legal troubles from their operations	✓	✓	-
Right to wear a uniform	✓		-
Right to receive Thai royal decorations	✓		For chief section position and the higher position
Right to use PEA nurseries	✓		-

Parental Leave [401-3]

Reasons for Taking Leave	2017	2018	2019	2020
Total number of employees who were entitled to parental leave (persons)	22,002 / 7,833	21,862 / 7,797	21,469 / 7,615	20,962 / 7,410
Total number of employees who took parental leave (persons)	355 / 194	394 / 202	426 / 217	409 / 166
Total number of employees who returned to work after parental leave ended (persons)	355 / 190	373 / 166	420 / 209	409 / 157
Total number of employees who returned to work after parental leave ended and who were still employed 12 months after their return to work (persons)	268 / 155	355 / 190	373 / 166	419 / 209
The Return to Work Rate (1) for employees who returned to work after parental leave ended (%)	100 / 98	95 / 82	99 / 96	100 / 95
The Retention Rate (2) for employees who returned to work after parental leave ended (%)	100 / 100	100 / 100	100 / 100	99 / 100

Remarks: (1) Return to Work Rate = (number of employees returning to work after parental leave ended/number of employees, by gender, that used their entitlement for parental leave) × 100

(2) Retention Rate = (number of employees who returned to work after parental leave ended and were still employed 12 months after their return to work/number of employees who returned to work after parental leave ended in the previous reporting cycle) × 100

Average Hours of Employees Training [404-1]

Hours of Employee Training	2017	2018	2019	2020
Average hours of employee training (hours/person/year)	20.28	20.16	27.40	22.27

Average hours of employee training, by gender (hours/person/year)	2017	2018	2019	2020
Male	23.06	70.29	74.51	24.11
Female	11.74	29.70	25.48	17.62

Average hours of training, by position (hours/person/year)	2017	2018	2019	2020
Executive Level	-	-	-	7.63
Expert Level	-	-	-	11.27
Operating Level	-	-	-	18.62

Employee with Regular Operation Assessment and Career Development [404-3]

Staff Operation Assessment Information	Operation Assessment Criteria				
	Success of policy-based operations or operations carried out as instructed by superiors	Operation by responsibility	Operation by creativity	Conventional behaviors in relation to operations	Others (specify)
Percentage of employees assessed according to the operation assessment criteria, by gender					
Male	73.88	73.88	73.88	73.88	-
Female	26.12	26.12	26.12	26.12	-
Percentage of employees assessed according to the operation assessment criteria, by position					
Executive Level	26.31	26.31	26.31	26.31	-
Expert Level	16.70	16.70	16.70	16.70	-
Operating Level	56.99	56.99	56.99	56.99	-

Authorization and Delegation Duties for Occupational Safety, Health, and Environment Committees

Work Unit	Executive Committee (persons)	Employee Committee (persons)	Secretary (Safety Officer for Work Unit Operation) (persons)	Total (persons)
Head Office	7	7	1	**15**
Area Office	7	7	1	**15**
Operational and Maintenance Offices outside the area offices	4	4	1	**9**
Procurement Department, Procurement Administrative Division 3 (Rangsit)	3	3	1	**7**
PEA Offices with 50 - 99 staff members, employees, and workers	2	2	1	**5**
PEA Offices with over 100 staff members, employees, and workers	3	3	1	**7**
PEA Concrete Plants	3	3	1	**7**

The Occupational Safety, Health, and Environment Committee has the authority and duty to carry out the following:

1) Consider policies and plans concerning the safety within the work processes and others to prevent and reduce accidents, harms, illnesses, or nuisances resulting from work or work safety hazards and present the matter to the executives;

2) Report and suggest measures or improvement guidelines that are in accordance with work safety and safety standards laws to executives for the safety of staff members, employees, laborers, contractors, and outsiders who come in for operation or to receive services inside the PEA;

3) Promote and support PEA safety activities;

