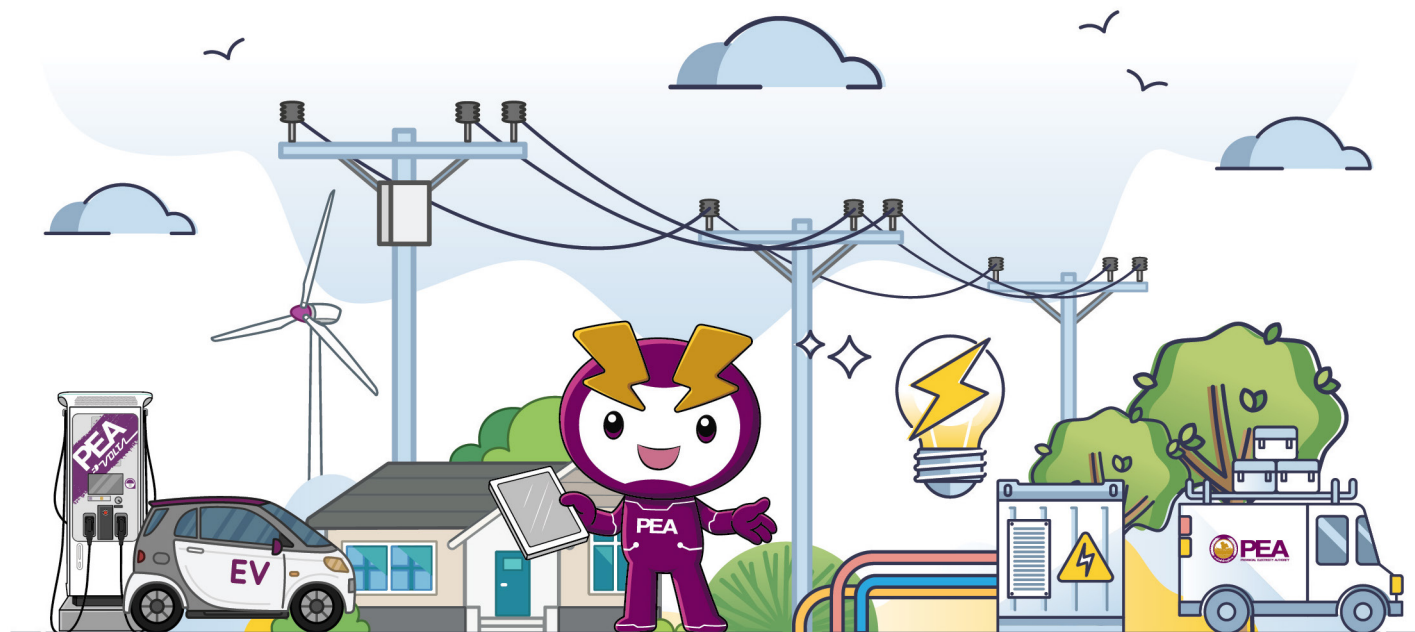




Sustainability Report 2022  
Provincial Electricity Authority

# SMART ENERGY FOR BETTER LIFE AND SUSTAINABILITY





# SMART ENERGY FOR BETTER LIFE AND SUSTAINABILITY



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## 01 Message from the Governor (2-22)



Currently, the cost of electricity is rising due to the global energy resource crisis from the situation between Russia and Ukraine, and it affected the price of natural gas; furthermore, Thailand's domestic natural gas production capacity is decreasing.

Provincial Electricity Authority (PEA) has been aware of the challenge of this crisis; consequently, PEA has adopted innovations and technologies to support all work processes. For instance, the processes of customers network, human resource development and the development of digital platforms, and the development of an application to support customer usage and business demand.

PEA has developed projects of renewable energy and energy conservation, and adopts technology to develop a distribution system; these projects are as follows:

- Microgrid Project: a minimal distribution grid system made to enhance distribution area to the non electricity household in remote areas.
- Solar Rooftops of PEA's Office Building Project.
- Net Zero Energy building project
- PEA Volta: an EV charging station with a quick charge located on main highways and at significant attractions.
- PUPAPLUG: the extension device of EV's wall charger that can change any space to an EV charging station which benefits both an EV user and an entrepreneur.

Additionally, PEA has prioritized good governance and risk management with consideration for the benefit of the whole country by restructuring and enhancing work performance to maintain the efficiency of service and to reach the demand and the expectation of the stakeholder of PEA.

All of these actions succeeded with the cooperation of executives and employees in their efforts to change and adjust work processes under the managerial and development policy of PEA. Moreover, PEA with determination has given priority to corporate governance with integrity, ethics and transparency in work processes.

This determination has led PEA to be in the first Integrity, and Transparency Assessment (ITA) rank among energy state enterprises with a transparency score of 97.37 percent, AA ranking level, and also affirmed "AAA" with a "Stable" outlook from Tris Rating, which was the highest rank from 2018 to the present year. This rank has reflected the result of investments in electricity tariffs and circumspect fiscal policies to respond to business and industry sectors' electricity demands and to aid the government's supportive measures for people affected by the pandemic of Coronavirus (COVID-19); additionally, to achieve UN's SDGs target 7.1.1 Access to electricity.

Thailand has set the target of access to electricity at 99.00 percent by 2025. For now, PEA provides electricity to 21,463,395 households from 21,516,395 households in responsible areas (99.73 percent), this percentage is accepted countrywide and by international standards.

On behalf of PEA, I insist on our determination to become the smart energy for better life and sustainability. We intend to grow and create value for Thailand by developing projects with long-term value to society and the environment; and to attach options such as fundraising to ESG Bond (Environmental, Social and Governance Bond).

Lastly, I appreciate all of PEA's stakeholders who always trust and support our business; they ease us stably through challenges and threats.

**"A goal is meant to be reached; a result must be oriented, with the resilient method."**

**Supachai Ek-un**  
Governor



## 02 Awards of Honor

### National Awards

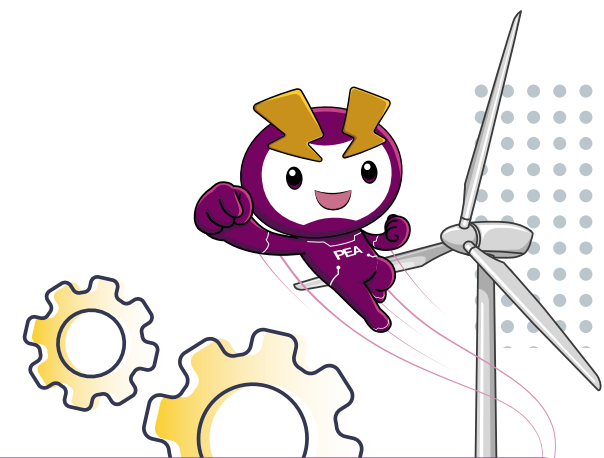
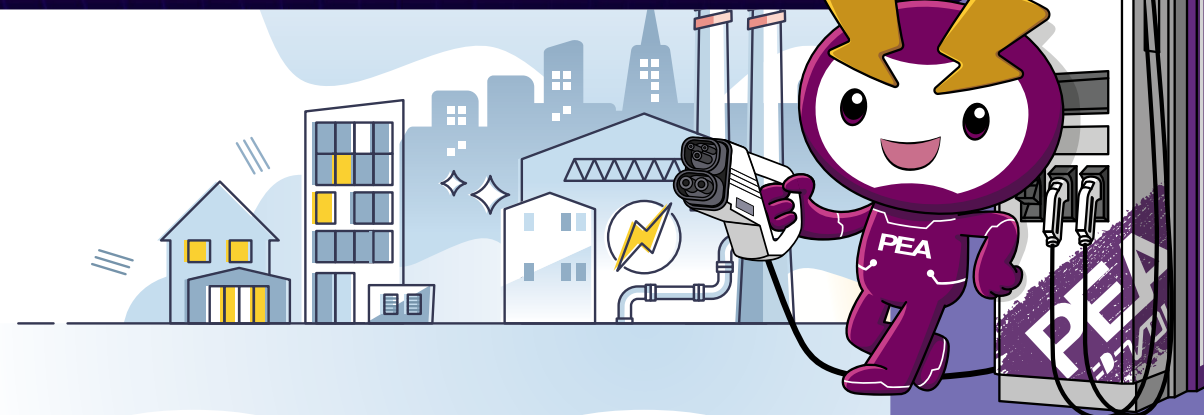


**รางวัลแห่งความภูมิใจ**



**รางวัลรัฐวิสาหกิจดีเด่น ประจำปี 2565**

- รางวัลคณะกรรมการรัฐวิสาหกิจดีเด่น
- รางวัลการพัฒนาสู่รัฐวิสาหกิจยั่งยืน
- รางวัลการดำเนินงานเพื่อสังคมและสิ่งแวดล้อมดีเด่น ประเภทดีเด่น (6 ปี ซ้อน)
- รางวัลความคิดสร้างสรรค์และนวัตกรรมดีเด่น ด้านนวัตกรรม ประเภทดีเด่น (5 ปี ซ้อน)
- รางวัลความคิดสร้างสรรค์และนวัตกรรมดีเด่น ด้านความคิดสร้างสรรค์ ประเภทชมเชย



### 1. SOE Awards 2022

PEA was honored with five SOE Awards from the State Enterprise Policy Office (SEPO) in 2022. These awards inspire state enterprises to contribute to national development, recognizing exceptional performance in diverse areas and motivating continuous improvement in operational efficiency

- **Outstanding Board of Directors Award** reflects the commitment of PEA's Board of Directors to promoting effective and transparent management practices in line with the principles of corporate governance.
- **Sustainable Development Award** recognizes the unwavering dedication and commitment in developing PEA for sustainability across all dimensions in alignment with the organization's vision of "Smart Energy for Better Life and Sustainability."
- **Outstanding Social and Environmental Implementation Award** (six consecutive years) for PEA's Clean Energy for Sustainability Project in Si Thoi Subdistrict, Mae Suai District, Chiang Rai Province. The project involved the construction of a weir and small reservoir in a highland area and the installation of a concentrated solar rooftop system.
- **Outstanding Creativity and Innovation Award** in the Innovation Category (five consecutive years) for the "Suspension Cradle Tool." This tool is designed to lift suspending insulators to efficiently align and install them with preforms and stanchions, which are crucial components in PEA's electricity distribution system.
- **Outstanding Creativity and Innovation Award** (Honorable Mention) in the Creativity Category for the "Wire Stripper." This innovation is designed to strip high-voltage wires using a remote control without cutting off the electricity.





## 2. Sustainability Disclosure Awards 2022

PEA received the accolade of the Sustainability Disclosure Award 2022 from the Thaipat Institute for disclosure of its sustainability performance across economic, social, and environmental dimensions reporting in accordance with the GRI Standards.

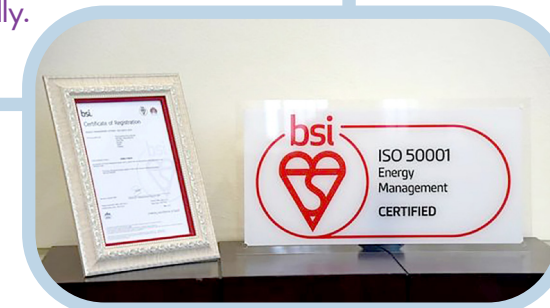


## 3. “AAA” Credit Rating from TRIS Rating Company Limited for Five Consecutive Years

PEA received the accolade of the highest credit rating “AAA” from the TRIS Rating Company Limited for the fifth consecutive year, reflecting its status as a key state enterprise with strong ties to the Thai government and its crucial role in nationwide electricity distribution. The award also recognizes PEA’s ability to maintain a strong financial position and liquidity, and achieve excellent performance results.

## 4. ISO 50001: 2018 Energy Management System Certification for PEA Head Office Building

PEA received accreditation for the ISO 50001:2018 Certificate from BSI Group (Thailand) to prove that its head office building has managed energy to the ISO 50001 Standard, which enabled it to improve energy efficiency and reduce electricity consumption by 891,510 units annually.



## 5. Best Government Agency in Business Facilitation “Golden Baroque” Awards 2022

PEA won the Golden Baroque Award 2022 in the Departmental Agencies Category, given to the government agencies with the best business facilitation.



## 6. Digital Government Awards 2022

PEA won the Digital Personnel Quality Award based on an assessment of the digital skills of its employees and its work to develop digital knowledge, understanding, and proficiency.







### 7. ISO/IEC 20000-1 IT Service Management System and ISO/IEC 27001:2013 Information Security Management System Certificates

PEA received accreditation for ISO/IEC 20000-1 IT Service Management System Certificate and ISO/IEC 27001:2013 Information Security Management System Certificate for enhancing customer service efficiency and prioritizing information security, including data accuracy, system availability, data confidentiality, and compliance with the Cybersecurity Act B.E. 2562.

### 10. People Development Awards

PEA won the People Development Award for its efforts to promote and inspire people both in local communities and nationally to act with integrity, courage, and competence. It set an example for the public, private, and people sectors to continuously and consistently develop the Thai people to excel in these three-character traits.



### 8. Government Easy Contact Center (GECC) Awards 2022

PEA won 2022 Government Easy Contact Center (GECC) Plaques and Emblems for its 124 offices, including 23 advanced-level and 101 basic-level offices. PEA's success in meeting the certification standards is due to the commitment of senior management to prioritizing service development as a strategic focus of the organization. This commitment has led to continuous improvement and the standardization of service systems throughout the country.



### 11. Public Service Awards (Good) in the Service Innovation and Service Development Categories

PEA won the Public Service Award (Good) in the Service Innovation Category for its large customer information monitoring system (LCIM) and in the Service Development Category for its ONE CLICK service.

### 12. ISO56002:2019 Innovation Management System Certification

PEA received accreditation for the ISO 56002:2019 Innovation Management System by the Management System Certification Institute (MASCI). This system was developed from the CEN /TS 16555-1:2013, which is an innovative management standard used widely in Europe and will soon be adopted as an international standard. PEA was the first state enterprise in Thailand to receive this certification, highlighting the strength of its innovation management system, including its award-winning innovations, specialized training programs to improve innovation capabilities, analysis of internal and external factors to develop an innovation master plan, technology readiness levels (TRL), allocation of resources to innovation development, collaboration with partners in research, and promotion of a culture of innovation through internal and external innovation contests.



### 9. Human Rights Awards 2022

PEA won the Human Rights Award 2022 in the Outstanding State Enterprise Category. The award was established by the Rights and Liberties Protection Department to be given to state enterprises, government agencies, private businesses, social enterprises, and civil society organizations in recognition of their outstanding performance in human rights and as a role model for promoting respect for human rights.







### 13. AA Rating from the ITA 2022 for the Third Consecutive Year

PEA won the ITA Award 2022 for achieving a score of 97.37 in the Integrity and Transparency Assessment (ITA), earning the AA rating for the third year in a row. It ranked first in the energy sector for state enterprises, fourth within the Ministry of Interior, and sixth out of all the state enterprises being assessed. PEA has been participating in ITA since 2014. This award

is an honor that fills PEA's board, executives, and employees with great pride, joy, and encouragement. This achievement reflects PEA's commitment to improving its integrity and transparency and to distinguishing itself as an organization guided by the principles of corporate governance.

### 14. Anti-Corruption Awards 2022

PEA received the accolade of the Anti-Corruption Awards 2022 for its efforts to prevent and combat corruption in accordance with the principles of corporate governance and the philosophy of sufficiency economy. It promoted honesty and integrity among its employees and the general public through the "PEA Chorsaard Community Project" as part of PEA's corporate social responsibility (CSR). The project integrated collaboration between important institutions (families, temples, mosques, churches, and schools) to instill four basic principles: clean body meaning being disciplined; clean mind meaning adhering to moral values; clean behavior meaning emphasizing collective benefit over personal gain; and clean wisdom meaning upholding integrity and rejecting all forms of corruption.



## International Awards

### 1. HRAsia Best Companies to Work for in Asia 2022 (Thailand Edition)

PEA received the accolade of the HR Asia Best Companies to Work for in Asia 2022 (Thailand Edition). This is the result of continuous development in human resource management, including the implementation of effective systems and mechanisms to harness the full potential of employees for the benefit of the organization, the improvement of employees' hard and soft skills, the systematic promotion of innovation development and use, and an increase of productivity within the organization.



### 2. 2022 Kaohsiung International Innovation & Design EXPO (KIDE 2022)

PEA won six prizes at the 2022 Kaohsiung International Innovation & Design EXPO (KIDE 2022), organized by the World Invention Intellectual Property Associations (WIIPA) and Taiwan Invention Products Promotion Association (TIPPA) at the Kaohsiung International Convention Center in Taiwan.

- Gold Medal and Canadian Special Award of Excellence from Innovator Circles Canada for the "Route Survey System by Application," a tool that helps design power systems. The application instantly converts survey data into route paths (AutoCAD files), reducing the time and resources necessary for surveying and designing.
- Gold Medal and Special Award from Norton University in Cambodia for the "High Voltage Cable Guide Pulley," a tool that guides high-voltage cables across the H-frame in the event of a cable break. The pulley allows the remaining cables to be guided and suspended from at least one pole, reducing repair time and enabling power to be restored more quickly.
- Gold Medal for the "Expansion Module for 46BC Function (EMU46BC)," a tool that works in conjunction with protective relays in the 22 kV system to accurately and precisely detect high-voltage cable breaks in the distribution system. This helps prevent accidents and damage to life and property.
- Silver Medal for the "Meter Wire Stripping Tool" that helps strip low-voltage wires. This replaces the traditional method of stripping with a side cutter, helping to prevent damage to electrical conductors because of the blade.



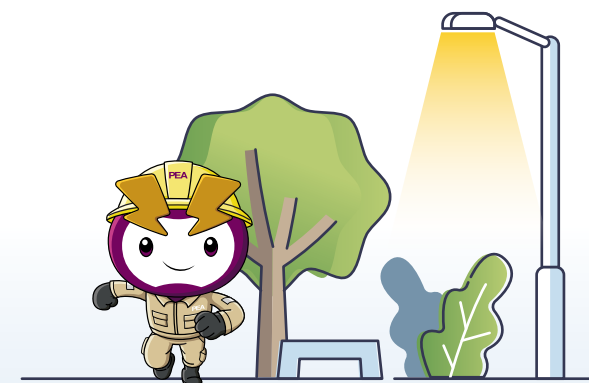


### 3. Seoul International Invention Fair 2022 (SIIF 2022)

PEA won six awards at the Seoul International Invention Fair 2022 (SIIF 2022), organized by the Korea Invention Promotion Association (KIPA) at the COEX Convention & Exhibition Center in Seoul, Republic of Korea.

- Gold Prize and Special Award from Indonesian Invention and Innovation Promotion Association (INNOPA), Republic of Indonesia, for the “PEA Communication Network Test Tool (INSPECTOR).” This device is designed to test the IP network quality. It is compact, portable, easy to use, and inexpensive to manufacture.
- Gold Prize and Special Award with Distinction Double Gold from Malaysia Innovation Association (MIA) for the “Power Flow Calculation Program” and “Online Power System Analysis (OPSA).” This web application is designed to analyze power system data problems in the low voltage distribution system. The analysis results are presented on a user-friendly dashboard, allowing easy access and interpretation of data.
- Bronze Prize for the “RS-232 Serial communication to Wireless Converter Module Based on LoRa Radio (BBLoRaX),” a device that converts serial communications from RS232 to wireless using LoRa technology, allowing transmission over long distances using radio frequencies. The BBLoRaX is easy to install and does not require additional software development.

- Vifotec Special Award from the Vietnam Fund for Supporting Technological Creations (VIFOTEC) for the “DNP3.0 Protocol Line Monitor and Test Set.” This tool is designed to test communication between SCADA and RTU systems wirelessly and displays the results via a smartphone. It is easy to use, reduces the cost of display interface design, and enables the fast transmission of data.



### 4. International Quality & Productivity Convention 2022 (IQPC 2022) in the Republic of Indonesia

PEA won four awards at the International Quality & Productivity Convention 2022 (IQPC 2022) held in Bali, Republic of Indonesia.

- Excellent Award for the “Tracking, Monitoring, and Expanding Distribution System 4.0,” which consists of three components: the tracking system, information monitoring administration, and an SMS chatbot to customers. Together, these components make distribution system expansion more efficient and systematic.
- Excellent Award for the “Young Analyst,” a computer program for the IT System Division to improve user experience and reduce technical commands necessary to analyze network-related problems and improve service availability. The program enables users to identify network problems on their computers and facilitates communication and troubleshooting between them and the system administrator. This significantly reduces the time required to analyze and resolve network problems.
- Excellent Award for the “Outage Management Development (Customer Service Division)” for developing PEA’s after-sales process in resolving outage issues for consumers. This improved the online notification process, allowing customers to have access to relevant information anytime and anywhere, including status tracking, operation-related data, and service charges. Additionally, the system includes a map feature that enables employees to navigate to work sites quickly and efficiently.
- Outstanding Award for the “Big Data Tracking and Analysis Program” to reduce losses and improve low-voltage meter inspection schedules. The program analyzes electricity consumption patterns based on historical data from the past five years, prioritizing meter inspections and developing inspection schedules based on workload in each area. This will help PEA reduce workload, maximize efficiency, and obtain electricity consumption data that reflects actual usage, ensuring fairness.







## 5. The International Trade Fair-Ideas, Inventions and New products (iENA 2022)

PEA won 12 awards at The International Trade Fair-Ideas, Inventions and New Products (iENA 2022) held in Nuremberg, Germany.

- **Gold Medal** from Germany and Special Prize on Stage for Excellent Efforts in Creating Invention from the Korea Invention Promotion Association (KIPA) for the “P- MAC: Power Meter and Current Transformer Tester.” This device can perform calculations, display results on a mobile application, and transmit data for online storage. This reduces human errors by increasing dependence on technology.
- **Gold Medal** from Germany and Special Prize for Excellent Efforts in Creating Invention from the Korea Invention Promotion Association (KIPA) for the “Busbar Cleaner,” an invention that effectively removes dirt

and debris from the busbar tubes of high-voltage power plants without interrupting the electrical current. It rotates and cleans the busbar tubes thoroughly simply by spraying high-pressure water.

- **Gold Medal** from Germany and Certificate for the Excellent Invention from the Research Institute of Creative Education (RICE), Vietnam, for the “Multipurpose Gear Driven Set.” This is a new invention designed to be used with high-pressure tools, such as compressors, cutters, and drills. With a worm gear system, it can transmit power from 200-230 Newton-meters, which is equivalent to hydraulic compression of 6,000-17,000 PSI or higher.
- **Gold Medal** from Germany and Certificate for the Excellent Invention from the Research Institute of Creative Education (RICE), Vietnam, for the “Automatic Transfer Voltage (ATV).” This device is designed for customers who require an uninterrupted power supply. It helps switch the electricity usage to another phase with normal voltage, in case of an outage. When the electricity returns to normal, the device automatically transfers the voltage back to the original phase.
- **Silver Medal** from Germany and Certificate for the Excellent Invention from the Research Institute of Creative Education (RICE), Vietnam, for the “Tools for Changing High-Voltage Insulators with Curve (TCHIC).” This invention is designed to help workers in replacing damaged high-voltage insulators with curves where cable tension is high, which can pose a risk to workers. It reduces work time and minimizes the risk of accidents.
- **Bronze Medal** from Germany and Certificate for the Excellent Invention from the Association of Portuguese Inventors, Innovators & Creatives (APIICIS), Portuguese Republic, for the “Transformer Tester.” This innovation can perform multi-functional testing on transformers in a 22 kV distribution system. It helps to confirm the condition of transformers before installation or power supply, ensuring the safety of workers and preventing damage to other related electrical equipment.

## 6. Taiwan Innotech Expo 2022 (TIE 2022)

PEA won six awards at the Taiwan Innotech Expo 2022 (TIE 2022) in Taipei, Taiwan.

- **Gold Medal for the “Density Switch and Pressure Gauge Tester Kit,”** a portable device for testing SF<sub>6</sub> pressure gauges in gas-insulated substations (GIS). It can assess the performance of pressure gauges in four different conditions: low gas alarm, high pressure, Lock Out No. 1, and Lock Out No. 2. Importantly, the testing process does not require the use of SF<sub>6</sub> gas. The compact size of the tester also allows for on-site testing, reducing the time required and production of greenhouse gases (SF<sub>6</sub>). This helps establish operational standards for electrical equipment within PEA’s power systems.
- **Silver Medal** for the “Tampering Tester,” a device designed to test single-phase meters for tampering. It can simulate eight different tampering scenarios, making pre-acceptance or pre-installation testing of single-phase meters faster and more efficient.
- **Bronze Medal and Special Award** from the World Invention Intellectual Property Associations (WIIPA) for the “Automatic Steel Wire Straightening and Cutting Machine.” This machine can automatically straighten and cut the steel wires used in the production of concrete electric poles, straighten steel wires from coils, and then cut them to the desired lengths. It can adjust the cutting length to six different options, resulting in reduced production time, minimized wire waste, and improved safety in the construction of concrete electric poles.

- **Bronze Medal and Special Award** from the Indonesian Invention and Innovation Promotion Association (INNOIPA) for the “PEA Comealong,” which grips and secures power lines to the crossarm of electric poles during the replacement of suspension insulators. This incorporates specially-designed steel clamps for gripping power lines and metal plates for installation on the crossarm of the electric pole. The invention significantly reduces the time required for changing suspension insulators and enhances safety during operation.

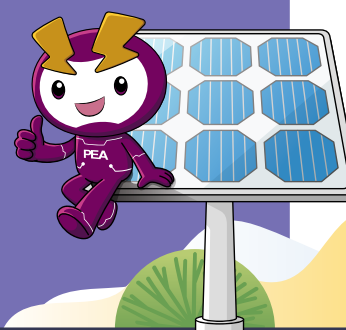




## 7. The International Trade Fair-Ideas, Inventions and New products (iENA 2022)

PEA won three awards at “The INNOVERSE Invention & Innovation Expo 2022” in Georgia, United States.

- **Gold Medal for the “Mini AVR,”** an innovative solution that works like a stabilizer to provide voltage supply to the AVR circuit, maintaining normal voltage even during emergencies. The Mini AVR has a wider voltage adjustment range compared to stabilizers available on the market. It is durable, operates in Standby Mode during normal voltage conditions to extend its battery life, is user-friendly and safe, and has the potential for further development.
- **Gold Medal for the “DNP3.0 Protocol Line Monitor and Test Set”** for testing communication between SCADA and RTU in CSCS FRTU-RCS systems or SCADA-ready reclosers. This can replace the expensive Software DNP3.0 Protocol Test Set and RS232 Compact Line Monitor. With a wireless design and data displayed through a smartphone, this device is user-friendly and reduces display design costs. It allows remote control from the installation site, ensuring the safety of users, and enables fast data transmission to the relevant personnel.
- **Gold Medal for the “Cable Pusher with Auto Lubricant.”** This tool is used to feed and lubricate cables as they are pulled through a duct bank. It can also measure the length of cable pulled through the duct bank, speeding up the work flow and improving safety during operation.



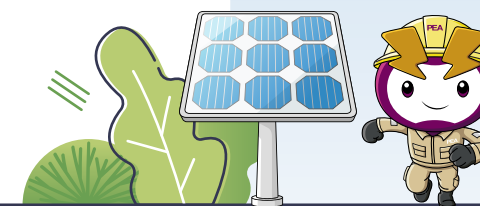
## 8. The 2022 Japan Design Idea and Invention Expo (JDIE 2022)

PEA won three awards at “The 2022 Japan Design Idea and Invention Expo (JDIE 2022)” in Kyoto, Japan.

- **Gold Medal for the “Cable Termination Steel Support for 115 kV Riser Pole,”** which involved designing and developing a steel structure to support cable terminations without using oil. This helps improve the efficiency of designing underground 115 kV riser poles by reducing the structure’s complexity, making construction easier and less time-consuming. It also decreases the overall weight of the structure and its installation components, ensuring stability and safety for both the structure itself and the wider power system. Importantly, this allows construction in limited spaces.
- **Gold Medal for the “Transformer Tester.”** This innovation can perform two types of multi-functional testing on transformers in a 22 kV distribution system: 1) offline testing, which includes turn ratio testing, insulation resistance testing, and winding resistance testing, and 2) online testing, which involves measuring voltage and testing phase sequences. This helps confirm the condition of transformers before installation or power distribution, ensuring the safety of operators and preventing damage to related electrical equipment.



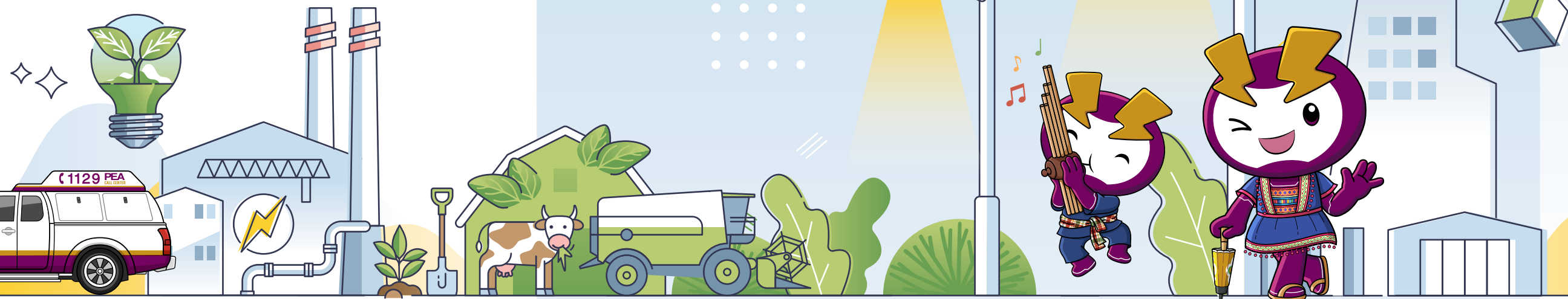
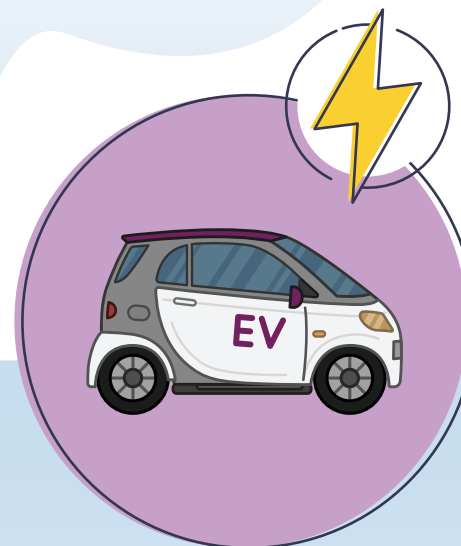
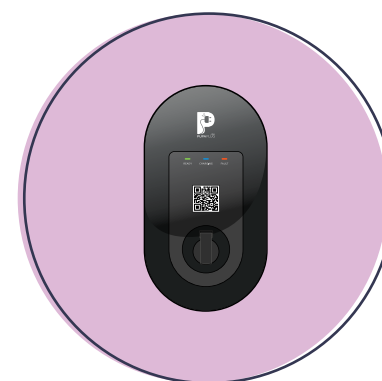
- **Silver Medal for the “High Voltage Cable Guide Pulley”** created from components available in the market, steel structures, and motors. This pulley is designed to guide high-voltage cables between the H-frame poles in the event of a cable break where at least one overhead ground wire or cable remains suspended. This eliminates the need for workers to manually pull cables through trees or other obstacles, significantly reducing repair time to restore power more quickly.





## 9. Asia Responsible Enterprise Awards 2022 (AREA) for the Fourth Consecutive Year

PEA won the Asia Responsible Enterprise Awards 2022 (AREA) for the fourth consecutive year. The awards were organized by Enterprise Asia, a leading non-profit organization which promotes responsible entrepreneurship in Asia by recognizing and honoring entrepreneurs who have demonstrated excellence in social and environmental responsibility and sustainable business development, which are committed to leadership in sustainability, and which have built credibility among international stakeholders.







## 03 PEA's Business <sup>(2-6)</sup>



The Provincial Electricity Authority (PEA) <sup>(2-1)</sup> was established on 28 September 1960, replacing the former Provincial Electricity Organization which officially commenced operations on 6 March 1954. During its initial decade, PEA undertook the vital tasks of procuring power generators and employing skilled technicians for their installation to facilitate the provision of electricity to underdeveloped regions. Now, in its sixth decade, it has undertaken organizational restructuring and improved operational strategies, aiming to provide efficient electricity services while fostering continuous development in terms of quality and service standards. Striving to excel in the electricity business, PEA is committed to meeting customer expectations, creating value for society and the environment through digital technology, and moving toward becoming PEA Digital Utility.

PEA is now a state enterprise in the energy sector under the Ministry of Interior and is regulated by the State Enterprise Policy Office (SEPO).<sup>(2-1)</sup> Our core business is procuring and distributing electricity to consumers in provincial areas. We also offer supplementary services that cater to our customer's needs, including construction, inspection, maintenance, and repair, and explore new business opportunities to capitalize on our assets, knowledge, and capabilities for potential future growth or ventures. To ensure a reliable and adequate supply of electricity to meet customer demands, and to cater to remote areas without electricity access, PEA has devised plans and projects to expand distribution systems, enhance and reinforce power infrastructure, and improve services. These endeavors inevitably impact stakeholders in all sectors, society, and the environment. Therefore, we strive to conduct our operations in compliance with the law, aligning with the organization's mission and the government's policies.



## History



1884 - 1959

### Introduction of Electricity in Thailand

Electricity was introduced in Thailand for the first time in 1884, during the reign of King Chulalongkorn. It was introduced by Field Chaophraya Surasakmontri (Jerm Sang-Chuto), who installed power generators, electrical cables, and lamps at the Royal Thai Army, where the Ministry of Defense is now located. This experimental use of electric lighting left nobles, officials, and the general public in awe as they marveled at its brilliance. When King Chulalongkorn learned about this achievement, he promptly ordered the installation of electric lighting in the Grand Palace. Subsequently, electricity began to be installed in all the residences of the nobility.



1960 - 1970

### First Decade, Pioneer Works to Bring Electricity to Communities

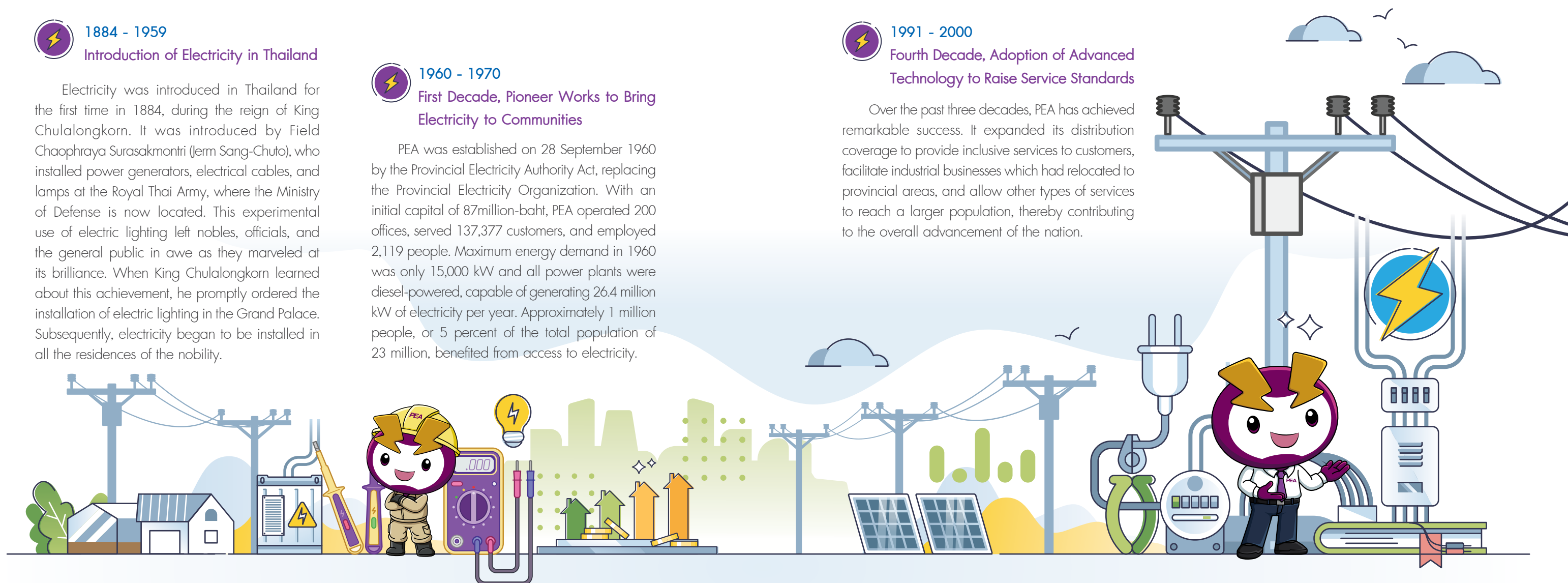
PEA was established on 28 September 1960 by the Provincial Electricity Authority Act, replacing the Provincial Electricity Organization. With an initial capital of 87million-baht, PEA operated 200 offices, served 137,377 customers, and employed 2,119 people. Maximum energy demand in 1960 was only 15,000 kW and all power plants were diesel-powered, capable of generating 26.4 million kW of electricity per year. Approximately 1 million people, or 5 percent of the total population of 23 million, benefited from access to electricity.



1991 - 2000

### Fourth Decade, Adoption of Advanced Technology to Raise Service Standards

Over the past three decades, PEA has achieved remarkable success. It expanded its distribution coverage to provide inclusive services to customers, facilitate industrial businesses which had relocated to provincial areas, and allow other types of services to reach a larger population, thereby contributing to the overall advancement of the nation.



1971 - 1980

### Second Decade, Accelerating Access to Electricity in Rural Areas

Entering the second decade after its establishment, following development and planning in the late years of the first decade, the initiation of the Third National Economic and Social Development Plan (1972-1976) and the constant increase in demand for electricity at a rate close to 30 percent per year propelled PEA to prepare and adjust its rural electrification plans to meet the growing needs effectively and in a timely manner.



1981 - 1990

### Third Decade, Advancing Progress in Businesses and Industries

Electricity played a crucial role in advancing progress in all aspects of Thailand. As an integral part of the infrastructure supporting various activities, electricity facilitated productivity and fostered economic and social development. Therefore, increasing electricity consumption was directly correlated to the growing bulk of Thailand's gross national product, national income, and economic expansion.



2001 - 2010

### Fifth Decade, Moving Forward to Achieve International Standards in the Energy Sector

PEA recognized the importance of providing quality services to create customer satisfaction while improving operational efficiency. It also strove to modernize and streamline management practices, enabling the organization to compete effectively and build investor confidence.



2011 - Present

### Sixth Decade, Developing Electricity Systems and Service Quality to Drive Toward PEA Digital Utility

PEA undertook organizational restructuring and improved operational strategies to provide efficient electricity services while fostering continuous development of quality and service standards. While striving to excel in the electricity business, PEA is committed to meeting customer expectations, creating value for society and the environment through digital technology, and moving toward PEA Digital Utility.

## Vision, Mission, and Core Values

In response to changes in the electricity industry, we devised the PEA Strategic Plan 2022-2026 which sets a direction for the organization's operations that aligns with changing circumstances. Not only have we continuously improved business performance through effective management and sound financial policies, but we also aspire to become a modern utility service provider by embracing digital innovations and streamlining our power system. Furthermore, we strive to make contributions to the development of a sustainable and resilient future for our nation and prepare for the transformation to the era of digital utility by 2022.

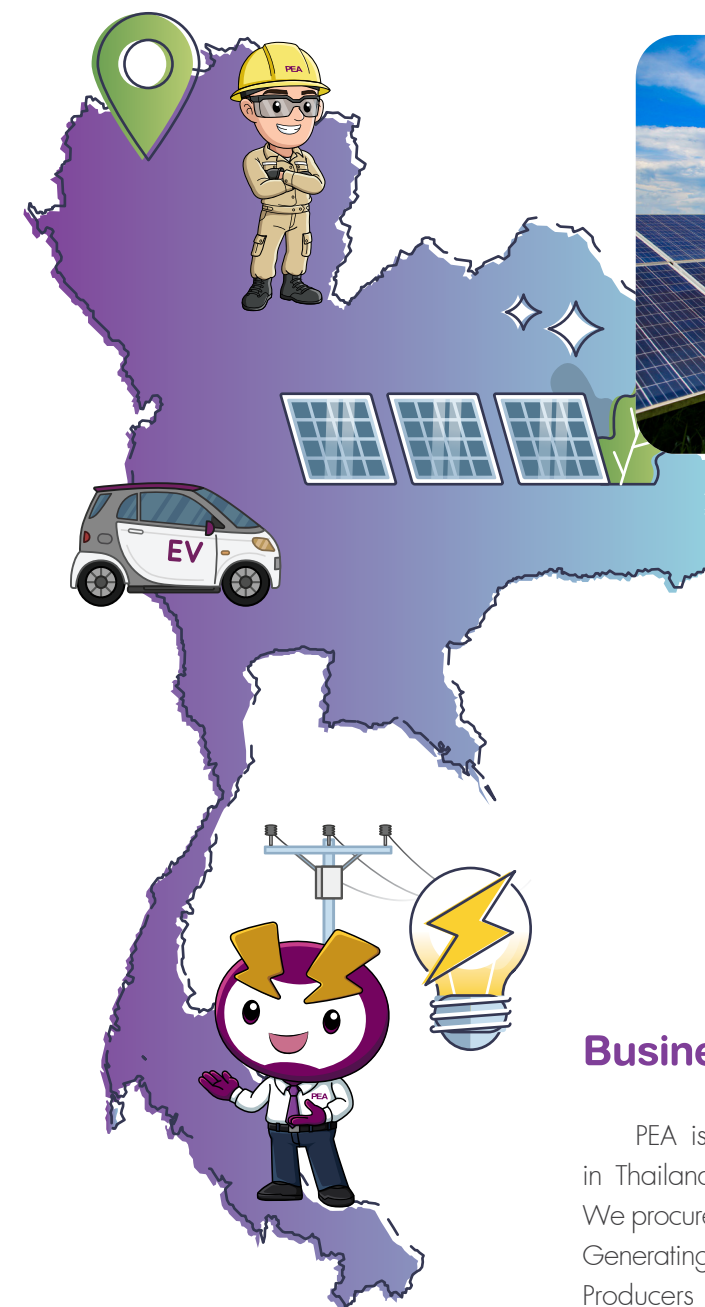
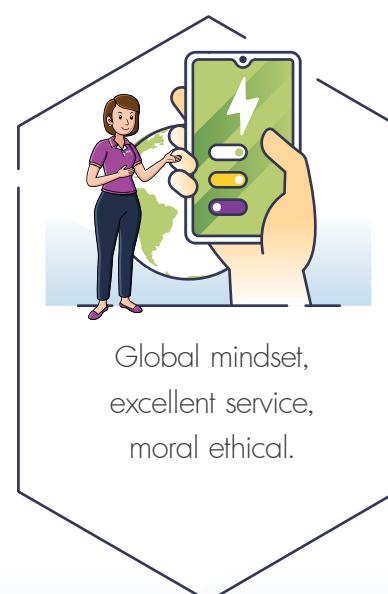
### Vision



### Mission



### Core Values

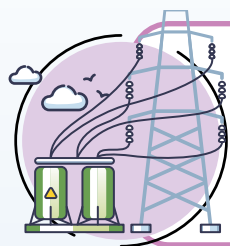


## Businesses and Services <sup>(2-6)</sup>

PEA is responsible for providing electricity in 74 provinces in Thailand-all except Bangkok, Nonthaburi, and Samut Prakan. We procure electricity from power producers, including the Electricity Generating Authority of Thailand (EGAT) and Very Small Power Producers (VSPPs). This is transmitted to large-scale consumers (large-sized industries, hotels, and department stores) and medium-sized industries. We also distribute electricity to residential consumers in four regions: North, Northeast, Central, and South. Furthermore, PEA provides comprehensive electrical engineering services, including consultancy, planning, design, construction, installation, and maintenance, through a professional team equipped with modern tools and equipment. We aim to deliver quality, reliable, and efficient services to meet customer needs and ensure the highest possible level of satisfaction.

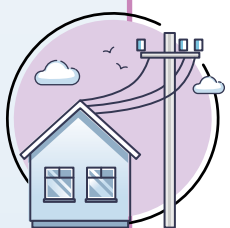






### Power Procurement and Distribution Business

- This involves sourcing electric power from power producers and distributing it to customers in four regions: North, Northeast, Central, and South.



### Power Service Support Business

- Related Business:** This includes supplementary and new businesses related to electric power services. They can be regulated or non-regulated businesses, aimed at fostering business growth and increasing returns from operations for PEA.
- Supplementary Business:** This is a business that provides support to PEA's customers or power services, both domestically and internationally. It entails further developing PEA's resources, expertise, and capabilities in various fields, including construction, inspection, repair, maintenance, and leasing.
- New Business:** This is a business related to electric power services. It can be an adjacent business that leverages PEA's existing assets or expertise, or a new S-curve business developed for a domestic or international market by PEA or in collaboration with public or private partners to respond to changes in the power industry and add value to PEA's portfolio and its affiliated companies.



### Energy Trading Management Business

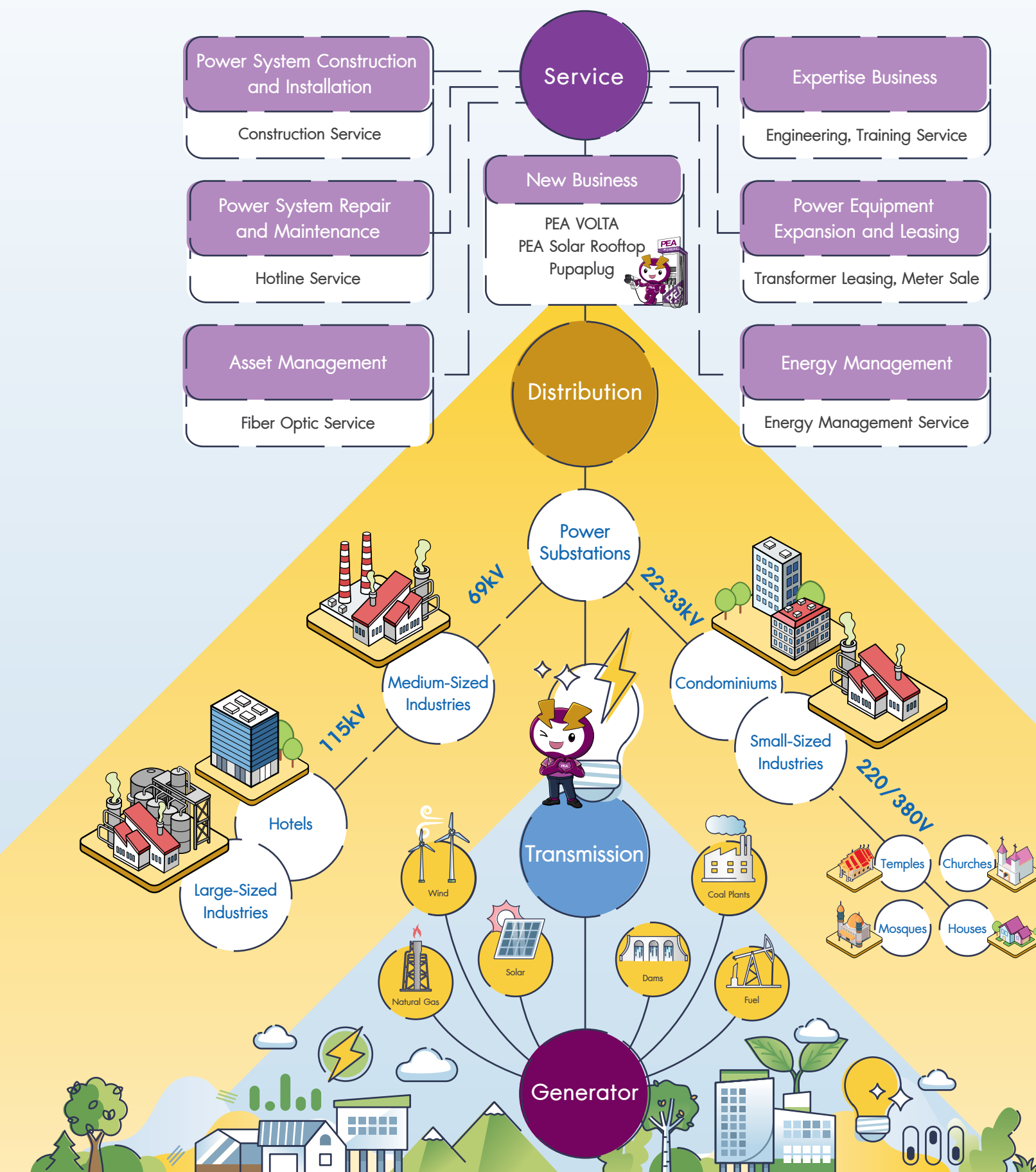
- PEA leverages its expertise in power distribution systems to engage in the energy trading management business. We develop and provide energy trading channels while also developing and managing power systems that connect power producers, prosumers, and energy storages. This enables efficient management of energy resources within cost-effective structures.



### Investment Business by Affiliates<sup>(2-2)</sup>

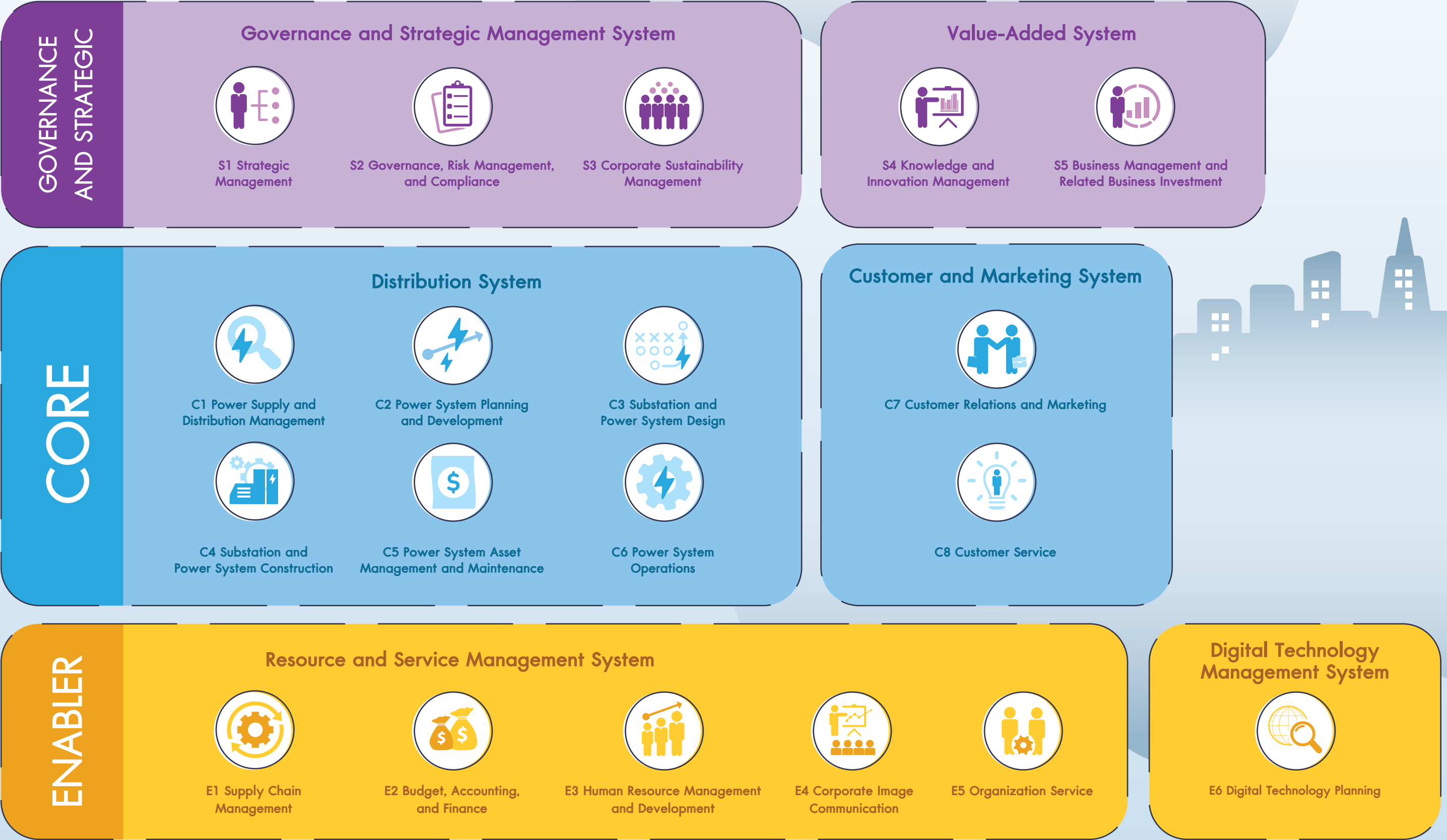
- To drive business growth, PEA needs to adapt to changes in the electricity industry and create new opportunities by investing in renewable energy or other ventures through PEA ENCOM and other affiliated companies that act as primary investors and engage in joint ventures with PEA's business partners. This works to support the country's renewable energy development.
- PEA ENCOM International Company Limited or PEA ENCOM is PEA's first affiliated company. It is a state enterprise, established under the Cabinet Resolution dated 3 June 2009, which engages in the electricity investment business and provides power system training to public and private organizations both in Thailand and abroad. PEA ENCOM is wholly owned by PEA, with an initial registered capital of 100,000,000 baht. Currently, its registered capital amounts to 3,795,283,750 baht.

## PEA's Value Chain<sup>(2-6)</sup>



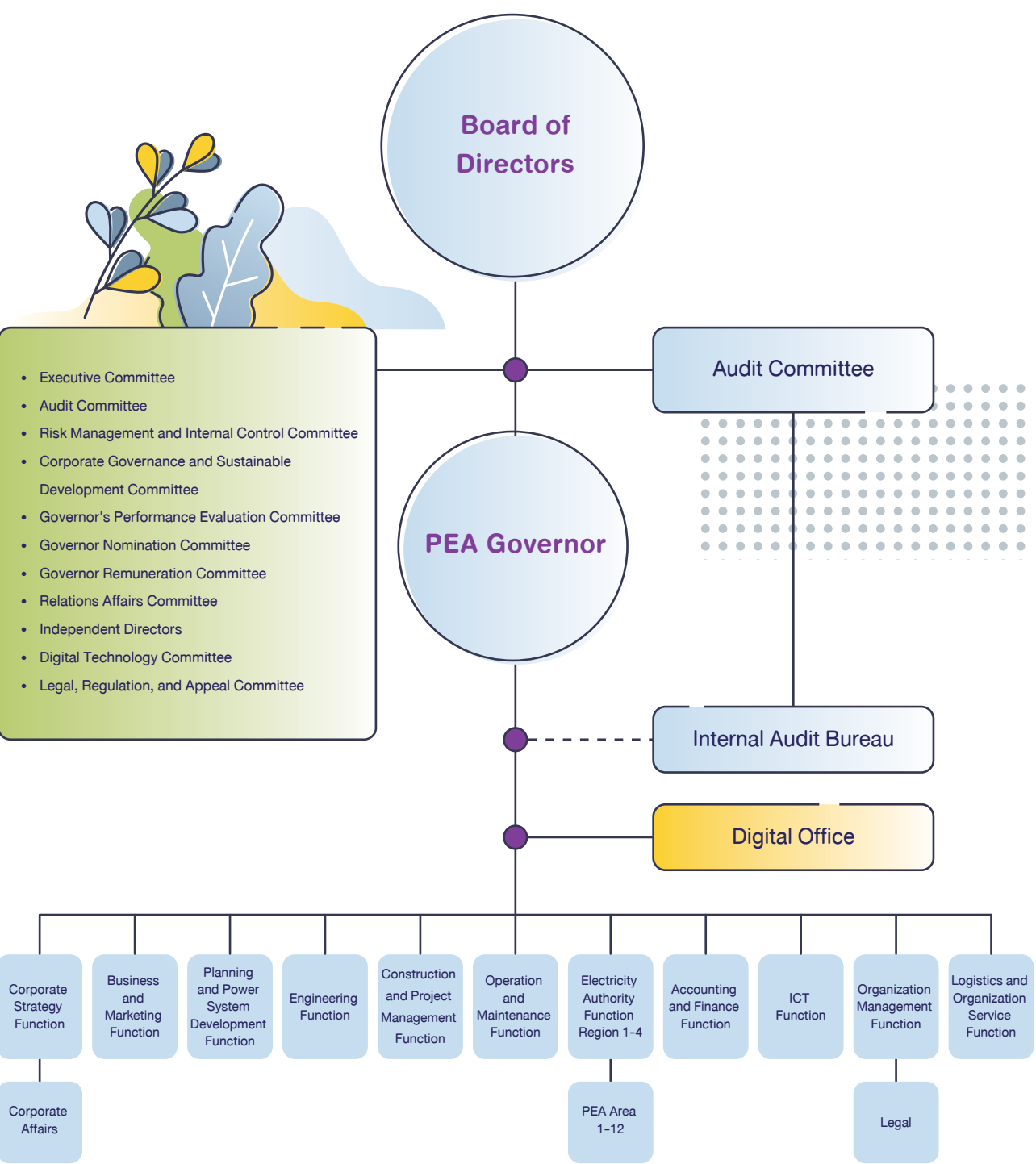
Business Architecture (BA) <sup>(2-6)</sup>

As-Is Business Architecture Level 0



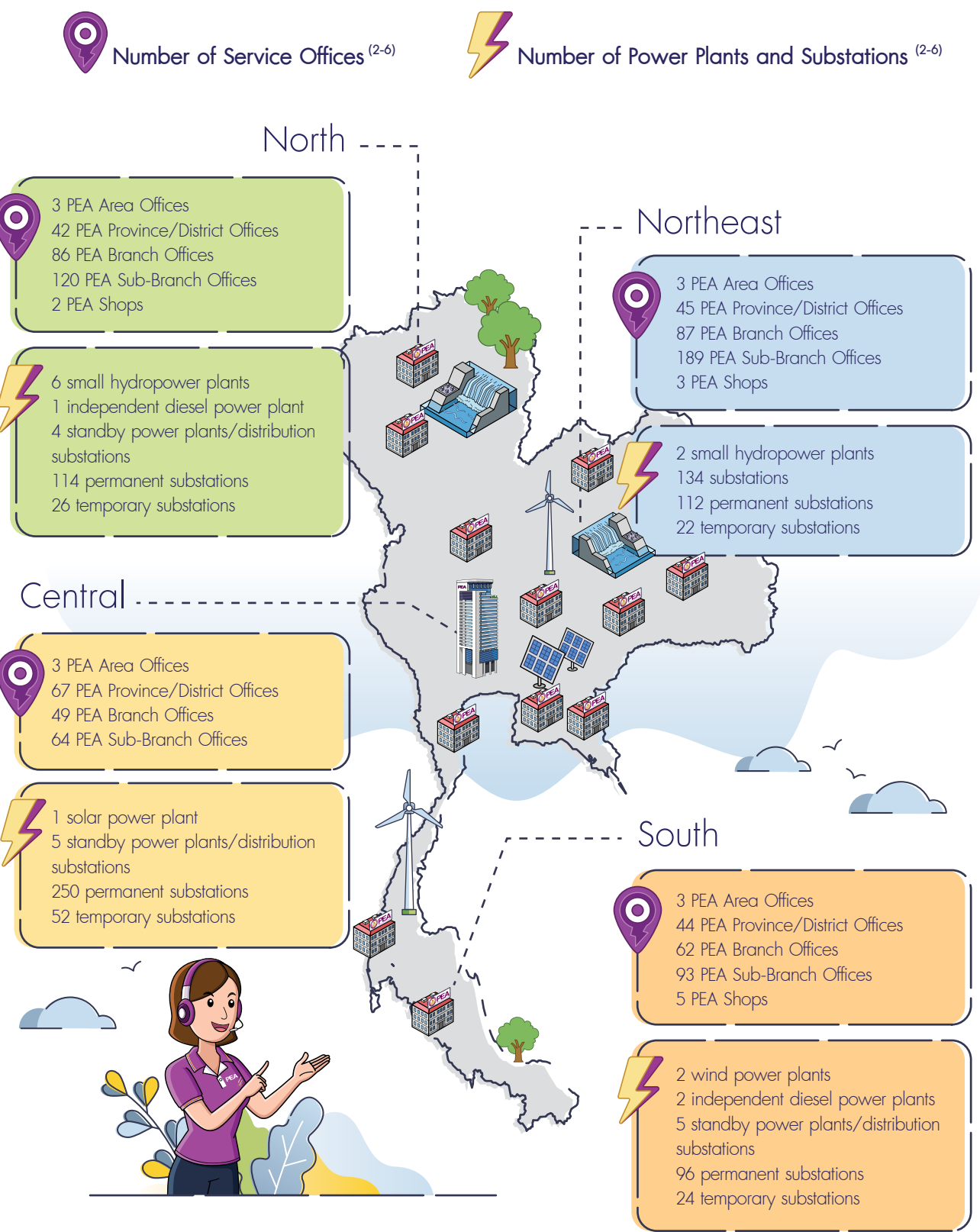
## Sustainability Governance Structure <sup>(2-4, 2-9)</sup>

With the sustainability governance structure in place, the Board of Directors passed a resolution on 19 January 2565 to establish the Corporate Governance and Sustainable Development Committee. The Committee is responsible for overseeing sustainability performance in line with PEA’s commitment to becoming a sustainable organization and its ongoing mission. Furthermore, we made changes to our organizational structure in October 2022 to ensure the effective management and alignment with PEA’s mission and strategies, ensuring it can respond to changes in the industry and the development of new electricity businesses in the future.



## Service Areas <sup>(2-1)</sup>

PEA’s head office is located at 200 Ngamwongwan Road, Ladyao, Chatuchak, Bangkok 10900. We are responsible for providing electricity in 74 provinces in Thailand, excluding Bangkok, Nonthaburi, and Samut Prakan. This represents 99 percent of Thailand, which is approximately 510,000 square kilometers, serving a total of 21,670,057 electricity users.



## Number of Electricity Users <sup>(2-6)</sup>

Electricity Users		2019 (units)	2020 (units)	2021 (units)	2022 (units)
Major Customers	Industrial	36,213	37,066	37,856	38,456
	Major Commercial	50,408	50,394	48,810	51,993
Retail Customers	Residential	17,816,406	18,308,892	18,757,812	19,107,386
	Retail Commercial	1,733,449	1,759,639	1,817,650	1,863,496
Public Sector		557,389	578,726	595,404	608,726
Total Electricity Users		20,193,865	20,734,717	21,257,532	21,670,057

## Corporate Information

### Number of Employees <sup>(2-7, 2-8)</sup>

Number of Employees and Workers by Gender	2019		2020		2021		2022	
	Number (persons)	%	Number (persons)	%	Number (persons)	%	Number (persons)	%
<b>Employees</b>								
Male	21,469	73.82	20,962	73.88	20,870	74.09	20,893	74.38
Female	7,615	26.18	7,410	26.12	7,298	25.91	7,197	25.62
<b>Total</b>	<b>29,084</b>	<b>100</b>	<b>28,372</b>	<b>100</b>	<b>28,168</b>	<b>100</b>	<b>28,090</b>	<b>100</b>
<b>Workers</b>								
Male	3,911	66.73	4,047	66.75	3,705	65.36	3,778	66.46
Female	1,950	33.27	2,016	33.25	1,964	34.64	1,907	33.54
<b>Total</b>	<b>5,861</b>	<b>100</b>	<b>6,063</b>	<b>100</b>	<b>5,669</b>	<b>100</b>	<b>5,685</b>	<b>100</b>
<b>Grand Total</b>	<b>34,945</b>		<b>34,435</b>		<b>33,837</b>		<b>33,775</b>	

**หมายเหตุ:** Employees refer to (1) executives, including Deputy Governors, Assistant Governors, Department Directors/Managers Level 1, Deputy Department Directors, Division Directors, Center Directors, Electric Vocational School Directors, Managers Level 2-3 or equivalents, Deputy/Assistant Division Directors, Deputy/Assistant Center Directors, Deputy/Assistant Electric Vocational School Directors, Deputy Managers Level 1-2, Branch Managers, Assistant Managers Level 3, Section Heads, Sub-Branch Managers, and Assistant Section Heads; (2) experts, including Experts Level 12-13, Researchers Level 9-11, Specialists Level 9, Specialists Level 8, Researchers Level 7-8, and Professional Officers Level 7; and (3) practitioners, including Researchers/Professional Officers Level 4-6 and Professional Officers Level 2-3.

Workers refer to monthly workers, who agree to work for the employer and receive monthly wages according to the workforce plan. They also include full-time workers in the Governor, Deputy Governor, and Assistant Governor Offices, such as drivers and housekeepers.

Area	Employees				Workers			
	2019 Number (persons)	2020 Number (persons)	2021 Number (persons)	2022 Number (persons)	2019 Number (persons)	2020 Number (persons)	2021 Number (persons)	2022 Number (persons)
Head Office	4,040	3,917	3,895	3,878	168	170	166	160
North	5,769	5,572	5,561	5,522	1,163	1,212	1,219	1,227
Northeast	6,786	6,610	6,583	6,584	1,525	1,564	1,400	1,478
Central	7,054	6,953	6,859	6,819	1,693	1,775	1,671	1,679
South	5,435	5,320	5,270	5,287	1,312	1,342	1,213	1,141
<b>Total</b>	<b>29,084</b>	<b>28,372</b>	<b>28,168</b>	<b>28,090</b>	<b>5,861</b>	<b>6,063</b>	<b>5,669</b>	<b>5,685</b>

### PEA Board of Directors <sup>(2-9)</sup>



**1) Full Name :** Unsit Sampuntharat  
(Chairman of the Board) (Directors' Pool 2020)

**Age :** 51

**Position :** Director General, Community Development Department

**Key work experiences :**

- Deputy Permanent Secretary, Ministry of Interior
- Governor, Tak Province

**Education :**

- Master of Development Administration (Public Administration), National Institute of Development Administration
- Bachelor of Political Science, Chulalongkorn University

**Directorships in other organizations :**

Director, Tourism Authority of Thailand

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 4 January 2022.



**2) Full Name :** Danucha Pichayanan  
(Directors' Pool 2020)

**Age :** 52

**Position :** Secretary General, Office of the National Economic and Social Development Council

**Key work experiences :**

- Deputy Secretary General, Office of the National Economics and Social Development Council
- Policy and Plan Advisor, Office of the National Economics and Social Development Council

**Education :**

- Master of Science in Engineering Management, George Washington University, USA
- Bachelor of Engineering, Chulalongkorn University

**Directorships in other organizations :**

- Director, PTT Public Company Limited
- Director, Bank of Thailand

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.





**3) Full Name :** Yodphot Wongrukmit  
(Directors' Pool 2020)

**Age :** 63

**Position :** Retired

**Key work experiences :**

- Chief Advisor, Nakhonchai Air Company Limited
- Senior Advisor, Bangchak Corporation Public Company Limited

**Education :**

- Master of Business Administration, Middle Tennessee State University, USA
- Bachelor of Economics, University of the Thai Chamber of Commerce (2nd Class Honors)

**Directorships in other organizations :**

- Chairman of the Board, PEA ENCOM International Company Limited
- Independent Director, Bless Asset Group

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**4) Full Name :** Thongchai Chawalitpichaet

**Age :** 60

**Position :** Retired

**Key work experiences :**

- Director, Office of Industrial Economics, Ministry of Industry
- Deputy Permanent Secretary, Ministry of Industry

**Education :**

- Bachelor of Engineering, Chiang Mai University

**Directorships in other organizations :**

- Director, Export-Import Bank of Thailand

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**5) Full Name :** Sak Segkhoonthod  
(Directors' Pool 2018)

**Age :** 56

**Position :** Advisor (Digital Transformation), Electronic Transactions Development Agency (ETDA)

**Key work experiences :**

- President, Digital Government Development Agency
- Vice President, Government Information Technology Services, National Science and Technology Development Agency

**Education :**

- Doctor of Philosophy (Electronic Systems Engineering), Essex University, UK
- Master of Computer Studies, Essex University, UK
- Bachelor of Industrial Technology in Electronics, King Mongkut's Institute of Technology Ladkrabang

**Directorships in other organizations :**

- Director, PEA ENCOM International Company Limited
- Director, Payment Systems Committee, Bank of Thailand

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**6) Full Name :** Pol. Maj. Gen. Wiwat Chaisangkha  
(Directors' Pool 2021)

**Age :** 56

**Position :** Deputy Commander, Central Investigation Bureau, Royal Thai Police

**Key work experiences :**

- Commander, Natural Resources and Environmental Crime Division
- Commander, Consumer Protection Police Division

**Education :**

- Master of Public and Private Management, National Institute of Development Administration (NIDA)
- Bachelor of Public Administration, Royal Police Cadet Academy

**Directorships in other organizations :**

- Director, Forest Industry Organization

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**7) Full Name :** Flg. Off. Kamolnai Chaixanien  
(Directors' Pool 2020)

**Age :** 64

**Position :** Vice President, TCC Assets (Thailand) Company Limited

**Key work experiences :**

- Senior Vice President, Thai Beverage Public Company Limited
- Vice President, Asset Management for International Hotels Group, TCC Assets (Thailand) Company Limited

**Education :**

- Master of Business Administration, Cornell University, USA
- Master of Engineering (Operations Research and Industrial Engineering), Cornell University, USA
- Bachelor of Science in Chemical Engineering, University of New Hampshire, USA

**Directorships in other organizations :**

- Director, ASM International Limited
- Director, ThaiBev Marketing Company Limited
- Director, Amarin Printing and Publishing Public Company Limited

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**8) Full Name :** Panit Dhirapharbwongse  
(Directors' Pool 2018)

**Age :** 55

**Position :** Legal Advisor, Office of the Permanent Secretary, Ministry of Finance

**Key work experiences :**

- Director, Legal Affairs Group, Office of the Permanent Secretary, Ministry of Finance
- Head, Legal Affairs Group, Legal Bureau, Revenue Department
- Doctor of Philosophy (Law), Thai Government Scholarship, Queen Mary College, University of London, UK
- Master of International Economic Law, University of Warwick, UK
- Bachelor of Laws, Thammasat University

**Directorships in other organizations :**

- Director, Islamic Bank Asset Management
- Director, KTB Law Company Limited

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**9) Full Name :** Chavang Thaiying  
(Directors' Pool 2021)

**Age :** 60

**Position :** Retired

**Key work experiences :**

- Permanent Law Councilor (Krisdika Counsel, Advisory Level), Office of the Council of State
- Director, Public Law Training and Development Institute
- Master of Laws, Chulalongkorn University
- Bachelor of Laws, Ramkhamhaeng University
- Bachelor of Education, Chulalongkorn University

**Directorships in other organizations :**

None

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 28 October 2020.



**10) Full Name :** Assoc. Prof. Thira Jearsiripongkul  
(Directors' Pool 2018)

**Age :** 47

**Position :** Dean, Faculty of Engineering, Thammasat University

**Key work experiences :**

- Director, Office of the Registrar, Thammasat University
- Assistant to the Rector for Development (Rangsit Center), Thammasat University
- Doctor of Engineering in Applied Mechanics (Dynamics), Technische Universität Darmstadt, Germany
- Master of Engineering in Mechatronics, School of Advanced Technologies (Exchanged Program), Asian Institute of Technology, Bangkok Thailand, Hamburg University of Technology, Hamburg, Germany
- Bachelor of Mechanical Engineering, King Mongkut's University of Technology Thonburi

**Directorships in other organizations :**

None

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 20 July 2021.



**11) Full Name :** Assoc. Prof. Pornanong Budsaratragoon

**Age :** 54

**Position :** Head, Department of Banking and Finance, Faculty of Commerce and Accountancy, Chulalongkorn University

**Key work experiences :**

- Working Group on Provident Fund Capacity Development, Securities and Exchange Commission (SEC)
- Expert, Senate Commission on Economics, Finance, and Treasury
- Doctor of Business Administration (Finance), Chulalongkorn University
- Master of Business Administration (MIS), University of Dallas, USA
- Bachelor of Business Administration (Quantitative Management), Chulalongkorn University

**Directorships in other organizations :**

- Director, Thai-Nichi Institute of Technology Council, Office of the Higher Education Commission

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 20 July 2021.





**12) Full Name :** Col. Saranyu Viriyavejakul  
(Directors' Pool 2019)

**Age :** 53

**Position :** Vice President, Neighboring Countries Economic Development Cooperation Agency (Public Organization)

**Key work experiences :**

- Deputy Director, Peace Operations Center, Directorate of Joint Operations, Royal Thai Armed Forces Headquarters
- Director, Projects and Budget Division, Directorate of Joint Intelligence

**Education :**

- Doctor of Science (Technology of Environmental Management), Mahidol University
- Master of Science (Structural Engineering), Stanford University, USA
- Master of Science (Environmental Engineering), University of California Los Angeles (UCLA), USA
- Bachelor of Science (Honors)(Double Major in Civil Engineering and Nuclear Engineering), United States Military Academy (USMA West Point), USA

**Directorships in other organizations :**

- Executive Director, United Thai-Sweden 1897 Foundation

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 20 July 2021.



**13) Full Name :** Thidarat Thanapakpawin  
(Directors' Pool 2021)

**Age :** 43

**Position :** Vice Chairman and Chairman, Digital Index and Standard Mission, Digital Council of Thailand

**Key work experiences :**

- Director, Information and Communication Technology Committee, Thai Chamber of Commerce
- President, Thai Game Software Industry Association

**Education :**

- Master of Finance/Marketing, Willamette University, USA
- Bachelor of Computer Science, Chulalongkorn University

**Directorships in other organizations :**

- Director, Government Savings Bank

**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 4 January 2022.



**14) Full Name :** Supachai Ek-un  
(Directors' Pool 2021)

**Age :** 57

**Position :** Governor, Provincial Electricity Authority (17 August 2021 - Present)

**Key work experiences :**

- Deputy Governor (Engineering)
- Deputy Governor (Electricity Authority Region 3)

**Education :**

- Master of Engineering (Safety Engineering), Kasetsart University
- Master of Public Administration, Khon Kaen University
- Bachelor of Science in Technical Education (Electrical Engineering), King Mongkut's Institute of Technology North Bangkok

**Directorships in other organizations :**

None

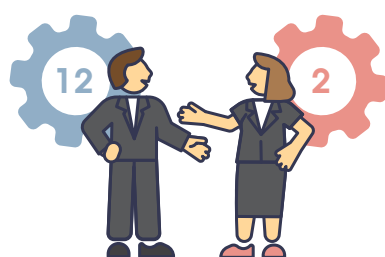
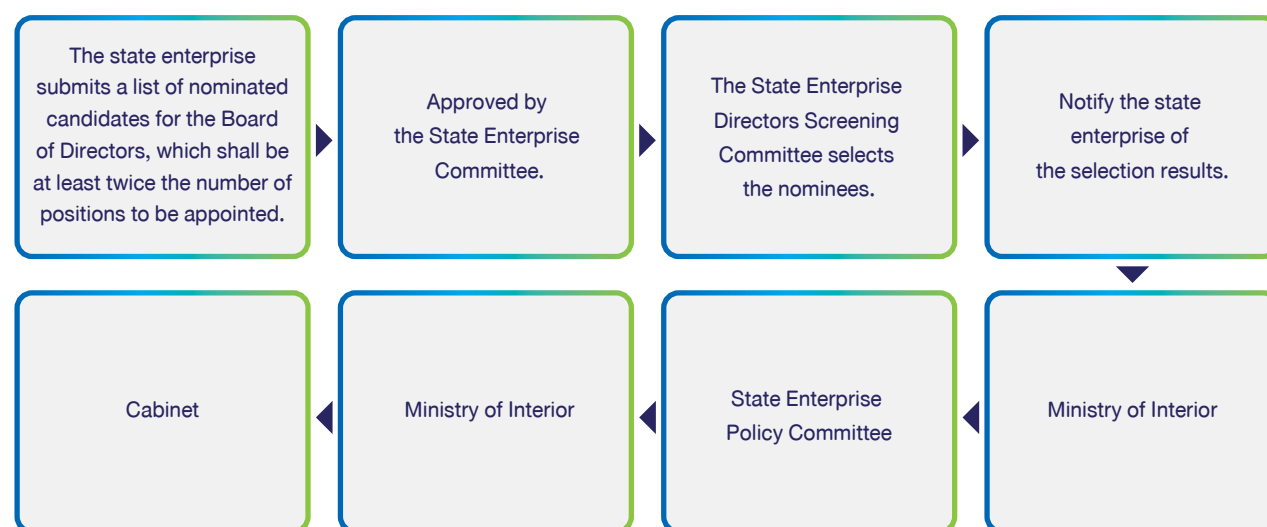
**Note** - Appointed by the Cabinet Resolution to the PEA Board of Directors effective from 17 August 2021.



## Nomination and Selection of the Board of Directors <sup>(2-10)</sup>

The qualifications of individuals nominated as members of the PEA Board of Directors shall comply with the Provincial Electricity Authority Act and the Standard Qualifications of State Enterprise Directors and Employees Act. Candidates are required to be Thai nationals and demonstrate substantial knowledge and expertise in business administration, electricity, engineering, economics, finance, or law. They must also possess other qualifications and no prohibited characteristics as specified in these Acts. Not less than one-third of the total board members must be selected from the Directors' Pool, as established by the Ministry of Finance. Moreover, at least one-third of the total board members must be independent directors in accordance with the Principles and Guidelines on Corporate Governance for State Enterprises 2019. Nominated candidates must be scrutinized by the State Enterprise Directors Screening Committee and approved by the State Enterprise Policy Committee before they are appointed by the Cabinet.

### PEA Board of Directors Nomination Process in Accordance with SEPO's Guideline



### Board Composition <sup>(2-11)</sup>

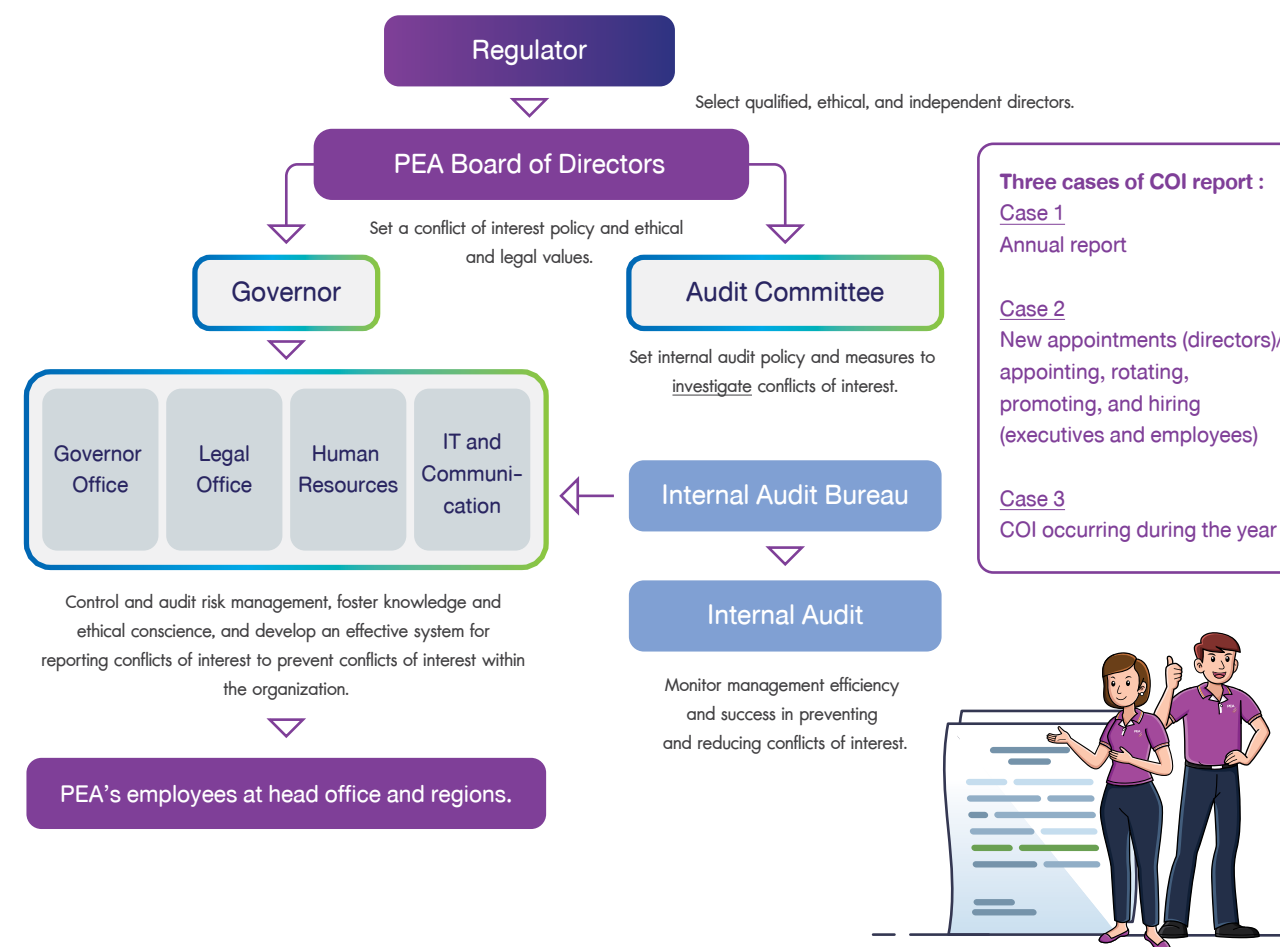
PEA Board of Directors is composed of 14 members, including the Chairman and the PEA Governor, who serves as an ex officio member. Within the Board, there are 12 males and 2 females. At present, 86 percent of the total board members serve terms of one to three years, and the remaining 14 percent serve terms of four to six years. In 2022, PEA had 10 independent directors who exercised judgment and expressed their own opinions free from any external influence. There were four directors representing regulatory agencies and serving as ex officio members. This is in accordance with the Principles and Guidelines on Corporate Governance for State Enterprises 2019 established by the State Enterprise Policy Committee, which stipulates that at least one-third of the total board numbers in a state enterprise shall be independent directors to ensure true independence in decision-making and an adequate number to influence the opinions of the meetings. Independent directors should possess specialized knowledge and abilities that are beneficial to the state enterprise.

## Roles and Responsibilities of the Board of Directors <sup>(2-12, 2-13, 2-14)</sup>

The PEA Board of Directors, appointed by the Cabinet, is responsible for establishing mechanisms to govern and oversee key systems under the principles of good corporate governance. The Board has established 11 specialized committees, each with clearly-defined roles, responsibilities, and authorities, to support the full Board in performing its functions, providing recommendations, and scrutinizing plans before presenting them to the Board for approval. The Corporate Governance and Sustainable Development Committee is responsible for overseeing, monitoring, and evaluating compliance with governance and sustainability policies and plans, and ensuring the effective integration of governance, risk management, and compliance across the organization. It is also in charge of reviewing guidelines for corporate governance, anti-corruption, CSR in Process, and sustainable development across environmental, social, and governance dimensions, benchmarked against international practices, before submitting them to the Board of Directors.

### Conflict of Interest Prevention <sup>(2-15)</sup>

Committed to preventing conflicts of interest, PEA prohibits members of the Board of Directors from having any interests, either directly or indirectly, in contracts or transactions with PEA in accordance with the Provincial Electricity Authority Act 1960. Furthermore, as set forth in the PEA Corporate Governance Manual and Best Practices, the Board of Directors has the duty to establish a conflict of interest policy and ethical and legal values. Additionally, it established the Audit Committee to be responsible for developing internal audit policy and measures to mitigate conflicts of interest. It does this by controlling and monitoring risk management, promoting understanding and ethical awareness, and improving the conflict of interest reporting system to prevent conflicts of interest within the organization.



## Knowledge Development for the Board of Directors <sup>(2-17)</sup>

PEA developed and promoted sustainable knowledge development for the Board of Directors through the following two training courses:

- “BCG Model for PEA” lecture by Dr. Wijarn Simachaya, President of Thailand Environment Institute (TEI).
- “Integration of Sustainability and DJSI” lecture by Advanced Info Service Public Company Limited.

## Performance Evaluation of the Board of Directors <sup>(2-18)</sup>

The evaluation of the performance of the Board of Directors is based on board meeting attendance and self-assessment by individual members and the board as a whole. All members are required to discuss the results of their performance evaluation in a meeting and use them to develop a plan for improving their governance performance in accordance with the PEA Corporate Governance Manual and Best Practices. Currently, sustainability is not included in the performance evaluation criteria. However, the Board regularly monitors and reviews sustainability performance based on the reports submitted by the Corporate Governance and Sustainable Development Committee. In the future, PEA plans to incorporate sustainability criteria into the board performance evaluation to align with global sustainability practices.

## Remuneration of PEA Board of Directors <sup>(2-19, 2-20)</sup>

In compliance with the Cabinet’s Resolution dated 24 April 2019 which approved the adjustments of the rates and rules for monthly remuneration and meeting allowances for boards, committees, subcommittees, and working groups of state enterprise Group 1: large state enterprises, PEA has revised the rates for monthly remuneration and meeting allowances as follows:

### Monthly Remuneration

The chairman of the board of a state enterprise receives twice the remuneration of other board members, as follows:

- 1) The chairman receives 20,000 baht per month.
- 2) The other board members receive 10,000 baht per month.

If a state enterprise board member does not serve a full month, the monthly remuneration shall be paid as proportionate to the duration of their service.

### Meeting Allowance

- 1) Meeting allowance shall be paid on a per-meeting basis, once per month. In exceptional circumstances, it may be paid more than once per month, but not more than 15 times per year.
- 2) The chairman of the board of a state enterprise receives a meeting allowance that is 25 percent higher than that of the board members. Specifically, the chairman receives 25,000 baht, while the other board members receive 20,000 baht.

Members of a committee or subcommittee will receive a meeting allowance on a per-meeting basis at a rate of 0.5 times that of the board meetings (not exceeding 10,000 baht per person per meeting). The chairman will receive a meeting allowance that is 25 percent higher than that of other committee members. The allowance will only be paid to the committee members who attend the meeting. Each committee or subcommittee member can receive a meeting allowance for not more than two meetings per month and one meeting per committee.

### Bonus

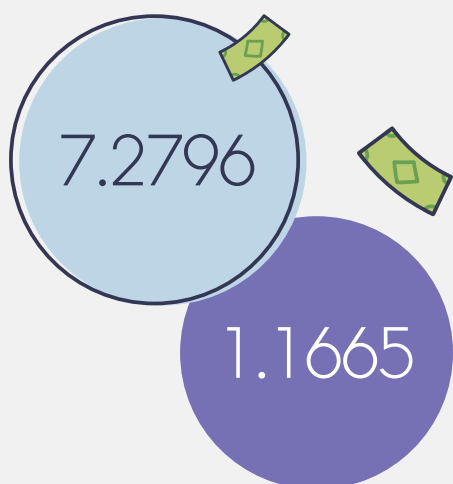
Board members of a state enterprise receive a bonus contingent upon the state enterprise’s performance evaluation. The bonus amount is determined based on the state enterprise’s net profit and evaluation score, in accordance with the rules set by the Ministry of Finance. The chairman and vice chairman of the board receive a bonus that is 25 and 12.5 percent higher than other board members, respectively. If a board member misses more than three monthly meetings in a fiscal year, the following rules will be applied:

- 1) In the event of an absence from meetings for more than three months but not more than six months, the bonus will be reduced by 25 percent.
- 2) In the event of absences from meetings for more than six months but not more than nine months, the bonus will be reduced by 50 percent.
- 3) In the event of absences from meetings for nine months or more, the bonus will be reduced by 75 percent.



### Meeting Allowance, Monthly Remuneration, and Annual Bonuses of the Board of Directors in 2022

Name	Position	Meeting Allowance (baht)		Monthly Remuneration (baht)		Yearly Bonus 2022 Disbursed in 2023 (baht)
		Before Tax	After Tax	Before Tax	After Tax	
Unsit Sampuntharat	Chairman	350,000	315,000	238,666.67	214,800	253,873.49
Danucha Pichayanan	Director	430,000	387,000	120,000	108,000	204,750
Yodphot Wongrukmit	Director	395,000	355,500	120,000	108,000	204,750
Thongchai Chawalitpichaet	Director	430,000	387,000	120,000	108,000	204,750
Sak Segkhoonthod	Director	447,500	402,750	120,000	108,000	204,750
Pol. Maj. Gen. Wiwat Chaisangkha	Director	630,000	567,000	120,000	108,000	204,750
Flg. Off. Kamolnai Chaixanien	Director	450,000	405,000	120,000	108,000	204,750
Panit Dhirapharbwongse	Director	520,000	468,000	120,000	108,000	204,750
Chavang Thaiying	Director	565,000	508,500	120,000	108,000	204,750
Assoc. Prof. Thira Jearsiripongkul	Director	520,000	468,000	120,000	108,000	204,750
Prechaporn Suwatnodom	Director	80,000	72,000	20,000	18,000	34,125
Col. Saranyu Viriyavejakul	Director	552,500	497,250	120,000	108,000	204,750
Assoc. Prof. Pornanong Budsaratagoon	Director	550,000	495,000	120,000	108,000	204,750
Thidarat Thanapakpawin	Director	500,000	450,000	119,333.33	107,400	203,098.79
Supachai Ek-un	Governor (ex officio director)	440,000	330,000	120,000	90,000	227,500



### Annual Total Compensation Ratio <sup>(2-21)</sup>

Ratio of the annual total compensation for the organization's highest-paid individual to the median annual total compensation for all employees (excluding the highest-paid individual): **7.2796**

Ratio of the percentage increase in annual total compensation for the organization's highest-paid individual to the median annual total compensation for all employees (excluding the highest-paid individual): **1.1665**

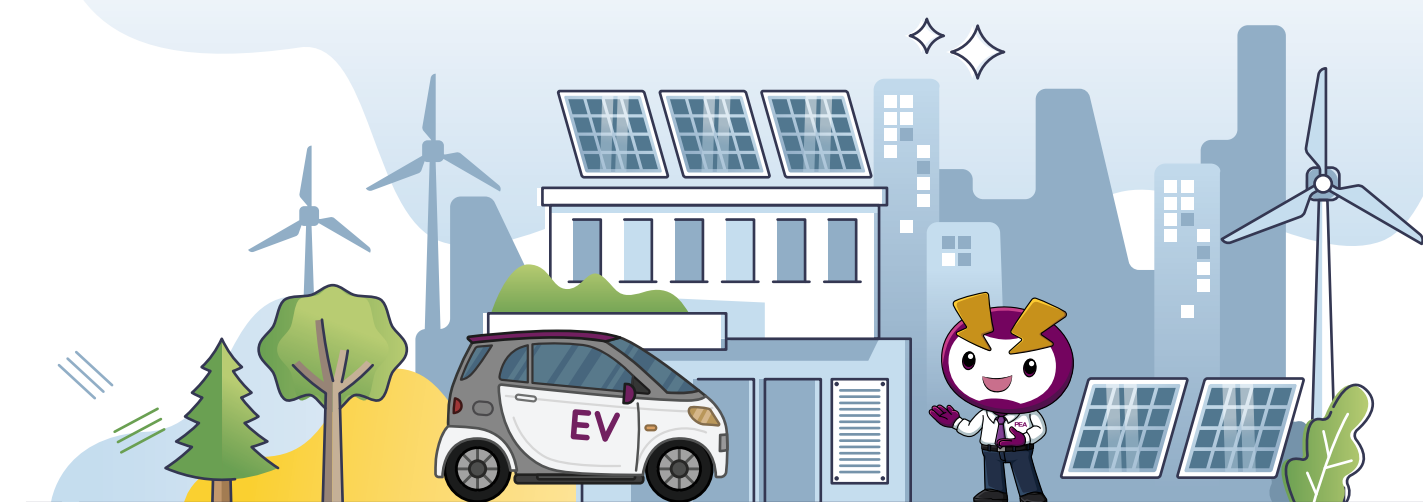


### Membership Associations <sup>(2-28)</sup>

PEA operates in accordance with the Provincial Electricity Authority Act 1960 and has adopted national and international requirements, frameworks, standards, and principles to improve the efficiency of its operations. These include requirements of the State Enterprise Policy Office, SODO ERM Framework, ISO/IEC 22301 Business Continuity Management, ISO/IEC 27001 Information Security Management, ISO 26000 Social Responsibility, GRI Standards, and UN SDGs.

Furthermore, to drive efficient operations and deliver value to communities and society, PEA participates as a member or collaborates with various public and private organizations, as follows:

- Key associations (distribution system): Energy Policy and Planning Office, Office of the Energy Regulatory Commission, Engineering Institute of Thailand under the Royal Patronage, IEEE Thailand Section, Electricity Supply Industry Association of Thailand (TESIA), Heads of ASEAN Power Utilities/Authorities (HAPUA), and Electricity System Reliability Improvement Committee.
- Other associations: Thai Electrical and Mechanical Contractors Association, Personnel Management Association of Thailand (PMAT), Department of Skill Development, Ministry of Labor, Department of Environmental Quality Promotion, and Ministry of Natural Resources and Environment.





## 04 Corporate Governance and Anti-Corruption for Sustainable Value Creation <sup>(3-3)</sup>



PEA acknowledges the importance of governance, placing a strong emphasis on effective management practices and mutual relationships among regulators, directors, executives, and employees. We strive to enhance our competitiveness and achieve sustainable growth while upholding ethical standards, fulfilling our responsibilities towards both internal and external stakeholders, and maintaining transparency and accountability. The PEA Board of Directors is responsible for governing and ensuring that the organization operates with honesty and care under the scrutiny of the Corporate Governance and Sustainable Development Committee. Our executives are also required to act with honesty, integrity, and vigilance, and to demonstrate the organization's commitment to preventing all forms of corruption and improving the Corruption Perception Index (CPI), which is vital for the overall development of the country.

### Goals <sup>(3-3)</sup>

- Become a leading organization that conducts business in accordance with the principles of corporate governance, upholds code of conduct and professional ethics, and maintains a good image and reputation.
- Free from all forms of corruption.
- Employees are equipped with knowledge about and understanding of corporate governance and sustainable development, and uphold their roles as individuals of integrity.
- The number of fraud and misconduct complaints decreases as a result of effective and robust prevention, deterrence, and suppression procedures.
- Stakeholders have confidence in and accept the organization's operations conducted in accordance with the principles of good governance.
- Maintain an Integrity and Transparency Assessment (ITA) score of 95 - 100 (equivalent to AA rating) or to rank first among state-owned enterprises in the energy sector.

### Strategies <sup>(3-3)</sup>

PEA has analyzed the governance system, carefully examining its strengths, weaknesses, opportunities, and threats, to support the development of the PEA Governance and Anti-Corruption Master Plan 2022-2026. This covers ethical standards, professional ethics, core values, and codes of conduct for the Board of Directors, executives, and employees. We have also devised projects and initiatives to drive the plan and regularly monitored their progress. There are four strategies, as follows:

#### Strategy 1

Elevating the commitment to governance and leadership in accordance with the principles of corporate governance.

#### Strategy 2

Promoting knowledges, society, and culture of corporate governance.

#### Strategy

#### Strategy 3

Raising the standards of corporate governance and anti-corruption measures across the PEA's value chain.

#### Strategy 4

Fostering participation in the process and mechanisms of effective deterrence, monitoring, investigation, and punishment.

In addition, in 2022, PEA adopted digital technology to improve the governance and anti-corruption processes, including monitoring and evaluating performance, managing potential risks, and supporting effective communication with all stakeholders. This endeavor not only enhances governance efficiency but is also a pivotal step in transforming PEA into a digital utility.



## Actions Taken to Improve the Governance and Anti-Corruption System

- Integrating corporate governance and anti-corruption into the PEA Strategic Plan 2022-2026, setting the Strategic Objective 1 (SO1) to elevate management practices to international standards for sustainability.
- Developing the PEA Governance and Anti-Corruption Master Plan 2022-2026, which consists of four strategies and 23 action plans. Plan implementation and progress are followed up on quarterly and reported to the Governor, Corporate Governance and Sustainable Development Committee, and Board of Directors for consideration.
- Integrating corporate governance into the Governance, Risk Management, and Compliance (GRC) Policy to ensure an effective management system under the principles of corporate governance, allowing PEA to achieve its vision and mission, build confidence among both direct and indirect stakeholders, and drive sustainable growth.
- Promulgating the No Gift Policy 2022 to reaffirm PEA's commitment to operating with transparency and fighting corruption in all its forms.
- Declaring an intention to combat corruption as a reaffirmation of PEA's determination to operate with integrity, transparency, and good corporate governance, promote ethical and responsible business, become a good corporate citizen, and achieve corporate resilience. This declaration has been held annually for seven consecutive years and is participated in by all PEA's executives and employees nationwide.
- Participating in the Integrity and Transparency Assessment (ITA) conducted by the Office of the National Anti-Corruption Commission (NACC) for the ninth consecutive year. The assessment results are used to improve the organization's performance in terms of integrity and transparency.

- Requiring senior executives to serve as role models for workplace ethics and core values (TRUSTED). Video clips are created to show exemplary behavior and posted on internal and external communication channels. Additionally, the PEA TRUSTED HEART activity allows employees to submit stories of colleagues who exemplify workplace ethics or core values.
- Organizing soft control activities and training to promote integrity and transparency in the workplace and raise awareness of anti-corruption for three target groups: 1) students of the PEA Electric Vocational School, 2) new employees, and 3) existing executives and employees.
- Integrating the PEA Sustainability and Transparency Standards into the Control Self-Assessment System (CSAS) to monitor and evaluate the performance of more than 1,000 organizations affiliated with PEA across the country. This ensures they understand and are committed to transparent practices and work together to improve operational efficiency.
- Incorporating technology into the CG e-System and improving it to international standards. The system comprises three components: CG Testing, which assesses understanding of corporate governance and anti-corruption; COI Reporting, which facilitates the reporting of conflicts of interest with PEA; and CG Acknowledgement, which facilitates the communication and dissemination of the corporate governance manual.