4) Consider regulations and manuals concerning work safety as well as safety standards in the PEA;

5) Investigate work safety operations and verify statistics of dangers that occur within the PEA at least once a month;

6) Consider programs or training plans concerning work safety as well as programs or training plans concerning responsibility for the safety of employees, supervisors, executives, and all levels of personnel to present to the PEA;

7) Establish a system where reporting unsafe work conditions are a duty of every staff member and employee at every level;

8) Follow up on the issues presented to the executives;

9) Report annual operation results, specifying problems, obstacles, and suggestions for operating the committee, after being on duty for one year, to the executives;

10) Assess safety operation results for the PEA;

11) Be able to invite representatives from related work units to join a meeting, discuss, give information, or clarify related documents;

12) Allow the Chairperson to appoint a working committee to operate on various matters as deemed appropriate in the meeting; and

13) Operate on other safety issues as dictated by the PEA.

Remark: The meeting shall be conducted at least once a month as dictated by law.

The Number of Employees/Workers Covered by an Occupational Health and Safety Management System [403-4] [403-1] [403-7]

Employees/workers covered by an occupational health and safety management system

- Employees and workers: 34,435 (persons) — 100%
- Workers who were not employees (contracted workers): 22,703 (persons) — 100%

Employees/workers covered by an occupational health and safety management system that is verified by the organization

- Employees and workers: 34,435 (persons) — 100%
- Workers who were not employees (contracted workers): 22,703 (persons) — 100%

Employees/workers covered by an occupational health and safety management system that is verified or approved by third party

- Employees and workers: 1,091 (persons) — 3.17%
- Workers who were not employees (contracted workers): 1,307 (persons) — 5.75%

Work-Related Injuries [403-9]

Rates of fatalities and injuries of employees and workers who were not employees but whose work and/or workplace was controlled by the organization	Number of the injured by type of injury (persons)					Total (persons)	Work Hours	Fatalities/ injuries (calculated based on 200,000 work hours)
	Burns	Electric shock	Vehicles	Falling from great heights	Other (specify), being hit by objects, slips			
Fatalities and injuries (employees and workers)								
Work-related fatalities and injuries	-	-	-	-	-	-	64,755,600	-
Work-related high-consequence injuries (excluding fatalities)	2	8	4	3	2	19		0.058682
Recordable work-related injuries (including fatalities)	2	8	14	3	6	33		0.101922
Fatalities and injuries of workers who were not employees but whose work and/or workplace was controlled by the organization (contracted workers)								
Work-related fatalities and injuries	-	8	1	2	-	11	41,319,460	0.053244
Work-related high-consequence injuries (excluding fatalities)	1	7	3	15	15	41		0.072605
Recordable work-related injuries (including fatalities)	2	18	10	18	27	75		0.072605

Explain criteria used by the organization to classify which dangers are related to work which leads to risks leading to high-consequence injuries.

Criteria used to assess risks which are based on consideration of the relationship between severity and chance of occurring and have been agreed on as follows: severity and chance of occurrence.

Specify dangers related to work which leads to risks of high-consequence injuries.

- Electrocutions
- Vehicles
- Falling from great heights
- Falling/crashing objects

Dangers Related to Work with Risks of High-Consequence Injuries [403-7]

Specify work characteristics or other dangers which may lead to high-consequence injuries:

- Electric current flow backward;
- Improvement of a distribution system with multiple operations;
- Distribution system fixture.

Operation guidelines to eliminate dangers and decrease risks by using levels of control:

- Establish an accident investigation committee;
- Set up/improve measures/standards of operations;
- Search for information on equipment which can decrease the severity of accidents;
- Random checks at each operation step, according to the checklist.