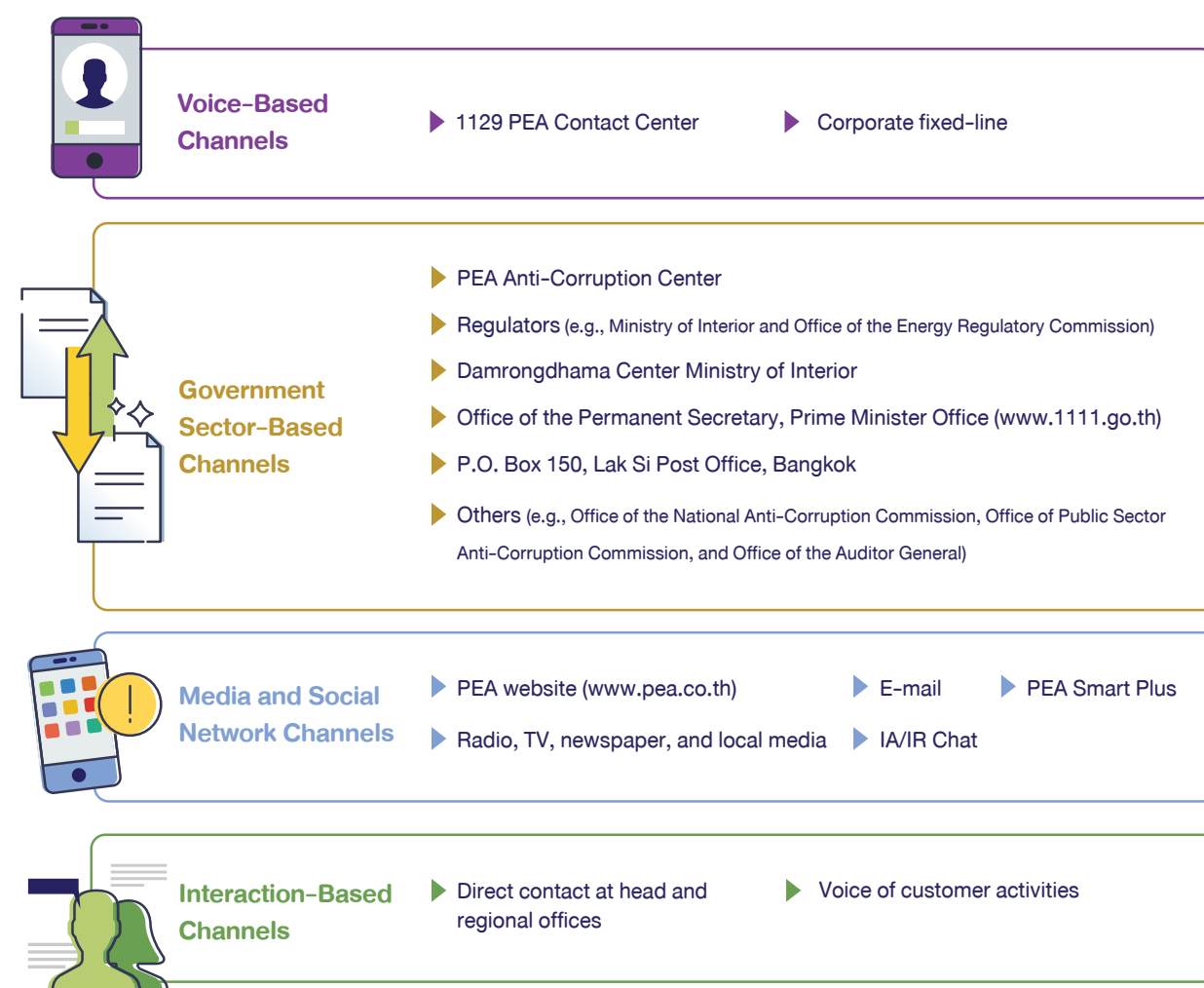
## Collaboration to Drive a Corruption-Free Society

In 2022, PEA collaborated with external organizations to develop an effective governance and anti-corruption system and leverage PEA's knowledge and competencies to empower communities and stakeholders to fight against corruption. Actions taken included:

- Signing the MOU on "Improving PEA's Integrity and Transparency" between the Anti-Corruption Foundation and PEA to drive the "PEA Chorsaard Community Project" which consists of four key principles: clean body, clean mind, clean behavior, and clean wisdom.
- Joining the Integrity Pact Initiative which requires that an integrity pact must be made between PEA, the bidder, and an observer for procurements with a value exceeding 1,000 million baht. This is aimed at building confidence among private companies participating in bidding.
- Collaborating with the Anti-Corruption Organization of Thailand to audit PEA's 725 procurement projects, with the help of the ACT AI system. Audit reports are then used to identify measures and actions to rectify and prevent corruption in procurement.

## Complaint and Whistleblowing Channels <sup>(2-16, 2-26)</sup>

PEA systematically manages complaints and reports of corruption and misconduct, involving stakeholders in evaluating the organization's governance performance and ensuring fairness for all parties. There are over 20 channels in place, such as the PEA Application, PEA Website, 1129 PEA Contract Center, and the mass media.

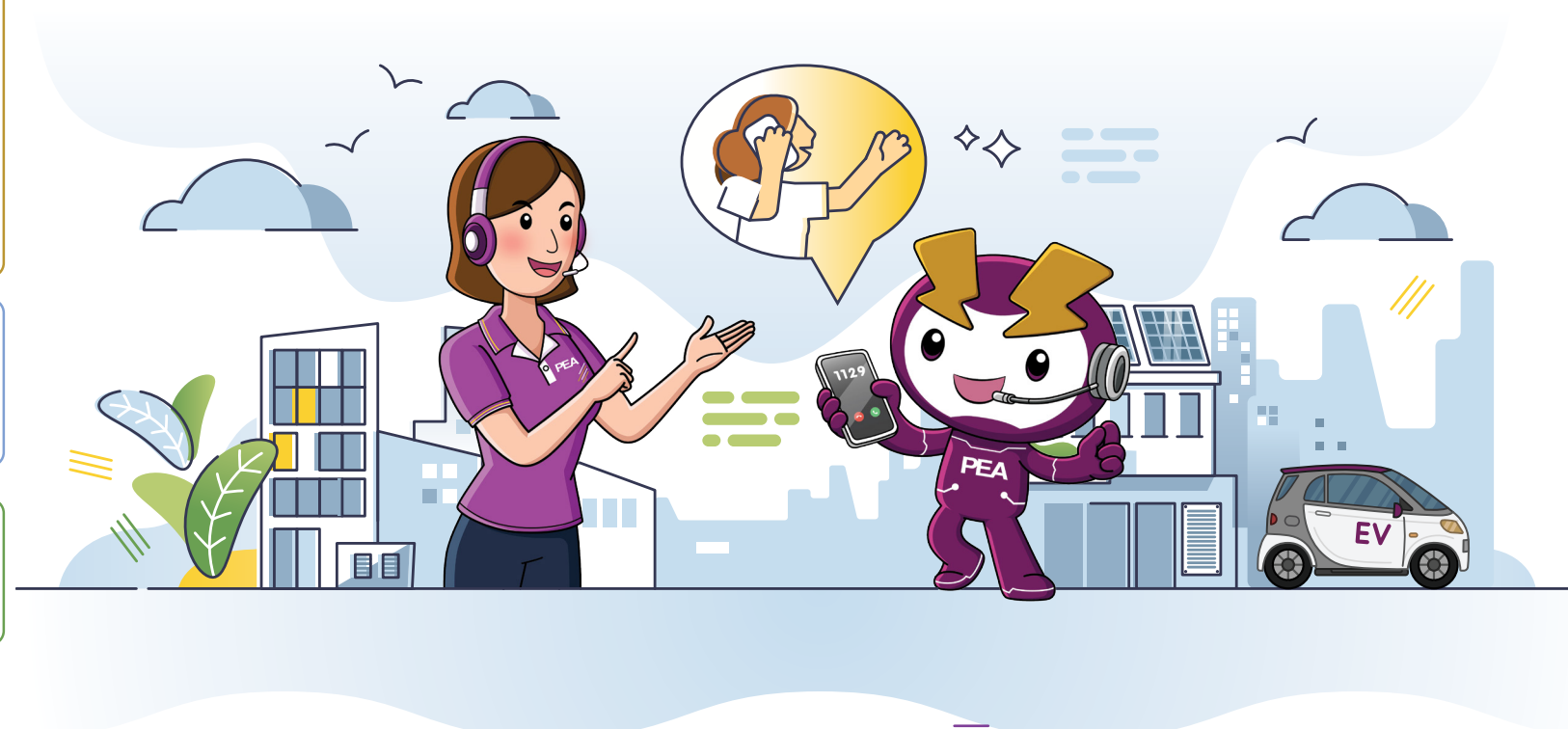


We have developed the PEA-VOC system which has a centralized database to receive and systematically handle complaints. This system not only improves data storage and progress tracking efficiency but also strengthens PEA's commitment to transparency practices. The PEA-VOC system enables reporting of various types of concerns, categorized into six types of complaints and eight types of whistleblowing reports, as follows:

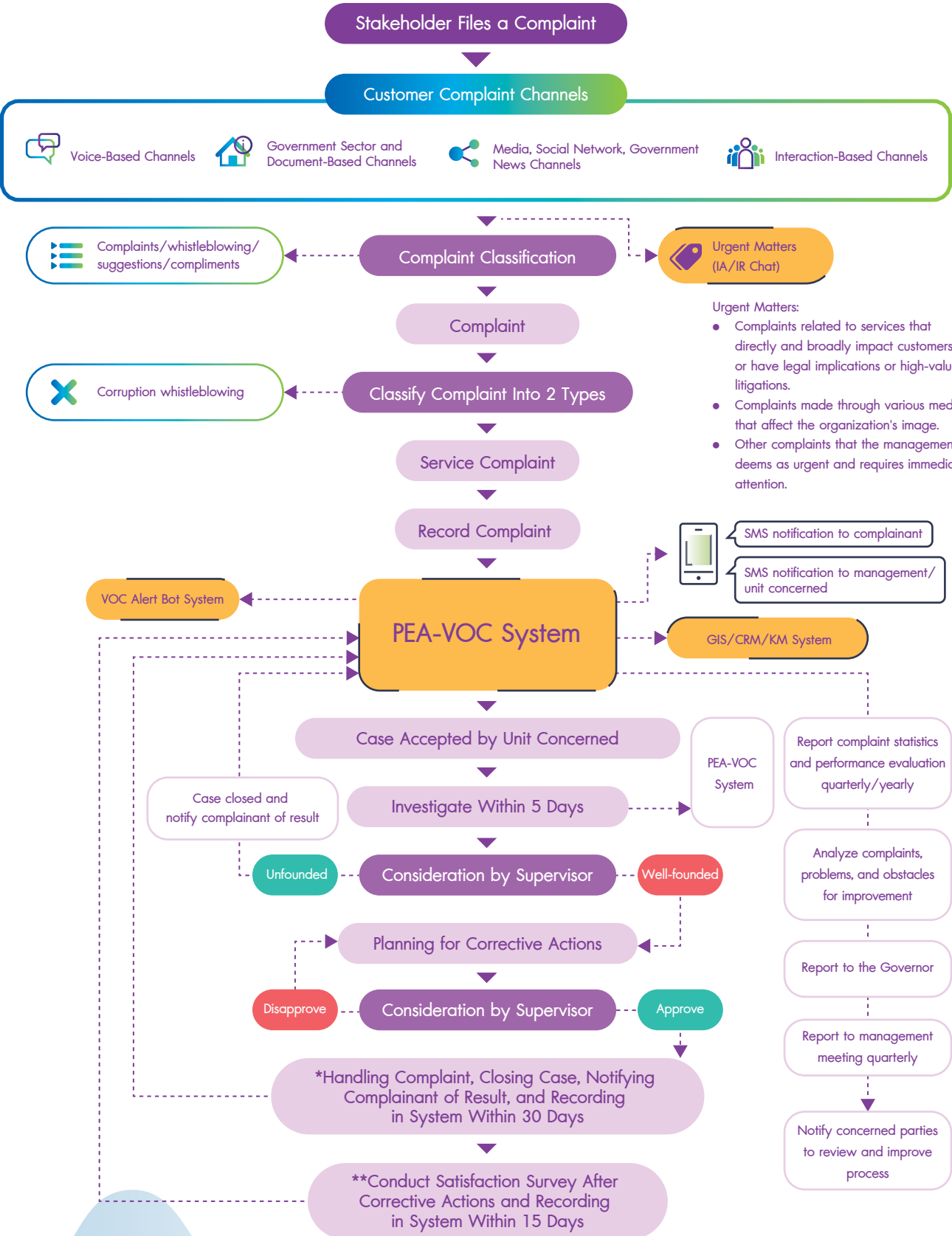
Type of Complaints	Type of Whistleblowing Reports
1. Electric power quality	1. Procurement process
2. Service	2. Human resource process
3. Meter reading/billing	3. Customer service process
4. Service shut-off	4. Financial process
5. Employee behavior	5. Misconduct/violation of the Code of Conduct
6. Other	6. Electric power system process
	7. Management and administration process
	8. Other

## Complainant and Whistleblower Protection

The PEA Complaint Management Handbook sets out rules for protecting complainants and whistleblowers, requiring the responsible officers to keep their information confidential and to prioritize the safety and well-being of complainants, whistleblowers, witnesses, and informants to protect them from any harm or unfair treatment that may arise from their involvement in the investigation process.

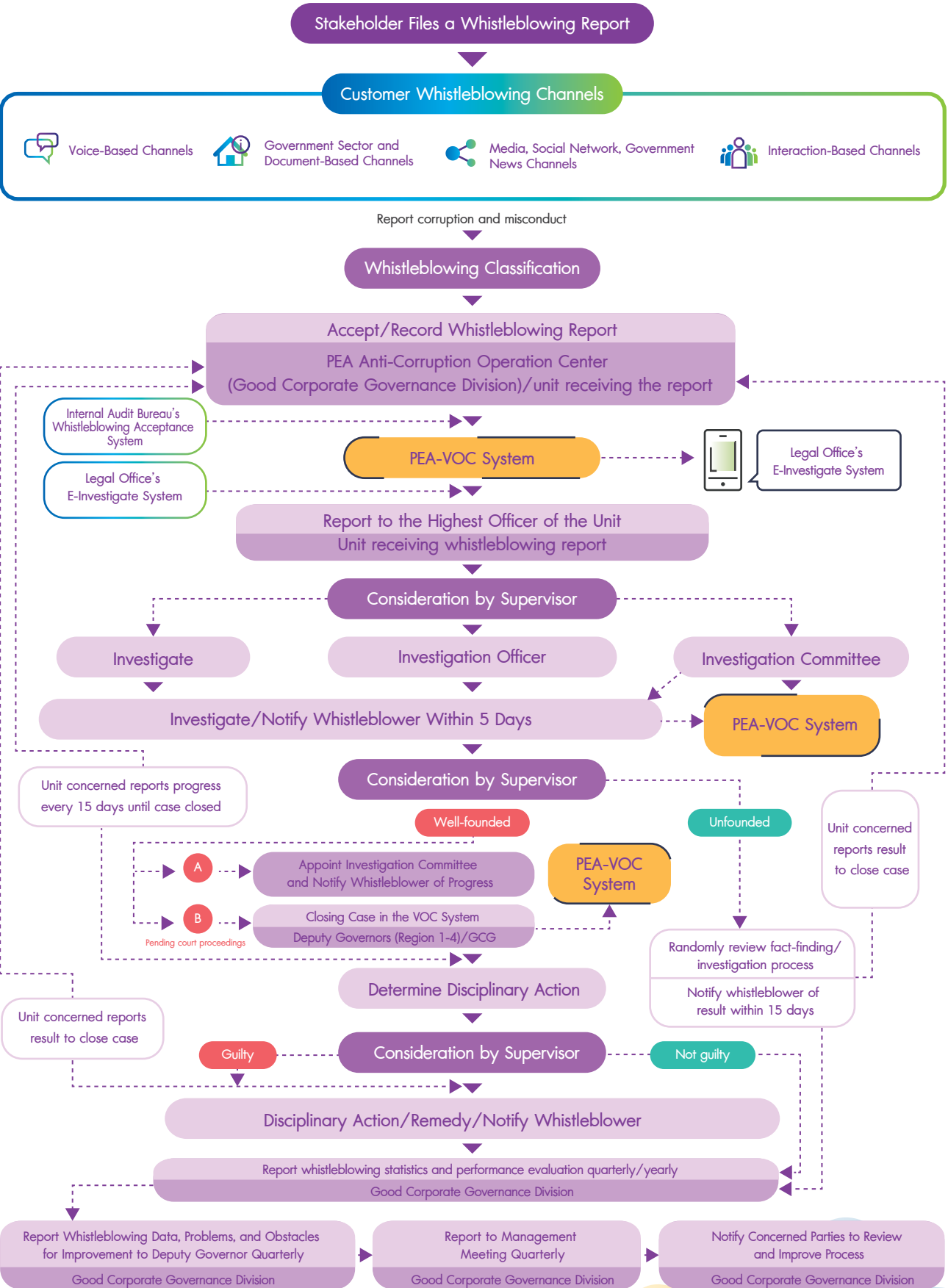


Service Complaint Handling Process (2-16, 2-26)



Notes:  
\*For power quality corrective action tracking (technical) in the PEA-VOC system, information can be added in the system within 120 days after closing case.  
\*\*Satisfaction survey should be conducted for Code I and Code M only (and not for Code C operated by the PEA Contact Center).

Whistleblowing Handling Process





### Corporate Governance and Anti-Corruption Performance

- PEA regularly conducts a fraud risk assessment in procurement processes in accordance with the rules and guidelines set by the Public Sector Anti-Corruption Commission (PACC). In 2022, five projects were assessed, including: <sup>(205-1)</sup>

No.	Project	Responsible Entity
Core Business		
1	4,450 Metric Tons of Aluminum Ingot Purchase	Procurement Department
2	4,000 Metric Tons of Aluminum Ingot Purchase	
Supplementary Business		
3	Power Distribution System Rehabilitation in Fort Vajiravudh, Pak Phun Subdistrict, Mueang District, Nakhon Si Thammarat Province	Engineering Services Department
4	Purchase and Installation of Communication, Interstrip, Direct Transfer Trip, and Tele Protection Systems to Connect Bio Power Plant's Substations and Khlong Khlung Clean Energy Power Plant in Kamphaeng Phet Province with PEA's Power System	
5	Construction of 115-22 kV Outdoor AIS Substation, 115 kV Transmission Line, 22 kV Distribution System, and 22 kV Emergency Circuit for Cal-Comp Electronics (Thailand), Samut Sakhon Province	

- PEA communicated its anti-corruption policies and procedures to 14 board members and 27,226 officers, accounting for 97.61 percent of the total employees, and to 3,900 business partners across the country, accounting for a 94.09 percent of total partners. <sup>(205-2)</sup>

### Number of People that have Received Communication on Anti-Corruption Policies and Procedures

People Category	Total Number of People That Have Received Communication on Anti-Corruption Policies and Procedures	%
Board of Directors	14	100.00
Employees by Region		
Head Office	3,704	95.64
North	5,395	97.42
Northeast	6,377	97.48
Central	6,620	97.42
South	5,125	97.77
Suppliers by Region		
Head Office	920	98.61
North	569	96.93
Northeast	317	78.66
Central	1,281	94.26
South	813	94.21

### Number of People that have Received Training on Anti-Corruption

People Category	Total Number of People That Have Received Training on Anti-Corruption	%
Board of Directors	14	100.00
Employees by Region		
Head Office	3,878	100.00
North	5,522	100.00
Northeast	6,584	100.00
Central	6,819	100.00
South	5,287	100.00

- There was a total of eight incidents of corruption involving the misappropriation of government assets. In these cases, eight employees were disciplined: three were dismissed and five were discharged. <sup>(205-3)</sup>
- There was a total of 118 complaints received, of which 50 have been addressed. Among these, 15 were grounded, down by 28.57 percent from the previous year (21 complaints).





Type of Complaints	Number (complaints)	%
1. Procurement process	15	12.71
2. Human resource process	12	10.17
3. Customer service process	9	7.63
4. Financial process	8	6.78
5. Misconduct/violation of the Code of Conduct	56	47.46
6. Electric power system process	6	5.09
7. Management and administration process	1	0.85
8. Other	11	9.32
<b>Total</b>	<b>118</b>	<b>100.00</b>

Of the 118 complaints, 50 have been addressed and settled and 68 are still being handled. However, PEA has established measures to enhance handling efficiency and reduce the number of complaints received. The following measures will be implemented in 2023:

- Improving the PEA-VOC System to handle corruption and misconduct complaints more effectively, in line with the PEA Complaint Management Handbook.
- Improving the management of corruption and misconduct whistleblowing through the PEA Anti-Corruption Operation Center (PEA ACOC) using GRC processes, such as analyzing causes and factors contributing to corruption risks, integrating with PEA's risk management and internal control systems, and conducting internal control audits.
- Developing an AI system and integrating it with the Anti-Corruption Organization of Thailand's AI system to monitor procurement activities.
- Communicating with and raising awareness among executives and employees of regulations and disciplinary actions.
- A two-part Soft Control Program: (1) organizing activities to raise awareness of corporate governance, integrity, and transparency in the workplace in three target groups: 1) PEA Electric Vocational School students, 2) new employees, and 3) executives and existing employees, and (2) organizing activities and lectures on corporate governance and anti-corruption in the workplace in 2022 at headquarters and in provincial areas. There were 46,160 executives, employees, and PEA Electric Vocational School students participating in these activities.
- Declaring the PEA Anti-Corruption 2022 under the title "PEA Zero Tolerance" for the seventh consecutive year to demonstrate PEA's commitment to operating with honesty, integrity, transparency, and in accordance with the principles of corporate governance. A total of 32,904 people, or 96.39 percent of the total employees, joined the event.



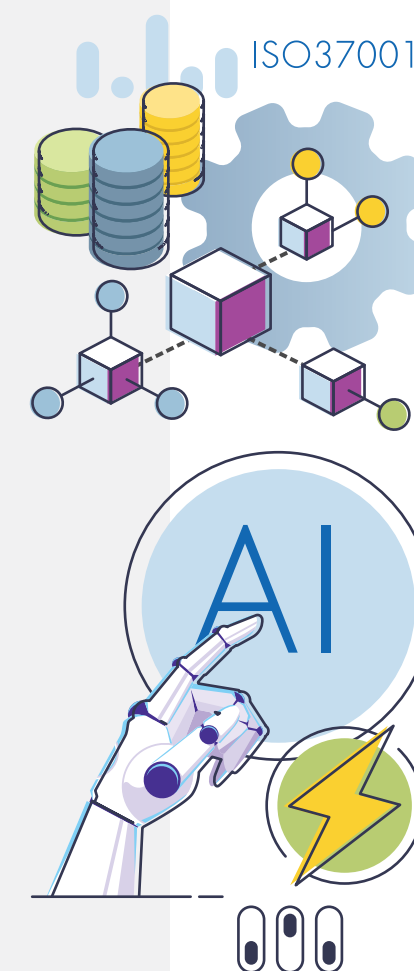
- In the 2022 Integrity and Transparency Assessment (ITA) conducted by the Office of the National Anti-Corruption Commission, PEA achieved a score of 97.37 or an AA rating, ranking first for state enterprises in the energy sector and sixth out of all the state enterprises being assessed.
- Results of implementing technology in the CG e-System in 2022 (Status as of November 30, 2022):
  - The CG Testing yielded a score of 96.95 percent, based on a sample group of 26,525 people, or 98.93 percent of the total employees.
  - The CG Acknowledgement rate was 97.61 percent, exceeding the target of 90 percent.
  - The COI Reporting showed the following results:
    - 1) annual reporting achieved a 100 percent submission rate among the employees required to submit reports, and 2) it reached 99.97 percent of employees who underwent processes of appointment, transfer, promotion, and recruitment.
- The stakeholder satisfaction survey yielded a high level of satisfaction with PEA's procurement transparency (a score of 4.17 out of 5). The survey was conducted through questionnaires with a total of 34 respondents.
- PEA has summarized the progress of the Integrity Pact (IP) program in the Corporate Governance and Anti-Corruption Performance Report 2022. It was also presented to the Governor and Corporate Governance and Sustainable Development Committee for consideration every quarter. In 2022, five projects were implemented under the Integrity Pact:

Function	Project
Operation and Maintenance, and Corporate Support Functions	1. Electronic Meter Purchase for Watt-Hour Meter Replacement (3,291.23 million baht)
Operation and Maintenance Function	2. Distribution System Dispatching Center Improvement (4,530 million baht)
ICT Function	3. Purchase, Development, Installation, and Maintenance of the Enterprise Resource Planning System (ERP) and Utility Platform (UTP) (4,998.47 million baht)
Engineering Function	4. Submarine Cable Extension to Koh Tao, Surat Thani Province (1,786 million baht) 5. 115 kV Submarine Cable Extension to Koh Samui, Surat Thani Province for Replacement and Power Reinforcement (2,133 million baht)



### Plans for Future Improvements <sup>(3-3)</sup>

- Improving the PEA Anti-Corruption Operation Center's whistleblowing management efficiency through:
  - Streamlining the whistleblowing management process to align with data governance practices.
  - Analyzing data and possibilities to improve anti-bribery practices to meet the ISO 37001 Standard.
  - Developing the PEA-AI system for procurement management and auditing the PEA-AI system through the Control Self-Assessment System (CSAS).
  - Promoting participation in the PEA transparency network to monitor corruption and organize training activities.
- Expanding the target audience for promoting knowledge and awareness of corporate governance and anti-corruption measures (soft control) to cover the following four groups: 1) PEA Board of Directors and Committees, 2) executives, employees, and workers, 3) new hires, and 4) PEA Electric Vocational School's students from years 1 to 3.
- Developing the fraud risk assessment to cover all aspects in accordance with the Fraud Risk Assessment Guidelines established by the Office of Public Sector Anti-Corruption Commission (PACC).

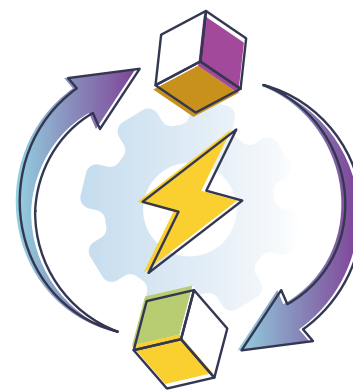




## 05 Business Trends and Changing Direction

In today's dynamic global landscape, organizations are grappling with constant changes stemming from new government policies, technological disruptions, and shifting consumer behaviors. PEA is not immune to these challenges. It is imperative for us to improve our work processes and service capabilities to meet the needs and expectations of all stakeholders effectively.

We strive to design and develop our work systems, system requirements, integrated and competitive work processes, and specifications to better respond to the needs of stakeholders and customers. This will allow us to adapt to economic, social, environmental, and technological changes. We will also create business opportunities and enhance competitive advantage by leveraging our skills and expertise, as well as the capabilities of our suppliers/partners, driving PEA to achieve its strategic objectives and goals.



### Goals <sup>(3-3)</sup>

- Develop work systems, work processes, organizational structures, and job descriptions to align with both internal and external factors, including government policies, PEA strategic plans, business trends, and digital technologies.
- Prepare and develop employees to ensure that they have the knowledge and skills to keep up with future changes in technology and electric power, as well as to adapt to changing circumstances.
- Manage changes to enable affected stakeholders to understand and adapt, creating an adhocratic culture.

### Strategies <sup>(3-3)</sup>

- Assess and analyze the internal and external factors that impact changes within PEA.
- Enhance the effectiveness of organizational structures, and work systems and processes.
- Regularly review the Business Architecture (BA) to align with changing internal and external factors and provide a framework for improving work systems, work processes, organizational structures, and job roles.
- Develop a change management plan for key projects that have an impact on PEA.
- Conduct stakeholders, change impact, and gap analysis.

### Business Trend and Direction Management <sup>(3-3)</sup>

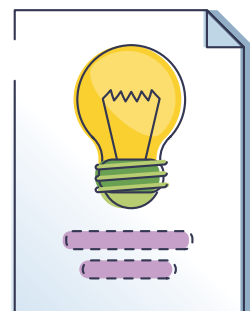
PEA designs and reviews its work systems and processes, and system requirements using various inputs, including corporate vision, expertise, sustainability factors, strategic direction, position, and objectives, performance results, and balanced scorecard. Other inputs are the needs and expectations of stakeholders, public sector shareholder policies, laws, cabinet resolutions, regulators' policies, benchmarking organizations, operational standards, and internal factors, such as PEA's master plans.





## Responses to Business Trends and Direction

- Integrating the design and review of work systems, work processes, and system requirements across all relevant functions with the Business Architecture is the first step of improving PEA's organizational structure to meet the needs and expectations of all stakeholders and to respond to PEA's strategies.
- Implementing and expanding the PEA Pilot Project to support organizational restructuring.



## Plans for Future Improvements <sup>(3-3)</sup>

- Monitoring changes in government policies on a macro level to review and improve work systems and processes, as well as creating effective plans to adapt to the resulting changes.
- Making a transition plan for organizational restructuring and employee development that encompasses upskilling, reskilling, and new skilling, in preparation for future changes in the electricity business landscape.
- Developing a change management plan for key projects that have an impact on PEA.
- Developing a performance tracking system that aligns with PEA's work systems and processes.
- Using lessons from past operations to improve performance.







## 06 Free and Fair Competition <sup>(206-1)</sup>



Due to changes in energy technology and consumer behavior, there is a push for electricity businesses to restructure in accordance with the national energy action plan which will transform the electricity industry into a merchant-power market. As a grid service provider and power distributor, PEA recognizes the importance of and supports free and fair competition. We have established guidelines for fair and transparent competition practices, prohibiting the exploitation of any powers or political relationships to gain unfair market advantages and ensuring that our operations in every project are conducted with utmost transparency and fairness.

### Goals <sup>(3-3)</sup>

- Improve the quality of products and services and make them accessible to everyone at an affordable price. This will enhance customers' quality of life and create satisfaction among stakeholders across all sectors.
- Prepare PEA to support national electricity restructuring and to enable it to work toward the defined strategic direction and position. Develop a PEA roadmap that is transparent, fair, and free of conflicts of interest.
- Prepare and develop employees to enable them to keep up with changes in technology and the electricity industry and compete in the market effectively.
- Develop specifications and procedures that align with the roadmap, including third-party access (TPA) code, account unbundling, functional unbundling, and legal unbundling.
- Communicate with the responsible parties of various projects under the merchant power market roadmap to ensure that they develop action plans that effectively drive the implementation of the roadmap and lead to tangible results.

### Strategies <sup>(3-3)</sup>

- Assess strategic potential by analyzing internal and external factors related to PEA's ongoing changes and the restructuring of Thailand's electricity.
- Identify strategic directions and develop action plans with responsible functions to support the restructuring of electricity.
- Develop a human resource management framework for the electricity market to support and facilitate the implementation of strategies, plans, and initiatives in response to the restructuring of electricity.

### Free and Fair Competition Management <sup>(3-3)</sup>

The liberalization of the electricity industry presents a potential risk to PEA's business. In particular, the heightened competition resulting from increased market options may lead to a decline in the number of PEA's customers, directly affecting its revenue. In response to this, PEA has formulated plans to prepare for future competition, as follows:

- Appoint a working group to monitor and evaluate the progress of electricity market liberalization.
- Design the enterprise architecture (EA), including processes, tools, software, and data management systems, for activities related to electricity liberalization.

### Free and Fair Competition Performance <sup>(206-1)</sup>

- Developed the PEA Roadmap to support the restructuring of the electricity industry.
- Coordinated with relevant organizations through meetings, discussions, and follow-ups. The working group is responsible for monitoring and evaluating the progress of electricity liberalization and assessing PEA's readiness for the liberalization on a monthly basis.
- Developed the Third-Party Access (TPA) Code for power purchasers in the market.
- Implemented functional unbundling and account unbundling to ensure transparency, fairness, and integrity in service provision within the framework of the liberalized electricity industry.
- Developed legal unbundling guidelines.
- There was no anti-competitive behavior, violations, antitrust issues, or monopolies in 2022.

### Plans for Future Improvements <sup>(3-3)</sup>



- Developing strategic plans for organizational restructuring and human resource management to prepare for electricity liberalization.
- Streamlining operational processes and developing strategic plans for future competition in line with the government policies related to electricity liberalization.
- Improving procurement processes to foster consumer confidence and lay a strong foundation for fair competition in the future.
- Developing a plan to scale up ongoing efforts in line with the current and future government policies related to electricity liberalization.

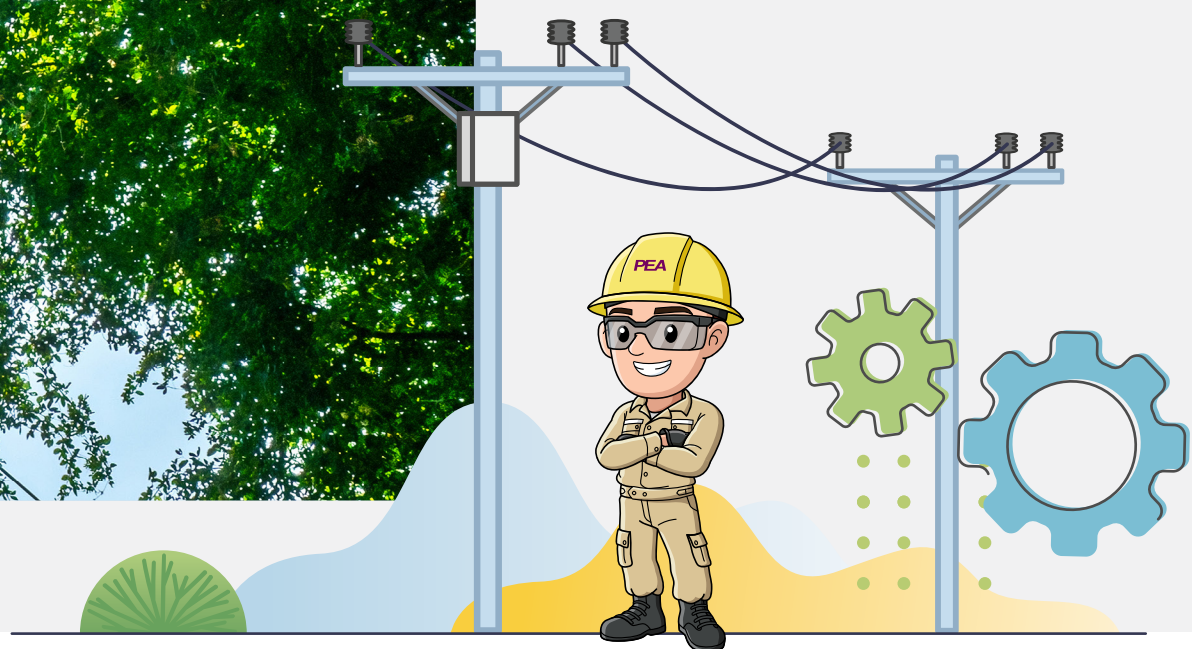




## 07 Enterprise Risk Management



PEA understands the impact of economic, social, and environmental risks on an energy business. Among the most critical are operational costs and energy prices, which play a pivotal role in determining the success of PEA's business operations. To respond to these risks, PEA has implemented the COSO ERM 2017 (Enterprise Risk Management Integrating with Strategy and Performance) Framework. We developed a risk management policy, established corporate objectives, identified risks and assessed them in terms of opportunities and impacts, and set measures and processes in place to prevent or mitigate damages, ensuring that risk management remains timely and aligned with the evolving environment. This enables PEA to pursue its mission and vision confidently, while adapting sustainably to business changes.





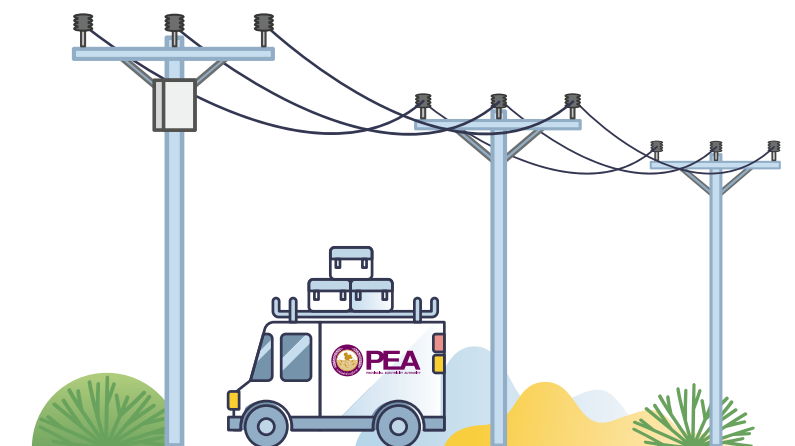
## Goals

- Operate with efficiency and effectiveness while responding to economic, social, and environmental changes in a timely manner to attain strategic objectives and operational targets within acceptable risk levels.
- Maintain a balance between risk and return to meet the expectations of stakeholders, conduct operations in compliance with applicable laws and regulations, and effectively utilize resources.
- Build power system stability and reliability and create value, allowing the organization to meet the needs of stakeholders.

## Strategies

PEA has divided its strategic positioning into three phases, which are:

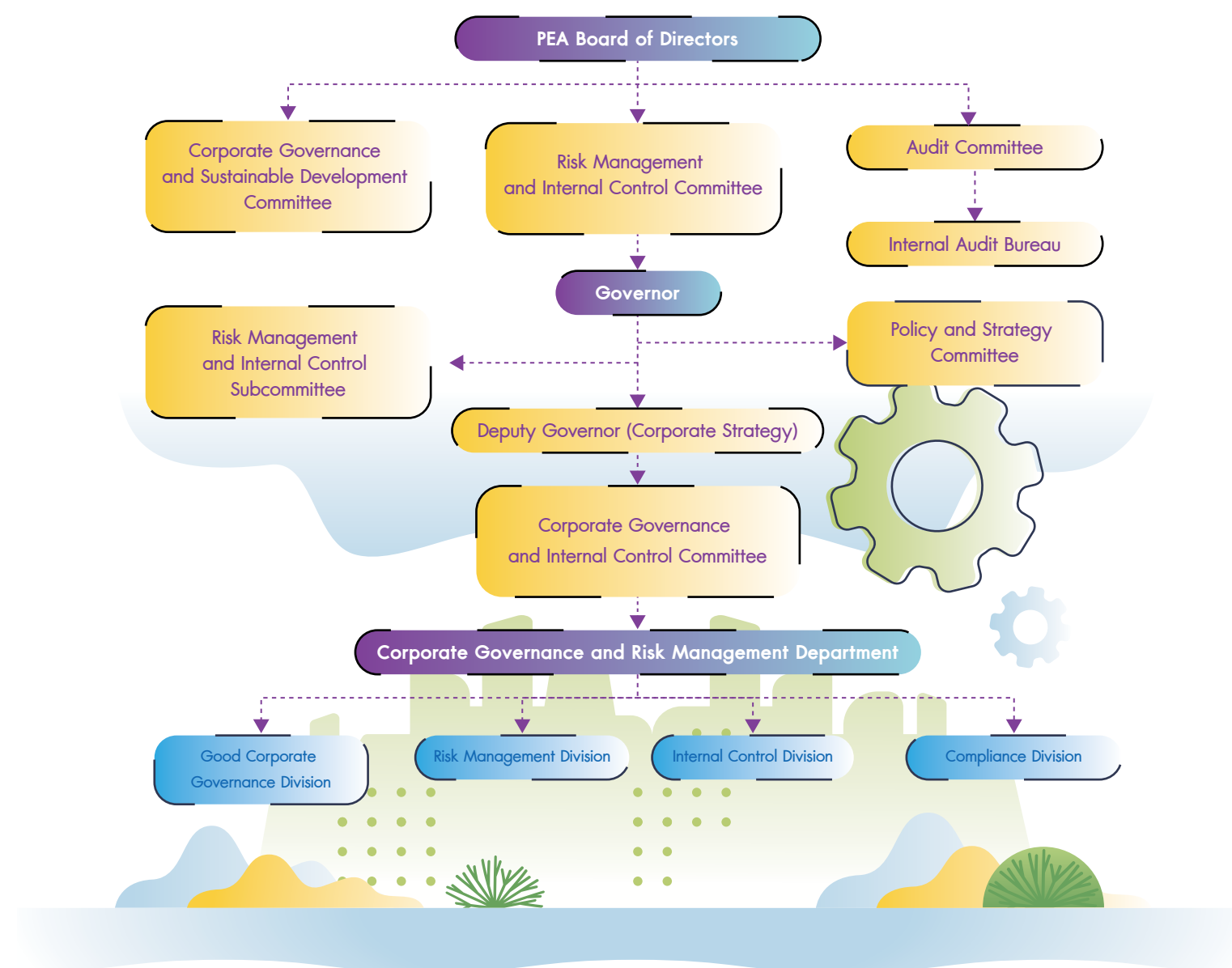
- Short-term (2022 - 2026): Ensure accomplishment of digital utility and create value through digital innovation.
- Medium-term (2027): To be a regional leader.
- Long-term (2037): Sustainable electricity utility. To facilitate the attainment of strategic goals in each phase, we have analyzed intelligent and enterprise risks, which are categorized into four types: strategic, operational, financial, and compliance risks. Furthermore, a SWOT analysis is performed. This positioning is aligned with organizational strategies; annual investments; potential technological changes that may impact the organization, customers, competitors, budget allocations, and employees; annual action plans; performance indicators; incidents occurring throughout the year which are relevant to stakeholders; and any short-, medium-, and long-term opportunities that may arise.
- Manage risks in accordance with the COSO ERM 2017 Standard and assess risk management practices using the State Enterprise Assessment Model (SE-AM) established by the State Enterprise Policy Office (SEPO) and the Ministry of Finance.
- Implement enterprise risk management, including developing a risk management policy, defining organizational objectives, identifying and assessing risks in terms of opportunities and impacts, setting risk management measures in place, and monitoring and reporting risk management performance.
- Develop and implement the 2022 enterprise risk management plan to mitigate the likelihood and impact of potential risks. Assess implementation progress on a quarterly basis and report the outcomes to the Risk Management and Internal Control Committee.



## Risk Management <sup>(2-25)</sup>

PEA takes risk management seriously. We have adopted enterprise risk management practices that align with the COSO ERM 2017 Standard, which enables us to efficiently execute strategies and operational plans, while ensuring the attainment of our mission and objectives. We report risk management results every quarter and review risk management practices at least once a year. Both internal and external risks that impact the organization are assessed annually through surveys conducted among stakeholders and the Board. Additionally, in our 2022 risk assessment, we also considered the results of our risk management plan implementation in 2021.

The Board of Directors is responsible for overseeing and supporting risk management policies. The Risk Management and Internal Control Committee, along with the PEA Governor, is entrusted with the task of supervising and monitoring the implementation of risk management policies and frameworks. They also collaborate with the Risk Management Subcommittees across all functions, each chaired by Deputy Governors in charge of respective functions. Risk owners are required to follow the procedures provided in the risk management policies and manual. PEA's risk management structure is as shown below:



## Economic, Social, and Environmental Risk Management and Implementation Outcomes

Risk Issue	Significance to PEA
<b>Economic</b>	
<p>Performance was below target and key projects were delayed because of the COVID-19 pandemic.</p> <p>Indicator</p> <ol style="list-style-type: none"> <li>Project success (work plans/projects that meet the performance evaluation requirements set by the Construction and Project Management Function in 2022) Risk Appetite (RA): 100% Risk Tolerance (RT): 95%</li> <li>Revenue from related businesses Risk Appetite (RA): 7,230.44 million baht Risk Tolerance (RT): 7,130.44 million baht</li> <li>CPI-X Risk Appetite (RA): 30,194 million baht Risk Tolerance (RT): 30,250 million baht</li> </ol>	<p>The COVID-19 pandemic in 2020 and 2021, with the possibility of the fourth wave in 2022, had caused a negative impact on PEA's financial liquidity and operations. Several construction projects and equipment imports were suspended due to government policies and measures, such as lockdowns and restrictions on certain activities. Relief measures like electricity bill discounts and payment deferrals also presented a liquidity risk. Additionally, when customers are not using the services as planned, revenue from related businesses may decrease. Consequently, it was essential for PEA to actively monitor and manage risks that could potentially impact its operations.</p>




Mitigation Measure	Outcome
<ul style="list-style-type: none"> <li>Follow up on the progress of equipment imports (monthly).</li> <li>Use communication channels such as Line and email so that evidence of communications can be saved and tracked.</li> <li>Provide support to contractors when they face problems of labor mobility or shortages.</li> <li>Monitor work progress, collaborate on problem-solving strategies, and provide information support for contractors to facilitate their work.</li> <li>Discuss with contractors to adjust work plans and expedite the acceptance inspection and payment processes to help contractors with their liquidity problems.</li> <li>Business portfolio implementation</li> <li>Control the increase of receivables and value of outstanding debts. <ul style="list-style-type: none"> <li>Debt notification/collection measures.</li> <li>Service shut-off measures due to overdue payments.</li> <li>Negotiate debt repayment arrangements.</li> </ul> </li> <li>Analyze customer database to identify target groups for business operations.</li> <li>Connect/improve work processes between headquarters and front-line operations for new business initiatives.</li> <li>Scale commercial innovations.</li> <li>Business segment plan for equipment in the distribution system and research.</li> <li>Manage smart/modern warehouses.</li> <li>Improve procurement regulations to align with the Public Procurement and Supplies Administration Act.</li> <li>Review and study strategies in each business segment to support supplementary businesses.</li> <li>Implement digital technology to improve work processes and operations.</li> <li>Improve the efficiency of financial operations.</li> </ul>	<ol style="list-style-type: none"> <li>The project success rate (work plans/projects that meet the performance evaluation requirements set by the Construction and Project Management Function in 2022) is 100 percent (meeting target).</li> <li>The revenue from related businesses is 7,604.55 million baht (higher than target).</li> <li>CPI-X is 28,174.58 million baht (higher than target).</li> </ol>



Risk Issue	Significance to PEA
Social	
<p>Improving satisfaction and meeting expectations of all stakeholders, especially key accounts and industrial estates.</p> <p>Indicator</p> <ol style="list-style-type: none"> <li>Key account satisfaction Risk Appetite (RA): 4.4234 Risk Tolerance (RT): 4.3734</li> <li>Industrial estate customer satisfaction Risk Appetite (RA): 4.3118 Risk Tolerance (RT): 4.2618</li> <li>Stakeholder satisfaction Risk Appetite (RA): 4.1100 Risk Tolerance (RT): 4.1000</li> </ol>	<p>Meeting the needs and expectations of customers and stakeholders is of utmost importance. To achieve this, PEA has streamlined work processes, improved customer service standards, and boosted service efficiency through digital technologies in compliance with the Service Level Agreement (SLA). We strive to deliver exceptional customer experiences and develop strategies to care for customers across different dimensions, such as product, service, support, and complaint management. Furthermore, we have implemented digital technology in our customer relationship management system to further enhance the service efficiency for each customer segment. However, as PEA's stakeholders are also electricity consumers, it is necessary to develop an integrated plan to better respond to their needs and improve our stakeholder engagement efforts.</p>
Environmental	
<p>Implementing the preparation plan and EEC pilot project to support electricity liberalization.</p> <p>Indicator</p> <p>The success of the preparation plan for electricity liberalization</p> <p>Risk Appetite (RA): 100</p> <p>Risk Tolerance (RT): 95</p>	<p>In response to the government policy of electricity market liberalization to mitigate environmental and climate change impact and the global pledge to achieve net zero emissions, a pilot project is implemented in the EEC. As a leading distribution system operator (DSO), PEA needs to expedite its preparations to support electricity liberalization, leveraging its expertise and the readiness of its distribution system. Moreover, PEA will need to establish its position as a retail leader by capitalizing on its extensive and nationwide customer base and developing a new business model that aligns with this position.</p>

Mitigation Measure	Outcome
<ul style="list-style-type: none"> <li>Improve stakeholder engagement efforts.</li> <li>Foster relationships to retain key accounts and implement a Digital CRM system to support customer service.</li> <li>Use digital technology in performing services under the Service Level Agreement (SLA) that exceed customer expectations and surpass competitors.</li> <li>Improve digital customer experience.</li> <li>Implement the stakeholder management manual.</li> <li>PEA Regulation on Information Management and Security B.E. 2560.</li> <li>Information Security Policy (No. 2) 2019.</li> <li>PEA COVID-19 Surveillance, Prevention, and Control Measures.</li> <li>Evaluate the popularity of digital channels among customers.</li> <li>Stakeholder satisfaction survey.</li> <li>Implement the Voice of Stakeholders (VOS).</li> <li>Improve digital customer experience.</li> </ul>	<ol style="list-style-type: none"> <li>Key account satisfaction rating is 4.4650 (higher than target).</li> <li>Industrial estate customer satisfaction rating is 4.5508 (higher than target).</li> <li>Stakeholder satisfaction rating is 4.2700 (higher than target).</li> </ol>
<ul style="list-style-type: none"> <li>The preparation plan for electricity liberalization consists of six sub-plans, as follows: <ul style="list-style-type: none"> <li>Preparation for the establishment of the market operator (MO) and distribution system operator (DSO).</li> <li>Designing an information system and software architecture for an energy trading platform to prepare for operating as a power marketer.</li> <li>Developing human resources and infrastructure to support electricity liberalization.</li> <li>Preparation in areas of accounting, finance, laws, and regulations.</li> <li>Preparation of affiliated companies.</li> <li>Developing and improving the TPA Code to be in line with the TPA Framework.</li> </ul> </li> </ul>	<p>The success rate of the preparation plan for electricity liberalization in 2022 is 100 percent (meeting target).</p>

## Management of Risk Issues in 2022

Risk Issue	Barrier
 <p>Deferred payments affect cash flow and outstanding debts increase.</p>	<p>The deferral of electricity bill payments may present liquidity challenges for PEA. Additionally, when customers are not using the services as planned, revenue from related businesses may decrease. Consequently, it was essential for PEA to actively monitor and manage risks that could potentially impact its operations.</p>
 <p>High-value customer retention (customers who generate significant revenue for the organization) and prioritization of stakeholder needs and expectations are not effective.</p>	<p>Unable to maintain relationships with and/or retain high-value customers, and unable to create a digital customer experience.</p>
 <p>External threats, such as malware, hacking, ransomware, and denial of service.</p>	

Solution	Outcome
<ul style="list-style-type: none"> <li>Track down debtors more actively and collect payments of past-due debts from major customers.</li> <li>Classify debtors and identify targets for each debtor category to expedite debt collection from both major and retail customers.</li> </ul>	<ul style="list-style-type: none"> <li>PEA was able manage its liquidity to ensure an adequate cash flow.</li> <li>PEA established procedures for collecting overdue payments in 2022 and analyzed outstanding debt data in the BI-CBSEX-SAP and ETSx systems against the collection cycle to accelerate the debt collection process.</li> <li>PEA classified debtors and identified targets for each debtor category to expedite debt collection from both major and retail customers, allowing for effective debt management.</li> </ul>
<ul style="list-style-type: none"> <li>Develop guidelines for classifying customers who are likely to switch to small power producers (SPPs).</li> <li>Align priority of customer needs with the existing processes.</li> </ul>	<ul style="list-style-type: none"> <li>PEA established guidelines for classifying customers who are likely to switch to small power producers (SPPs) based on the risk assessment matrix. The assessment considers two dimensions: customer churn probability and its impacts. PEA also developed a response plan for high-risk key accounts who are likely to switch to SPPs and conducted exit interviews to understand the reasons for switching and find ways to prevent it.</li> <li>PEA implemented a Voice of Stakeholders (VOS) program through the Voice of Customers (VOC) system and prioritized stakeholder needs and expectations.</li> </ul>
<ul style="list-style-type: none"> <li>Purchase and install hardware and software for the SCADA/TDMS system.</li> <li>Purchase and implement virtual desktop infrastructure (VDI) and multifactor authentication system.</li> </ul>	<ul style="list-style-type: none"> <li>PEA installed hardware and software for its SCADA/TDMS system to protect against external attacks. The system components have also been upgraded to keep up with evolving technologies.</li> <li>PEA set modern security equipment and procedures in place to prevent external attacks.</li> </ul>

## Risk Management and Internal Control Training Programs

PEA provides risk management knowledge and skill-building opportunities to its executives through various training programs. For example, an enterprise risk management workshop was organized in 2022. A risk management/internal control training program was offered to the Risk Management Committee in 2022, as well as to all executives and employees in the risk management function. The goal is to enhance knowledge and understanding about risk management practices, enabling participants to effectively manage risks within their respective units or areas of responsibility. The overall aim is to foster a risk management culture. Pre- and post-training assessments were also conducted to improve training programs for the future.