Planet

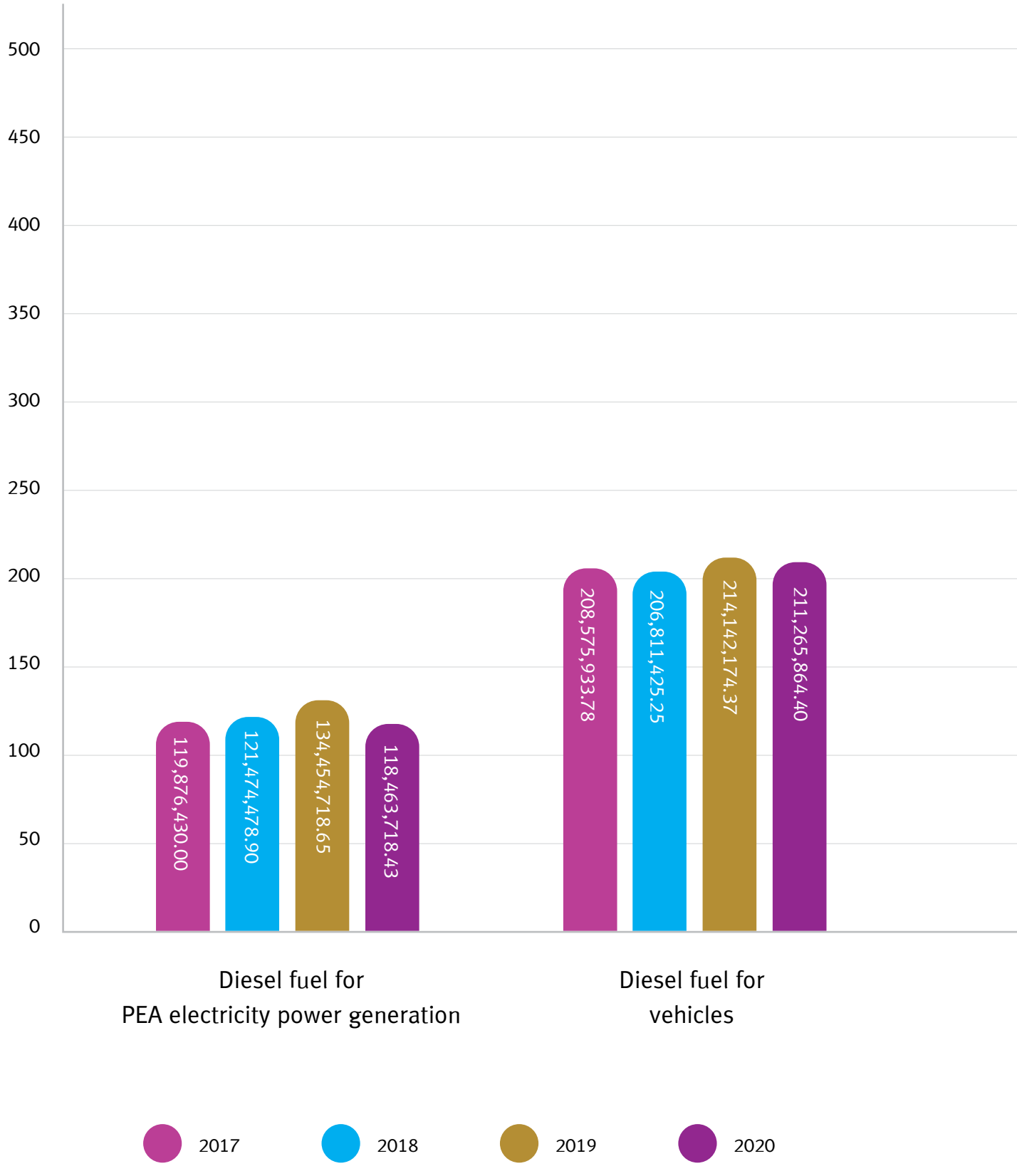
Information on Materials Used in Production and Services [301-1]