## Plans for Future Improvements

- Reviewing the Risk Management Plan 2022 and identifying risk factors for 2023 based on residual risks, as well as determining mitigation measures.
- Analyzing the risk management plan and submitting issues to the Policy and Strategy Committee for suggestions and inputs for improvements.
- Developing a more effective Cybersecurity Plan for 2023.

## Business Continuity and Crisis Management

Today, PEA faces many critical risks, including cybersecurity, natural disasters, electricity demand, and system stability risks. Therefore, it is essential for us to develop an effective business continuity and crisis management plan aligning with the ISO 22301:2019 Standard. This plan will allow us to respond to potential threats and enhance resilience, enabling us to protect our reputation and the interests of our stakeholders and create value-added activities that are beneficial and impactful.

### Goals

- Continue to operate and provide electricity services without interruption, even in the event of a disaster or unforeseen event.
- Align the business continuity management system with the ISO 22301:2019 Standard. The system should be applicable and improved regularly.
- Achieve the defined Recovery Time Objective (RTO).
- Respond to stakeholder needs and expectations.

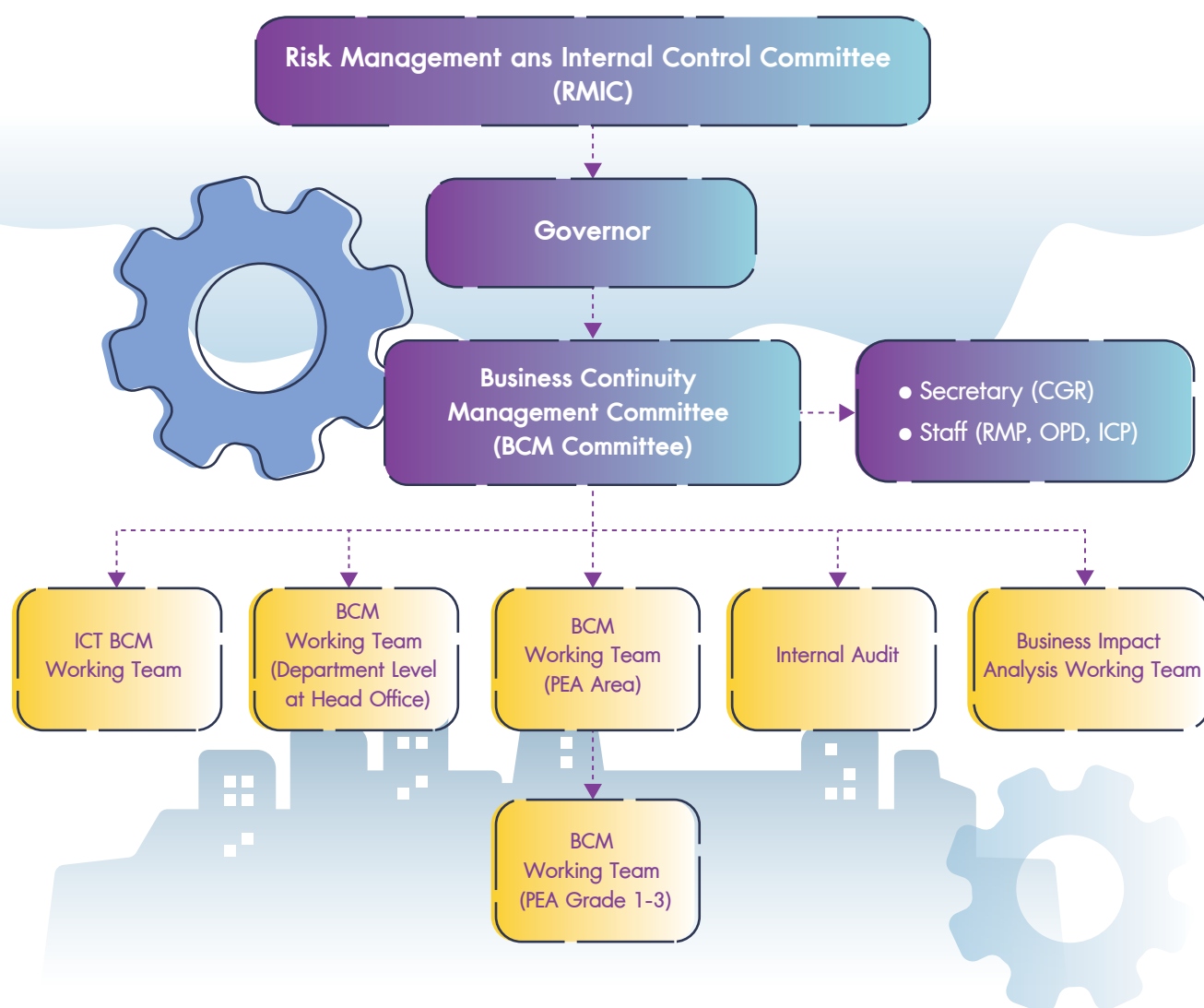
### Strategies

- Establish guidelines for prevention, likelihood reduction, preparedness, emergency response, and recovery.
- Manage and mitigate risks from potential threats that could disrupt business operations. Continuously review, improve, and exercise emergency response plans to foster a culture of readiness.
- Encourage employees at every level to develop knowledge and understanding of business continuity management and actively participate in implementing business continuity policies.
- Monitor and evaluate the implementation of the PEA Business Continuity Management System (PEA BCMS).





## Business Continuity and Crisis Management Structure

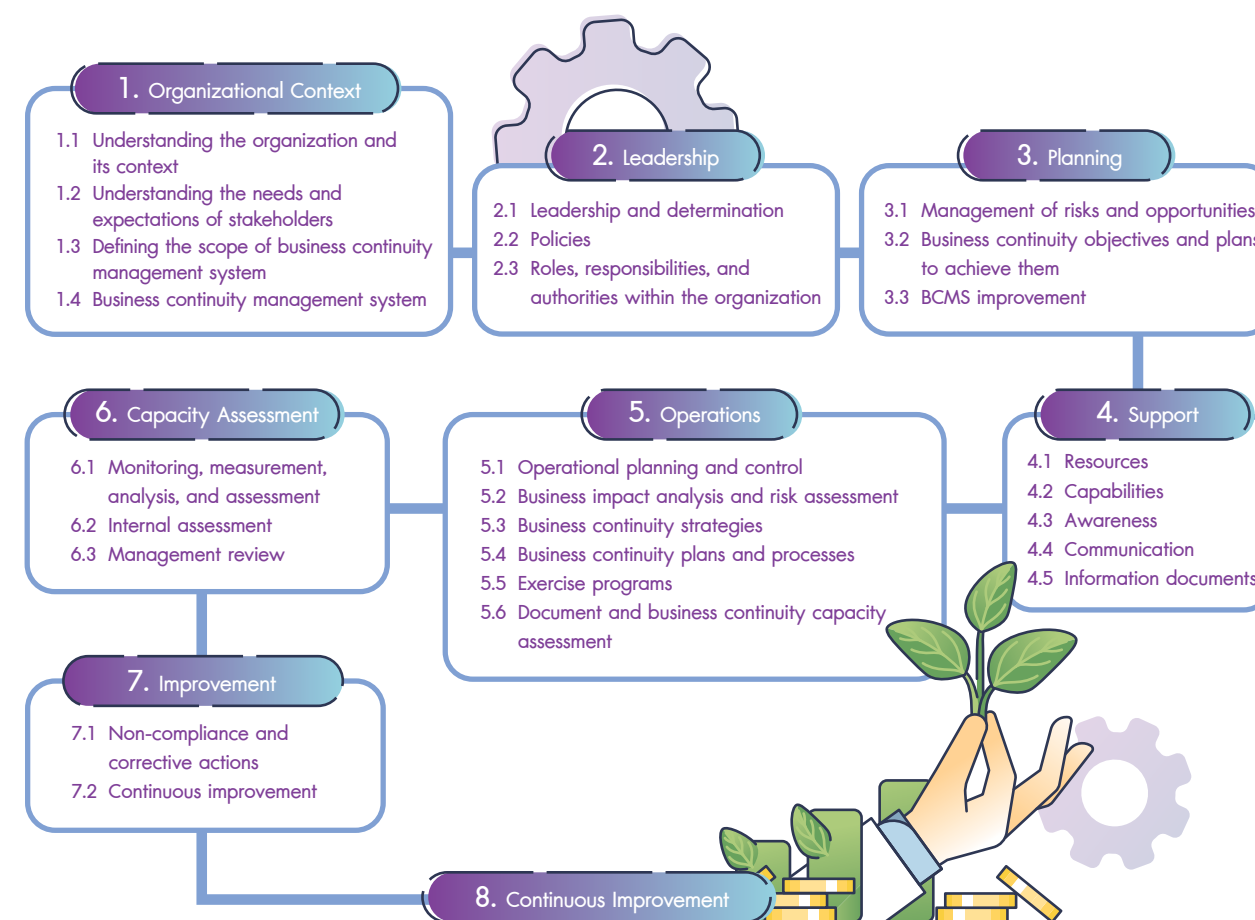


PEA has established the Business Continuity Management Committee to be responsible for:

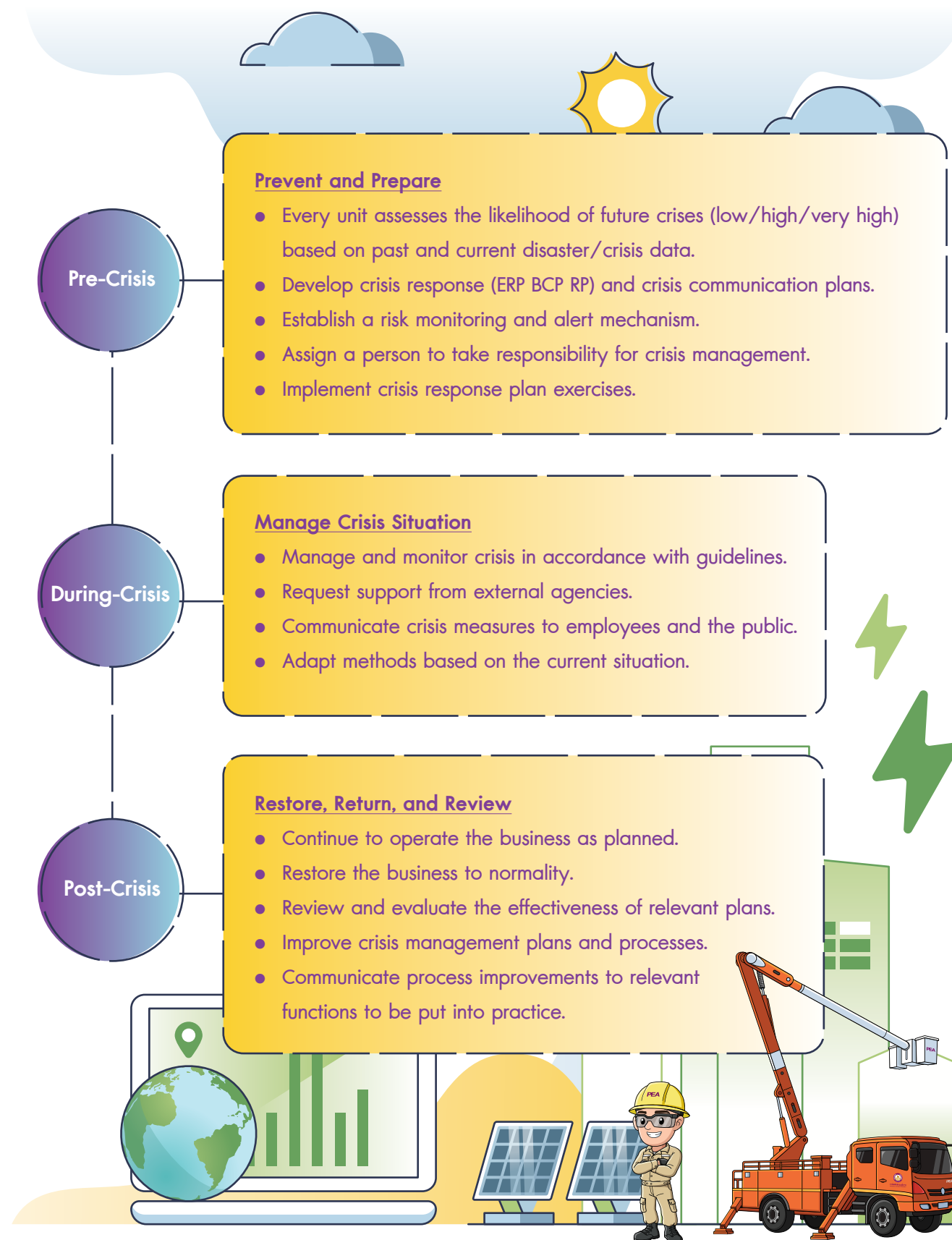
- Developing the Business Continuity Management Policy in alignment with the guidelines of the Office of the Energy Regulatory Commission and State Enterprise Policy Office, as well as PEA's Operational Risk Management Policy, to be submitted to the Board of Directors for approval.
- Approving identified critical missions, recovery time objectives, strategies, and the implementation of the Business Continuity Plan (BCP).
- Assigning responsible persons to implement the Business Continuity Plan, as well as preventing and responding to emergency situations.

- Submitting the progress of the implementation of the Business Continuity Plan, as well as the emergency prevention and response plans, to the Governor for consideration.
- Setting guidelines for communicating the Business Continuity Management Policy and Business Continuity Plan (BCP) to employees.
- Setting guidelines for communicating information to employees and external stakeholders about crises that may have an impact on the organization's business operations and reputation.
- Establishing a subcommittee and determining its authorities under the Business Continuity Management Committee (BCM Committee) This subcommittee will ensure compliance with the business continuity management policy and the achievement of goals set by the BCM Committee.
- Has the authority to summon relevant individuals for clarification or request additional documents from relevant departments to ensure that the Committee's operations fulfill its objectives.

The Business Continuity Management System (BCMS) is aligned with the ISO 22301:2019 Standard to ensure it efficiently and effectively manages crises or disasters and is capable of responding to various incidents, recovering critical business processes in a timely manner, and delivering an uninterrupted electricity supply to consumers. Additionally, it minimizes the impact of potential threats effectively. PEA has established the business continuity management processes, as shown below:



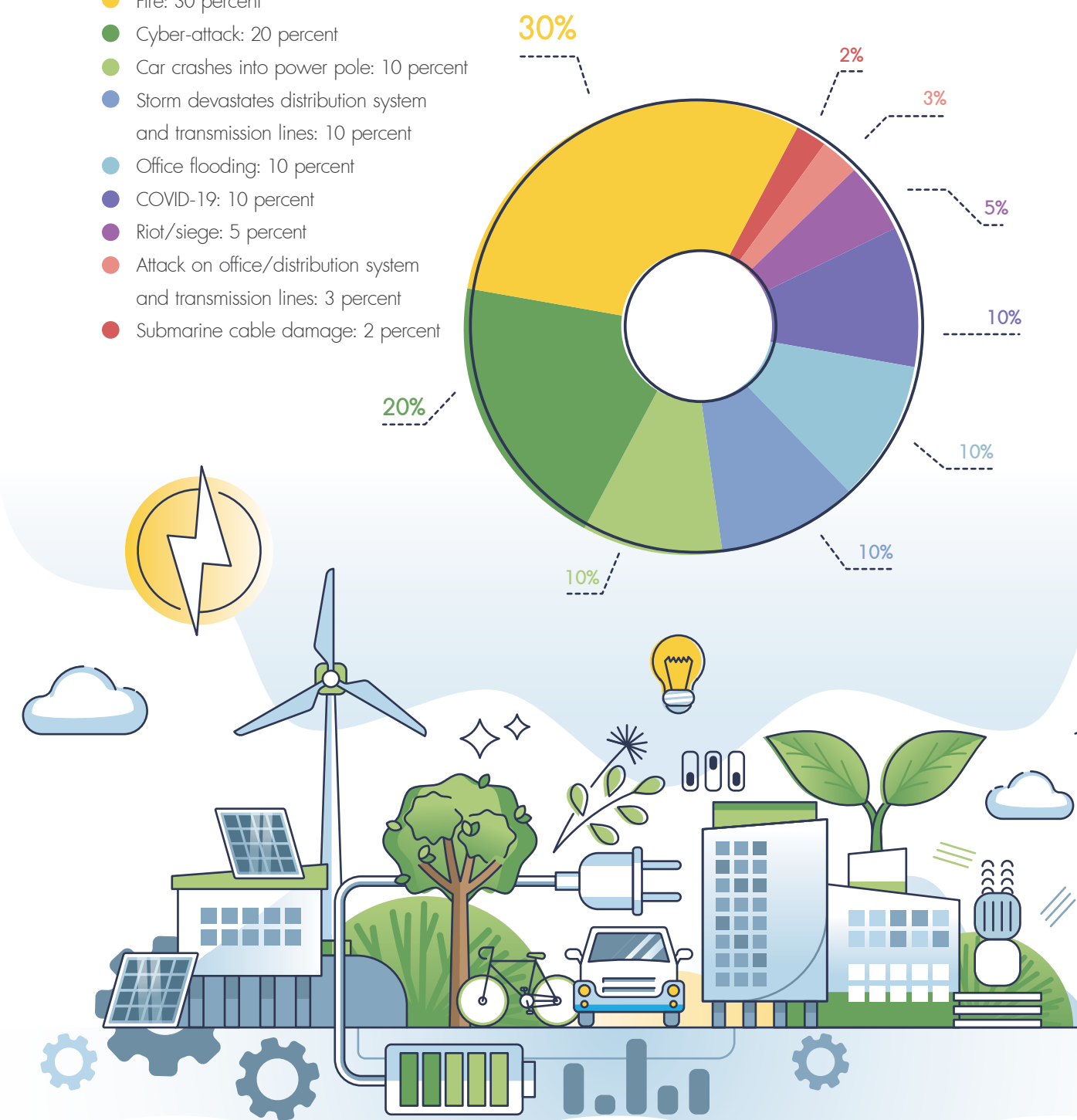
The Business Continuity Management System (BCMS) can be divided into the following response phases:



## Risk Management Performance

- PEA Head Office passed a re-certification audit for the ISO 22301:2019 Standard.
- Developed the Business Continuity Management System (PEA BCMS) in alignment with the ISO 22301:2019 Standard. Communicated information to 36 area offices and sub-area stations to ensure the effective implementation of PEA BCMS.
- Conducted BCP exercises to prepare for potential threats and ensure the resilience of critical processes. The exercise incident scenarios are listed below in descending order:

- Fire: 30 percent
- Cyber-attack: 20 percent
- Car crashes into power pole: 10 percent
- Storm devastates distribution system and transmission lines: 10 percent
- Office flooding: 10 percent
- COVID-19: 10 percent
- Riot/siege: 5 percent
- Attack on office/distribution system and transmission lines: 3 percent
- Submarine cable damage: 2 percent

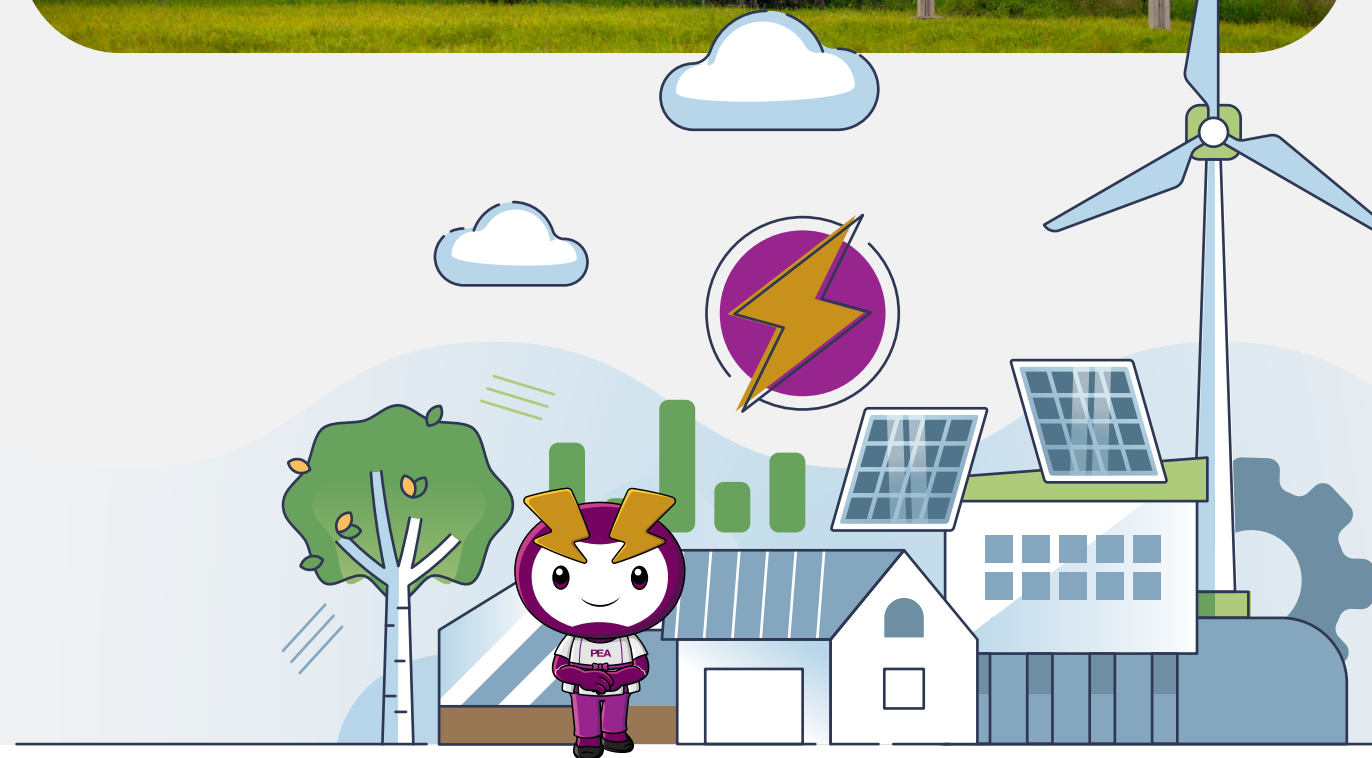




- Conducted disaster recovery testing and a full BCP exercise, in which ransomware was found at the head office, causing damage to the server at the DC Site Phase 2 (SAP, BPM, and OMS systems) and relocation to the DR Site. The exercise was able to restore services within the time frame specified by the Recovery Time Objective (RTO).
- Conducted a cyber threat response exercise involving information and operational technology systems and the Cybersecurity Operations Center (SOC). The scenario was developed based on a real-life attack which targeted the energy sector, believed to be related to PEA. The exercise aimed to develop cyber threat response strategies and improve cyber incident response plans across the organization. Additionally, it improved understanding of the roles and responsibilities of relevant units, not only for internal incidents but also for those related to other sectors and even in cases of severe events that have nationwide impact. The exercise was able to achieve its objectives and the expected results.
- Organized crisis communication and incident command training for executives to support them to understand the principles of crisis management and emergency response and to put this understanding into practice to meet the needs and expectations of stakeholders.

### Plans for Future Improvements

- Improving supportive activities and systems, including automatic meter reading (AMR) and advanced metering infrastructure (AMI) systems, making the scope of PEA's business continuity management more comprehensive and complete.
- Testing and improving the PEA BCMS standards and manual to ensure their effective implementation across all functions.
- Providing training and knowledge to develop internal auditors and support the expanded scope of PEA BCMS certification.
- An internal auditor conducts a PEA BCMS certification audit, and an external auditor validates compliance with the ISO 22301 Standard.







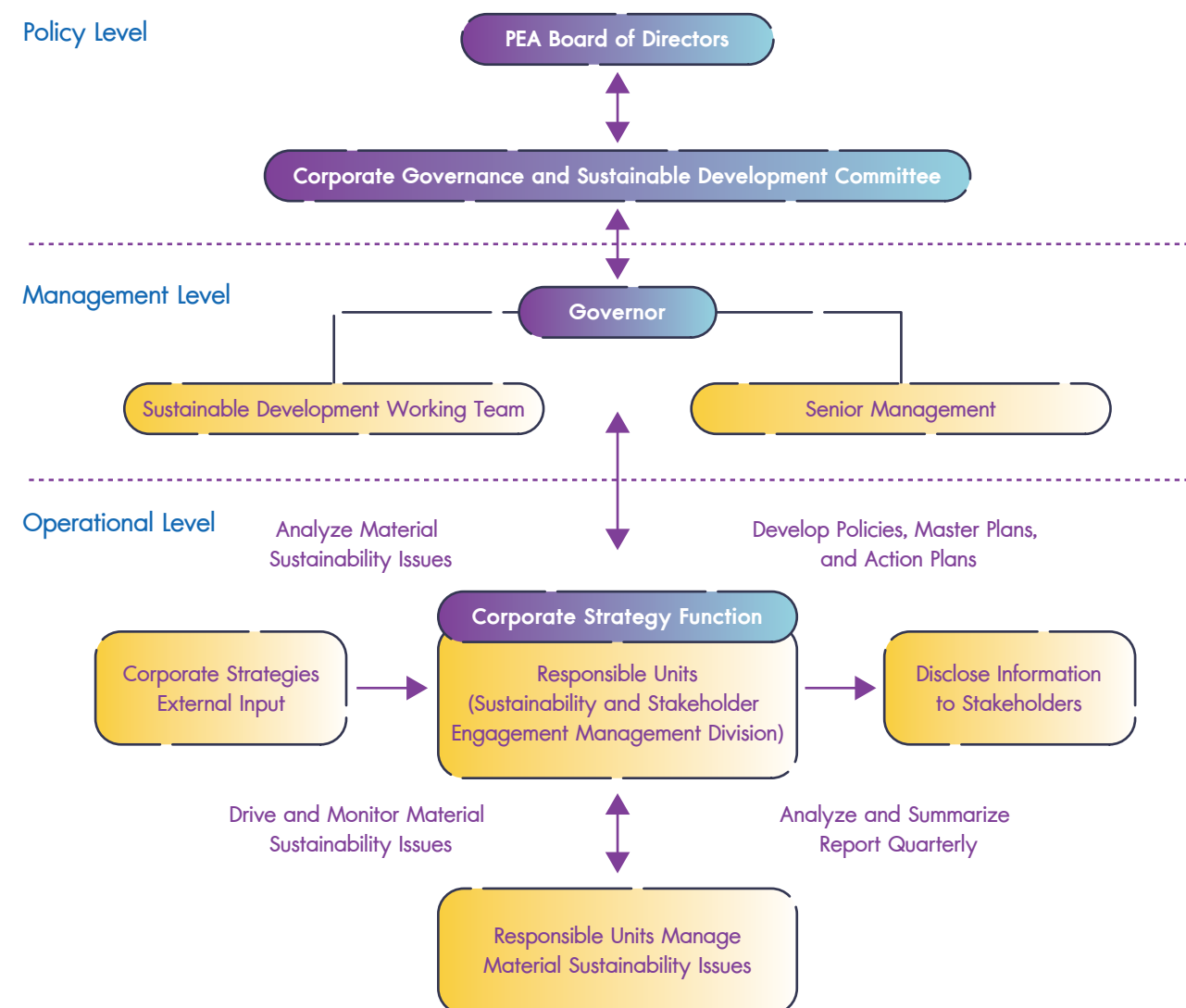
## 08 Sustainable Organizational Development



Recognizing the importance of becoming a sustainable organization, PEA is determined to foster balance across the economic, social, and environmental dimensions. This will assure the public that we will deliver excellent services under a sustainable development strategy. To achieve this, we have adopted the ISO 26000 Standard and Sustainable Development Goals (SDGs) as guiding frameworks for developing sustainable business policies and manuals. A key focus is placed on analyzing the sustainable context, both internally and externally, while allowing for input from stakeholders to develop sustainable development strategies. Both the Board of Directors and senior executives play pivotal roles and are involved in every process.

## Sustainability Management Structure (2-23, 2-24)

The Board of Directors has assigned the Corporate Governance and Sustainable Development Committee to be responsible for overseeing sustainability management to attain the strategic objectives outlined in the Sustainable Development Policy. The Committee also reviews and approves material sustainability issues identified by the Governor, senior executives, and the Sustainable Development Working Group, while offering recommendations to ensure the effective realization of strategic objectives. In addition, the Sustainability and Stakeholder Engagement Management Division, Stakeholder Engagement and Corporate Communication for Sustainability Department, and Corporate Strategy Function were assigned under the Deputy Governor (Corporate Strategy) and Assistant Governor (Corporate Strategy-Organization Affairs) to communicate policies, material sustainability issues, master plans, and other strategies throughout the organization. They also collaborate with other departments to manage sustainability issues, drive and monitor implementations, and report progress to executives every quarter.





## Strategic Objectives (2-23, 2-24)

We have reviewed the PEA Strategic Plan 2022-2026 and set the following four strategic objectives:

### SO1: Focus on Core Business Enablers for Sustainability

This objective aims to equip PEA with an effective management system that aligns with relevant ISO standards and the United Nations Sustainable Development Goals.

PEA is determined to achieve sustainable development goals across three dimensions: economic, social, and environmental. A focus is placed on operating with responsibility for society and the environment in alignment with globally-recognized best practices, including ISO 26000, UN SDGs, and DJSI, as well as guidelines for good governance established by the State Enterprise Policy Office, Ministry of Finance. PEA will also implement CSR initiatives to deliver tangible results in response to the expectations of stakeholders and communities, and disclose its impacts in accordance with sustainability reporting standards.

### SO2: Leveraging Efficiency of Distribution System and Building Credibility with All Stakeholders

PEA aims to raise the standard of its power distribution system to attain regional recognition by enhancing the system quality, stability, reliability, and efficiency. These are the key characteristics of a strong grid, and will support the expansion of special economic zones and industrial estates. Furthermore, PEA will improve its asset management system and supply procurement process to optimize asset utilization and reduce operational and maintenance costs while increasing returns. An asset management roadmap and strategy, and maintenance plan will also be developed to serve as guiding framework.

### SO3: Achieving Digital Utility Capabilities, and Aiming to Become a Regional Leader of the Future

In addition to raising the standard of the distribution system to attain regional recognition, PEA takes actions to support the Smart Grid Master Plan 2015-2036, announced by the Ministry of Energy. As the developer of the Smart Grid Master Plan, the Energy Policy and Planning Office has established a vision for the smart grid development which aims to promote adequate and sustainable electricity supply in the best interest of Thailand.

### SO4: Enhancing Performance of Pea Business Portfolio

To expand the business, PEA needs to adapt to changes in the electricity industry brought about by rapid technological advancements and structural transformations. While electricity distribution remains the primary source of revenue for PEA, its core competency and resources position it to outperform other private companies. This opens up opportunities for PEA in various business segments, including power system services for industrial customers, rooftop solar energy management, and power system consultancy and design. These complementary ventures are expected to contribute to PEA's overall revenue growth significantly in the future.

Additional business prospects involve investing in renewable energy ventures or state and privately-owned businesses, both in Thailand and the wider ASEAN region through PEA ENCOM International Company Limited and affiliated companies. These companies are key investors and joint venture partners with PEA, playing an active role in the development of green energy and the promotion of energy saving.







## SO1 Focus on Core Business Enablers for Sustainability

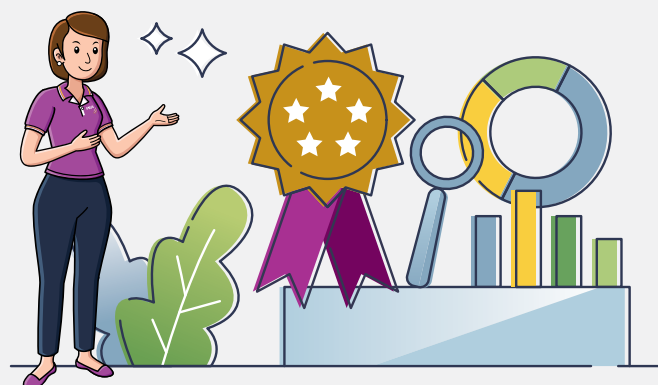
- Occupational health and safety performance achieved the target of a 100-percent success rate. All 12 offices were certified for the TIS 18001 Standard. Occupational health and safety training, including technical engineering and compliance courses, was also provided to employees and workers.
- Disabling injury index (√DI) was 0.0898.
- Digital capability development plan achieved the target of a 100-percent success rate. There were 12 training courses under the digital personnel development plan, including:
  - Information security risk assessment course for employees involved within the scope of the ISO/IEC 27001 information security management systems.
  - Information security management audit for internal auditor course for employees involved within the scope of the ISO/IEC 27001 information security management systems.
  - Smart meter installation procedure course for employees managing AMR meters.
  - PEA communication network maintenance course for employees at the practitioner level.
  - CompTIA security course.
  - Digital platform plan and implementation course.
  - Information security awareness for developers course.
  - Information security awareness for digital technology and information communication executives course.
  - Low-level enterprise architecture course 2022.
  - Information security awareness course.
  - Machine learning using Apache Hadoop & Spark course.
  - IT governance course.
- Corporate governance and information technology performance (ISO 38500) achieved the target of a 100-percent success. ITG policy was communicated through the IT Governance e-learning course available on the LMS platform. Additionally, PEA was certified for ISO/IEC 38500 by Bureau Veritas Certification (Thailand) Co., Ltd.
- Data governance implementation achieved the target of a 100-percent success. The Digital Strategy and Enterprise Data Management Department audited data quality and security according to the guidelines for auditing service and customer support processes, as well as improved the data governance manual.
- Commercial innovations or processes that generate income and reduce expenses, such as PEA WISE ENERGY and PEA VOLTA DC25. These initiatives achieved the targeted five rating.

## SO2 Leveraging Efficiency of Distribution System and Building Credibility with All Stakeholders

- The system average interruption frequency index (SAIFI) in 2022 was 1.76 times, down by 19.60 percent from 2.19 times in the previous year.
- The system Average Interruption Duration Index (SAIDI) in 2022 was 34.98 minutes, down by 21.41 percent from 35.25 minutes in the previous year.
- In 2022, there were no unplanned expenses resulting from emergency repairs of the main components of transformers, including OLTC, winding, and HV bushing. This led to a 50-percent reduction in expenses. Actions taken to achieve this were:
  - During the maintenance of transformer components, winding displacement was found in two transformers. Repairs were implemented to prevent further damages.
  - To prevent OLTC Type V as analyzed by FMECA: Mechanical Mode, the existing gearing pressure spring energy was replaced by a new model. The operation has been successfully carried out for all 138 units.
- The success rate of implementing a database in long-term asset management planning was 100 percent.
- Distribution loss in 2022 was 5.21 percent.
- SAIFI in industrial estates in 2022 was 0.220 times.
- SAIDI in industrial estates in 2022 was 5.190 minutes.
- The overall satisfaction with product quality of industrial estate customers was 4.55. This achievement is attributed to the implementation of the following measures:
  - There was a report of SAIFI & SAIDI in industrial estates, along with proposed solutions to address the issues.
  - There was a report of outages and an analysis of failure prevention.
  - There was an analysis of 115 kV Close Loop Contingency N-1 in industrial estates and a report of power supply efficiency improvement in 115 kV stations and transmission lines for approval of 115 kV Close Loop Circuit in industrial estates.
  - There were inspections of the power system, including the transmission and distribution networks. Necessary actions were taken to address any abnormalities. Tree trimming was carried out near the power system infrastructure. Maintenance plans for switchgear and relays in industrial estates were implemented.
- Implementations to address outages and enhance the quality of the low-voltage power system to accommodate changes in the electrical industry achieved a 100-percent success rate.
- In 2022, a number of key accounts made up 96.77 percent of total high-value customers.







### SO3 Achieving Digital Utility Capabilities, and aiming to become a Regional Leader of the Future

- Customer satisfaction rating in 2022 was 4.5806.
- Key account and high-value customer satisfaction rating in 2022 was 4.47.
- Approving workflows and service level agreements (SLAs) to set up four digital service channels, as follows:
  - Applying for meter installation through PEA Smart Plus.
  - Applying for meter installation through e-Service.
  - Applying for low-voltage power system expansion through PEA Smart Plus.
  - Applying for low-voltage power system expansion through e-Service.

### SO4 Enhancing Performance of PEA Business Portfolio

- Business portfolio implementation achieved a 100-percent success rate. Revenue from related businesses was 7,604.55 million baht, up by 8.16 percent from 7,030.44 million baht in the previous year.
- CPI-X amounted to 537,788.79 million baht. After adjusting entries, net operating expenses were 28,174.58 million baht.



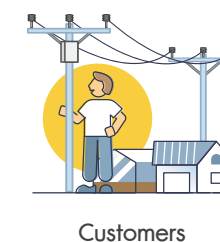




## 09 Stakeholder Engagement (2-29, 3-3)

PEA is committed to sustainable growth alongside communities and society. We strive to respond to the needs and expectations of stakeholders systematically while respecting their rights and treating them with fairness. In addition to minimizing the impact of PEA's operations through stakeholder engagement, we also prioritize building confidence and cultivating appropriate relationships with stakeholders, as these are essential elements for becoming a sustainable organization in alignment with the AA1000 Stakeholder Engagement Standard (AA1000SES).

- PEA conducts identification, analysis, and prioritization of stakeholders and issues affecting them and PEA systematically in order to analyze risks and impacts on each group of stakeholders more comprehensively. From this process, nine groups of stakeholders have been identified, as follows:



- PEA establishes communication strategies, methods, formats, and procedures for both internal and external stakeholders. We communicate with them regularly to ensure that they receive adequate and timely information.



## Stakeholder Group

## Communication Formats and Channels



Regulators and Government Agencies

- Stakeholder Management

**Communication Format:** One-way communication and limited two-way engagement

**Communication Channel:** E-mail, website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), posters, official letters, audits, policy posters, Annual Report 2021, and Sustainability Report 2021

- Relationship Building

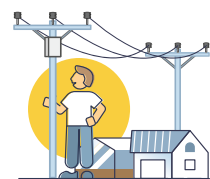
**Communication Format:** Two-way engagement

**Communication Channel:** Conversations, in-depth interview, meetings, satisfaction surveys, and official letters

- News and Information

**Communication Format:** One-way communication

**Communication Channel:** E-mail, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), and official letters



Customers

- Stakeholder Management

**Communication Format:** One-way communication

**Communication Channel:** Website, Line Official, policy posters, Annual Report 2021, Sustainability Report 2021, and public relations media



Communities, Society, and the Environment

- Stakeholder Management

**Communication Format:** One-way communication

**Communication Channel:** Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, policy posters, Annual Report 2021, Sustainability Report 2021, and public relations media

- Relationship Building

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** Line, local media, conversations, meetings, and public hearings

- News and Information

**Communication Format:** One-way communication

**Communication Channel:** Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), public relations media, and PEA employees

## Stakeholder Group

## Communication Formats and Channels



Mass Media

- Stakeholder Management

**Communication Format:** One-way communication

**Communication Channel:** Email, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), policy posters, Annual Report 2021, Sustainability Report 2021, and social media

- Relationship Building

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** E-mail, conversations, meetings, and satisfaction surveys

- News and information

**Communication Format:** One-way communication

**Communication Channel:** E-mail, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), and social media



Partners

- Stakeholder Management

**Communication Format:** One-way communication

**Communication Channel:** E-mail, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), policy posters, Annual Report 2021, and Sustainability Report 2021

- Relationship Building

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** Website, conversations, activities, study visits, meetings, and satisfaction surveys

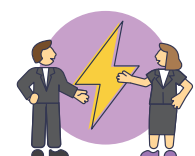
- News and Information

**Communication Format:** One-way communication

**Communication Channel:** E-mail, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), Annual Report, and Sustainability Report

## Stakeholder Group

## Communication Formats and Channels



Board of Directors

- Stakeholder management

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** E-mail, notifications, meetings, policy posters, Annual Report 2021, and Sustainability Report 2021

- Relationship building

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** Meetings, activities, and satisfaction surveys

- News and information

**Communication Format:** One-way communication

**Communication Channel:** Meetings, Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Annual Report 2021, and Sustainability Report 2021



Employees and Internal Units

- Stakeholder management

**Communication Format:** One-way communication and limited two-way engagement

**Communication Channel:** E-mail, Website, policy posters, Annual Report 2021, and Sustainability Report 2021

- Relationship building

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** Conversations, meetings, training, workshops, Meet the Governor Program, CEO CONNEXT, strategy meetings, and employee satisfaction surveys

- News and information

**Communication Format:** One-way communication

**Communication Channel:** E-mail, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Intranet PEA, meetings, Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), Annual Report 2021, Sustainability Report 2021, circulars, and internal public relations media

## Stakeholder Group

## Communication Formats and Channels



Affiliates

- Stakeholder management

**Communication Format:** One-way communication and limited two-way engagement

**Communication Channel:** E-mail, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), circulars, policy posters, Annual Report 2021, and Sustainability Report 2021

- Relationship building

**Communication Format:** One-way communication and two-way engagement

**Communication Channel:** Conversations, meetings, discussions, satisfaction surveys, and official letters

- News and information

**Communication Format:** One-way communication

**Communication Channel:** Email, Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, YouTube (<https://www.youtube.com/@PEAchannelThailand>), internal public relations media, and circulars



Peers and Competitors

- Stakeholder management

**Communication Format:** One-way communication

**Communication Channel:** Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), policy posters, Annual Report 2021, and Sustainability Report 2021

- Relationship building

**Communication Format:** Two-way engagement

**Communication Channel:** Conversations, activities, study visits, interviews/discussions, and satisfaction surveys

- News and information

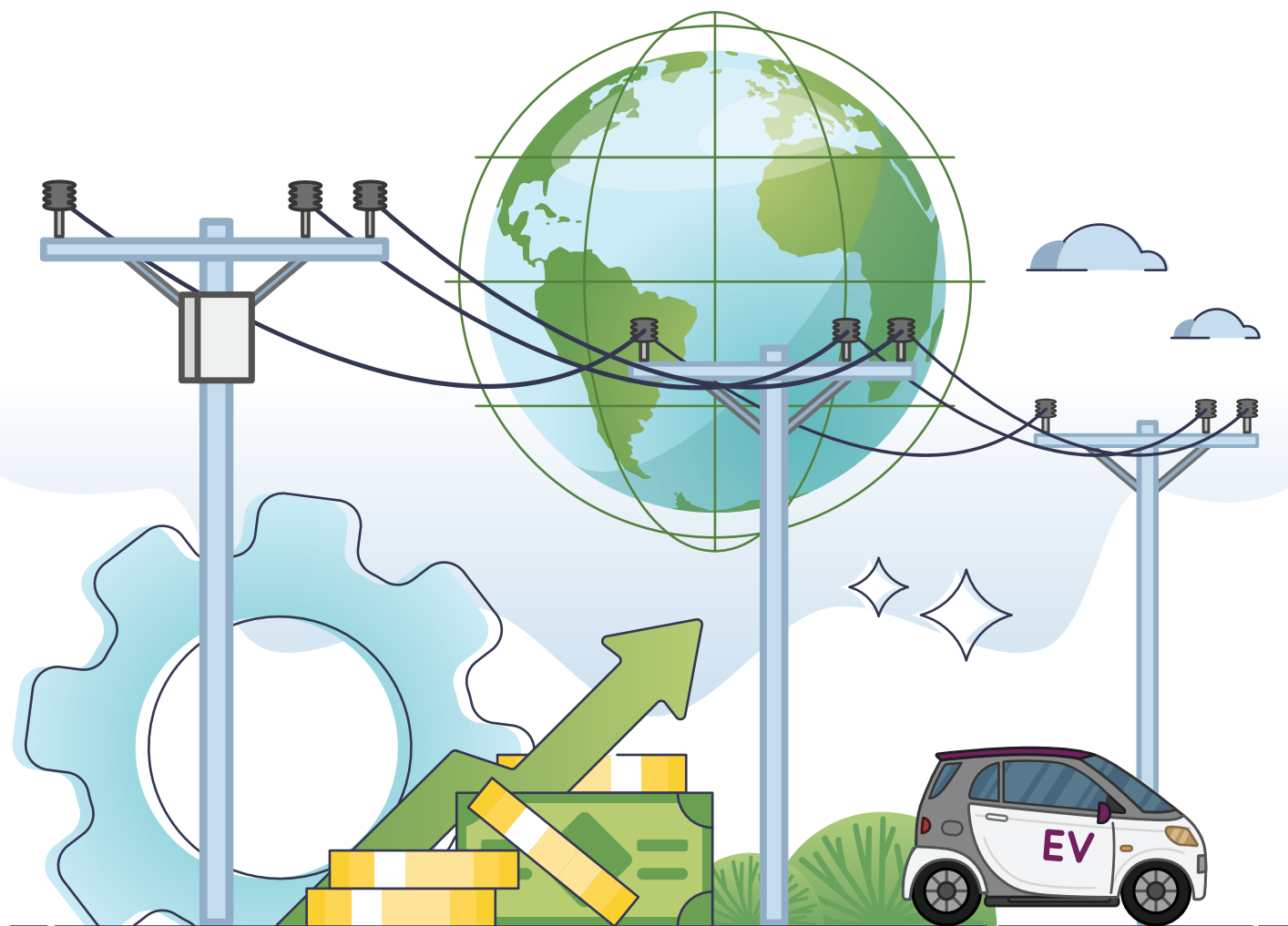
**Communication Format:** One-way communication

**Communication Channel:** Website (<https://www.pea.co.th> and <https://sustainability.pea.co.th>), Line Official, and YouTube (<https://www.youtube.com/@PEAchannelThailand>)








- PEA provides opportunities for stakeholders to participate in matters that affect them through various channels, allowing them to voice their opinions, express their needs, and communicate their expectations before, during, and after their collaboration with PEA or during interactions or relationship-building activities. In addition, we conduct both qualitative and quantitative stakeholder surveys, which can be used to guide the development of collaboration for mutual benefits between PEA and its stakeholders.
- PEA forecasts, identifies, analyzes, and prioritizes risks associated with stakeholder engagement. This is done to respond to and manage potential risks systemically, including establishing risk control measures, mitigation plans, and contingency plans to respond to emergency situations.
- PEA monitors and evaluates its stakeholder management performance to drive continuous improvement. The performance report is disclosed to the public through sustainability reports and PEA website.





## Stakeholder Engagement <sup>(2-29, 3-3)</sup>

Stakeholder Group	Stakeholder Needs and Expectations	Engagement Activities and Frequency	Responses to Stakeholder Needs and Expectations/ Responsible Units
 Regulators and Government Agencies	<ul style="list-style-type: none"><li>• Compliance with laws, rules, and regulations and cooperation (document preparation and permit application, distribution pole relocation, and traffic facilitation during maintenance work).</li><li>• Efficiency in communication or coordination with government agencies.</li><li>• Efficient customer service.</li><li>• Compliance with the principles of corporate governance and ethics.</li><li>• Accurate, transparent, and accessible information.</li><li>• Investment policy aligning with the goals of government policies.</li></ul>	<ul style="list-style-type: none"><li>• Arranging in-depth interviews with regulators and government agencies once a year to obtain their opinions and suggestions.</li><li>• Conducting an engagement survey to assess the needs, and expectations of regulators and government agencies once a year.</li><li>• Holding meetings at least once a year to gather feedback from regulators and government agencies regarding the following issues affecting stakeholders:</li><li>• Issues related to PEA's strategies, in collaboration with the Ministry of Interior, Ministry of Energy, Energy Regulatory Commission, National Economic and Social Development Council, and State Enterprise Policy Committee.</li><li>• Issues related to energy, in collaboration with the Ministry of Energy and Energy Regulatory Commission.</li><li>• Issues related to land use, in collaboration with the Department of Highways, Department of Rural Roads, and Provincial/ Local Administrative Organizations.</li><li>• Issues related to social and environmental activities, in collaboration with the Provincial/Local Administrative Organizations.</li></ul>	<ul style="list-style-type: none"><li>• Corporate Governance and Anti-Corruption, pages 39 - 50/Corporate Governance and Risk Management Department</li><li>• Business Trends and Changing Direction, pages 51 - 52/Organization Development and Change Management Department</li><li>• Power System Reliability, pages 104 - 107/Power System Control and Operation Department</li><li>• Equitable Treatment of Employees, pages 127 - 131/Human Resources Strategy Department</li><li>• Cybersecurity, pages 108 - 114/IT Department</li><li>• Customer Privacy, pages 115 - 119/Digital Strategy and Enterprise Data Management Department</li></ul>
 Customers and Electricity Users	<ul style="list-style-type: none"><li>• Electric power quality.</li><li>• Service provision (planned outages, repairs, safety standards, electricity supply/ service application, improvement/ maintenance, meter reading/billing, service shut-offs/reconnection, bill payments, customer support channels, and customer consultation).</li></ul>	<ul style="list-style-type: none"><li>• Conducting a customer and electricity user satisfaction survey once a year.</li><li>• Holding a meeting to listen to feedback from customers and electricity users regarding PEA's strategies once a year.</li><li>• Conducting a customer and electricity user satisfaction survey once a year.</li><li>• Visiting key account customers and electricity users to listen to their opinions and suggestions and use the Digital CRM system to support customer service.</li></ul>	<ul style="list-style-type: none"><li>• Power System Reliability, pages 104 - 107/Power System Control and Operation Department</li><li>• Customer Health and Safety, pages 142 - 147/ Human Resource Service Department</li><li>• Cybersecurity, pages 108 - 114/IT Department</li></ul>

Stakeholder Group	Stakeholder Needs and Expectations	Engagement Activities and Frequency	Responses to Stakeholder Needs and Expectations/ Responsible Units
		<ul style="list-style-type: none"> <li>Listen to the voice of customers through the following channels: <ul style="list-style-type: none"> <li>1129 PEA Call Center: 37,932 voices.</li> <li>PEA Website: 5,470 voices.</li> <li>PEA Smart Plus: 4,820 voices.</li> <li>OPS PM, OAG, NACC, and PACC: 407 voices.</li> <li>PEA Office: 117 voices.</li> <li>Governor/PEA Area Offices 1-4: 115 voices.</li> <li>Other agencies: 54 voices.</li> <li>PEA-V Care: 38 voices.</li> <li>Damrongdhama Center: 23 voices.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Customer Privacy, pages 115 - 119/Digital Strategy and Enterprise Data Management Department</li> </ul>
 <p><b>Communities, Society, and the Environment</b></p>	<ul style="list-style-type: none"> <li>Prevention of accidents/fires arising from the power distribution system and education about how to use PEA's services or electricity safely and efficiently.</li> <li>Enhancing the scenery on power poles for the safety of people in communities, such as organizing communication cables and underground power line installation.</li> <li>Fair and non-discriminatory services accessible to everyone.</li> <li>Convenient and accessible communication channels.</li> <li>Implementation of technology in operations.</li> </ul>	<ul style="list-style-type: none"> <li>Conducting an engagement survey to assess the needs and expectations of communities, society, and the environment once a year.</li> <li>Visiting communities in all 12 areas to listen to their opinions, suggestions, and needs once a year.</li> <li>Holding a meeting to listen to feedback from communities, society, and the environment regarding PEA's strategies once a year.</li> <li>Communicating guidelines for preventing accidents and fires arising from the distribution system, as well as providing knowledge about how to use PEA's services or electricity safely and efficiently for communities across the country regularly throughout the year.</li> </ul>	<ul style="list-style-type: none"> <li>Customer Health and Safety, pages 142 - 147/ Human Resource Service Department</li> <li>Improving the quality of life through electricity accessibility, pages 148 - 150/System Planning Department</li> <li>Equitable Treatment of Employees, pages 127 - 131/Human Resources Strategy Department</li> </ul>
 <p><b>Mass Media</b></p>	<ul style="list-style-type: none"> <li>Access to clear, accurate, and complete information in a timely manner.</li> <li>Providing information that is communicable and easy to understand.</li> <li>Use of both traditional and social media to report news throughout the country.</li> <li>Cooperation in reporting news.</li> <li>Attention to local media and news content.</li> </ul>	<ul style="list-style-type: none"> <li>Conducting a survey to listen to opinions, suggestions, and needs from the mass media once a year.</li> <li>Holding a meeting to listen to feedback from the mass media regarding PEA's strategies once a year.</li> <li>Conducting an engagement survey to assess the needs and expectations of the mass media once a year.</li> </ul>	<ul style="list-style-type: none"> <li>Enterprise Risk Management, pages 56 - 68/ Corporate Governance and Risk Management Department</li> </ul>

Stakeholder Group	Stakeholder Needs and Expectations	Engagement Activities and Frequency	Responses to Stakeholder Needs and Expectations/ Responsible Units
	<ul style="list-style-type: none"> <li>Channels for reporting information about electricity.</li> <li>There is no spokesperson in the Area Office to report crisis events to the public.</li> <li>Lack of publicity causing the mass media to be unaware of PEA's support and assistance programs for customers.</li> </ul>	<ul style="list-style-type: none"> <li>Organizing events to strengthen and build good relationships with the mass media, such as Press Tour, Thank Press, and Governor Meet Editors, at least once a year.</li> </ul>	
 <p><b>Partners</b></p>	<ul style="list-style-type: none"> <li>Coordination to ensure safety and speed in the workplace.</li> <li>Timely exchange of clear, accurate, complete, and accessible information.</li> <li>Operating with equality, fairness, and non-discrimination. The procurement process is transparent and verifiable.</li> <li>Building and promoting positive relationships between partners (suppliers and collaborators) and PEA.</li> <li>Projects/joint ventures to develop the stability of the national power system.</li> <li>Fast and efficient communication and coordination.</li> </ul>	<ul style="list-style-type: none"> <li>Holding a meeting to listen to feedback from partners regarding PEA's strategies once a year.</li> <li>Conducting an engagement survey to assess the needs and expectations of partners once a year.</li> <li>Holding a meeting to communicate and listen to feedback and suggestions from partners at least once a year on the following topics: <ul style="list-style-type: none"> <li>Power suppliers</li> <li>Issues related to operational plans and requirements and regulations for power systems, in collaboration with EGAT and MEA.</li> <li>Issues related to power delivery processes, in collaboration with very small power producers (VSPPs).</li> <li>Equipment and service suppliers</li> <li>Issues related to power system construction standards, in collaboration with contractors/power stations.</li> <li>Issues related to operations and safety, in collaboration with power system maintenance contractors.</li> <li>Issues related to work control and safety, in collaboration with contractors.</li> </ul> </li> <li>Collaborators</li> <li>Issues related to communication cable laying, in collaboration with requesting agencies.</li> <li>Making a site visit to inspect the operations between PEA and partners (equipment and service suppliers) at least once a year.</li> </ul>	<ul style="list-style-type: none"> <li>Enterprise Risk Management, pages 56 - 68/ Corporate Governance and Risk Management Department</li> <li>Power System Reliability, pages 104 - 107/Power System Control and Operation Department</li> <li>Occupational Health and Safety, pages 132 - 141/Human Resource Service Department</li> </ul>



Stakeholder Group	Stakeholder Needs and Expectations	Engagement Activities and Frequency	Responses to Stakeholder Needs and Expectations/ Responsible Units
 <b>Board of Directors</b>	<ul style="list-style-type: none"> <li>• The adaptation of PEA to respond to impacts of the electricity liberalization policy and associated changes.</li> <li>• Creating business opportunities through promoting the use of clean, renewable, and alternative energy.</li> <li>• Implementing corporate governance within the organization, encompassing transparency, fair treatment of employees and suppliers, and fair procurement practices.</li> <li>• Promoting safety to reduce accidents from using electricity and community power systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Arranging an in-depth interview with the Board of Directors once a year to obtain their opinions and suggestions.</li> <li>• Holding a meeting to listen to feedback from the Board of Directors regarding PEA's strategies once a year.</li> <li>• Conducting a board satisfaction survey once a year.</li> </ul>	<ul style="list-style-type: none"> <li>• Corporate Governance and Anti-Corruption, pages 39 - 50/Corporate Governance and Risk Management Department</li> <li>• Business Trends and Changing Direction, pages 51 - 52/Organization Development and Change Management Department</li> <li>• Economic Performance, pages 120 - 126/Business Development Department</li> </ul>
 <b>Employees and Internal Units</b>	<ul style="list-style-type: none"> <li>• A positive working environment and effective and timely communication about management and organizational changes.</li> <li>• Clearly defined roles and responsibilities, work-life balance, and opportunities for career advancement.</li> <li>• Salary, compensation, and welfare benefits.</li> </ul>	<ul style="list-style-type: none"> <li>• Management meets employees (meetings/visits/activities) once a week.</li> <li>• Meet the Governor program once a quarter.</li> <li>• Executive meeting once a month.</li> <li>• Announcement of the Governor's management and organizational development policy once a quarter.</li> <li>• Annual strategy seminar once a year.</li> <li>• Meeting for strategy communication/ annual operational plan review once a year.</li> <li>• Conducting an employee/internal unit satisfaction survey once a year.</li> </ul>	<ul style="list-style-type: none"> <li>• Equitable Treatment of Employees, pages 127 - 131/Human Resources Strategy Department</li> </ul>

Stakeholder Group	Stakeholder Needs and Expectations	Engagement Activities and Frequency	Responses to Stakeholder Needs and Expectations/ Responsible Units
 <b>Affiliates</b>	<ul style="list-style-type: none"> <li>• Creating value for affiliates, improving their stability, performance, and financial status, reducing risks that may arise from both internal and external factors, and upholding corporate governance.</li> <li>• Well-defined plans for affiliates.</li> <li>• Setting clear goals, objectives, and responsibilities for affiliates.</li> <li>• Promoting cooperation between affiliates and PEA.</li> <li>• Efficient and streamlined business processes to reduce delays in transactions with PEA.</li> <li>• Providing support, advice, and assistance as required by affiliates.</li> </ul>	<ul style="list-style-type: none"> <li>• Conducting a survey to listen to opinions, suggestions, and needs from the Board once a year.</li> <li>• Holding a meeting to listen to feedback from affiliates regarding PEA's strategies once a year.</li> <li>• Conducting a board satisfaction survey once a year.</li> <li>• Holding a meeting to communicate and listen to feedback and suggestions from affiliates at least once a year on the following issues: <ul style="list-style-type: none"> <li>• Goals, objectives, and responsibilities for affiliates.</li> <li>• Cooperation between affiliates and PEA.</li> <li>• Support, advice, and assistance as required by affiliates.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Enterprise Risk Management, pages 56 - 68/Corporate Governance and Risk Management Department</li> <li>• Economic Performance, pages 120 - 126/Business Development Department</li> </ul>
 <b>Peers and Competitors</b>	<ul style="list-style-type: none"> <li>• Good relationships and collaboration networks between PEA and its peers/competitors.</li> <li>• Joint operations/projects to develop the stability of the national power system or expand other businesses.</li> </ul>	<ul style="list-style-type: none"> <li>• Holding a meeting to listen to expectations and needs from peers/competitors once a year.</li> <li>• Holding a meeting to listen to feedback from peers/competitors regarding PEA's strategies once a year.</li> <li>• Conducting a peer/competitor satisfaction survey once a year.</li> <li>• Holding a meeting to communicate and listen to feedback and suggestions from peers/competitors at least once a year and creating a network of PEA and its peers/competitors.</li> </ul>	<ul style="list-style-type: none"> <li>• Power System Reliability, pages 104 - 107/Power System Control and Operation Department</li> <li>• Economic Performance, pages 120 - 126/Business Development Department</li> </ul>



# 10 Assessment of Material Sustainability Issues <sup>(3-1)</sup>

We have prepared this report to disclose economic, social, and environmental performance that is important to PEA and our stakeholders reporting in accordance with the GRI Standards. The assessment of material sustainability issues involves the following three steps:

## 1. Study, Review, and Identification of Relevant Sustainability Issues

We analyzed and identified sustainability issues related to PEA's business across the economic, social, and environmental dimensions. This information serves as a foundation for reviewing and developing the PEA Strategic Plan 2022-2026. The process of identifying sustainability issues involves the following steps:

- Studying sustainability principles and practices at the global level.
- Comparing past performance against sustainable development goals (SDGs).
- Analyzing the needs and expectations of stakeholders.
- Studying electric utility sector information within the GRI G4 Electric Utilities Sector Disclosure Framework.
- Reviewing material sustainability issues for 2020.

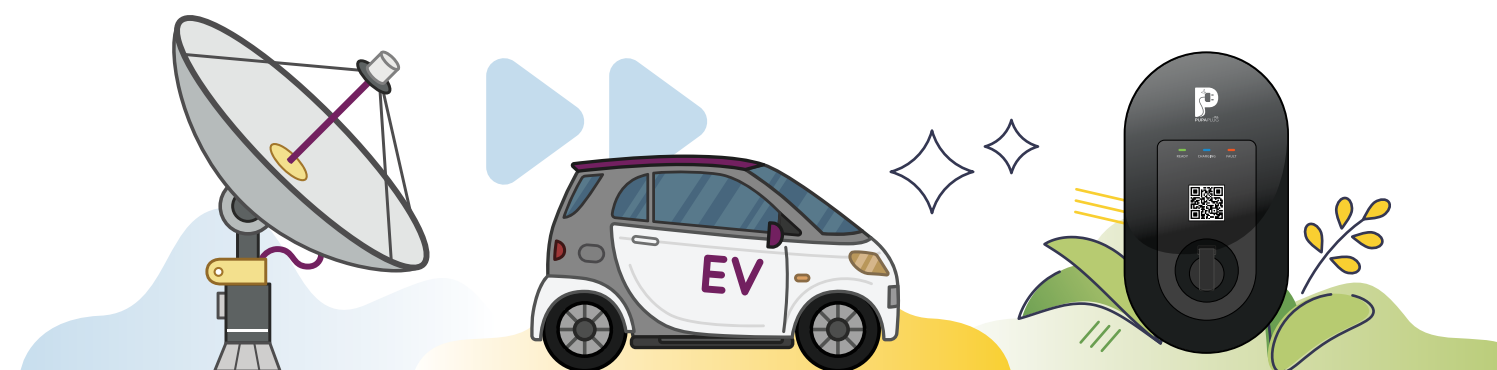
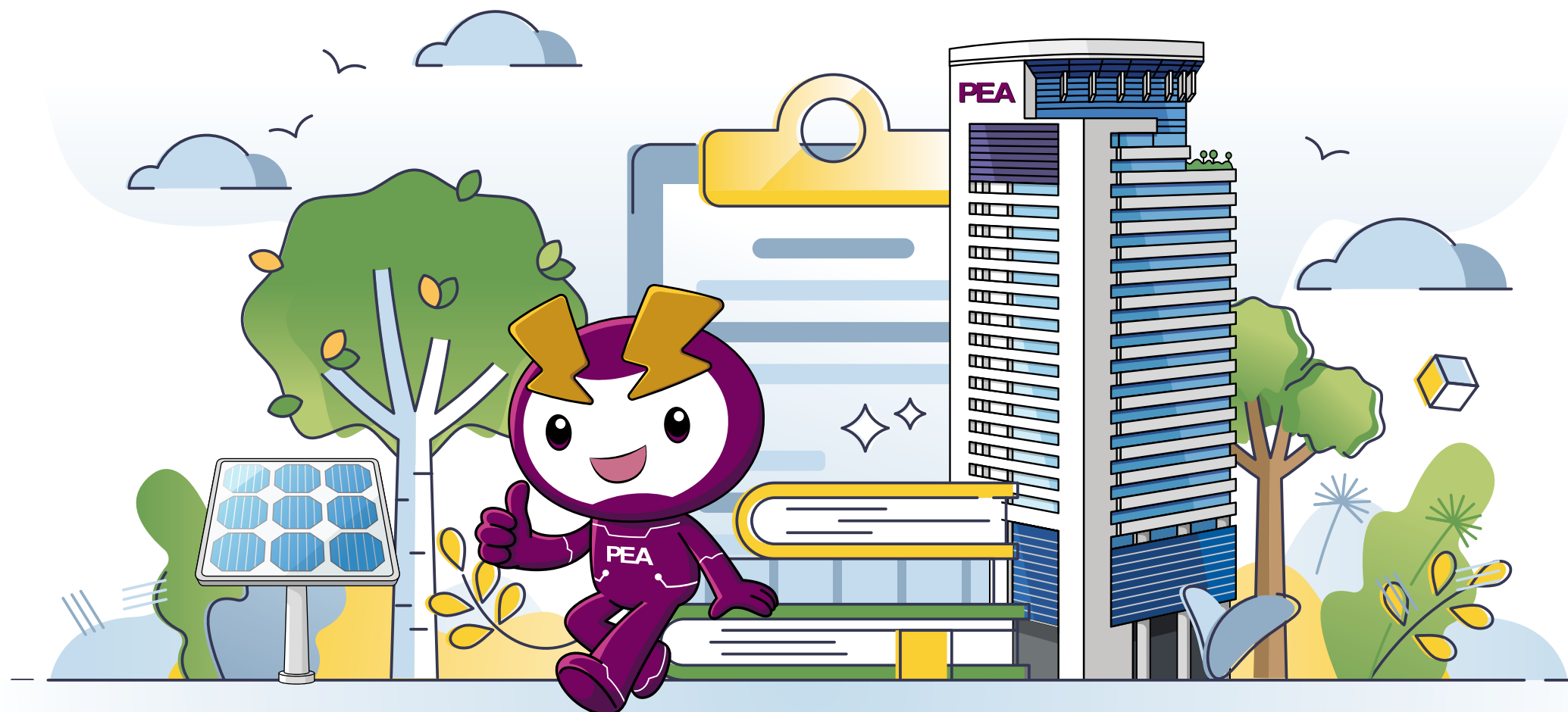
## 2. Prioritization of Sustainability Issues

After Step 1, all 11 identified sustainability issues were prioritized based on the following criteria:

- Reflect the organization's significant economic, social, and environmental impacts.
- Substantively influence the assessments and decisions of stakeholders.






















## 3. Validation of Sustainability Issues

All 11 identified sustainability issues were reviewed and validated before submitting them to the Corporate Governance and Sustainable Development Committee for approval. This is to ensure the accuracy and completeness of the 11 sustainability issues and that they can effectively meet the needs and expectations of stakeholders.

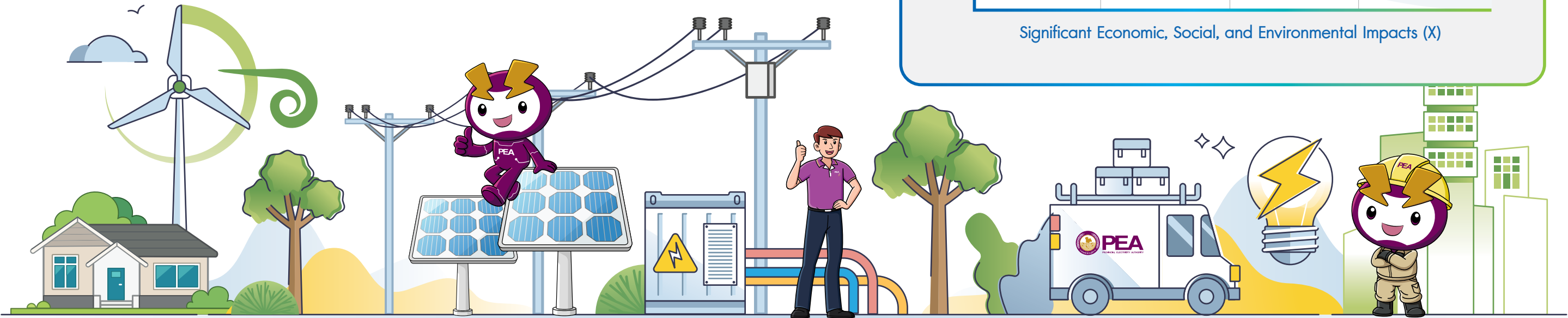
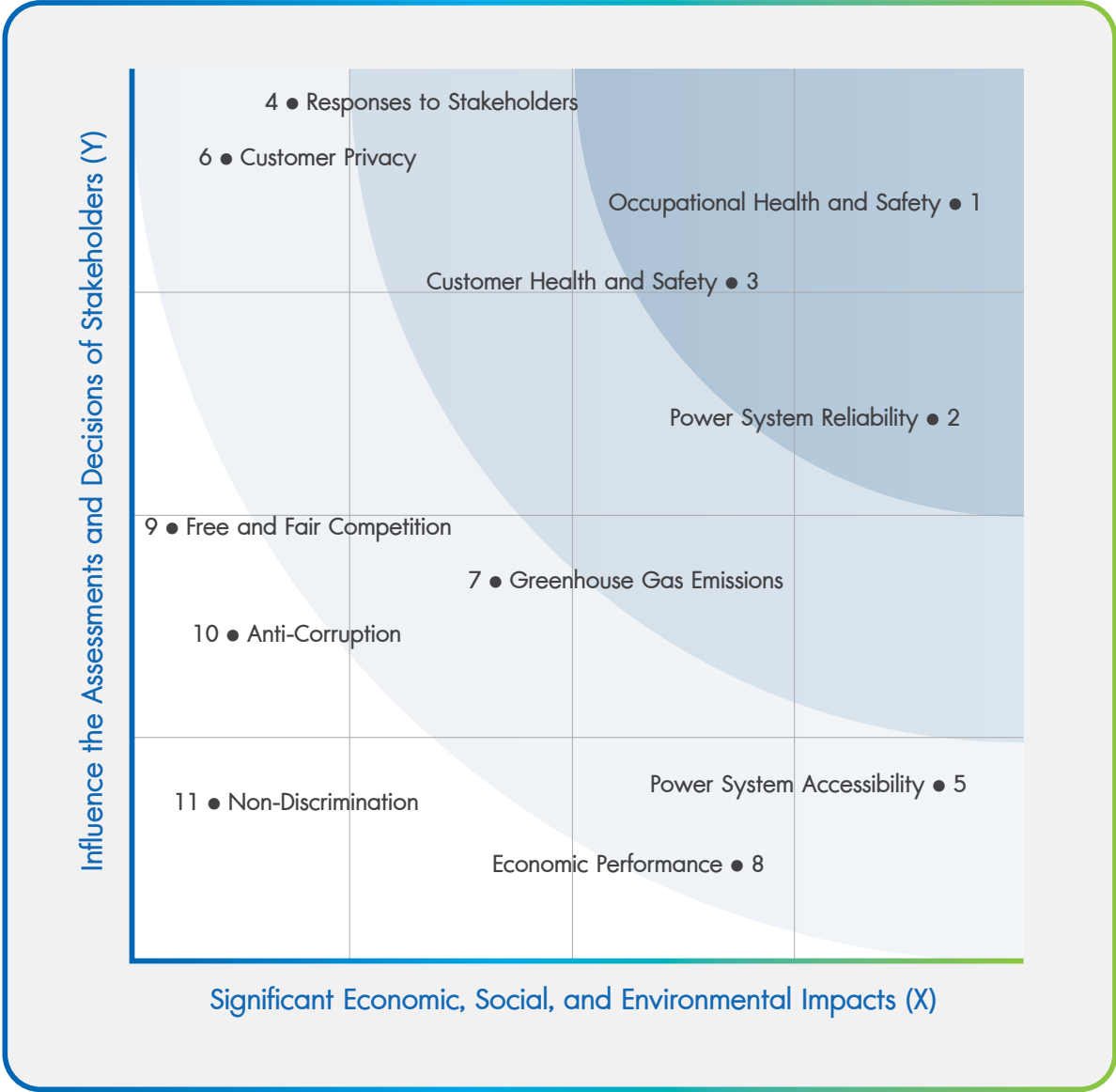




PEA Material Sustainability Issues <sup>(3-2)</sup>

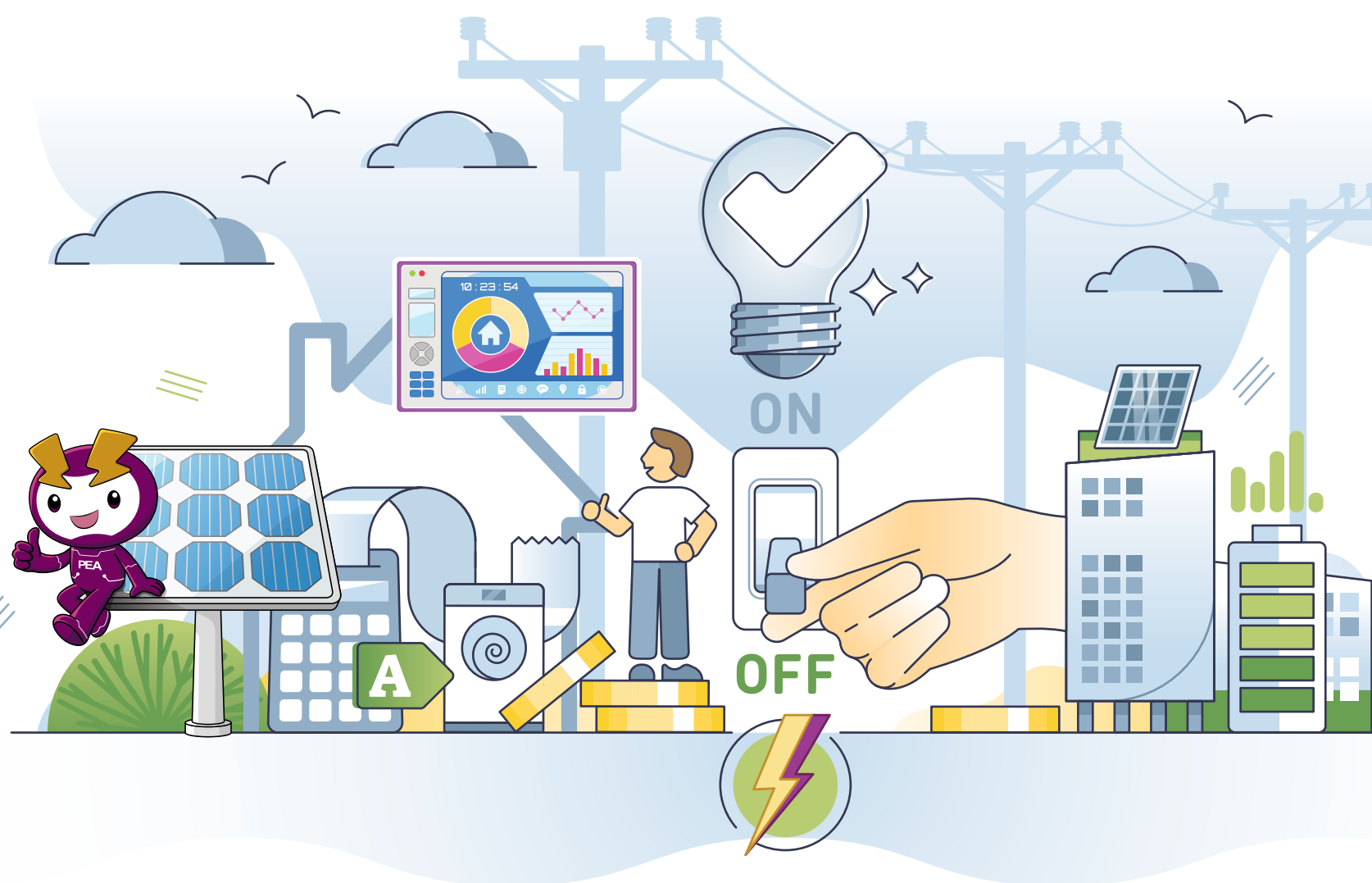
Material Sustainability Issues	Boundary	SDGs
1. Occupational Health and Safety	PEA/Partners	  
2. Power System Reliability	PEA/Partners	 
3. Customer Health and Safety	PEA	
4. Response to Stakeholders	PEA	-
5. Power System Accessibility	PEA/Communities and Society	 
6. Customer Privacy	PEA	
7. Greenhouse Gas Emissions	PEA	     
8. Economic Performance	PEA	 
9. Free and Fair Competition	PEA/Regulators and Government Agencies	
10. Anti-Corruption	PEA/Partners	
11. Non-Discrimination	PEA	 

Results of Material Sustainability Issue Assessment





# 11 Sustainable Business

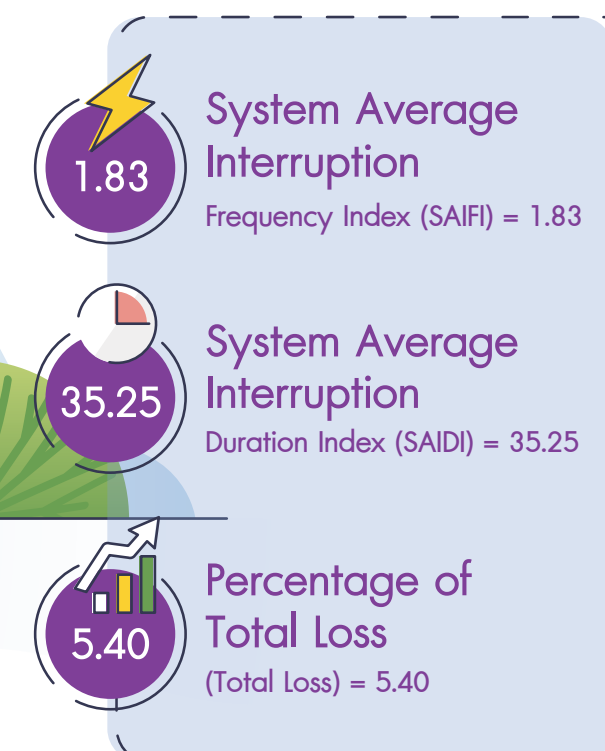


## Performance

### Power System Reliability <sup>(3-3)</sup>

Electricity is an essential public utility and a crucial driver of the economy and society. As the provider and distributor of electricity, PEA plays a vital role in ensuring an adequate supply of electricity to meet demand and maintaining the stability and reliability of the power system. Failing to fulfill this responsibility will have far-reaching consequences for the business sector, leading to disruptions in business activities and affecting the overall quality of life of the general public.

PEA strives to develop a digitalized smart grid system, which will support the efficient use of electrical energy, connect all activities within the electricity industry, and adapt to the changing landscape of public and industrial infrastructure. This will ensure a supply of safe, reliable, and sufficient electricity to meet the needs of consumers both now and in the future. PEA's distribution system development in 2022 aligns with the Twelfth National Economic and Social Development Plan 2017-2021.



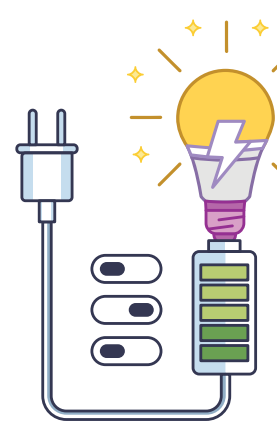
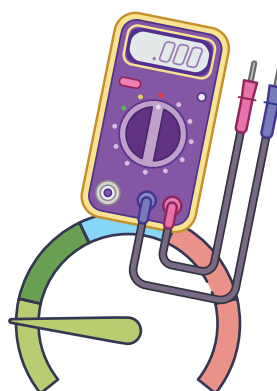
### Goals <sup>(3-3)</sup>

- A power system that ensures an uninterrupted and efficient supply of electricity and reduces SAIFI and SAIDI to the set targets (equivalent to BSC level 5).
- Power systems and related infrastructure in place to fully support the smart grid system. The implementation of all four Smart City Projects piloted in Chiang Mai, Phuket, Koh Samui, and the Eastern Economic Corridor (EEC) successfully meets the objectives set in the Smart Grid Plan.
- Use of smart grid analytics to improve the grid system and customer service.



### Strategies (3-3)

- Review relevant risks and develop risk management strategies, annual maintenance plans, and preventive maintenance plans to enhance the efficiency and reliability of the distribution system.
- Construct power stations as planned to ensure an adequate and reliable electricity supply to meet the growing demand.
- Improve and integrate distribution systems in business and key areas to accommodate the expansion of the economic zones.
- Develop smart grid infrastructure to accommodate renewable energy and future technologies.
- No service shut-offs for families with bedridden patients.

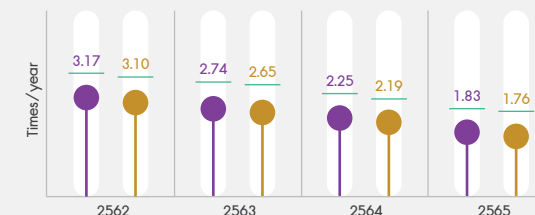


### Power System Reliability Management (3-3, EU6)

- Forecast single-station electricity demand using forecasting models, statistical methods, and assumptions that affect future electricity consumption. The forecasting results are analyzed for power station and transmission line planning to accommodate the growing energy demand. Additionally, DlgSILENT Power Factory software is used to analyze data to develop short-term (2023 - 2024) and long-term (2022 - 2028) plans to enhance power system reliability. Based on the demand forecasting conducted in 2022, the electricity demand in the service areas was projected to increase by 3.51 percent compared to the previous year. Consequently, plans and measures were put in place to accommodate this increased demand. These include the Strong Grid Development Plan, Power System Reliability Improvement Project Phase 3, SCADA/TDMS Improvement Project, Transmission and Distribution System Development Phase 1, and Power System Development in Major Cities Phase 1. (EU10)
- Improve power system inspection and maintenance to reduce power outages and enhance system reliability. The Advanced Patrolling System Application (APSA) was replaced with the Mobile Job Management (MJM) and Mobile for Field Operation (MFO) programs. These new programs are designed to facilitate the inspection and monitoring of corrective actions for abnormalities in the high-voltage distribution and transmission systems. Furthermore, the data collected from these operations is analyzed to identify preventive measures and improve the accuracy and reliability of the power system.
- Prepare for the smart grid implementation by installing 116,308 smart meters for consumers in Pattaya and smart grid systems in the North Pattaya Station, South Pattaya Station, and Jomtien Station. These efforts aim to enable efficient electricity distribution through the smart grid system in the city of Pattaya, Chonburi Province.
- Improve the power system in the metropolitan fringe to enhance its efficiency.

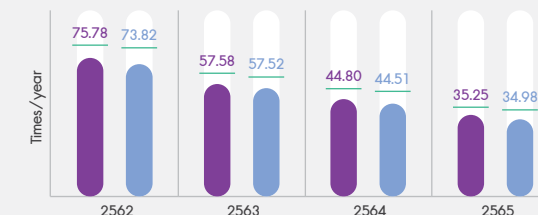
### Power System Reliability Performance (EU28, EU29)

#### System Average Interruption Frequency Index (SAIFI)

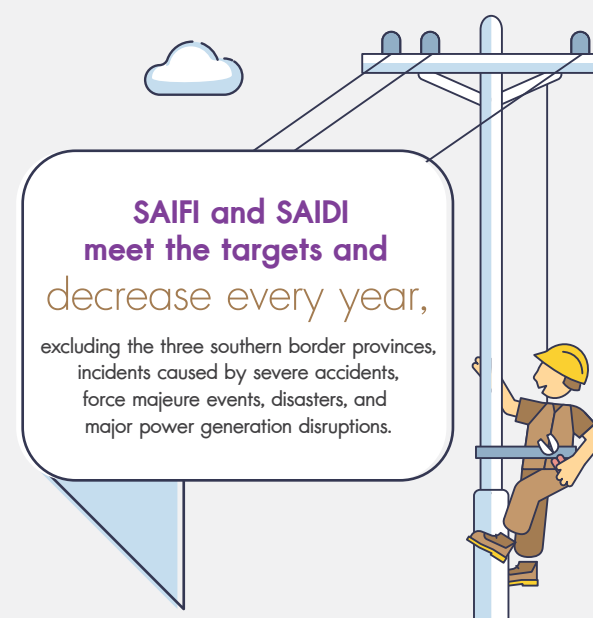


● SAIFI target  
● SAIFI result

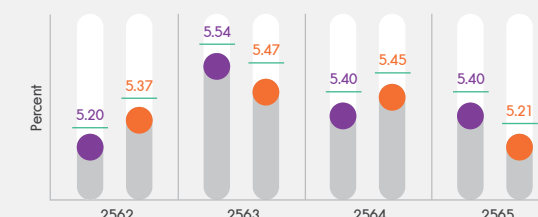
#### System Average Interruption Duration Index (SAIDI)



● SAIDI target  
● SAIDI result

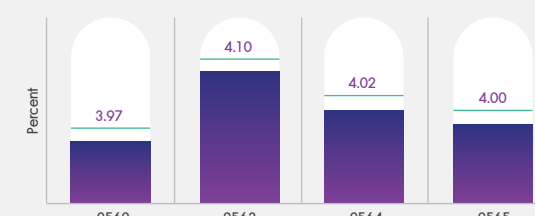


#### Total Target Loss



● Power system loss target  
● Power system loss result

#### Technical Loss






■ Technical loss result

#### Non-Technical Loss

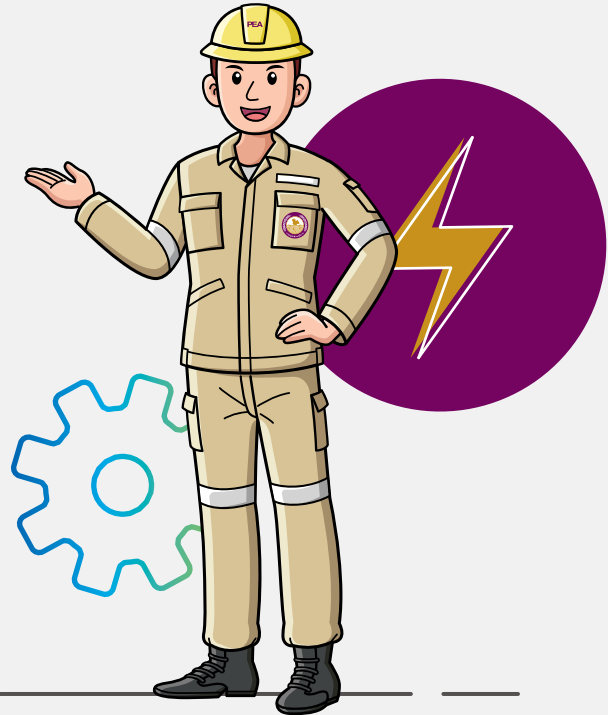


■ Non-technical loss result

Operational Process	Results
 <b>Residential consumers have a growth rate lower than</b> initially projected, with a deviation of 0.21 percent.	In 2022, sales have a growth rate of 3.50 percent, lower than initially projected by a deviation of 0.02 percent when analyzed by consumer type. <sup>(EU10)</sup> <ul style="list-style-type: none"><li>Electricity demand = 152,518 GWh</li><li>Number of electricity users = 21,670,057 units</li></ul>
 <b>Medium-sized business consumers have a growth rate higher than</b> projected, with a deviation of 0.71 percent.	
 <b>Large-sized business consumers have a growth rate lower than</b> projected, with a deviation of 0.63 percent.	

Plans for Future Improvements <sup>(3-3)</sup>

- Improving policies and regulations to facilitate the smart grid development and support PEA’s investment in infrastructure development.
- Improving the stability and reliability of low-voltage distribution systems to accommodate changes in the electricity industry, particularly in areas expected to experience significant growth in electric vehicles.
- Improving data quality to the ISO/IEC 25012 Standard to ensure that it meets user expectations, particularly in grid analytics which is crucial for planning, expanding, and managing grids, as well as DERs integration.

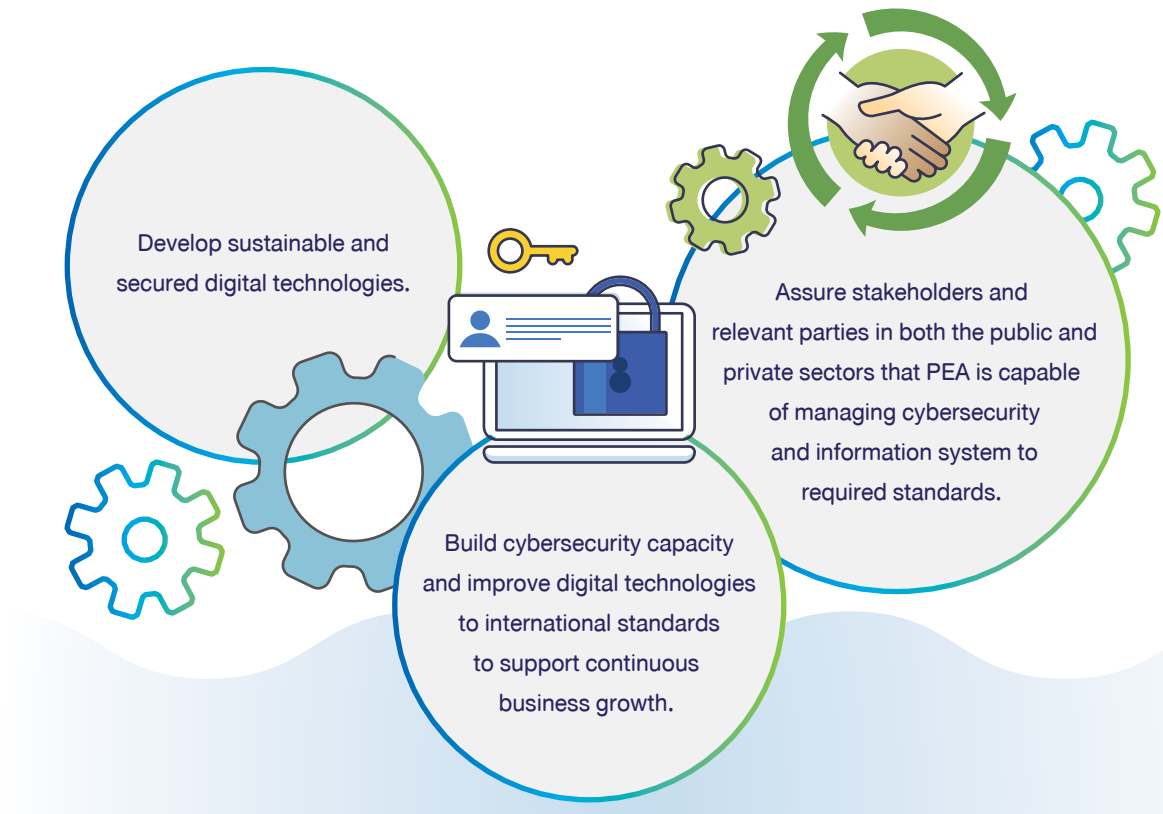


Cybersecurity

Today, digital technology plays a vital role in both our daily lives and businesses. It brings about positive effects by providing convenience and facilitating efficient business processes. However, it also poses negative consequences, particularly in the form of cyber threats, which can have far-reaching impacts across all sectors, including the economy and national security. The majority of cyber threats involve unauthorized intrusion attempts that aim to breach or disrupt systems. Therefore, we place great importance on the security of our digital technology, as it is a vital component of our data management and business operations. PEA is aware of the risks that cyber threats may pose to the organization’s infrastructure and databases, resulting in damages for both PEA and the country’s economy. Moreover, it can affect the reputation and credibility of PEA among stakeholders.

In 2022, PEA underwent an organizational restructuring to enhance cybersecurity performance. The IT Standards and Cyber Security Division was established to replace the IT Standards and Security Division. Its primary role is to oversee and maintain cybersecurity within the organization across the three pillars of people, process, and technology. Furthermore, in addition to the Computer System Security Coordination Committee, the Information Technology Working Group, and the Operation Technology Working Group that manage and coordinate cybersecurity efforts within and outside the organization, the Security Operations Center (SOC) has been established to monitor and respond to potential cyber threats. PEA has also set processes and procedures in place to address cyber threats, as well as implementing a risk assessment related to cybersecurity every year. Our cybersecurity practices align with legal requirements and the ISO/IEC 27001 Standard, which provides a fundamental basis for analyzing and controlling risks that may arise in the future.

Goals







## Strategies

- Strengthen digital security, which is a fundamental driver toward becoming a digital utility.
- Ensure IT security to build confidence in online communications and transactions, such as implementing an efficient and secure payment system that meet user needs.
- Establish measures and best practices to protect privacy rights and personal data of customers, including use of mobile commerce, smartphone, and social media guidelines, to support the growth of digital technology usage in the future.
- Establish measures for monitoring and responding to cyber threats, particularly for protecting critical infrastructure such as the SCADA system. Promote the development of cybersecurity networks and information sharing to effectively respond to cyber threats.
- Promote awareness and understanding of the importance of cyber threats within the organization. Develop digital technology management practices to international standards. Implement IT Governance to ensure effective decision-making processes and management of digital technology, aligning with global standards and the organization's strategic objectives.

## Cybersecurity Management

PEA is regarded as Thailand's critical infrastructure, as prescribed in the Notification of the Electronic Transactions Commission on List of Agencies or Organizations, or Parts of Agencies or Organizations Deemed To Be Critical Infrastructure B.E. 2559 and relevant laws. It is required to ensure the confidentiality, integrity, and availability of its information system in compliance with the Notification of the Electronic Transactions Commission on Information System Security Standards with Secure Methods B.E. 2555, the Cybersecurity Act B.E. 2562, and the Notification of the Cybersecurity Oversight Committee on the Code of Practices and Standards for Cybersecurity for State Agencies and Critical Information Infrastructure B.E. 2564. To ensure PEA manages its information and cybersecurity in line with laws and international standards, the following regulations, policies, practices, and measures have been established:

- PEA Regulation on Information Management and Security 2017.
- Information Security Policy 2018 and (No. 2) 2019.
- Information Security Guidelines accompanying the Information Security Policy.
- PEA Measure on the Use of Information Asset 2020.

In 2022, PEA managed cybersecurity as follows:

- We have implemented the information security management system in accordance with the ISO/IEC 27001 Standard. The scope of this system covers critical infrastructure, particularly the information system of the PEA Computer Center. We have continuously managed and mitigated risks related to information security according to the ISO/IEC 27001 Standard with reference to risk assessment methodologies, the scope of information security structure, the roles and responsibilities of relevant stakeholders, and internal and external factors that align with the organization's objectives and context. PEA established information security risk assessment procedures and methodologies in 2017 and reviewed them regularly to reflect changing internal and external factors.

In 2021-2022, PEA planned to improve its information security management system for critical infrastructure to cover the Head Office and all 12 Area Offices across the country. The scope also extended to the PEA Core Business Software Package Project Phase 2, payment system, and bill printing and payment management (BPM) as outlined in the Action Plan 2022.

- We have implemented various tools and systems to monitor performance and manage risks in order to effectively respond to potential cyber threats or incidents. Examples of these tools and systems include Log Collection, Security Information and Event Management (SIEM), and IT Service Management (ITSM). This enables PEA to promptly respond to and address customer complaints regarding digital services.
- We have provided training programs to enhance the skills of employees in specific and general management functions. Additionally, we have communicated information and raised awareness about information security among all employees through two multimedia formats: 2D animated videos and infographics on topics of password policy, risks of using unauthorized software, and phishing email detection. Furthermore, various channels have been set up to provide knowledge and deliver threat notifications, such as lock screens before PC login, @PEAFriends, and PEA newsletters. The important training courses for PEA's management and employees in 2022 include:
  - Cybersecurity Awareness for employees (across all functions and 12 PEA Areas) through the Learning Management System (LMS).