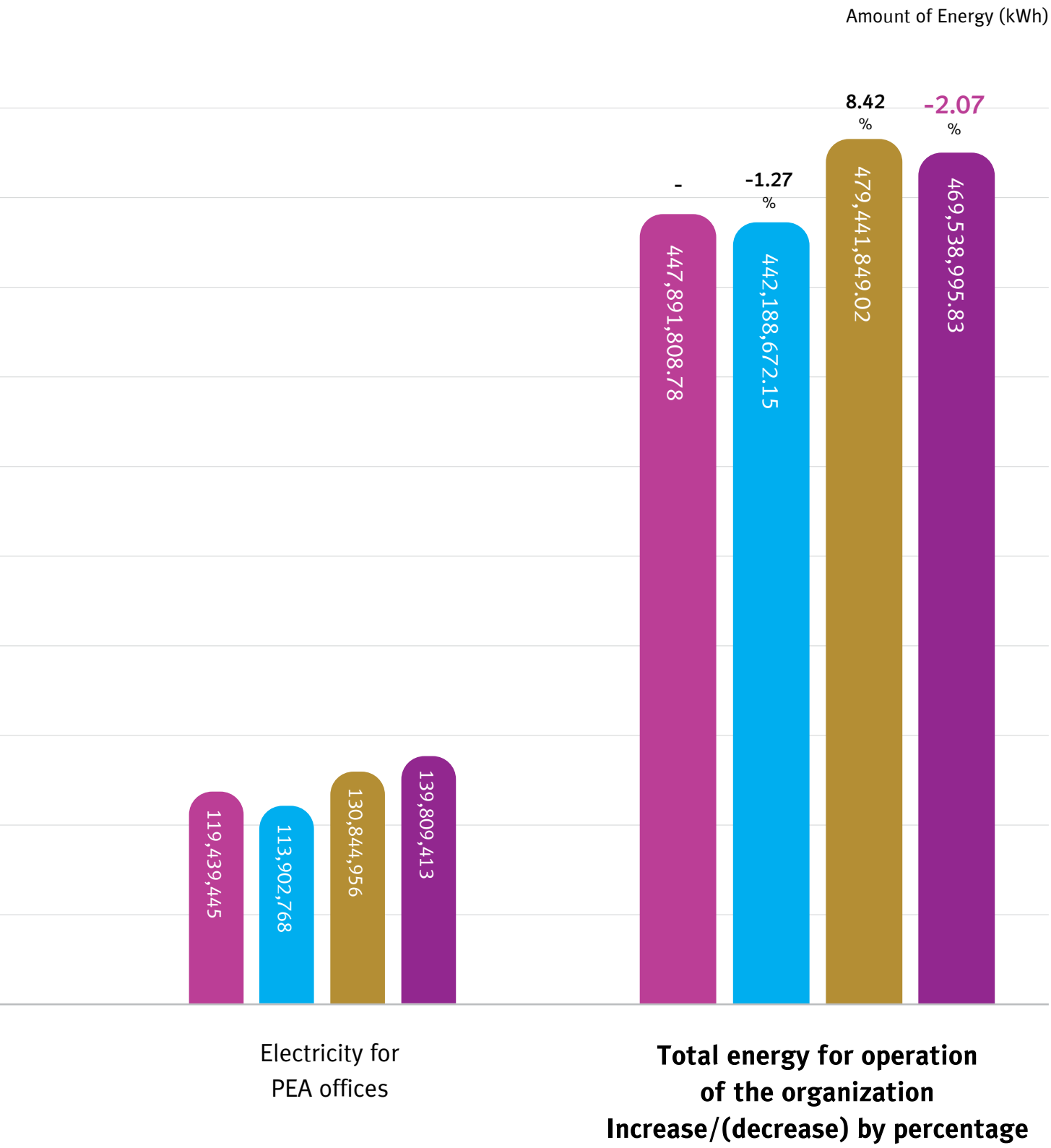
List of materials used in production services	Unit	Amount			
		2017	2018	2019	2020
Non-renewable materials					
Diesel fuel for PEA electricity power generation	Liters	11,849,400	12,007,362	13,290,417	11,709,758
Diesel fuel for vehicles	Liters	20,617,061	20,442,645	21,167,266	20,882,952
Transfer oil	Liters	439,800	973,200	670,218	1,641,600
Electricity for PEA Office	Kilowatt-hours	119,439,445	113,902,768	130,844,956	139,809,413
SF6 (Sulphur Hexafluoride)	Kilograms	1,089.80	978.60	560.00	820.00
R-22	Kilograms	3,685.85	2,985.72	2,037.62	0.00
R-501	Kilograms	5.00	0.00	0.00	0.00
R-12	Kilograms	7.00	0.00	27.00	1,454
R-123	Kilograms	181.44	0.00	0.00	0.00
R-134a	Kilograms	155.90	8.30	153.00	32
R-32	Kilograms	8.00	17.70	149.00	39
R-410A	Kilograms	90.00	30.00	387.00	44
Self-produced concrete poles	Poles*	No data collection	1,712	1,170	1,825
Procured concrete poles	Poles*	No data collection	18,015	14,786	18,522
Renewable materials					
A4 paper	Kilograms	702,596.54	543,189.50	323,808.58	127,498
Thermal paper	Kilograms	74,906.80	107,099.46	214,398.81	6,133,184
Water supply	Cubic meters	No data collection	1,159,986.44	1,268,641.00	1,513,664