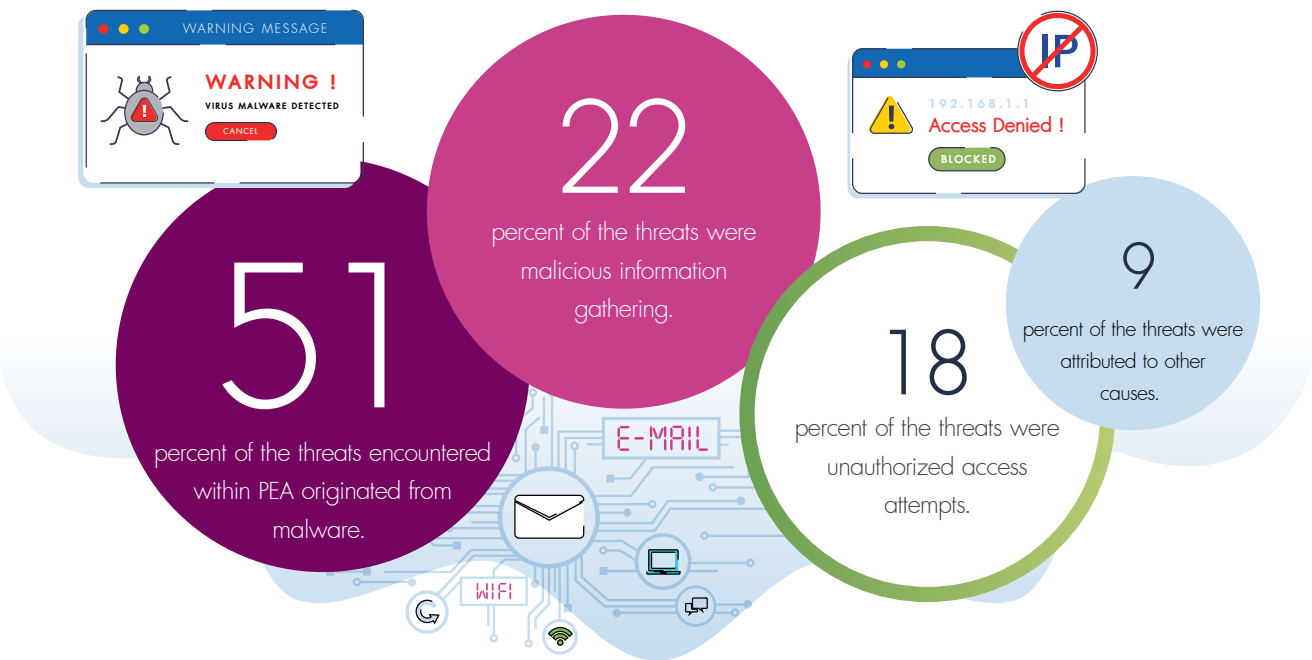


- Onboarding Program 2022 for new employees on the topic of "Information System Security" through the e-Learning System.
- Secure Software Development Life Cycle for developers.
- Information Security Management System for information security management team.
- Information Security Awareness Program 2022 for working and sub-working groups at the Head Offices and 12 PEA Areas, as well as relevant outsourced companies.
- NIST: Cyber Security for working and sub-working groups at the Head Offices and 12 PEA Areas, as well as OT (Scada AMR GIS).
- Cyber Attack Emergency Response Plan (ERP) and Business Continuity Plan (BCP) Table Top Exercise 2022 in collaboration with SCADA.
- We have established the Cybersecurity Operations Center (SOC) with round-the-clock and 24/7 monitoring of cyber-attacks, covering information technology and operational technology. The center is also equipped with an alert system to promptly notify relevant parties.



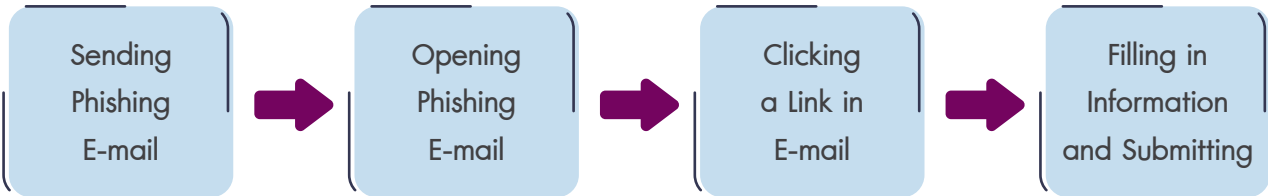
Cybersecurity Performance

- PEA improve its information security management system and was certified for the ISO/IEC 27001:2013 Standard for critical infrastructure, covering the Head Office and all 12 Area Offices, the PEA Core Business Software Package Project Phase 2, payment system, and bill printing and payment management (BPM). Furthermore, in 2022-2023, there are plans to expand the ISO/IEC 27001:2013 certification scope to include more critical infrastructure, such as back-office software (e.g., enterprise resource planning), front office software (e.g., IS-U utility system), and outage management system (OMS).
- We assessed the effectiveness of information security management based on the criteria outlined in the information security management system assessment procedures. We also monitored and reported information security risk management progress.
- An audit of the information security management system is conducted annually by the Internal Audit and certification body (CB). The audit results are used to improve the efficiency of the operational processes.
- PEA participated in the Intensive Cybersecurity Capacity Building Program Phase 1, which aims to develop Thailand’s cybersecurity professionals. This program targets critical information infrastructure organizations (CII) in both the public and private sectors and relevant organizations involved in the implementation of the Cybersecurity Act B.E. 2562. It offers basic, expert-level, and executive-level courses.
- PEA developed the National Incident Response Plan and Incident Response Fundamentals in collaboration with critical information infrastructure organizations (CII) in both the public and private sectors.
- In 2022, there were no significant cyber threats that affected the operations of PEA. The cybersecurity monitoring conducted by PEA’s Security Operation Center (SOC) found that:



PEA has undertaken the following measures to prevent attacks:

- Installing equipment or software to protect against and detect malicious files and updating the operating systems and software to their latest versions.
- Streamlining the cyber incident response and handling processes.
- Proactively improving the operations of the Security Operation Center (SOC) to prevent cyber threats before they occur.
- Reiterating the importance of complying with the information security policy and providing security awareness training for employees.
- A total of 25,042 employees out of the target of 22,490 participated in the Information Security Awareness Course in 2022. This represents 89.08 percent of the total 28,112 employees. Among them, 24,248 individuals or 96.83 percent of the total number of participants successfully passed the assessment, surpassing the target of 20,241.
- PEA conducted a cyber drill involving phishing mail, where users were prompted to verify their identity and access the information system to update their data, as shown in the diagram below:



The results of sending malicious emails to a total of 7,560 employees can be summarized as follows:

No.	Number of Phishing Mails Sent (Copies)	Number of People Who Opened Phishing Mail, Clicked on the Attached Link, Filled in Information, and Clicked Submit (Persons)
2022/1 (Quarter 2)	A total of 3,500 copies was sent to 500 people at the Head office and 250 people in each of the 12 Area Offices.	34
2022/2 (Quarter 4)	A total of 4,060 copies was sent to 640 people at the Head Office, 280 people in each of the 12 Area Offices, 34 at-risk employees from the exercise 2022/1, and 26 senior executives.U	92

Following the drill results, it was found that PEA would face a relatively high risk in the event of phishing emails. Consequently, the IT Standards and Cyber Security Division has implemented activities to raise employee awareness. We have also provided training sessions and informational materials to help employees understand potential threats and detect and prevent phishing attempts, in addition to conducting organization-wide phishing drills.



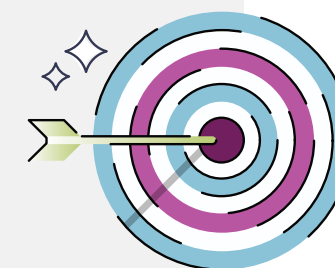
### Plans for Future Improvements

- Developing a proactive cyber threat monitoring plan to prevent potential risks. The plan will implement technology to gather and analyze threat intelligence, analytics tools to assess threats, and automation for incident response. The completion of this plan is anticipated within 2022.
- Improving cyber threat response drills in collaboration with key regulators to cover all 12 PEA Areas.
- Developing a structure and guidelines to support the monitoring operations in 2022 through the development of the Security Operation Center (SOC).



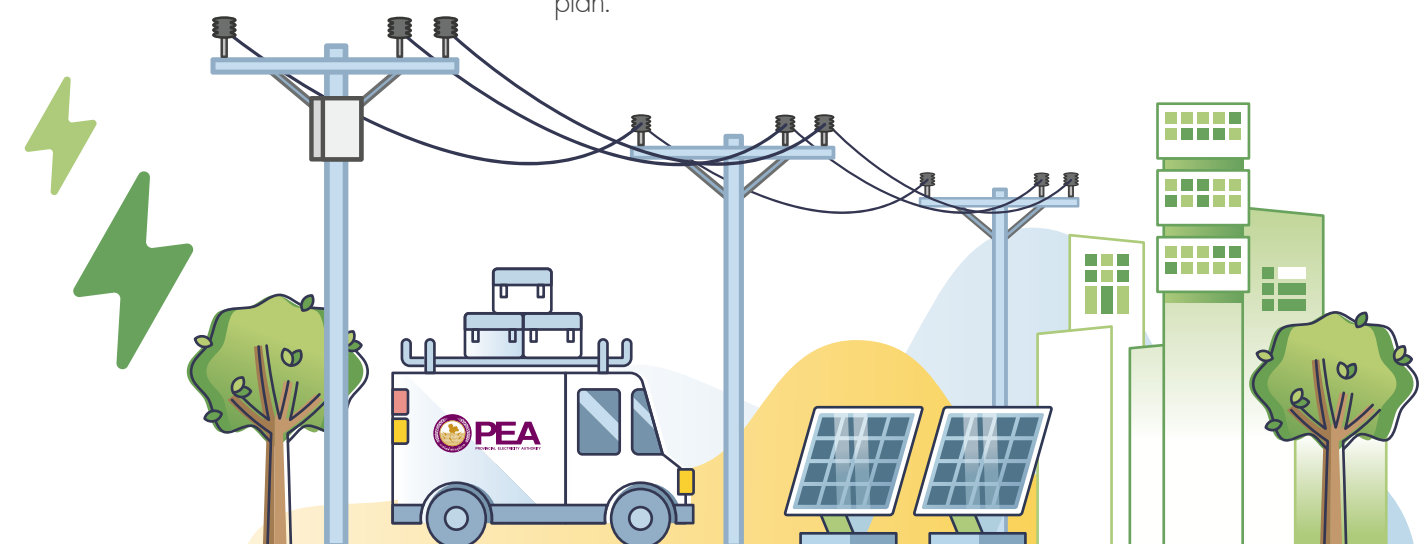
### Customer Privacy <sup>(3-3)</sup>

PEA holds and processes a large amount of personal data, including the supervision of data processor. To build confidence among stakeholders, we prioritize the personal data protection and right to privacy. Personal data will be collected and used only to the extent necessary to perform our duties. Additionally, we have established policies and guidelines for the proper handling and protection of customer data and for preventing data breaches in compliance with Thailand's Personal Data Protection Act B.E. 2562 (PDPA). In the event of a personal data breach, we will conduct thorough investigations and assume legal responsibilities in accordance with the prescribed procedures. Appropriate organizational and technical measures will be taken to mitigate the impact on customer privacy and improve the management of customer personal data.



### Goals <sup>(3-3)</sup>

- Provide knowledge and understanding to employees to comply with the Personal Data Protection Act through meetings, personal data protection online training courses, publications materials, and the Digital Talk the Series.
- At least 90 percent of employees complete the personal data protection training courses.
- Require all department within the Business Architecture to keep an up-to-date Record of Processing Activities (RoPA).
- Require all departments to create metadata, data dictionaries, and data life cycle, as well as conduct data quality and data security assessments.
- Conduct exercises to practice the personal data breach respond plan.

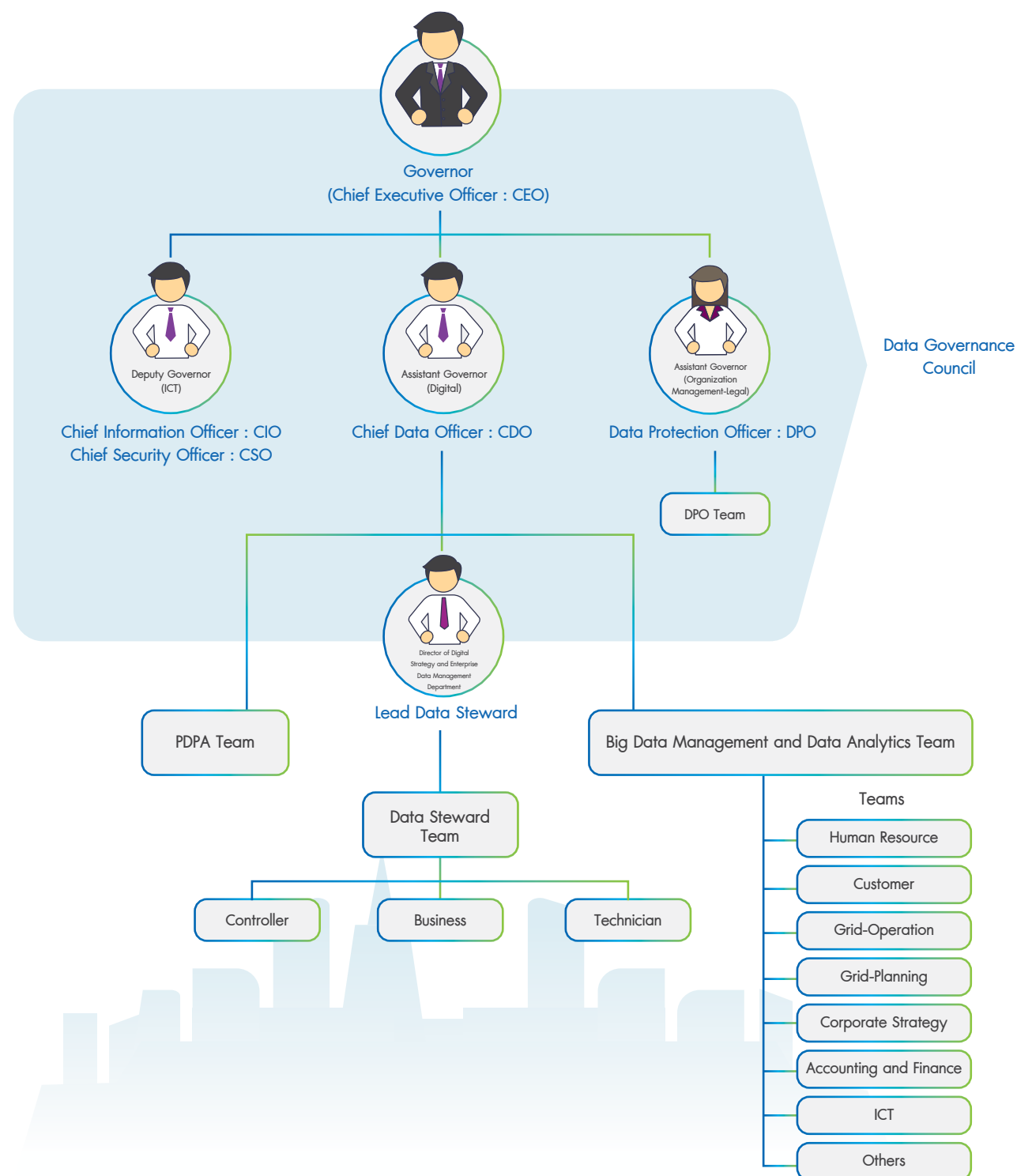




### Strategies <sup>(3-3)</sup>

Since the publication of the Personal Data Protection Act B.E. 2562 (PDPA) in the Royal Gazette on 27 May 2019, PEA has developed and implemented policies, regulations, and guidelines to ensure compliance with the PDPA and relevant requirements. Moreover, we have provided knowledge and understanding of personal data protection to our employees and workers. To facilitate effective data governance, we have established a data governance structure comprising designated employees, departments, and working groups responsible for personal data protection. A data protection officer (DPO) has also been appointed to advise all departments on personal data protection operations.

#### • Data Governance Structure



- To comply with the Digitalization of Public Administration and Services Delivery Act B.E. 2562, PEA established the Data Governance Policy and Practices in 2019 covering the following topics:
  - General Domain such as data governance structure, duties, and liabilities.
  - Data Creating Storage and Quality Control
  - Data Processing and Use Domain
  - Data Request Exchange and Integration Domain
  - Data Disclosure and Confidentiality Domain
  - Data Archive and Destruction Domain
- PEA established the Personal Data Protection Policy and Practices in 2020 to ensure that data subjects, including PEA's employees, workers, customers, and suppliers, are informed of and understand how the organization protects their personal data. The policy covers the following topics:
  - Collection, Use, and Disclosure of Personal Data
  - Data Security
  - The Rights of the Data Subjects
  - Disclaimer
  - Improvement to the Personal Data Protection Policy
- PEA established the Compliance Policy to be complied with by executives and employees and ensure that PEA operates in strict compliance with internal and external laws, regulations, and notifications.



## Customer Privacy Management <sup>(3-3)</sup>

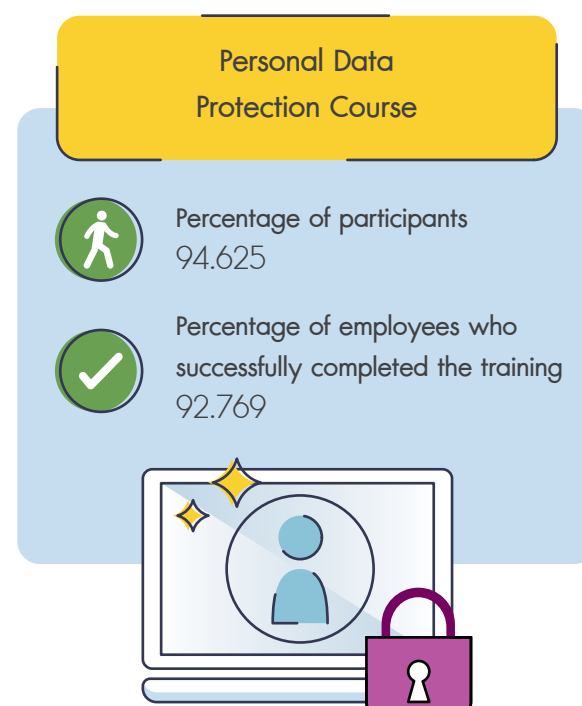
PEA has controlled personal data processing activities within the organization to ensure compliance with the PDPA. Additionally, all departments are required to carry out a data protection impact assessment on their processing activities or jobs to mitigate potential negative impacts on customer privacy. Our approaches to personal data management include:

- Document and work manual in regard with personal data consists of:
  - Procedures for handling general personal data complaints, personal data breach complaints, and data leakage reporting.
  - Data subject access request (DSAR).
  - Require that any operations or personal data processing activities are to arrange a Data Processing Agreement (DPA) or a Personal Data Sharing Agreement (PDSA), as the case may be.
  - Privacy Notice for PEA's customers, employees, workers, and the Board of Directors.
- Communication, briefings, and training sessions related to personal data processing.
  - Creating a webpage to compile policies, regulations, and relevant practices related to personal data to allow employees to study. Information related to personal data protection is communicated through internal channels and media platforms.
  - Organizing briefings to explain personal data protection to employees at the Head and Area Offices.
  - Supporting internal departments to implement data governance, including developing metadata, data dictionaries, and data life cycle, as well as implementing information classifications.
- Reviewing privacy policy every year. Submitting the performance evaluation results to management to improve and revise the policy to be enforced within the organization.

## Customer Privacy Performance

In 2022, PEA required employees from all functions to take the personal data protection training course and all functions within the Business Architecture to keep an up-to-date record of their processing activities. The important results of our customer privacy performance are as follows:

- At least 90 percent of employees have taken and successfully completed the personal data protection training course.



- All departments within the Business Architecture kept an up-to-date record of their processing activities.
- All departments created metadata, data dictionaries, and data life cycle, as well as conducted data quality and security assessments.
- A data breach response plan was conducted without prior notice. In this drill, employees were able to promptly respond to the situation.
- There were six personal data-related complaints. The Data Protection Officer (DPO) was coordinated to assess the potential risks and impacts on the data subjects. However, no incidents of data breach or significant privacy violations that could impact the data subjects have been identified. <sup>(418-1)</sup>

## Plans for Future Improvements <sup>(3-3)</sup>

- Raising awareness of the importance of compliance with the Personal Data Protection Act and relevant laws.
- Conducting a data protection impact assessment (DPIA).
- Implementing a system to support personal data protection performance and improve its efficiency.



### Economic Performance <sup>(3-3)</sup>

To march ahead in the digital technology-driven world of today, the Thai government has launched pilot projects to prepare for electricity market liberalization similar to the electricity market in Europe. Although this liberalization reduces the role of electricity suppliers and distributors, it will create more options for consumers, promote price and service competition, and shift the role of electricity business operators in Thailand. This will lead to changes in the industrial structure, regulations related to the electricity business, tariff structure, and power distribution, which is a primary source of income for PEA. To adapt to changes and competition in the electricity industry, PEA has implemented the Strategic Plan 2022-2026, which will focus on sound financial management and seeking opportunities to expand supplementary and new ventures in addition to its core business. Moreover, PEA will actively participate in driving the carbon credit market to create sustainable value for stakeholders and reduce greenhouse gas emissions.

### Goals <sup>(3-3)</sup>

- Affiliates have a clear business model and governance structure, and revenue recognition using the portfolio method.
- Develop the National Energy Trading Platform (NETP) and further expand into various digital platforms for commercial purposes to become a market leader.
- Earn a return on assets of 2.03 percent.
- Earn revenue of 7,230.44 million baht from related businesses.
- CPI-X is 31,391 million baht.
- Install 190 electric vehicle charging stations in 2022 - 2023.

### Strategies <sup>(3-3)</sup>

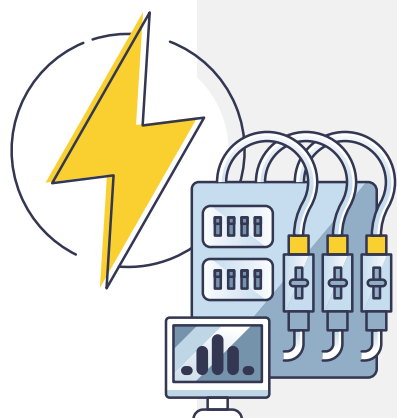
- Define policies and operational directions for affiliated companies and ensure clear business alignment.
- Create added value from the power user database.
- Implement the PEA Portfolio Management Plan.
- Improve corporate performance and establish cost accounting between regulated and non-regulated businesses using an ABC costing method.
- Review laws, regulations, and rules to support operations in related businesses and oversee the operations of affiliated companies to ensure synergy.
- Ensure that all functions have a clear understanding of the role and relevance of the energy trading platform in relation to their respective responsibilities.



Earn revenue  
related businesses.

7,230.44  
million baht

Install  
Vehicle Charging  
**190**  
stations

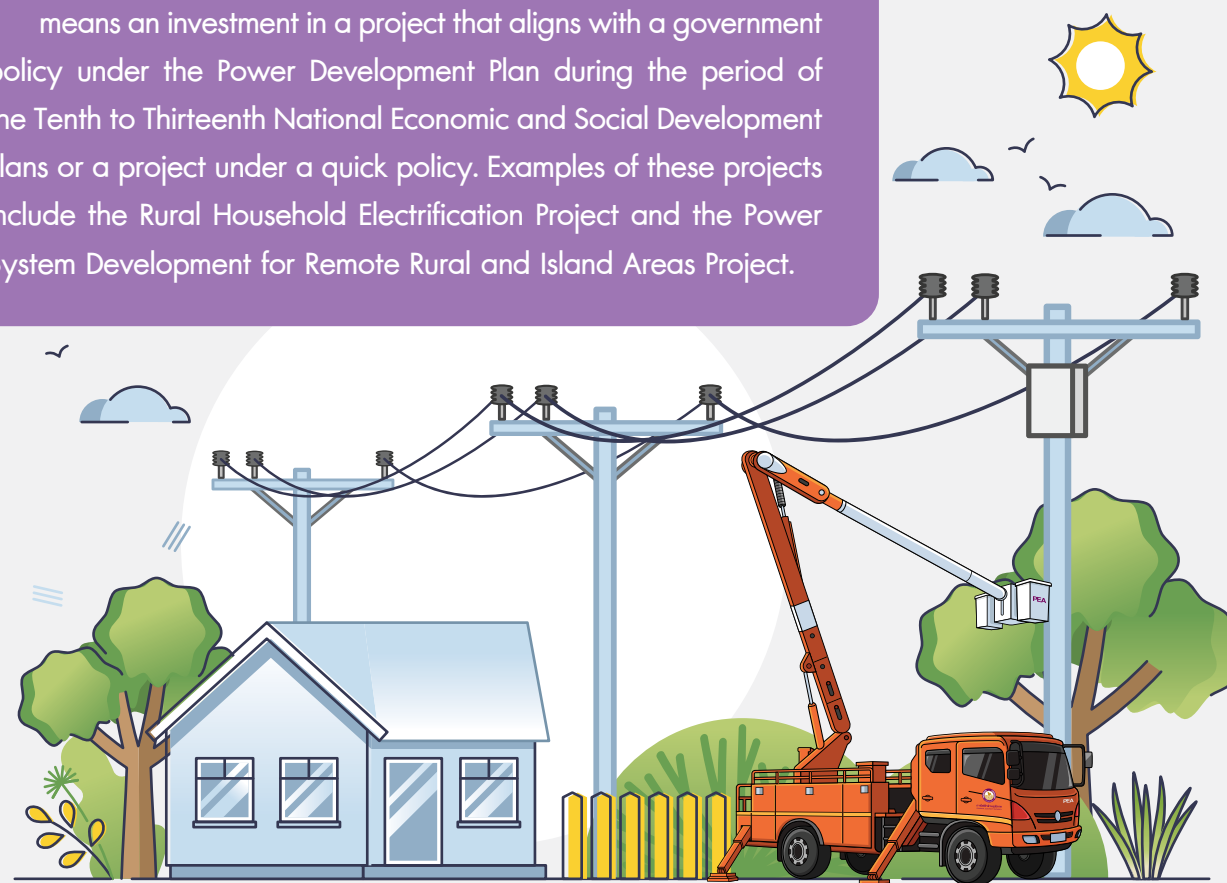


### Management of Economic Performance <sup>(3-3)</sup>

- PEA holds a meeting and workshop involving the Board of Directors and senior executives to establish business models, design the business portfolio, and develop flowcharts for PEA and its affiliated companies. These frameworks serve as a guide for the annual planning of affiliates with clear objectives, anticipated outcomes, and specific timelines.
- Improving the process of electricity application through PEA Smart Plus and develop a service level agreement (SLA) for electricity application through e-Service and low-voltage electricity expansion application through PEA Smart Plus and e-Service.
- Implementing clear cost accounting aligning with the changing electricity industry structure. In the case of regulated business, cost accounting will consider economic viability and benefits, as well as ensure appropriate costs in line with the electricity tariff structure determined by the Energy Regulatory Commission. For non-regulated business, cost accounting will consider opportunities for related businesses to enhance the value and sustainable growth of PEA.

#### Regulated Business

means an investment in a project that aligns with a government policy under the Power Development Plan during the period of the Tenth to Thirteenth National Economic and Social Development Plans or a project under a quick policy. Examples of these projects include the Rural Household Electrification Project and the Power System Development for Remote Rural and Island Areas Project.



#### Non-Regulated Business

means an investment in a project that can reduce the government's financial burden, accommodate changes in the electricity industry structure such as peer-to-peer energy trading, and create new energy business models such as supply and load aggregator and behind-the-meter.



- Developing and updating regulations, rules, and operational guidelines to support the operations of PEA and its related businesses, such as recording service charges arising from Third Party Access (TPA) and defining the accounting separation guidelines for Network Service and Support (including DSO MO and Power Marketer), in preparation for electricity market liberalization.
- Developing an Energy Trading Platform that aligns with the role of PEA. A working group has been established to be responsible for studying and designing the Energy Trading Platform to prepare for electricity market liberalization. Moreover, a consultant has been engaged to study the integration of the platform with relevant components and design mechanisms, information systems, and data management systems.

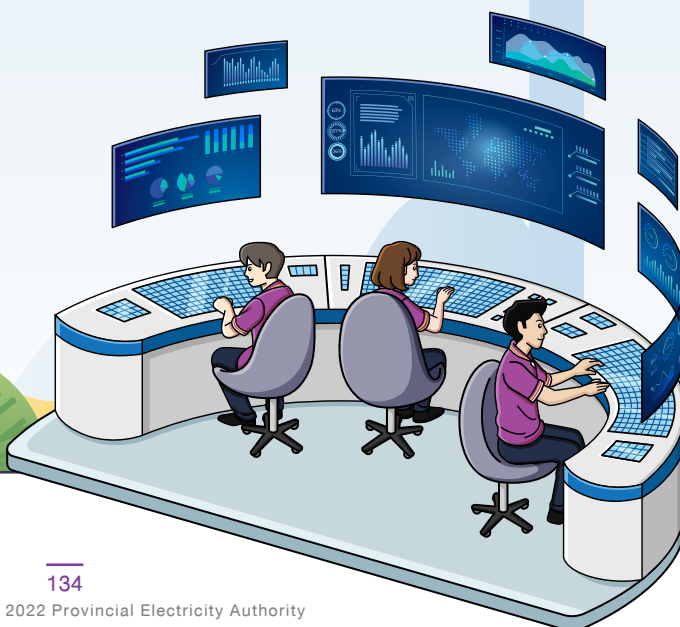
## Product and Service Action Plan

### Core Business



Supply electricity purchased from power producers using renewable and non-renewable energy resources.

- Develop the Strong Grid Development Plan.
- Develop a power system to support the smart grid.
- Develop the Third-Party Access (TPA).
- Improve the meter reading and billing processes.
- Develop a key account retention plan and implement a Digital CRM system to support customer service.



### Related Business

Consists of



#### Supplementary Business

Power system construction, leasing, power system maintenance and repair, inspection, power system testing and analysis, personnel training and development, consulting, and power system design services.

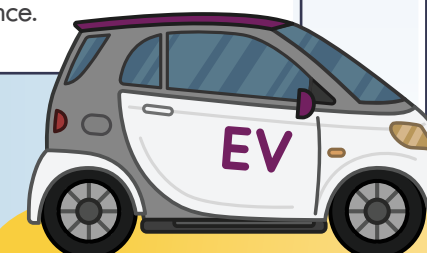
- Set targets and key performance indicators for supplementary businesses.
- Develop strategies for supplementary businesses.
- Allocate resources that align with the operation of supplementary businesses, including budgets, personnel, tools and equipment, and organizational structures.
- Monitor and analyze supplementary business performance.



#### New Business

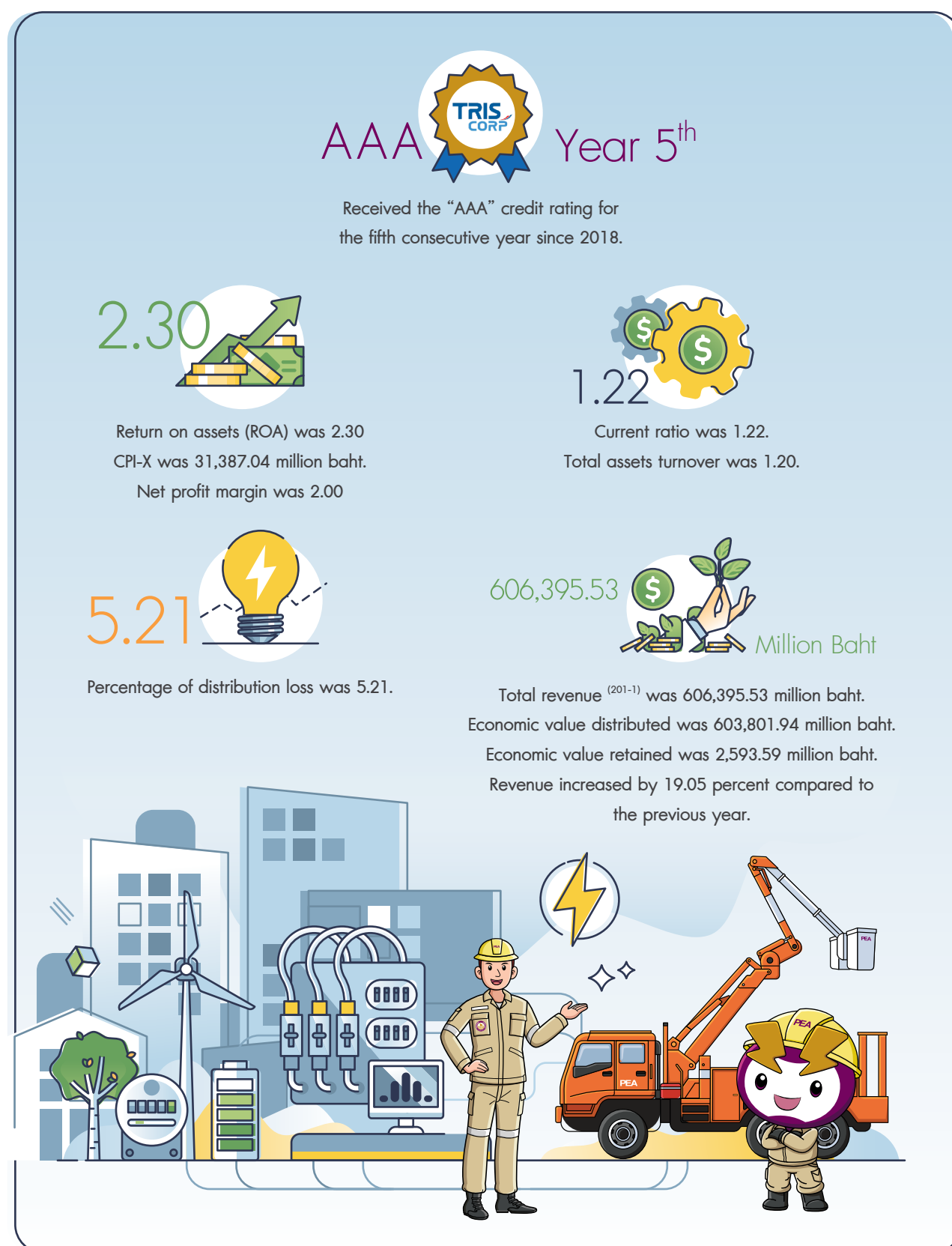
Businesses that are beneficial to PEA and respond to disruptive technologies, such as electric vehicles (EV), solar rooftops, smart meters, and smart homes.

- Study internal and external factors related to the business.
- Establish business scope, guidelines for operations, and business model.
- Study the feasibility of the new business and develop a business plan to be submitted to management for approval.
- Continue implementing the PEA Hero Platform, which was initiated in 2022. Analyze and evaluate the platform usage for improvement.
- Follow up on and summarize performance.

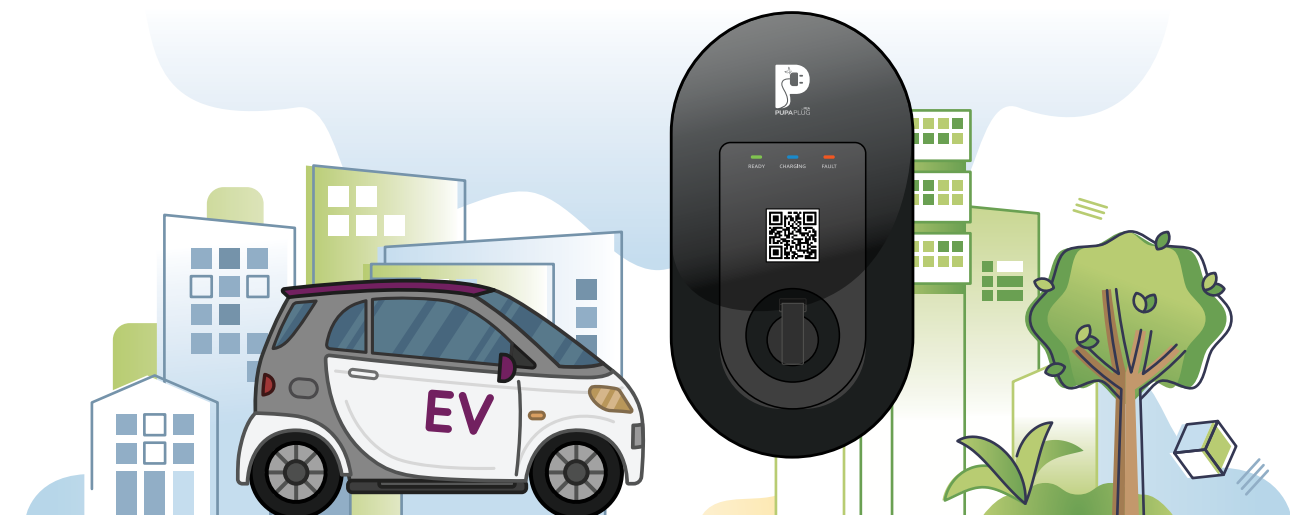




## Results of Economic Performance



## PEA's New Businesses



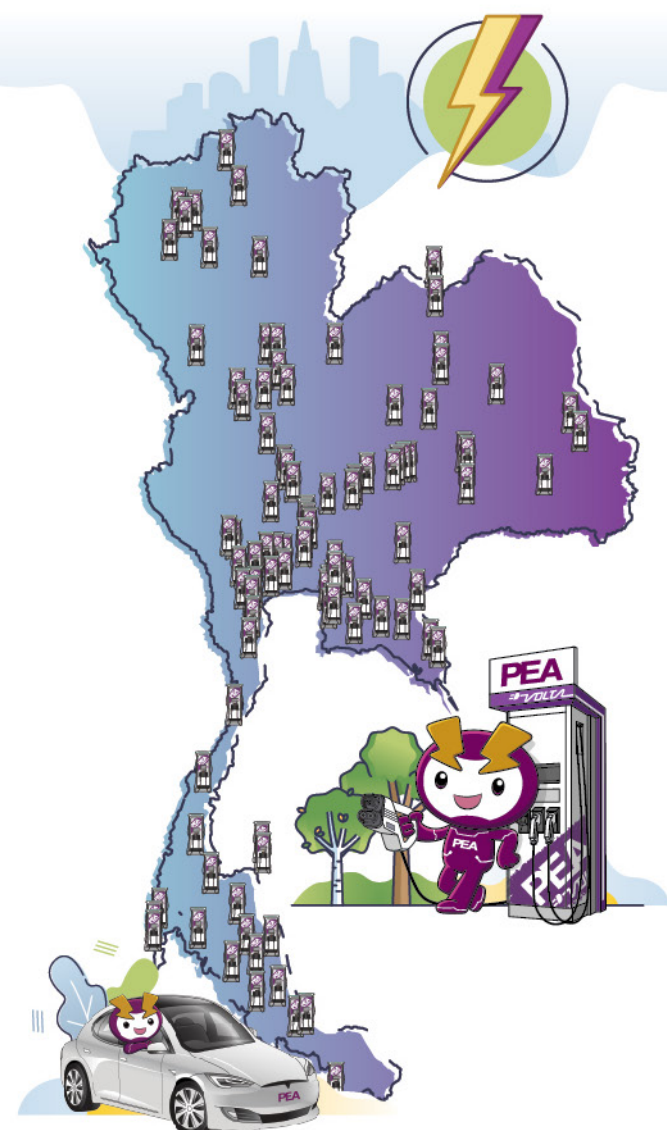
- **PUPAPLUG** is an innovative power plug for EV charging business used in conjunction with the charging equipment that comes with electric vehicles. It can change any space to an EV charging station which benefits both an EV user and an entrepreneur. PEA has collaborated with Synergy Technology Co., Ltd. to produce the PUPAPLUG product, which can be purchased at 6,500 baht/unit (including VAT). The product attracts the interest from the public and businesses, such as hotels, resorts, and condominiums. For more details, please visit [pupaplug.pea.co.th](http://pupaplug.pea.co.th)
- **PEA Volta Charging Station** provides quick charging services along major roads nationwide and at key tourist destinations. In 2022, 102 stations were opened for commercial service. Two types of revenue were recognized: deferred revenue (prepaid) with accumulated revenue from January to December of 15,287,700 baht (including VAT) and real revenue (charging service fees) with accumulated revenue from January to December of 10,709,685.86 baht (including VAT).

### Charging Station Service Inquiry Channels

- |  |   |  |   |
|--|---|--|---|
|  | <a href="https://www.facebook.com/peavolta">https://www.facebook.com/peavolta</a> |  | 1129 PEA Contact Center   |
|  | @PEAVOLTA   |  | <a href="https://peavoltaev.pea.co.th">https://peavoltaev.pea.co.th</a> |
|  | PEA VOLTA Application   |  |   |



In 2022  
were opened  
for service. **102** stations



In 2023  
will be opened **413** Stations  
for Service Covering  
**74 Provinces**  
and Bangkok.

- Peer-to-Peer Energy Trading is the electricity trading between end-users or between renewable energy power plants and communities that can reduce transmission losses. Blockchain technology plays a crucial role in enabling secure peer-to-peer trading, instilling confidence among the general public. In 2022, PEA developed an e-payment channel to support the information system and energy trading software architecture.
- Developing the business skills and expertise of employees through a business model contest at the organizational level.

### Plans for Future Improvements <sup>(3-3)</sup>

- Additional 190 PEA Volta charging stations will be opened for commercial service, and it is expected that a total of 313 stations will be in service by 2023.
- Studying to prepare to list PEA ENCOM International Company Limited on the Stock Exchange of Thailand (SET).
- Implementing a fully completed CRM integration, such as developing mobile customer relationship management systems (CRM Mobile Workforce and PEA Smart Care) that benefit customer service, marketing, customer data analysis, and other services that meet the future needs and expectations of customers and generate revenue for PEA.
- The Energy Trading Operation Center, Power System Control Center, Information System, and Software Architecture for the Energy Trading Platform are expected to be completed in 2025.

## People

### Equitable Treatment of Employees <sup>(3-3)</sup>

Employees are the driving force behind PEA's operations. As such, we are committed to treating and caring for our employees equitably and without discrimination. Every aspect of our workforce, from manpower planning to recruitment, is carried out with transparency and equality. In addition to seeking out job candidates who possess knowledge, skills, dedication, and the ability to contribute to the organization's sustainable growth, we place great importance on compensation management and employee retention. We regularly conduct an inspection of forced labor, child labor, illegal labor, and gender discrimination, while creating a safe and positive work environment to meet the needs and expectations of employees. We also strive to improve employee satisfaction and engagement to motivate them throughout their careers.

PEA firmly believes that happy and engaged employees are more productive, efficient, and loyal. and generate higher profits. This, in turn, helps drive profitability and excellent customer service, while supporting the organization's sustainable growth.

### Goals <sup>(3-3)</sup>

- Reduce complaints regarding discrimination in the selection and recruitment process.
- Increase the satisfaction level of new employees towards the selection and recruitment process, as well as the satisfaction level of supervisors towards new employees.
- Reduce employee turnover rate.
- Foster employees' sense of belonging and commitment to the organization.
- Educate employees about non-discrimination practices and provide training to develop their skills and prepare them for digital transformations.

### Strategies <sup>(3-3)</sup>

- PEA promotes respect for human rights throughout the organization, which is a fundamental virtue for working and living together. To ensure that all stakeholders receive equal and fair treatment, we adopt the Human Rights Policy, covering the following aspects: respecting human rights principles, prohibiting human rights violations, non-discrimination, human rights due diligence, and human rights communication and education.



- PEA strictly complies with the Compliance Policy.
- Develop various criteria such as criteria for recruitment and selection, annual salary increases, and rewards, such as outstanding employee awards. A working group was tasked with reviewing and improving methods for determining annual salary raises, and a committee was set up to select outstanding employees for 2022 to prevent discrimination.
- PEA declares its intention to prevent and address sexual harassment in the workplace. This includes fostering a corporate culture and core values among executives, employees, and workers and urging them to treat each other with dignity and respect.
- PEA adopts the Employee Welfare Policy and actively monitors and improves relevant regulations to ensure that welfare benefits provided to employees meet at least the minimum standards required by the State Enterprise Labor Relations Committee. Moreover, PEA does not support forced or child labor and respects employees' right to freedom of opinion and expression.
- Promote understanding of diversity in the workplace and develop collaborative practices that employees at all levels can apply in their work.
- Organize activities and create a work environment that provides positive experiences for employees throughout their time at PEA. This will improve their physical and mental well-being, foster a sense of self-pride, and motivate them to dedicate themselves to PEA.

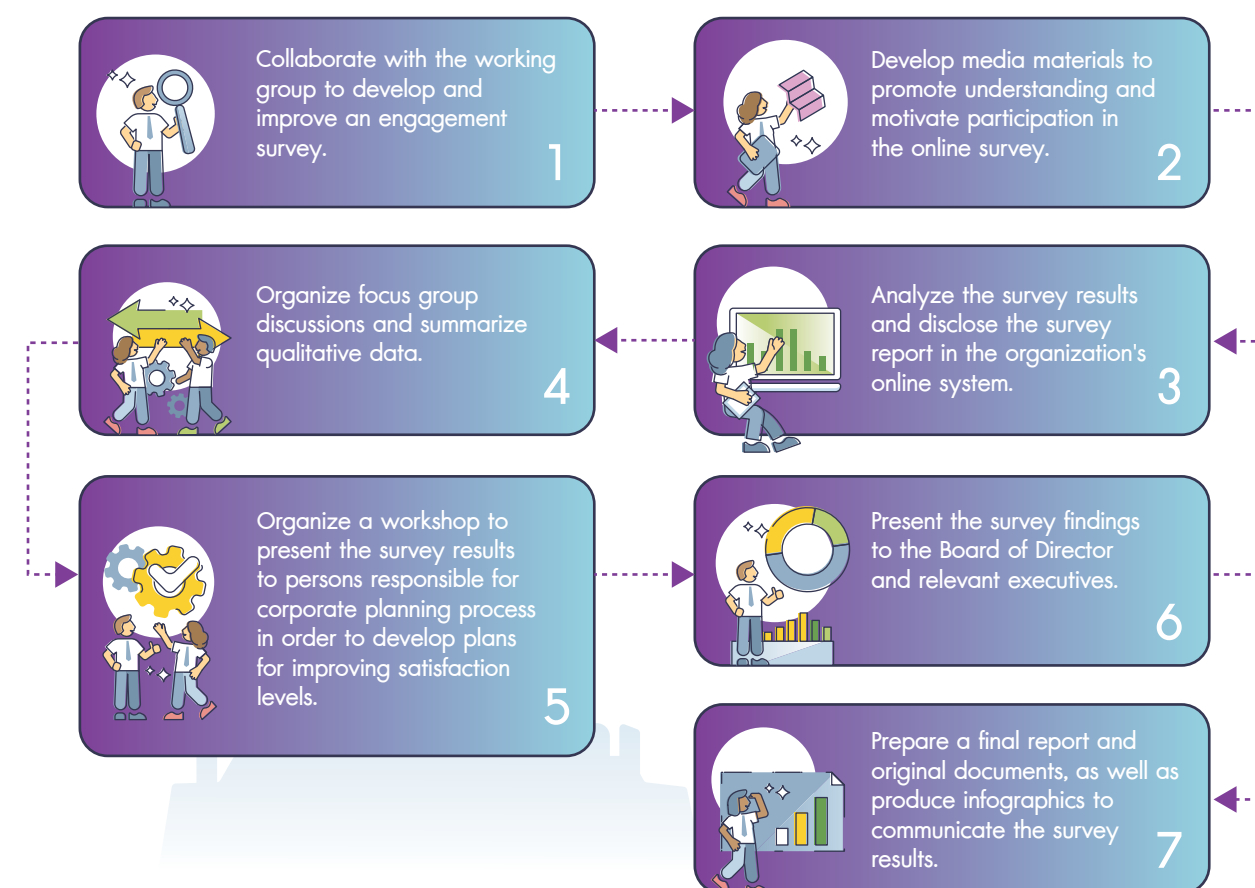
### Equitable Treatment Management <sup>(3-3)</sup>

- Provide equal employment opportunities and establish a transparent recruitment process that takes into account knowledge, skills, and qualifications set by the organization.
- Promote employees based on their qualifications without regard to race, gender, religion, or other discriminatory factors.
- Encourage employees to perform duties in compliance with the Human Rights and Zero Tolerance Policies, particularly with regard to forced labor, illegal migrant labor, child labor, and human trafficking.
- Provide employment opportunities for people with disabilities. Establish policies and guidelines for recruitment and equal welfare benefits to improve the quality of life for employees with disabilities.
- Manage with good governance that covers the rule of law, integrity, transparency, participation, and accountability, as well as develop, improve, and revise relevant regulations or practices.
- Provide training, guidance, and communication to ensure consistent work standards throughout the organization. Conduct meetings to explain operational practices across all 12 PEA Areas and create media materials to promote awareness among employees.
- Allow employees to form a group to represent them in negotiating with the employer, protect employee benefits and rights, and offer consultation to members who have not received fair treatment. Communicate labor relations policies to all employees to assure them that PEA values building good relationships between the employer, employees, and stakeholders.
- Provide training and development programs to promote a non-discriminatory work environment and encourage continuous learning to improve employees' capabilities and quality of life.

- Produce information materials like circulars, banners on the Intranet, video clips. Set up Line Open Chat and PEA Email to provide a channel for inquiries. Organize online platforms where employees at different levels, functions, and areas can share experiences, exchange ideas, and learn together to foster collaboration and engagement.



PEA evaluates the level of employee engagement through the following processes:



### Human Rights Procedures

The Human Rights procedures at PEA are designed to foster a culture of respecting human rights within the organization and society. This fundamental ethical standard in the workplace aims to guarantee equal and fair treatment of all PEA stakeholders in alignment with NAP Implementation Phase 1 (2019-2022 BC). Additionally, PEA commits to keeping all stakeholders informed about its processes, which are outlined as follows:



- In order to uphold and adhere to human rights principles within PEA's operations, PEA has complied with the United Nations Universal Declaration of Human Rights (UNDHR) and the International Labor Organization (ILO) standards. A total of 33.52% of PEA's workforce has acknowledged and accepted this policy.
- Prevent any form of human rights violations, whether occurring in the course of our operations or through our business processes, against PEA's employees, the community, and stakeholders. This commitment extends throughout PEA's business value chain, encompassing both direct and indirect interactions.
- Reject any form of discrimination and ensure equal treatment in adherence to human rights principles. PEA is resolute in providing equitable electricity and services to urban, rural, and remote regions. PEA is dedicated to the idea that access to electricity plays a pivotal role in promoting prosperity in provincial areas, which, in turn, contributes to economic growth and an improved quality of life for the people of Thailand. This endeavor not only enhances the well-being of the citizens but also bolsters the nation's economy. PEA's mission is to expand its electricity distribution to remote areas, initiating community projects and promoting clean energy on an ongoing basis.
- Human Rights Due Diligence (HRDD): PEA assesses the human rights aspects and examines external impacts arising from its business operations across the entire business value chain.
- Communication of Human Rights Information: PEA imparts knowledge about human rights and promotes awareness to all relevant parties within the business value chain, encompassing all stakeholders.

Furthermore, PEA has embraced human rights principles of respect and remedy, with a strong commitment to fully integrate them into the core management processes, which are delineated in five main aspects as follows:

1. Equal Treatment of Personnel: PEA has implemented a fair hiring system for individuals with disabilities, in compliance with Section 33 of the law since 2016. Presently, PEA employs 111 individuals with both permanent and temporary disabilities, with the goal of creating job opportunities and income for the wider society.
2. Fair Promotion Practices: PEA conducts promotion evaluations without any form of discrimination, ensuring transparency throughout the process. This approach reaffirms the commitment of both stakeholders and employees, elevating their satisfaction and dedication. Furthermore, PEA permits employees to establish the Labor Unity of Provincial Electricity Authority, offering them protection for their welfare and an avenue for addressing any unjust treatment.
3. Occupational Health and Safety in the Workplace: PEA is dedicated to creating a safe work environment, promoting a zero-accident culture, and developing the PEA Safety Management System (PEA-SMS). These efforts aim to prevent accidents for both permanent and temporary employees, suppliers, and the Thai public. This protective measure is extended to all stakeholders within the business value chain. Additionally, PEA provides channels for complaints through a management system for subsidization and compensation, such as hotlines and an employee fund, to support employees affected by work-related accidents. PEA has established regulations for subsidization and compensation, which apply to all stakeholders.
4. Fair and Transparent Procurement: PEA has adopted the Integrity Pact to enhance transparency and fairness in procurement, promoting equality in competition while reducing the risks of corruption, conflicts of interest, and bribery. This initiative fosters confidence in the transparency of the procurement process for partners, collaborators, and all stakeholders.

5. Environmentally-Friendly Procurement: PEA actively encourages its suppliers to comply with laws, regulations, and human rights related to the environment, communities, and natural resources. This commitment is exemplified by the Green Office project initiated in 2014, which strives to promote eco-friendly procurement practices within PEA's internal divisions. Furthermore, PEA supports related organizations in becoming more aware of their processes and resource usage that might impact the environment. In 2022, PEA established regulations and standards for organizational environmental management, known as the PEA Eco Standard, which is applicable to all PEA branches. This standard serves as a framework for operational procedures aimed at reducing environmental externalities, curbing greenhouse gas emissions, and mitigating environmental concerns.

### Equitable Treatment Performance

- No complaints about unfair recruitment and selection processes and discriminatory treatment were reported. <sup>(406-1)</sup>
- The level of satisfaction among new employees towards the recruitment and selection process was 4.61 out of 5, or extremely satisfied.
- The average level of employee engagement was 4.56 out of 5.
- The average level of employee well-being and happiness was 4.52 out of 5.
- The level of employee sense of belonging was 4.56 out of 5.
- The level of employee dedication was 4.61 out of 5.
- The employee turnover rate in 2022 was 0.22 percent, up by 83.33 percent from the previous year.
- The worker turnover rate in 2022 was 8.90 percent, down by 13.00 percent from the previous year.



### Plans for Future Improvements <sup>(3-3)</sup>

- Developing a diverse range of communication products and materials to promote understanding of human rights, non-discrimination, and prevention of sexual harassment in the workplace.
- Improving the resignation process by implementing a consultation mechanism for supervisors and employees to discuss prior to making a decision to resign. Also, establishing a system to collect relevant data regarding resignations to facilitate analysis and effective problem-solving.
- Organizing focus group discussions or in-depth interviews with employees and stakeholders to seek information to develop strategies to enhance employee engagement and create a positive employee experience.

## Occupational Health and Safety <sup>(3-3)</sup>

In addition to treating all employees equitably and without discrimination, PEA strives to create a motivating work environment. Due to previous incidents of work-related injuries, including electric shocks, falls from heights, and accidents involving vehicles that have unfortunately resulted in fatalities, PEA is committed to minimizing unsafe acts and conditions that pose risks to the lives and properties of our employees. Occupational health, safety, and working environment are our top priorities as they are crucial for driving PEA forward efficiently. To protect the well-being of our employees, have devised and enforced workplace safety protocols in compliance with safety agencies' laws, regulations, and strategies, as well as international safety standards. We have also implemented the Occupational Health and Safety Master Plan to monitor and evaluate our performance in achieving the safety objectives.

### Goals <sup>(3-3)</sup>

- Assess the Disabling Injury Index (√DI) and reduce accidents in the workplace by 5 percent every year.
- The success of occupational health and safety performance.
- Number of employees and workers injured and dead as a result of work-related incidents decrease compared to the previous year.
- Number of workers who are not employees but whose work and/or workplace is controlled by the organization/contracted workers injured or dead as a result of work-related incidents decrease compared to the previous year.
- Promote a zero-accident culture by calculating the Disabling Injury Index (√DI) to be set as a threshold and recording accident statistics within PEA Head and Area Offices to prevent the recurrence of accidents.

### Strategies <sup>(3-3)</sup>

PEA is committed to occupational health, safety, and working environment. Our goal is to minimize and ultimately eliminate accidents and incidents, while strictly complying with the Compliance Policy.



The PEA Strategic Plan 2022-2026 sets out Strategic Objective 1 (SO1), which aims to enhance sustainable management. The strategy includes plans to improve safety performance to international standards and develop standards and procedures that support safe work practices. Furthermore, in addition to cultivating a safety culture within the organization, we have implemented the Occupational Health, Safety, and Environment Master Plan 2020-2024 (2Nd Revision 2022) under the concept of PEA Safety for All, as follows: <sup>(403-6, 403-7)</sup>

- Implement the PEA Safety Management System (PEA-SMS) across the organization to continuously develop and improve our safety performance to attain internationally recognized safety management standards.
- Every executive, employee, and worker at PEA must be aware of and involved in promoting and supporting occupational health, safety, and working environment implementation and collaborate with the Safe Work Network.
- Provide adequate budget and resources for occupational health, safety, and working environment implementation.
- Develop occupational health, safety, and working environment knowledge and expertise for employees. Implement up-skilling and re-skilling and encourage employees to undergo training courses required by laws and PEA.
- Develop innovations and leverage digital technologies to enhance the implementation of occupational health, safety, and working environment within the organization.
- Achieve zero accidents and reduce work-related injuries by prioritizing safety in all work processes and adhering to strict safety procedures and standards. This applies to both PEA's operations and contractors' activities.

PEA Governor, Deputy Governors, and Assistant Governors (PEA Areas) have signed the Declaration of "2022: A Year of Safety, Stringency, Sustainability, and Continuity" under the concept of PEA Safety for All to effectively and systematically manage safety and establish penalties for violations, as follows:

- Implementing the PEA Safety Management System (PEA-SMS).
- Requiring all employees to participate in activities to promote the PEA Safety Culture (PSC).
- Conducting a personal protective equipment (PPE) assessment to ensure an adequate supply for all employees. It is mandatory for all employees to wear PPE before commencing any work.
- Requiring all employees to comply with the standards, measures, regulations, procedures, and requirements related to safe work practices.

In addition, PEA strives to develop digital technologies to safety in the workplace and reduce the risk of accidents. This includes developing the PEA Safety Management System (PEA-SMS), which provides standards to ensure compliance with the Occupational Safety, Health, and Environment Act B.E. 2554. The system consists of seven standards, covering compliance, regulators, use of operating systems, safety audits, safety activities, emergency response, and public safety.

PEA Safety Management System (PEA-SMS) (403-2, 403-3)



Occupational Health and Safety Management (3-3) (403-1)

Putting the Occupational Health and Safety Strategy into practice, PEA has developed the Action Plan to achieve strategic objectives. The plan clearly specifies responsible persons, targets, and timelines for each activity, in line with the PEA Occupational Health, Safety, and Environment Master Plan 2020-2024 (2nd Revision 2022). We have also developed the PEA Safety Management System (PEA-SMS) aligning with the Occupational Safety, Health, and Environment Act B.E. 2554 to apply for the (TIS 18001/BS OHSAS 18001 certification and ensure effective accident prevention for employees, contractors, and the general public.

Management of Risks Resulting in Work-Related Injuries and Ill Health (403-9) (403-10)

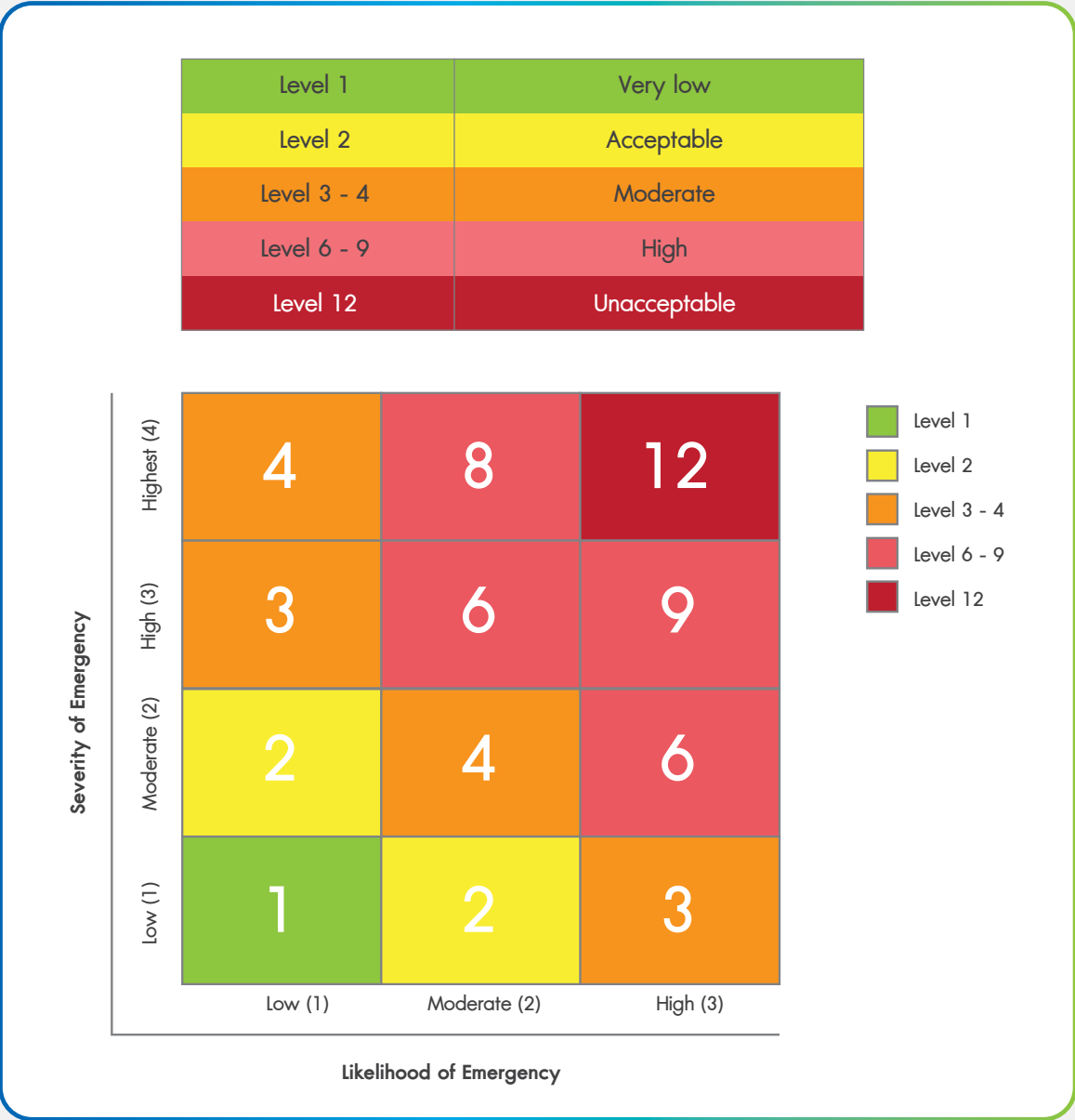
To manage the risks that lead to work-related injuries and ill health, we have implemented the PEA Safety Management System (PEA-SMS) and conducted an annual emergency risk assessment to rank the risks from highest to lowest based on their severity and likelihood of occurrence according to agreed criteria and using the formula risk level = likelihood x severity, as follows:

Level	Severity	Description
1	Low	No lost workdays or property damage is less than 50,000 baht.
2	Moderate	Not more than 3 lost workdays or property damage is 50,000 - 250,000 baht.
3	High	More than 3 lost workdays or property damage is 250,000 - 500,000 baht.
4	Highest	Loss of organs/disability/death or property damage is more than 500,000 baht.

Level	Likelihood	Description
1	Low	Low or no likelihood to cause harm.
2	Moderate	Moderate likelihood to cause harm.
3	High	High likelihood to cause harm.



Risk ranking from high to low helps identify critical emergency situations for emergency response planning. Levels of risks are further classified into five groups, as follows:



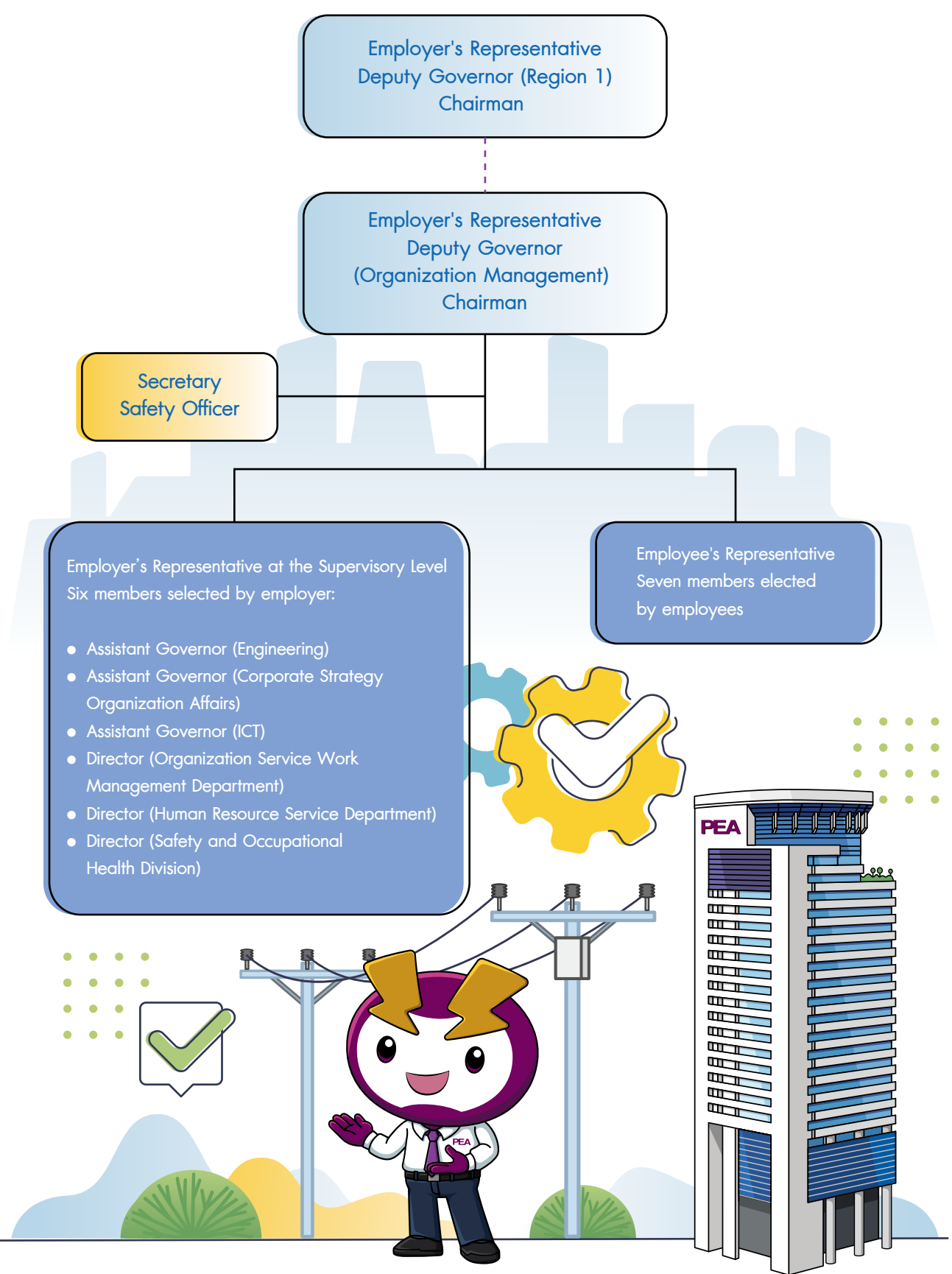
The above risk classification serves as a basis for deciding whether to take risk management or control measures to eliminate or reduce the likelihood of occurrence or reduce the severity of consequences, or both. It also aids in determining the appropriate time frame for implementing control and preventive actions, which directly aligns with the identified risk levels presented in the table.

Risk Level	Action and Time Frame	Risk Management	
Unacceptable	Work cannot proceed or continue until the risk is reduced. If the risk cannot be reduced despite utmost efforts, work must be immediately suspended.	Reduce	The organization must come up with appropriate risk control measures aiming to reduce the likelihood of risk occurrence and an emergency response plan to effectively address the risk situation.
High	Work can only commence once the risk has been reduced. Adequate resources and measures must be allocated to mitigate the risk. When a risk is identified during ongoing work, immediate corrective actions must be taken.	Plan	The organization must develop an emergency response plan and conduct response plan exercises.
Moderate	Efforts must be made to reduce the risk, but the cost of prevention and budget constraint should be taken into account. Risk reduction measures must be implemented within the specified time frame. When moderate-level risks are associated with severe damage, additional assessments should be conducted to determine the more accurate probability of damage. This will serve as a basis for deciding whether the measures need improvement.	Control	The organization must come up with appropriate risk control measures or, in cases where control measures are already in place, ensure consistent implementation of those measures to reduce the likelihood of risk occurrence.
Acceptable	No additional controls are necessary. Risk assessments may be conducted when deemed worthwhile or when improvements can be made without incurring additional costs. Regular monitoring and audits should still be conducted to ensure the ongoing effectiveness of the controls.	Accept	The organization can accept the risk or, in cases where control measures are already in place, continue to implement those measures consistently.
Very low	No further corrective actions are required.	None	

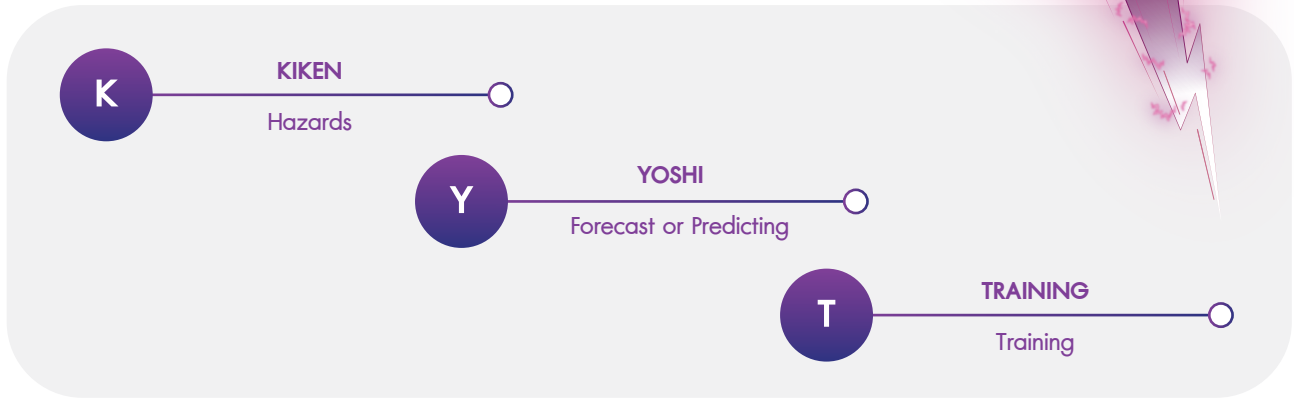
In addition, we have identified potential work-related hazards that can result in high-consequence injuries, such as electric shock, objects hitting vehicles, falls from heights, burns, slips/trips, collapsing structures, falling objects, cutting/stabbing, clamping, and chemicals/poisonous animals. These identified hazards are studied and reviewed to determine appropriate risk control measures.

Our analysis of work-related injury risks has identified risks associated with chemical exposure in the Organization Work Support Division. Following the Regulation of the Ministry of Industry on Prescribing Safety Management Standards B.E. 2565, we arranged for at-risk employees to receive a health examination according to PEA’s procedures. In 2022, no abnormal incidents resulting in work-related injuries were reported among PEA’s employees or contractors.

Structure of the Working Group on Occupational Health and Safety Compliance System or the Occupational Health, Safety, and Working Environment Committee, Head Office <sup>(403-4)</sup>



PEA also has a safety culture in place, with the Safety Talk conducted weekly before commencing work. Additionally, the Know Your Task (KYT) system is implemented to prevent work-related accidents. KYT involves analyzing or predicting potential hazards in the workplace and establishing measures or procedures to ensure safety. We also conduct training and develop courses to promote safety, as well as monitoring and evaluating the results for improvement.

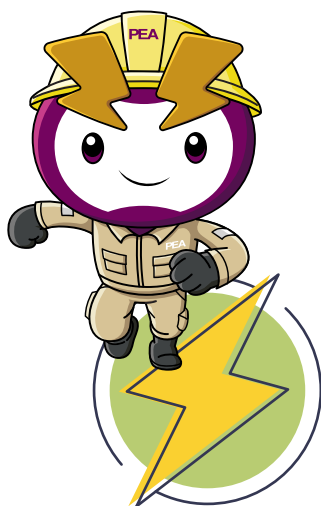
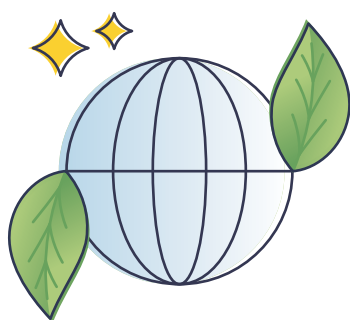


Communication on Occupational Health and Safety <sup>(403-4)</sup>

Communication Channels	Frequency	Persons Involved
Employees		
Disabling Injury Index (√DI) Meeting	Once every quarter	PEA Area Safety and Occupational Health Section
Safety Subcommittee Meeting	At least once every quarter	Assistant Governor (Organization Management) as a chairman
Accident Prevention Committee Meeting	Once every quarter	Governor as a chairman with Deputy Governors and Assistant Governors (12 Areas), including related parties as members
Occupational Safety, Health, and Working Environment Committee Meeting	Once a month	1) Deputy Governor (Organization Management) as a chairman for Head Office 2) Assistant Governor as a chairman for PEA Area 3) Manager as a chairman for PEA Office For 1) – 3), Professional-Level Safety Officer is assigned to act as a secretary
Contractors		
Operational Safety Awareness Exercise	Four times a month	Professional-Level Safety Officer

## TIS 18001

### 12 PEA Offices



### Occupational Health and Safety Performance <sup>(3-3)</sup>

- All 12 PEA Offices were certified for the TIS 18001 Standard.
- The success rate of occupational health and safety performance was 100 percent (5 out of the target level 5).
- Disabling Injury Index (√DI) was 0.0898, achieving 4.6364 out of the target level 5 of 0.0882 - 0, down by 46 percent from the 0.0765 of previous year.
- Number of work-related injuries and fatalities was 14, down by 11 or 44 percent from the previous year.
- Number of workers who are not employees but whose work and/or workplace is controlled by the organization/contracted workers injured or dead as a result of work-related incidents was 64, down by 12 or 15.79 percent from the previous year.
- A total of 2,142 employees and workers, representing 3.707 percent of the total workforce, participated in occupational health and safety training (403-5), which was divided into engineering technical and compliance courses.

### Plans for Future Improvements <sup>(3-3)</sup>

- Improving the occupational health and safety processes to meet the ISO 45001 Standard in 2023 for concrete products, Hot Line, and power system.
- Implementing the WeSafe program, an IT solution that improves the efficiency of the occupational health, safety, and working environment management.
- Developing the Personal Voltage Detector (PVD) to be attached to safety helmets for detecting areas with electrical leakage.
- Developing a Lifesaving Rope and Safety Harness with a secured hook to prevent falls from electrical poles or heights.
- Developing the PEA-SMS (Online Platform) for overseeing and managing safety of contractors responsible for power system work. Currently developing and testing the PEA-SMS Monitoring Program.
- Reviewing and upgrading the certification from TIS 18001 to ISO 45001, which consists of two phases:
  - Phase 1: Applying for certification of concrete products and Hot Line (covering four regions, one location per region).
  - Phase 2: Applying for certification of power systems.

### Customer Health and Safety <sup>(3-3)</sup>

Because of past incidents of customers exposed to electrical hazards, PEA is fully aware of the utmost importance of customer safety. As a result, we strive to ensure that our power systems are safe and stable to prevent hazards to customers. We have recorded and conducted surveys to gather information about electrical hazards that our customers have experienced, such as broken or fallen electricity poles, power cables passing through buildings, broken conductor faults, electrical equipment explosions, and circuit faults. This data is used for system improvements and corrections. In addition to establishing standards to ensure the safety of the public, such as electrical safety clearance standards, we provide knowledge and guidance to electricity users through various projects like the PEA Electrical Safety Community Project to build public understanding about power system and electrical safety. In the event of accidents caused by the power system, we have set guidelines in place to provide remedies to those affected by such incidents. Furthermore, risk assessments of these accident cases are used to improve the electricity system safety and promote the health and safety of customers and communities in our service areas.

### Goals <sup>(3-3)</sup>

- Reduce the number of customer accidents caused by PEA's power system by 5 percent.
- Set the impact on consumers to 0.0262 (Level 5).

### Strategies <sup>(3-3)</sup>

- Implement safety patrol in the responsible areas.
- Implement the TIS 18001: Occupational Health and Safety Management System to continuously monitor, inspect, and improve safety performance for the well-being of the public.
- Improve power cables near buildings or constructions to meet the PEA standards.
- Implement the PEA-SMS (PEA Safety Management System) Standard 7: Public Safety under the PEA Occupational Health, Safety, and Environment Master Plan 2020-2024 (2nd Revision 2022).

Furthermore, PEA has set forth the Customer Health and Safety Policy aligning with the concept of PEA Safety for All in the Occupational Health, Safety, and Working Environment Policy. We plan to implement the PEA Safety Management System (PEA-SMS) across the organization to equip PEA with an internationally recognized safety management system. Management, employees, and staff of PEA are all required to understand and actively participate in promoting and supporting safety practices.



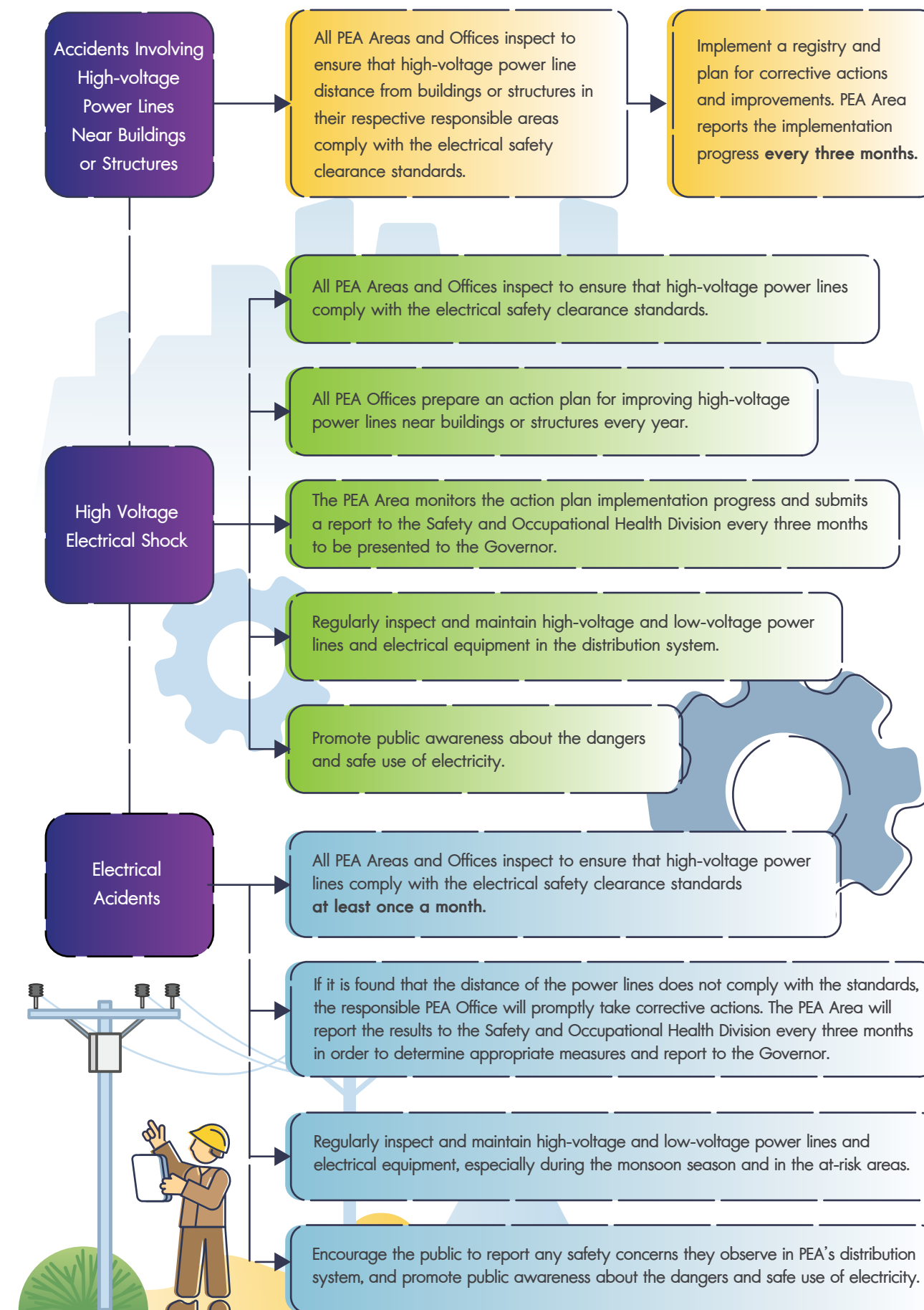
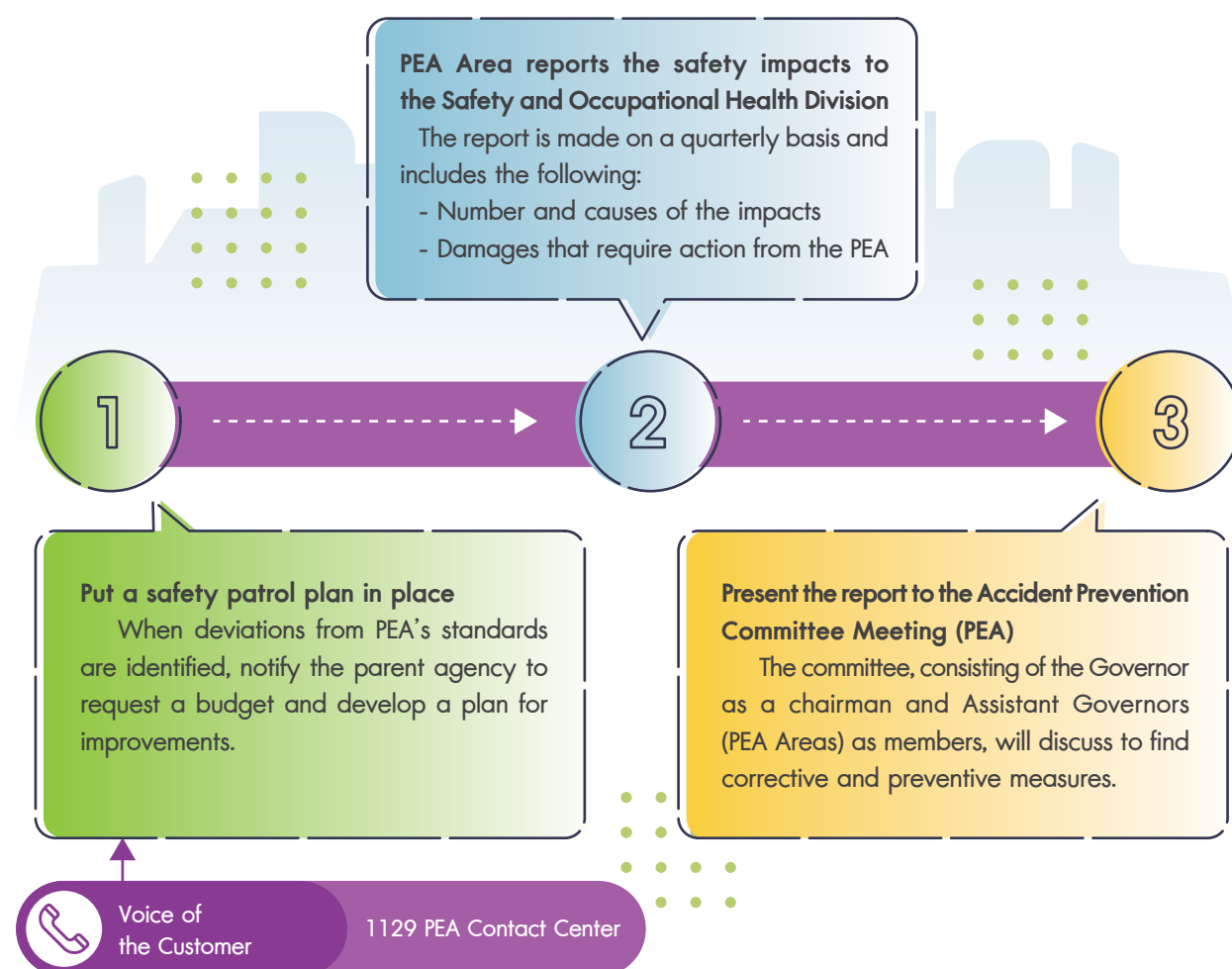


## Customer Health and Safety Management <sup>(3-3)</sup>

Approaches to customer health and safety management are as follows:

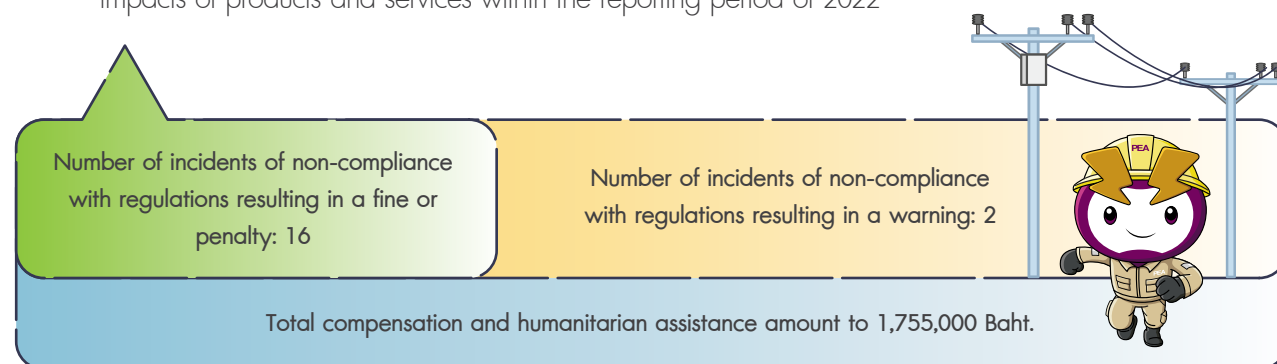
- Assess all 100 percent of the risk areas that may have an impact on electricity users.
- Assess design, quality, and safety standards for the installation of transmission and distribution system equipment for all 100 percent of the products and services. This assessment will be conducted annually, and the PEA Area will produce an improvement progress report every three months. <sup>(416-1)</sup>
- Randomly inspect every service area on a regular basis. If any indices are found to deviate from operational guidelines or standards, necessary improvements will be implemented. A plan will be developed for corrective actions or further operations, and progress will be reported to the Safety Patrol.
- Comply with PEA Occupational Health, Safety, and Working Environment Policy. The Safety and Occupational Health Division will monitor the improvement progress in response to survey findings or public complaints and fix unresolved distribution system issues following the PEA Safety Management System (PEA-SMS) Standard 7 (Public Safety) and the Occupational Health, Safety, and Environment Master Plan 2020-2024 (2<sup>nd</sup> Revision 2022).
- Conduct public relations to inform electricity users to report any safety concerns they observe in PEA's distribution system through 1129 PEA Call Center, Line Application, Facebook, PEA Website, and local PEA offices. Additionally, safety promotion activities will be organized to raise public awareness in communities.

## Customer Health and Safety Management Process



## Customer Health and Safety Performance

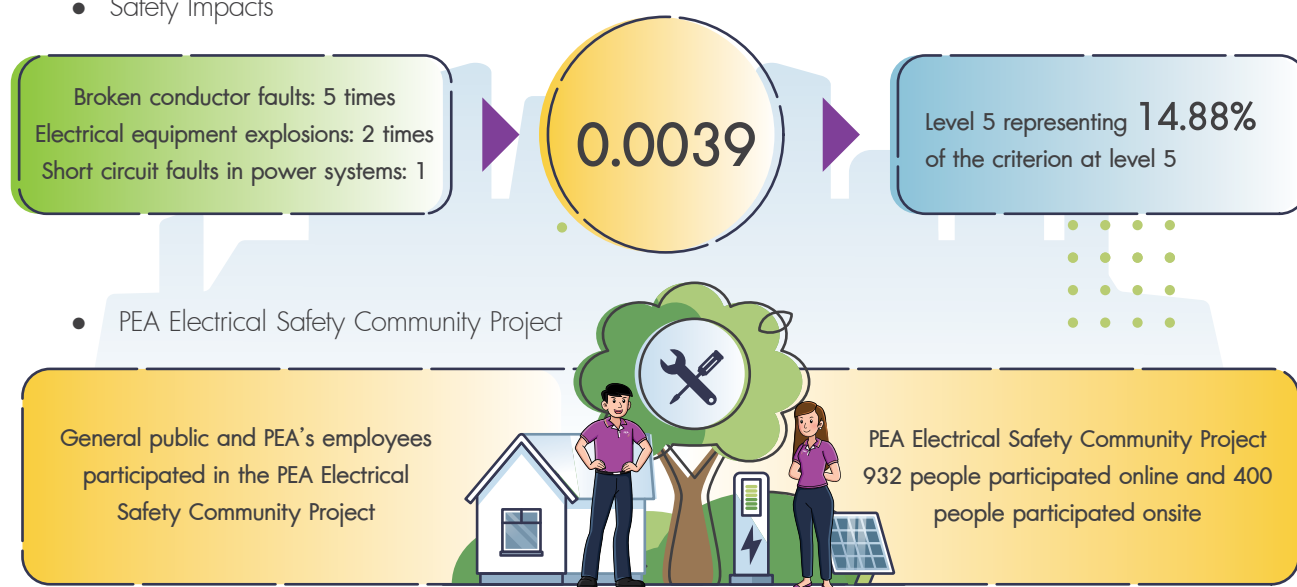
- Incidents of non-compliance with regulations and/or voluntary codes concerning the health and safety impacts of products and services within the reporting period of 2022 (2-27 11R: 416-2)



**Note:** There were no incidents of non-compliance with voluntary codes in the reporting year.

An example of non-compliance with regulations resulting in a fine or penalty is when an employer instructs an employee to approach or handle an uninsulated conductor without appropriate electrical insulation suitable for the voltage level within a distance less than the specified standard. This action is in violation of Section 8 of the Occupational Safety, Health, and Environment Act B.E. 2554, which requires employers to manage and operate the occupational safety, health, and environment in conformity with the standards prescribed in the Ministerial Regulation. In this particular case, PEA imposes a penalty of 400,000 Baht.

- Safety Impacts



## Plans for Future Improvements (3-3)

- Increasing the frequency of inspections at potential risk areas and speeding up the process of improving power cables near buildings or structures to meet PEA standards according to plans.
- Increasing the frequency of safety impact reporting by requiring every Assistant Governor (PEA Areas) to report directly to the Governor at the executive meeting every month to identify any shortcomings in the problem-solving processes and actions for improvements.

## Improving the Quality of Life through Electricity Accessibility (3-3)

Access to the power system is a basic necessity for both the general public and the business sector. Ensuring universal access to the power system can support economic growth, create employment opportunities, reduce income disparities, and promote economic development in urban and rural areas. Moreover, it can contribute to equal opportunities and improve the quality of life for all citizens, particularly those in remote areas. While expanding electricity access has significant positive impacts on the economy and society, it may have some minor negative environmental consequences in certain areas. As a result, PEA recognizes the importance of assessing environmental impacts and implementing appropriate measures to mitigate any negative effects.

### Goals (3-3)

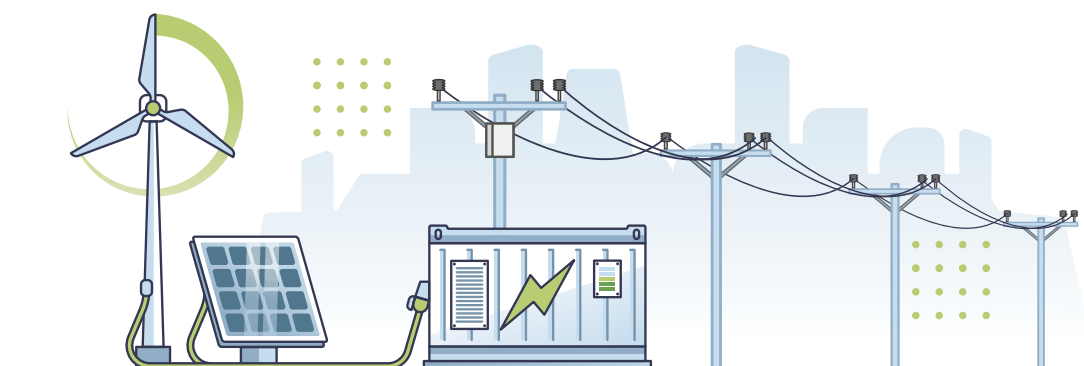
- Expand the power system to cover 141,960 unelectrified households.
- Expand the power system to cover 57,100 unelectrified farmer households.

### Strategies (3-3)

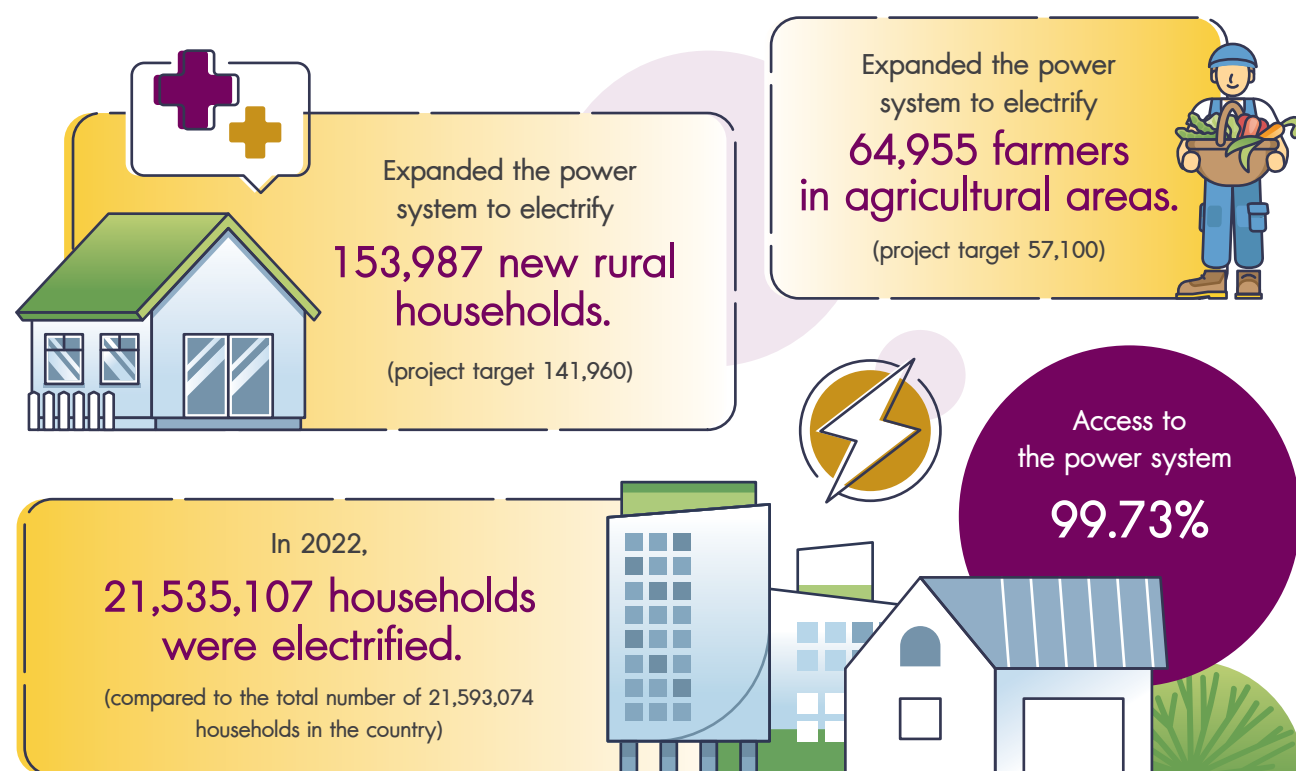
- Expand electricity coverage to meet the needs of the public and reach remote areas such as rural areas, islands, and off-grid areas using renewable energy sources.
- Develop microgrid systems.

### Accessibility Management (3-3)

- Implementing the New Rural Household Electrification Project Phase 2 (2016-2022) to provide electricity access to unelectrified households. Eligible households must meet the project criteria, such as having a permanent address and being located outside any restricted areas designated by the government.
- Implementing the Agriculture Electrification Project Phase 2 (2016-2022) to meet the electricity demand of farmers, reduce production costs, and alleviate the impact of economic crises resulting from fluctuations in fuel prices. Eligible farmers must meet the project criteria. PEA has communicated information about this project through various channels and PEA Areas across the country.
- Developing a renewable energy or microgrid plan to generate electricity for households located in restricted areas, remote islands, or off-grid areas, where conventional grid extension is not feasible. Households are categorized into two groups: 1) households outside of Class 1 Watershed will be served by mini-grid systems using renewable energy sources, and 2) households located within Class 1 Watershed will be served by solar home systems.



## Accessibility Performance



- Relief measures to mitigate the impact of energy price increases assisted 15.99 million residential consumers and more than 700,000 small-sized enterprise consumers (excluding government and state enterprises), totaling 16.69 million consumers and amounting to 1,508.76 million baht.

### Plans for Future Improvements <sup>(3-3)</sup>

- Implementing the Renewable Energy Electrification Project in five remote areas in Mae Hong Son Province, including Ban Huai Hong, Ban Sao Hin, Ban Mae Samong Tai, Ban Sala Chiangtong, and Ban Sampeng Tai. The total budget allocated for this project is 60 million baht.
- Scaling up the Renewable Energy Electrification Project 2022 - 2025 to cover 238 villages (approximately 18,659 households). The total allocated budget for this project is 3,200 million baht.
- Expanding the solar home system coverage in 2022 - 2024 to cover 178 villages located in Class 1 Watershed (approximately 16,860 households). The project will be supported by various funds.
- Implementing the New Rural Household Electrification Project Phase 3, 2024-2028 to reach 128,000 households, with a total budget of 6.5 billion baht.
- Implementing the Agriculture Electrification Project Phase 3, 2023-2028 to reach 60,000 households, with a total budget of 4.5 billion baht.

## Planet

### Greenhouse Gas Emissions <sup>(3-3)</sup>

PEA is engaged in power supply and services through various processes that rely on natural resources and diverse forms of energy, both direct and indirect. These processes inevitably contribute to greenhouse gas emissions and climate change, which are significant and urgent issues at both national and international levels. They can have negative impacts on the environment, society, communities, and PEA's business sustainability.