Material Type			Source of materials (purchased from external supplier or in-house supplies)
Raw Materials	Associated Process Materials	Components	
✓	-	-	External Supplier
-	✓	-	External Supplier
-	-	✓	External Supplier
-	✓	-	External Supplier
-	-	✓	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	-	✓	In-house Suppliers
-	-	✓	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier
-	✓	-	External Supplier

PEA Energy Management [302-1]

Unit: Million (kWh)





Remark: The amount of fuel energy released (net calorific value) by burning diesel was 10.1167 kWh/liter (referenced from the energy balance report of Thailand by the Department of Alternative Energy Development and Efficiency, Ministry of Energy).

GRI Content Index [102-55]

This report has been prepared in accordance with the GRI Standards: Core option. [102-54]

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
GRI 101: Foundation 2016						
General Disclosures						
GRI 102: General Disclosures 2016	102-1 Name of the organization	14				
	102-2 Activities, brands, products, and services	14, 18-19				
	102-3 Location of headquarters	22				
	102-4 Location of operations	22				
	102-5 Ownership and legal form	14				
	102-6 Markets served	22				
	102-7 Scale of the organization	22-23, 128, 130				
	102-8 Information on employees and other workers	146-147				SDG 8
	102-9 Supply chain	15				
	102-10 Significant changes to the organization and its supply chain	16-17, 20-22				
	102-11 Precautionary principle or approach	118-119				
	102-12 External initiatives	23				
	102-13 Membership of associations	23				
	102-14 Statement from senior decision-maker	4-5				
	102-15 Key impacts, risks, and opportunities	36, 42-46				
	102-16 Values, principles, standards, and norms of behavior	24-29, 38				SDG 16
	102-18 Governance structure	20-21				
	102-19 Delegating authority	69				
	102-25 Conflicts of interest	26-28				SDG 16
	102-26 Role of highest governance body in setting purpose, values, and strategy	68-69				
	102-31 Review of economic, environmental, and social topics	39				

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
	102-32 Highest governance body's role in sustainability reporting	81				
	102-40 List of stakeholder groups	70, 72, 74, 76, 78				
	102-41 Collective bargaining agreements	95				SDG 8
	102-42 Identifying and selecting stakeholders	70				
	102-43 Approach to stakeholder engagement	72, 74, 76, 78				
	102-44 Key topics and concerns raised	72, 74, 76, 78				
	102-45 Entities included in the consolidated financial statements	19				
	102-46 Defining report content and topic boundaries	80-81, 176				
	102-47 List of material topics	82				
	102-48 Restatements of information	176				
	102-49 Changes in reporting	82				
	102-50 Reporting period	176				
	102-51 Date of most recent report	176				
	102-52 Reporting cycle	176				
	102-53 Contact point for questions regarding the report	176				
	102-54 Claims of reporting in accordance with the GRI Standards	166-174				
	102-55 GRI content index	166-173				
	102-56 External assurance	174-175				
Material Topics						
Economic Performance						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	90				
	103-2 The management approach and its components	91				
	103-3 Evaluation of the management approach	92-93				

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	90, 128				SDG 2, SDG 5, SDG 7, SDG 8, SDG 9
Anti-Corruption						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	24				
	103-2 The management approach and its components	24, 26-27, 31-35				
	103-3 Evaluation of the management approach	28-35				
GRI 205: Anti-Corruption 2016	205-2 Communication and training about anti-corruption policies and procedures	124-125				SDG 16
	205-3 Confirmed incidents of corruption and actions taken	31				SDG 16
Materials						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	118				
	103-2 The management approach and its components	119				
	103-3 Evaluation of the management approach	120-121				
GRI 301: Materials 2016	301-1 Materials used by weight or volume	162				SDG 8, SDG 12
Energy						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	118				
	103-2 The management approach and its components	119				
	103-3 Evaluation of the management approach	120-121				
GRI 302: Energy 2016	302-1 Energy consumption within the organization	164-165				

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
Employment						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	94, 98				
	103-2 The management approach and its components	95, 99				
	103-3 Evaluation of the management approach	96-97				
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	148-150				SDG 5, SDG 8
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	151-153				
	401-3 Parental leave	154				SDG 5, SDG 8
Occupational Health and Safety						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	102, 104				
	103-2 The management approach and its components	103, 104-105				
	103-3 Evaluation of the management approach	103, 105				
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	104-105				SDG 8
	403-2 Hazard identification, risk assessment, and incident investigation	104-105				SDG 8
	403-3 Occupational health services	102-103	A description of the policies and processes for workers to remove themselves from work situations that they believe could cause injury or ill health, and an explanation of how workers are protected against reprisals.	Information unavailable	Considering for improving the policies and processes. The complete disclosure of information will report on the next reporting period.	SDG 8
	403-4 Worker participation, consultation, and communication on occupational health and safety	102-103, 159				SDG 8, SDG 16

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
	403-5 Worker training on occupational health and safety	102-103, 159				SDG 8
	403-6 Promotion of worker health	152-153				SDG 3
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	161				SDG 8
	403-8 Workers covered by an occupational health and safety management system	159				SDG 8
	403-9 Work-related injuries	160				SDG 3, SDG 8, SDG 16
Training and Education						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	98				
	103-2 The management approach and its components	99				
	103-3 Evaluation of the management approach	100-101				
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	155				SDG 4, SDG 5, SDG 8
	404-2 Programs for upgrading employee skills and transition assistance programs	100				SDG 8
	404-3 Percentage of employees receiving regular performance and career development reviews	156				SDG 5, SDG 8
Non-discrimination						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	94				
	103-2 The management approach and its components	95	https://www.pea.co.th/เกี่ยวกับเรา/การกำกับดูแลกิจการที่ดี			
	103-3 Evaluation of the management approach	96-97				
GRI 406: Non-discrimination 2016	406-1 Incident of discrimination and corrective actions taken	96				SDG 5, SDG 8, SDG 16

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
Customer Health and Safety						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	104				
	103-2 The management approach and its components	104-105				
	103-3 Evaluation of the management approach	105				
GRI 416: Customer Health and Safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	105				
Customer Privacy						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	106				
	103-2 The management approach and its components	107				
	103-3 Evaluation of the management approach	108				
GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	108				SDG 16
Availability and Reliability						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	86				
	103-2 The management approach and its components	87				
	103-3 Evaluation of the management approach	88-89				
	Management approach to ensure short- and long-term electricity availability and reliability (former EU6)	136-139				SDG 7
	EU10 Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime	129-133				SDG 7

EU - Specific Information Disclosure of Electric Utilities Sector according to GRI (G4)

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
Demand-Side Management						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	86				
	103-2 The management approach and its components	87				
	103-3 Evaluation of the management approach	88-89				
	Demand-side management programs including residential, commercial, institutional and industrial programs (former EU7)	142-145				SDG 7, SDG 8, SDG 12, SDG 13
Research and Development						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	110				
	103-2 The management approach and its components	111-113				
	103-3 Evaluation of the management approach	114				
	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development (former EU8)	115-117				SDG 7, SDG 9, SDG 17
System Efficiency						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	86				
	103-2 The management approach and its components	87				
	103-3 Evaluation of the management approach	88-89				
	EU12 Transmission and distribution losses as a percentage of total energy	134				SDG 7, SDG 8, SDG 12, SDG 13, SDG 14

EU - Specific Information Disclosure of Electric Utilities Sector according to GRI (G4)

GRI Standard	Disclosure	Page Number(s) and/or URL(s)	Omission			SDG Linkage to Disclosure
			Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	
Disaster/Emergency Planning and Response						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	48				
	103-2 The management approach and its components	49				
	103-3 Evaluation of the management approach	49-51				
	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans (former EU21)	48-53	https://www.pea.co.th/เกี่ยวกับเรา/การบริหารความต่อเนื่องทางธุรกิจของ กฟภ.			SDG 1, SDG 11
Access						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	109				
	103-2 The management approach and its components	109				
	103-3 Evaluation of the management approach	109				
	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services (former EU23)	109, 140				SDG 1, SDG 7
	EU28 Power outage frequency	135				
	EU29 Average power outage duration	135				
Cyber Security						
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	106				
	103-2 The management approach and its components	107				
	103-3 Evaluation of the management approach	107				

EU - Specific Information Disclosure of Electric Utilities Sector according to GRI (G4)

LR Independent Assurance Statement

Relating to Provincial Electricity Authority's Sustainability Report for the calendar year 2020

This Assurance Statement has been prepared for Provincial Electricity Authority in accordance with our contract but is intended for the readers of this Report.

Terms of engagement

Lloyd's Register Quality Assurance Limited (LR) was commissioned by Provincial Electricity Authority (PEA) to provide independent assurance on its Sustainability Report 2020 ("the report") against the assurance criteria below to a limited level of assurance and materiality of the professional judgement of the verifier using LR's verification procedure. LR's verification procedure is based on current best practice, is in accordance with ISAE 3000 and uses the following principles of - inclusivity, materiality, responsiveness and reliability of performance data.

Our assurance engagement covered PEA's power supply operations and service activities in procuring and providing electric power service, including power distribution services and customer support services, in Thailand, and specifically the following requirements:

- Confirming that the report is in accordance with GRI[1] standards, core option
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below: [2]
  - Availability and Reliability (former EU6)
  - System Efficiency (EU12).

Our assurance engagement excluded the data and information of PEA's suppliers, contractors and any third-parties mentioned in the report.

LR's responsibility is only to PEA. LR disclaims any liability or responsibility to others as explained in the end footnote. PEA's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of PEA.

LR's Opinion

Based on LR's approach nothing has come to our attention that would cause us to believe that PEA has not, in all material respects:

- Met the requirements above
- Disclosed accurate and reliable performance data and information as no errors or omissions were detected
- Covered all the issues that are important to the stakeholders and readers of this report.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

LR's approach

LR's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing PEA's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through reviewing documents and associated records.
- Reviewing PEA's process for identifying and determining material issues to confirm that the right issues were included in their report. We did this by benchmarking reports written by PEA's and its peers to

[1] *https://www.globalreporting.org*

[2] *GHG quantification is subject to inherent uncertainty.*

ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to evaluate whether PEA makes informed business decisions that may create opportunities that contribute towards sustainable development.

- Auditing PEA's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the report.

Observations

Further observations and findings, made during the assurance engagement, are:

- **Stakeholder inclusivity:** We are not aware of any key stakeholder groups that have been excluded from PEA's stakeholders' engagement process.
- **Materiality:** We are not aware of any material issues concerning PEA's sustainability performance that have been excluded from the report. It should be noted that PEA has established extensive criteria for determining which issue is material and that these criteria are not biased to the company's management.
- **Responsiveness:** PEA has ensured good collaboration with suppliers and customers. They have also addressed, within the report, the expectations of all stakeholder groups. However, we believe that PEA could provide a clearer message on its environmental improvement strategy as part of explaining its corporate sustainability context to readers.
- **Reliability:** Data management systems are considered to be well defined but the implementation of systems is variable at site level. PEA could introduce a function in the data collection tool that automatically converts the data into the required unit.

LR's standards, competence and independence

LR ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

The verification is the only work undertaken by LR for PEA and as such does not compromise our independence or impartiality.

Ms. Wiriya Rattanasuwan
LR Lead Verifier

Dated: 15th June 2021

On behalf of Lloyd's Register Quality Assurance Ltd.
Lloyd's Register International (Thailand) Limited
22nd Floor, Sirinrat Building, 3388/78 Rama IV Road
Klongton, Klongtoey, Bangkok 10110 THAILAND

LR reference: BGK00000636

About this Report

History of the Report [102-48][102-50][102-51][102-52]

The 2020 Sustainability Report is the fourth report following the 2019 Sustainability Report [102-51] which the Provincial Electricity Authority (PEA) has delivered according to the GRI Standards in order to disclose annual operational results of the organization in terms of economic, social, and environmental performance, with annual reporting period [102-52] from 1st January to 31st December 2020 [102-50] and guidelines used for the report based on the GRI Standards and Electric Utilities (EU) of the Global Reporting Initiative (GRI), 'This report has been prepared in accordance with the GRI Standards: Core option' [102-54] based on the extent for the disclosure of information.

Furthermore, to express the determination dedicated to sustainable development, PEA conducts its operation in connection with the 17 Sustainable Development Goals (SDGs) of the United Nations, which are included in this report as well.

Scope of the Report [102-46]

The disclosure of information in this report shows the information and impacts from the operation thoroughly throughout the value chain of PEA. The scope of the report covers PEA Head Office and its provincial offices, power plants, power stations, including relevant stakeholders; the scope, however, does not extend to its affiliates.

External Assurance for the Report [102-56]

The Board of Directors and high-level executives of PEA are tasked to monitor and give advice, as well as to approve and validate important information in this report, in order to deliver a report with inclusive and complete content and comprehensive coverage of responses to every group of stakeholders.

Moreover, PEA provides the endorsement of the report from Third Party entities with expertise in the endorsement and External Assurance of the process for the making of the report, in order to enhance credibility and transparency according to the reporting guidelines of the GRI Standards.

Upgrade of the Quality in Preparation for the Report

PEA opens up an opportunity for every group of stakeholders to be able to express their opinions and comments regarding the annual Sustainable Development Report via questionnaires to draw opinions and comments of readers, which PEA will use for the development and upgrade in preparation for the next Sustainable Development Report in order to satisfy the needs, demands/expectations of the stakeholders.

Inquiry for information [102-53]

Any additional suggestion or inquiry for information shall be directed to the Corporate Social Responsibility Department, PEA Head Office, LED Building, 200 Ngamwongwan Road, Lat Yao Sub-district, Chatuchak District, Bangkok 10900, E-mail: analysis.csr@pea.co.th, Tel: 0 2590 9916, Fax: 0 2590 9919.

For more information about PEA's work on sustainability, please follow us at

www.sustainability.pea.co.th

Scan the QR Code
to visit the Website

Scan the QR Code
to start the opinion
Questionnaire

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