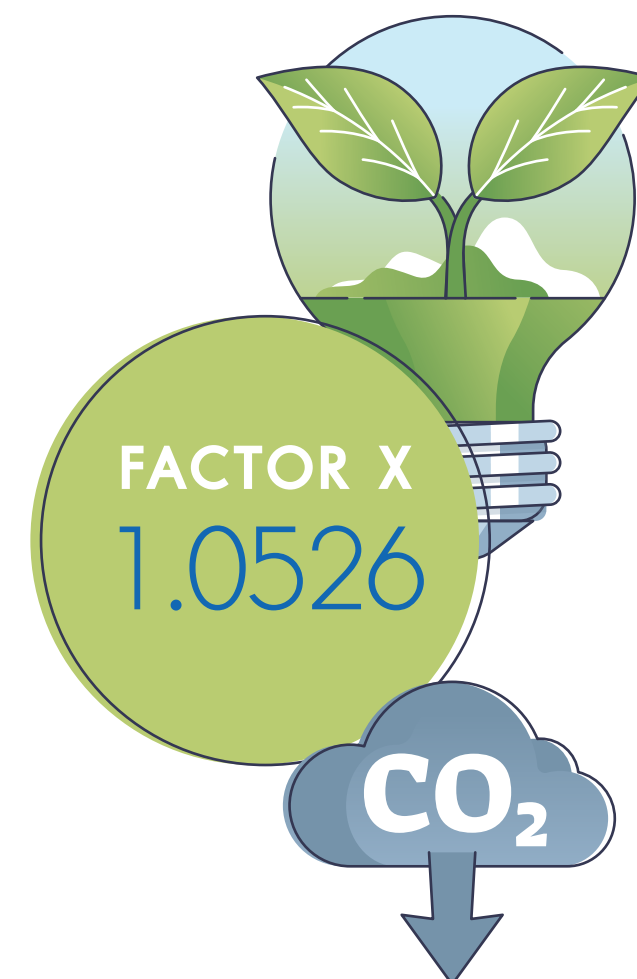
We recognize and acknowledge the importance of these issues and are committed to upholding our responsibilities toward the environment. This includes actively participating in reducing greenhouse gas emissions, implementing action plans, and setting targets, indicators, and control measures to effectively reduce emissions. We also manage energy consumption and regularly monitor and analyze operational issues or loopholes to continuously improve our efficiency. We have reviewed the environmental impacts of our operational processes, from power generation to high-voltage transmission and distribution of electricity to end-users. Furthermore, we communicate important performance to both internal and external stakeholders through various communication channels. We also actively seek feedback and suggestions from stakeholders to gather information for improving efforts to reduce greenhouse gas emissions.

### Goals <sup>(3-3)</sup>

- Eco-efficiency (Factor X) is 1.0526.
- Switching vehicle fuel to B7, E20, E85, and Gasohol 95 results in a greenhouse gas emissions reduction of 1,500.00 tCO<sub>2</sub>e
- The implementation of the Green Office Policy results in a greenhouse gas emissions reduction of 200.00 tCO<sub>2</sub>e

### Strategies <sup>(3-3)</sup>

- Improve sustainable energy and resource consumption efficiency to cover the organization, suppliers, and consumers in line with the ISO 14045 greenhouse gas reduction guidelines and rules set by the State Enterprise Policy Office.





- Create a balance in greenhouse gas emissions to become a low-carbon organization through the GHG Offset program initiated by the Thailand Greenhouse Gas Management Organization.
- Provide knowledge to employees and business partners to raise awareness of the impact of climate change and encourage behavioral changes among stakeholders at all levels.

### Greenhouse Gas Emissions Management <sup>(3-3)</sup>

#### Eco-Efficiency Assessment

The purpose of the eco-efficiency assessment is to evaluate the efficient use of resources in business activities that contribute to greenhouse gas emissions. PEA has developed a plan to control and monitor these activities in order to reduce greenhouse gas emissions and meet the eco-efficiency indicators set by the State Enterprise Policy Office. In 2022, the target was set at Criterion 5 or eco-efficiency (Factor X) of 1.0526.

In addition, the assessment results are used to identify ways to improve PEA's eco-efficiency. Government agencies are communicated about PEA's plan to improve eco-efficiency, aligning with national policies and strategies. The assessment scope covers PEA's direct operational activities and services across all 74 provinces.

#### Criteria for Measuring Eco-Efficiency Success in 2022

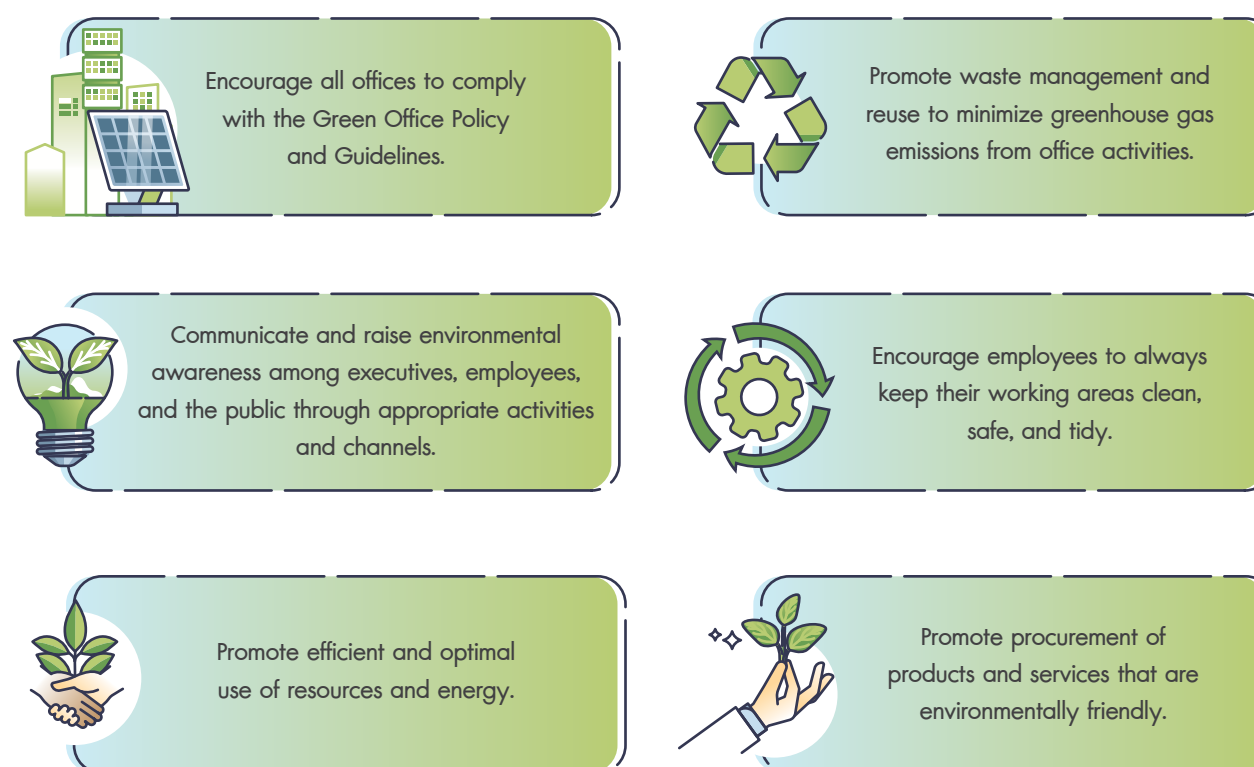
Criteria	
Criterion 1	Factor X is 1.0522
Criterion 2	Factor X is 1.0523
Criterion 3	Factor X is 1.0524
Criterion 4	Factor X is 1.0525
Criterion 5	Factor X is 1.0526

In 2022, PEA monitored and collected data on resource and energy consumption and greenhouse gas emissions on a monthly basis. This includes five environmental indicators from 11 core activities and resources. We also collected economic data or electricity sales quantities (Economic Indicators) to assess the Factor X.

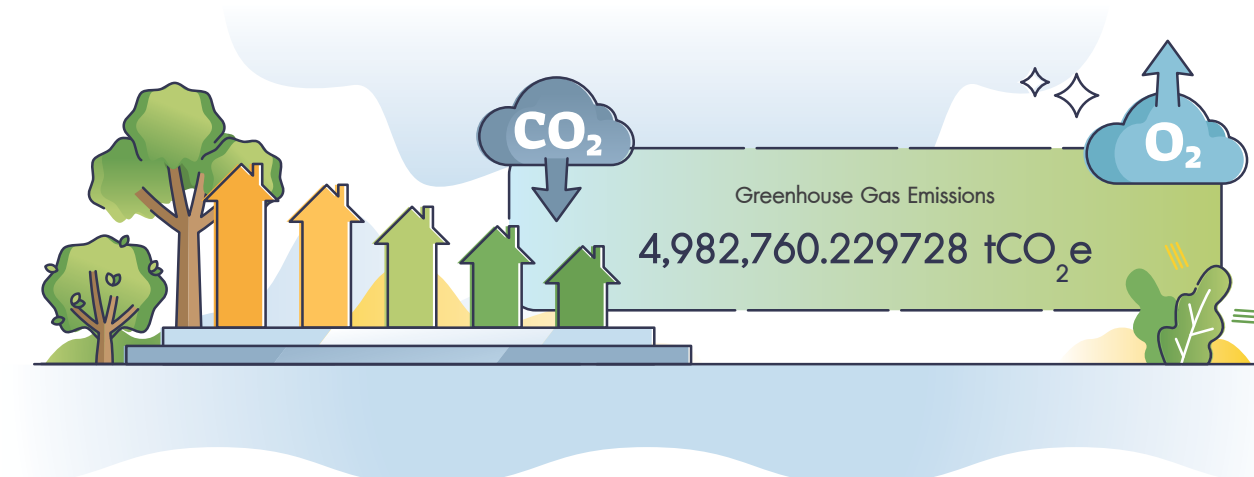
#### Green Office Policy

The Green Office Policy aims to raise awareness among all PEA employees about the efficient and optimal use of resources and energy. It also strives to improve office management to become more environmentally friendly and reduce negative environmental impacts, particularly by minimizing greenhouse gas emissions. We regularly monitor and assess positive outcomes against the policy's objectives every year. Additionally, we set the goal to scale the Green Office to cover additional 372 PEA offices, out of the target of 482, across the country by 2025.

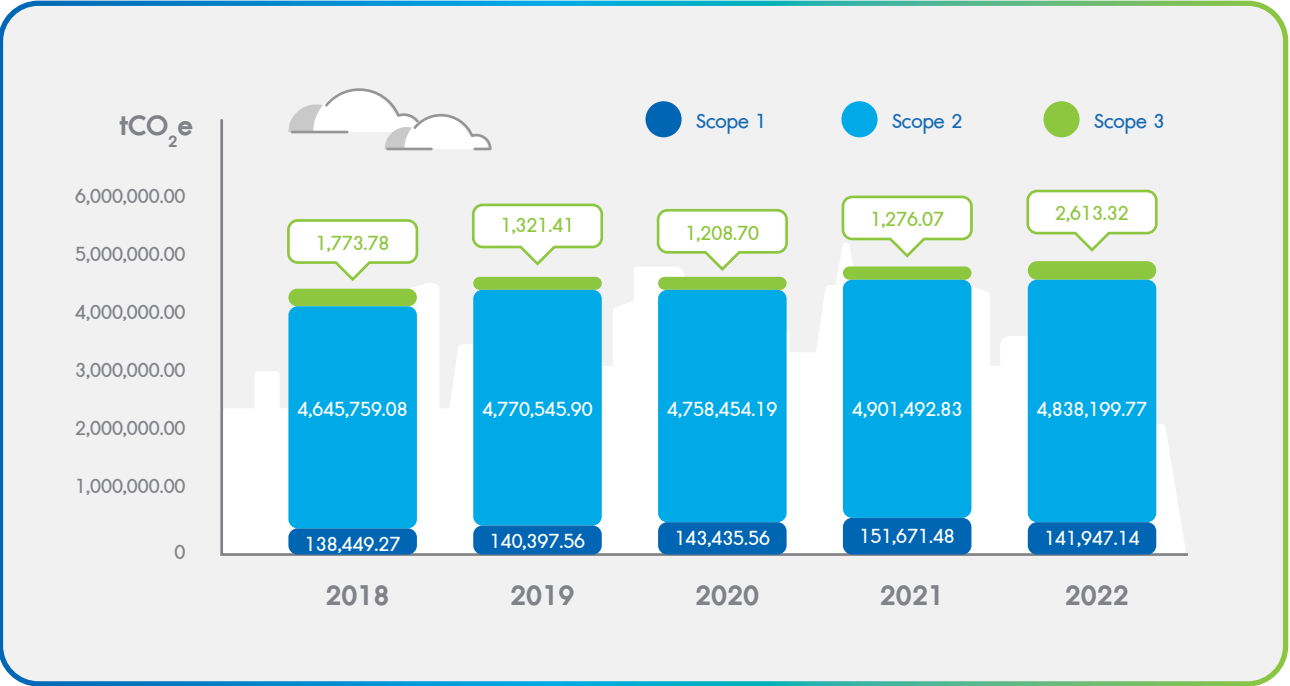
In 2022, we communicated the Green Office Policy through various channels, including PEA Green Office website. We also organized Green Day activities to raise awareness and provide knowledge regarding the potential impacts of climate change on the environment, society, and PEA's business to employees at all levels. The six key components of the policy in 2022 are as follows:



#### Greenhouse Gas Emission Performance

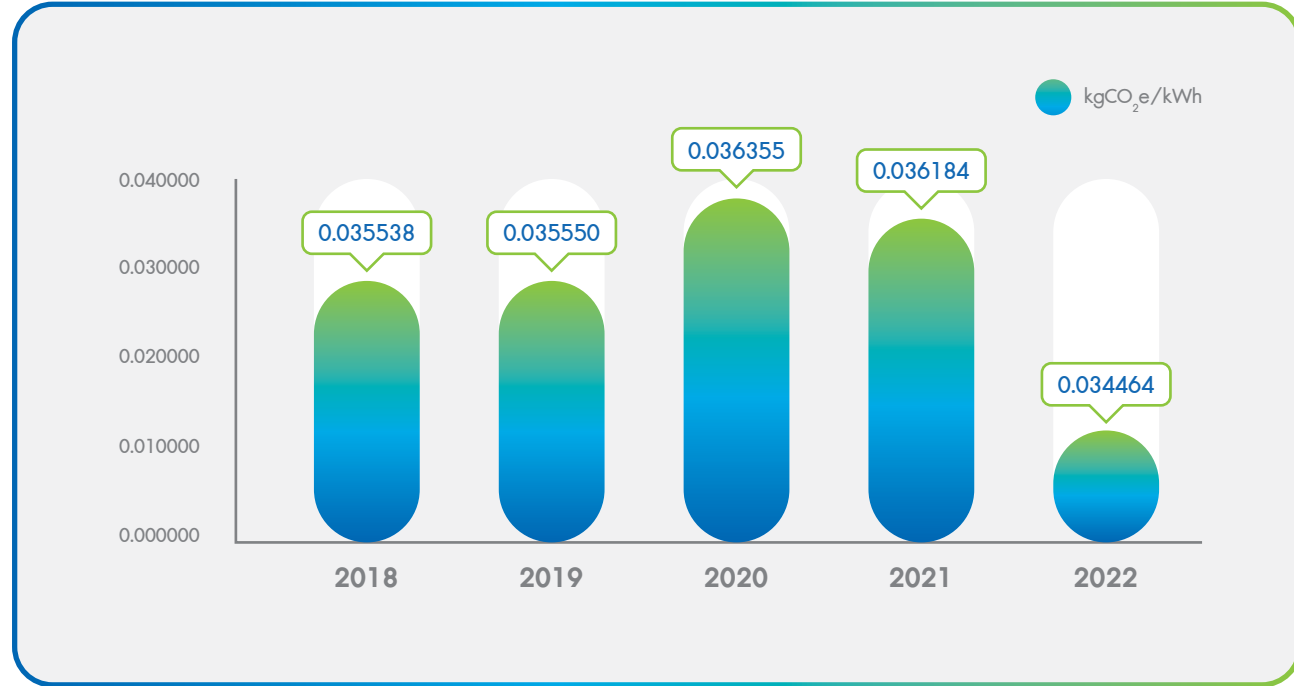


### Scope 1, 2, and 3 Greenhouse Gas Emissions <sup>(305-1, 305-2, 305-3)</sup>



- Notes:**
- In 2018, PEA's greenhouse gas emissions were assessed by the Thailand National Metal and Materials Technology Center to determine indicators under the State Enterprise Performance Agreement. The year 2018 is, therefore, adopted as a base year.
  - Greenhouse gas emissions of organization refer to the amount of greenhouse gases emitted from an organization's activities, such as fuel combustion, electricity consumption, waste management, and transportation. It is measured as carbon dioxide equivalent and divided into the following three scopes:  
 Scope 1: Direct emissions from sources owned or controlled by the organization, such as fuel combustion from company vehicles or power generation, power substation and system maintenance, production of concrete utility poles, and leakage of gases or vapors.  
 Scope 2: Indirect emissions from the generation of purchased energy consumed by the organization and transmission and distribution losses.  
 Scope 3: Other indirect emissions from activities, such as paper or municipal water consumption.
  - Emission Factors are derived from the Thailand Greenhouse Gas Management Organization (TGO) and Intergovernmental Panel on Climate Change (IPCC).
  - Operational control means an organization has operational control over an operation if it has the full authority to introduce and implement its operating policies. Under the operational control approach, an organization accounts for 100 percent of the greenhouse gas emissions from operations over which it has control but not including the greenhouse gas emissions from operations in which it owns an interest but has no control.
  - The calculation involves multiplying activity data with emission factors and expressing the results in tons of carbon dioxide equivalent (tCO<sub>2</sub>e).

### Greenhouse Gas Emissions Intensity Ratio <sup>(305-4)</sup>



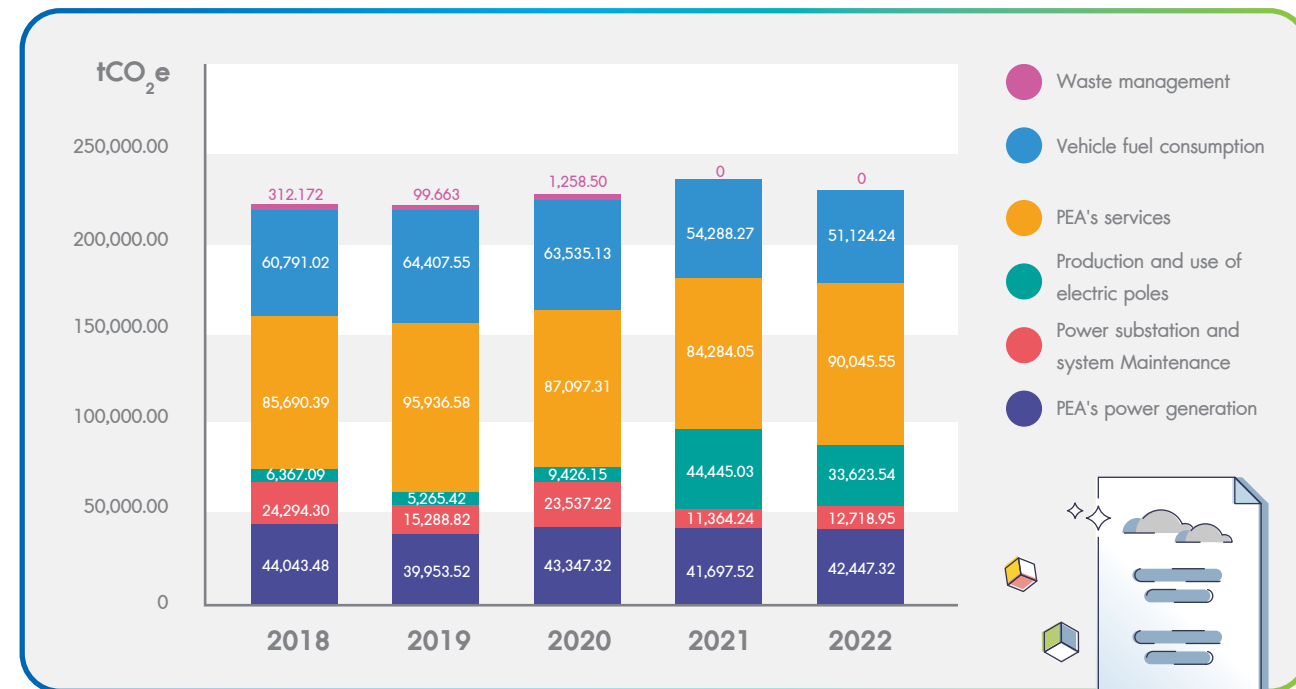
In 2022, PEA's emissions intensity was 0.034464 kgCO<sub>2</sub>e/kWh. This emission intensity encompasses Scope 1, 2, and 3 emissions. The organization-specific metric chosen to calculate the ratio was sales volume. This means that in 2022, 1 kWh of electricity sold resulted in a greenhouse gas emission of 0.034464 kgCO<sub>2</sub>e, down by 0.001720 kgCO<sub>2</sub>e/kWh or 4.75 percent from the previous year.

### Eco-Efficiency Assessment Results

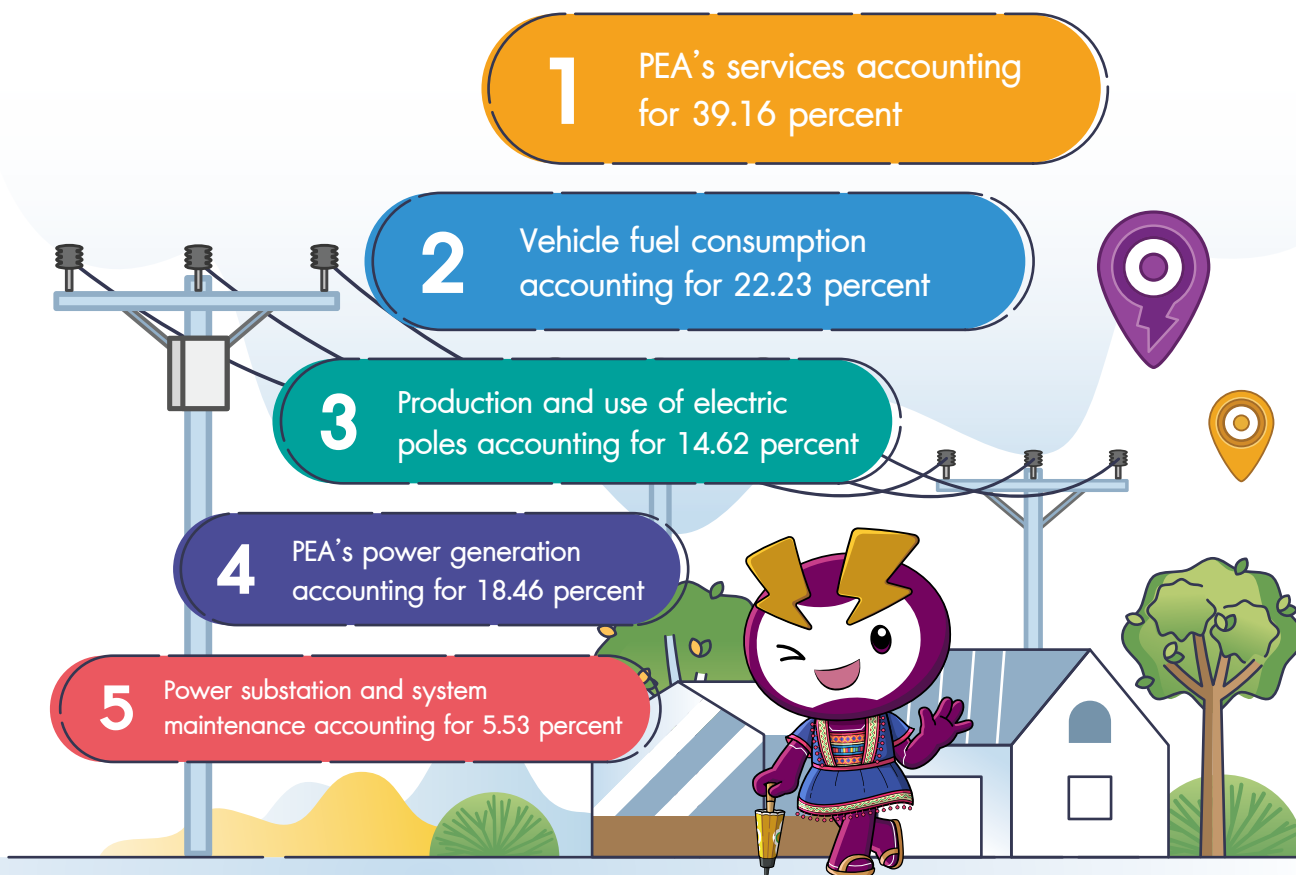
We collect data on environmental indicators from our 11 core activities and resources to monitor and assess the quantity of greenhouse gas emissions on a monthly basis in order to improve resource utilization within the organization and achieve greenhouse gas emissions reduction and eco-efficiency targets. Based on these efforts, it was found that PEA's total greenhouse gas emissions from its five core activities amounted to 229,959.59 tCO<sub>2</sub>e in 2022. It should be noted that this quantity does not include emissions from transmission and distribution losses.

When comparing the greenhouse gas emissions data from 2022 to previous years, it becomes apparent that PEA has experienced a consistent increase in total greenhouse gas emissions since 2018. This upward trend can be attributed to heightened consumption of diesel fuel for electricity generation, increased energy usage within PEA's nationwide offices, and greater fuel utilization in company vehicles driven by efforts to enhance service efficiency. However, we implement projects and activities to reduce greenhouse gas emissions every year, such as the Green Office initiative and the installation of solar roofs in nationwide offices. It should be noted that in the period from 2018 to 2020, we included the quantification of greenhouse gas emissions resulting from our waste management activities. However, starting in 2021, these activities were excluded from assessment due to their insignificant emissions. Nonetheless, the overall trend still demonstrates an upward trajectory in greenhouse gas emissions.

## A Comparison of Total Greenhouse Gas Emissions from Core Activities



Based on the assessment conducted in 2022, activities with the highest greenhouse gas emissions were ranked as follows:



This ranking was used to plan and improve resource utilization in order to reduce greenhouse gas emissions. In 2022, actions were taken to mitigate the impact of activities under No. 2: Vehicle fuel consumption, which resulted in a total emissions reduction of 4,776.81 tCO<sub>2</sub>e from the following two key activities. <sup>(305-5)</sup>

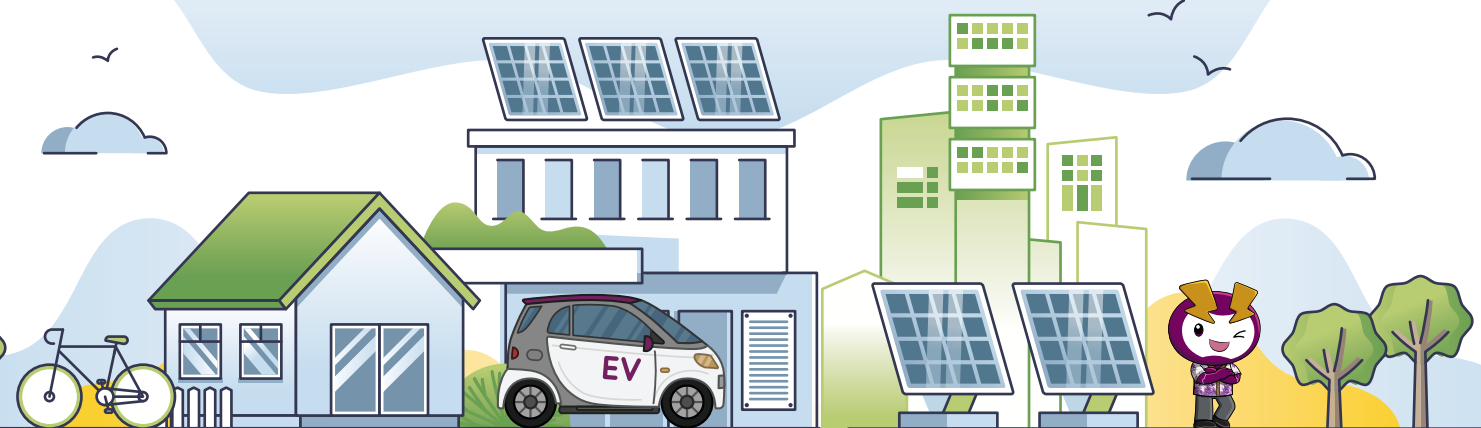
- Switching vehicle fuel to B7, E20, E85, and Gasohol 95, which resulted in a reduction of 1,684.64 tCO<sub>2</sub>e in greenhouse gas emissions, surpassing the set target of 1,500.00 tCO<sub>2</sub>e.
- Implementing the Green Office Policy, which reduced greenhouse gas emissions by 3,092.17 tCO<sub>2</sub>e, surpassing the target of 200.00 tCO<sub>2</sub>e. Additionally, the project was scaled to cover 372 additional offices, out of the target of 486.

The Factor X or eco-efficiency in 2022 was 627,104 kWh/1 tCO<sub>2</sub>e. This means that the sale of 627,104 kWh of electricity resulted in the greenhouse gas emission of 1 tCO<sub>2</sub>e. Comparing the data between the base year of 2018 and 2022, it was discovered that the operations in 2022 were more efficient, with a 1.05281-fold increase in efficiency compared to 2018. Moreover, following the ISO 14045 guidelines for target setting, environmental assessment scope, and eco-efficiency assessment, PEA was able to achieve the standard set by the State Enterprise Policy Office at Criterion 5 or Factor X of 1.0526.

### Plans for Future Improvements <sup>(3-3)</sup>

The results of the eco-efficiency assessment conducted in 2022 were used to establish guidelines for operational improvements. In the greenhouse gas reduction plan for 2023, PEA will carry out the following activities to mitigate greenhouse gas emissions:

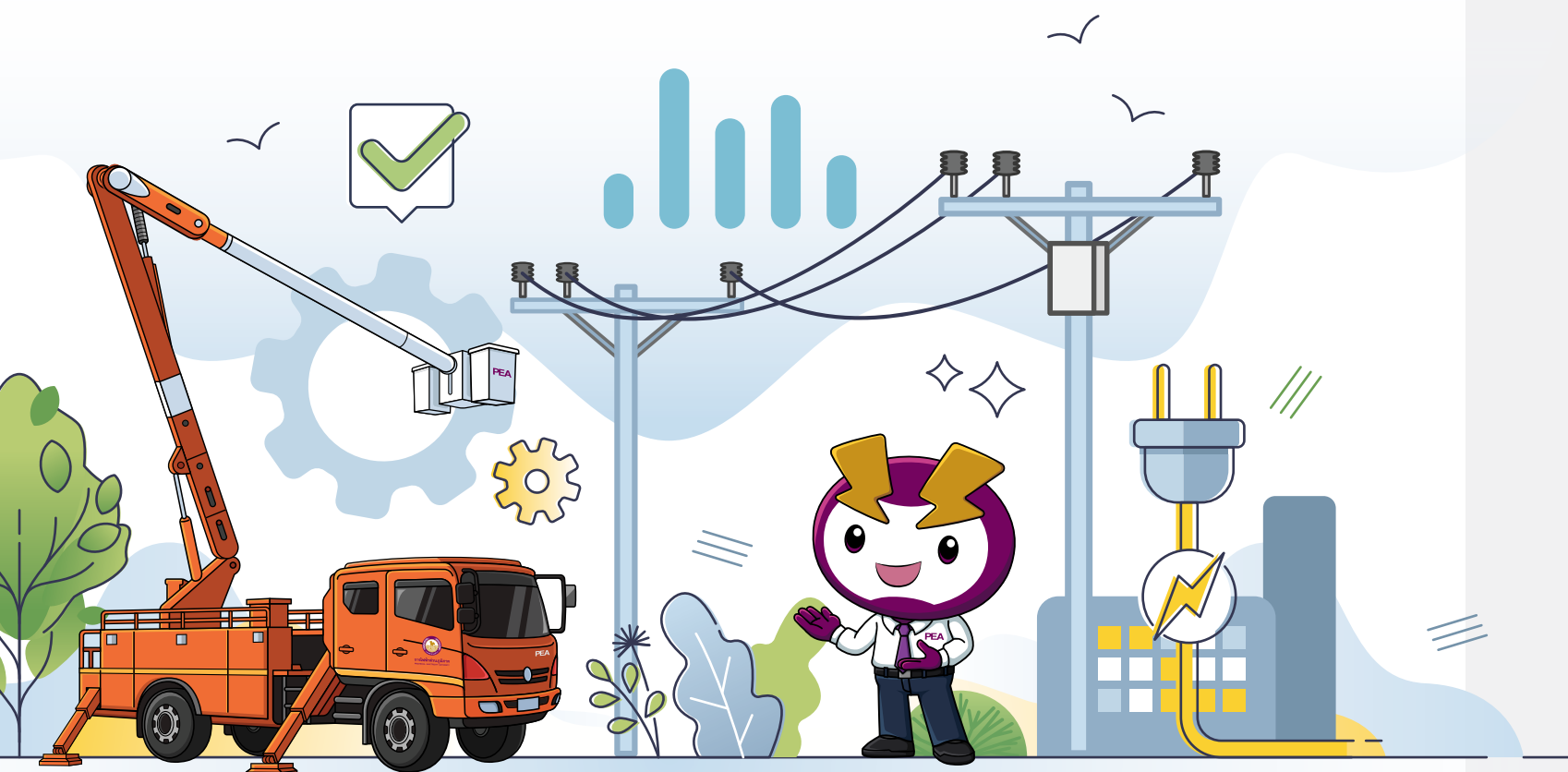
Greenhouse Gas Reduction Plan in 2023	Reduction Target (kgCO <sub>2</sub> e)
1. Installation of solar power generation systems at 62 PEA offices	3,500,000
2. Green Office Project	3,500,000
<b>Total greenhouse gas reduction</b>	<b>7,000,000</b>







## 12 Appendix



Forecasting the Number of Electricity Customer by Tariffs <sup>(EU10)</sup>

User Type	Actual	Forecast (No. of Customers)						
	2022	2022	2023	2024	2025	2026	2027	2028
Residential	19,107,386	19,147,079	19,539,940	19,938,161	20,345,398	20,757,090	21,174,275	21,601,510
increase/(decrease) %	1.86	2.08	2.05	2.04	2.04	2.02	2.01	2.02
Small General Service	1,746,341	1,754,589	1,804,698	1,860,016	1,931,980	2,014,444	2,098,869	2,173,292
increase/(decrease) %	1.51	1.99	2.86	3.07	3.87	4.27	4.19	3.55
Medium General Service	85,804	85,952	88,944	92,067	95,041	98,540	102,116	106,118
increase/(decrease) %	3.23	3.40	3.48	3.51	3.23	3.68	3.63	3.92
Large General Service	7,742	7,858	8,094	8,341	8,624	8,977	9,423	9,918
increase/(decrease) %	1.68	3.20	3.00	3.05	3.39	4.09	4.97	5.25
Specific Business Service	13,034	13,325	14,492	15,289	16,033	16,778	17,362	17,849
increase/(decrease) %	9.15	11.59	8.76	5.50	4.87	4.65	3.48	2.80
Non-profit Organizations	1,042	1,041	1,041	1,041	1,041	1,041	1,041	1,041
increase/(decrease) %	4.20	4.10	0.00	0.00	0.00	0.00	0.00	0.00
Agricultural Pumping	5,618	5,758	5,987	6,266	6,555	6,874	7,173	7,506
increase/(decrease) %	(0.16)	2.33	3.98	4.66	4.61	4.87	4.35	4.64
Temporary Service	423,012	423,735	446,398	468,733	489,531	512,353	533,815	555,838
increase/(decrease) %	6.34	6.52	5.35	5.00	4.44	4.66	4.19	4.13
Users excluding free electricity	21,389,979	21,439,337	21,909,594	22,389,914	22,894,203	23,416,097	23,944,074	24,473,072
increase/(decrease) %	1.93	2.16	2.19	2.19	2.25	2.28	2.25	2.21
Free of Charge	280,078	281,672	292,563	303,755	313,904	324,078	336,061	347,742
increase/(decrease) %	2.88	3.46	3.87	3.83	3.34	3.24	3.70	3.48
Total	21,670,057	21,721,009	22,202,157	22,693,669	23,208,107	23,740,175	24,280,135	24,820,814
increase/(decrease) %	1.94	2.18	2.22	2.21	2.27	2.29	2.27	2.23

**Note:** Large general service includes backup power and interruptible rate.



## Forecasting the Electricity Energy Consumption by Tariffs <sup>(EU10)</sup>

User Type	Actual	Forecast (GWh)						
	2022	2022	2023	2024	2025	2026	2027	2022
Residential	38,264	38,171	38,799	39,507	40,278	41,033	41,794	42,461
increase/(decrease) %	(0.66)	(0.90)	1.64	1.82	1.95	1.87	1.86	1.60
Small General Service	14,512	14,324	14,883	15,479	16,150	16,891	17,775	18,418
increase/(decrease) %	3.92	2.57	3.90	4.00	4.34	4.59	5.24	3.62
Medium General Service	22,456	22,296	23,351	24,563	25,558	26,533	27,535	28,628
increase/(decrease) %	3.45	2.71	4.73	5.19	4.05	3.81	3.77	3.97
Large General Service	60,926	61,315	63,102	65,173	67,825	70,924	74,791	79,349
increase/(decrease) %	4.49	5.15	2.91	3.28	4.07	4.57	5.45	6.09
Specific Business Service	3,508	3,597	4,590	4,870	5,136	5,485	5,645	5,739
increase/(decrease) %	38.61	42.16	27.61	6.10	5.46	6.80	2.91	1.67
Non-profit organizations	77	80	80	80	80	80	80	80
increase/(decrease) %	9.48	13.16	0.00	0.00	0.00	0.00	0.00	0.00
Agricultural Pumping	335	405	416	426	473	491	508	536
increase/(decrease) %	(15.81)	1.91	2.55	2.49	11.09	3.82	3.39	5.53
Temporary Service	923	932	981	1,036	1,105	1,181	1,244	1,291
increase/(decrease) %	3.05	4.08	5.23	5.58	6.71	6.89	5.27	3.86
Sales excluding free electricity	141,001	141,120	146,202	151,134	156,605	162,618	169,372	176,502
increase/(decrease) %	3.38	3.46	3.60	3.37	3.62	3.84	4.15	4.21
Free of Charge	3,578	3,472	3,596	3,734	3,840	3,945	4,071	4,191
increase/(decrease) %	8.72	5.50	3.57	3.83	2.84	2.73	3.19	2.96
Total	144,579	144,592	149,798	154,868	160,445	166,563	173,443	180,693
increase/(decrease) %	3.50	3.51	3.60	3.38	3.60	3.81	4.13	4.18

## Forecasting the Electricity Energy Purchases <sup>(EU10)</sup>

Information	Actual	Forecast						
	2022	2022	2023	2024	2025	2026	2027	2028
Purchase from EGAT								
Energy (GWh)	140,684	141,244	146,639	151,663	155,875	159,178	162,458	168,408
Peak demand (MW)	22,714	22,714	22,976	23,541	24,251	24,870	25,675	26,648
Purchase from DEDE								
Energy (GWh)	87	70	70	70	70	70	70	70
Peak demand (MW)	6.15	6.15	6.05	6.05	6.05	6.05	6.05	6.05
PEA self-generation								
Energy (GWh)	101	101	101	101	101	101	101	101
Peak demand (MW)	5.78	5.78	5.00	5.00	5.00	5.00	5.00	5.00
Purchase from VSPPs								
Energy (GWh)	11,646	11,481	11,590	11,926	13,613	16,780	20,773	22,491
Peak demand (MW)	918	918	909	912	1,060	1,379	1,621	1,738
<b>Total</b>								
Energy Requirement (GWh)	152,518	152,896	158,400	163,760	169,659	176,129	183,402	191,070
increase/(decrease) %	3.24	3.49	3.60	3.38	3.60	3.81	4.13	4.18
Peak demand (MW)	23,643	23,643	23,896	24,464	25,321	26,260	27,307	28,397
increase/(decrease) %	6.49	6.49	1.07	2.38	3.51	3.71	3.99	3.99

**Notes:** Projected demands for 2022 - 2028 are short-term demands used for the preparation of PEA's budgets for fiscal years 2023 - 2024 (as of 20 October 2022).

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

- Electricity Energy Consumption (Unit: GWh)
  - Comparing the gross domestic product (GDP) growth forecasts provided by the Office of the National Economic and Social Development Council on 18 March 2022 and 19 August 2021 (for budget planning for the fiscal year 2022 - 2023) shows an average annual growth rate of -0.09 percent for the period 2022 - 2028.
  - The econometric model for electricity demand forecasting improved by the National Institute of Development Administration was used in conjunction with the end-use model that accounts for energy consumption at the disaggregated level to project electricity sales broken down by user type. The actual sales in 2022 (January - July) were also reviewed.
  - Power generation by very small power producers (VSPPs) is divided into two groups:
    - The existing projects and projects under agreements with the government, such as projects that have achieved Commercial Operation Date (COD), projects with power purchase agreements and pending COD, and projects with confirmed power purchase (excluding projects with pending applications). For PEA self-generation and purchase from DEDE, all were considered by current data.
    - New policies for renewable energy power plants are under the Alternative Energy Development Plan (AEDP2022).



- PEA System's electricity peak demand forecasting (Unit: MW)
  - 1) VSPP Typical Generation Profile (2018 edition) using in this report was part of studies of Dependable Capacity Factor (March - May 2014) from the Electricity Generating Authority of Thailand (EGAT), and FIT data proposed by EPPO to NEPC in 2014.
  - 2) Load Profile 2019 was used as the baseline data, as Load Profiles from 2020 and 2021 were affected by the COVID-19 pandemic, which resulted in changes in electricity consumption patterns.
  - 3) Unit loss is set at 5.43 percent (average from 2014 to 2021) throughout the forecasting year.
- The scope and assumptions used in forecasting the number of electricity users are as follows:
  - 1) Calculate the electricity consumption in the past per capita per year.
  - 2) The assumption of the electricity consumption per capita per year remains constant throughout the forecast period.
  - 3) Forecasting the number of electricity users based on the projected demand per unit per year.

## PEA Power Loss

Type of Loss	Percentage of Power Loss Compared to Total Power			
	2019	2020	2021	2022
Total target loss	5.20	5.54	5.40	5.40
Total loss	5.37	5.47	5.45	5.21
Technical loss	3.97	4.10	4.02	4.01
Non-technical loss	1.40	1.37	1.43	1.20

- Notes:**
- 1) Technical loss includes the loss of electricity from the 115 kV transmission lines, 22-33 kV power transformers, distribution system transformers, and low-voltage distribution system transformers.
  - 2) Total target loss is derived from a state enterprise performance assessment.



## System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) <sup>(EU28 11A: EU29)</sup>

SAIFI and SAIDI	2019	2020	2021	2022
SAIFI target	3.17	2.74	2.25	1.83
SAIFI result	3.10	2.65	2.19	1.76
SAIFI target in 12 major cities	1.174	1.036	0.893	0.893
SAIFI result in 12 major cities	1.036	0.893	0.661	0.547
SAIDI target	75.78	57.58	44.80	35.25
SAIDI result	73.82	57.52	44.51	34.98
SAIDI target in 12 major cities	14.853	13.364	10.558	10.558
SAIDI result in 12 major cities	13.364	10.558	8.522	6.039

- Notes:**
- SAIFI and SAIDI do not include the three southern border provinces.
  - SAIFI and SAIDI do not include severe accidents, force majeure events, disasters, and serious disruptions in power generation sources.
  - SAIFI and SAIDI in 12 major cities include only power interruptions, outages, and emergency operations triggered by circuit breakers at power substations.
  - SAIFI and SAIDI targets are derived from a state enterprise performance assessment.
  - SAIFI and SAIDI targets in 12 major cities are determined by PEA.



## Direct Economic Value Generated and Distributed\* (2-2, 201-1)

Direct Economic Value Generated and Distributed	2019 (million baht)	2020 (million baht)	2021 (million baht)	2022 (million baht)
(1) Direct economic value generated				
Revenues	519,767.94	490,109.53	509,368.53	606,395.53
(2) Economic value distributed				
Operating costs	475,679.05	453,831.40	469,500.88	567,446.02
Employee wages and benefits	27,397.41	22,264.78	21,961.61	23,124.37
Payments to providers of capital	2,657.44	2,740.18	3,061.99	3,628.43
Payments to government	6,715.00	7,300.00	7,853.85	9,355.00
Community investment	739.36	777.17	235.97	248.12
(1) – (2) Economic value retained	6,579.68	3,196.00	6,754.23	2,593.59

\* Economic performance is reported for PEA only.

## Number of Employees with Disabilities in 2022

Employment of Persons with Disabilities 2022			Male (persons)	Female (persons)	Total (persons)
Employment of persons with disabilities (Section 33)	Employees	Disabled person ID card	68	14	89
		No disabled person ID card	6	1	
	Workers (1-2 year contract)	Disabled person ID card	13	3	22
		No disabled person ID card	6	-	
Arranging places for products or services for persons with disabilities or their caregivers in the head and regional offices (as per Section 35).			46	35	81
Total			139	53	192

## Electricity Accessibility Improvement Projects (Former EU6)

Ongoing Projects	Objectives	Operation Details	Investment (million baht)	Scope	Progress
Transmission and Distribution System Development Project Phase 1	To develop efficient distribution systems to accommodate the increasing electricity demand.	- Construct 115 kV transmission lines - Construct loop lines - Construct 22-33 kV distribution system - Construct low-voltage distribution system	62,678.71	Operating in four regions, with each region divided into three areas, totaling 12 areas. Each area has provincial offices under its jurisdiction.	- 1,110.84 circuit km length of 115 kV transmission lines has been completed. - 78.48 circuit km length of loop lines has been completed. - 7,787.00 circuit km length of 22/33 kV distribution system has been completed. - 3,353.00 circuit km length of low-voltage distribution system has been completed. - Project progress: 60.18% completed. (Status as of September 2022)
Transmission and Distribution System Development Project Phase 2	To develop efficient distribution systems to accommodate the increasing electricity demand.	- Construct 115 kV transmission lines - Construct loop lines - Construct 22-33 kV distribution system - Construct low-voltage distribution system	77,334	Operating in four regions, with each region divided into three areas, totaling 12 areas. Each area has provincial offices under its jurisdiction.	- 47.00 circuit km length of 115 kV transmission lines has been completed. - 17.127 circuit km length of loop lines has been completed. - 1,559.356 circuit km length of 22/33 kV distribution system has been completed. - 10,228.072 circuit km length of low-voltage distribution system has been completed. - Project progress: 18.94% completed. (Status as of September 2022)
New Rural Household Electrification Project Phase 2	To expand the power system to new households according to the government policy.	- Expand the electricity service coverage to accommodate 141,960 new households.	6,565	Operating countrywide, except the areas under the Metropolitan Electricity Authority's jurisdiction, to provide electricity to unelectrified households.	- Electricity service coverage has been expanded to cover 158,184 new households. - Project progress: 111.43% completed. (Status as of January 2023)
Total budget for ongoing projects			146,577.71 million baht		

Projects Planned in the Next 3 Years	Objectives	Operation Details	Investment (million baht)	Scope	Progress
New Rural Household Electrification Project Phase 3	To expand the power system to new households according to the government policy.	- Expand the electricity service coverage to accommodate 130,000 new households.	6,500	Operating countrywide, except the areas under the Metropolitan Electricity Authority's jurisdiction, to provide electricity to unelectrified households.	- In the process of submitting to PEA Governor to propose to the Board of Directors for consideration and approval.
Distribution System Extension for Agricultural Areas Project Phase 3	To supply electricity to agricultural areas and support farmers in their agricultural endeavors.	- Expand the electricity service coverage to accommodate 50,000 farmers.	2,500	Operating countrywide, except the areas under the Metropolitan Electricity Authority's jurisdiction, to provide electricity to 50,000 farmers.	- In the process of submitting to PEA Governor to propose to the Board of Directors for consideration and approval.
Power System Reinforcement by Submarine Cables to Electrified Islands Project	To develop the power system to enhance capacity and stability in electricity supply for tourist islands with high economic growth potential, while reducing outage costs.	- Construct 22-33 kV submarine cables. - Construct distribution systems on islands. - Improve distribution systems on islands.	1,891	Improving power distribution stability and reliability on islands to meet increasing electricity demand.	- In the process of preparing a feasibility study report.
Power System Development on Islands Project	To develop power systems to enhance distribution capacity and reliability in order to meet the increasing electricity demand for islands that are important tourist destinations and have a high economic growth rate.	- Construct 22-33 kV submarine cables. - Construct distribution systems on islands. - Improve distribution systems on islands.	6,630	Constructing submarine cables to various islands to enhance the capacity and reliability of their power systems.	- In the process of preparing a feasibility study report.
Total budget for planned projects			15,637 million baht		
Grand total			162,214.71 million baht		

## Number of Employees/Workers Covered by an Occupational Health and Safety Management System <sup>(403-1, 403-8)</sup>

Employees/Workers Covered by an Occupational Health and Safety Management System					
Employees and Workers		Workers Who Are Not Employees		Contractors	
Persons	%	Persons	ร้อยละ	Persons	%
28,090	100	5,685	100	22,458	100
Employees/Workers Covered by an Occupational Health and Safety Management System That Has Been Internally Audited					
Employees and Workers		Workers Who Are Not Employees		Contractors	
Persons	%	Persons	ร้อยละ	Persons	%
28,090	100	5,685	100	22,458	100
Employees/Workers Covered by an Occupational Health and Safety Management System That Has Been Audited or Certified by An External Party					
Employees and Workers		Workers Who Are Not Employees		Contractors	
Persons	%	Persons	%	Persons	%
-	-	-	-	-	-

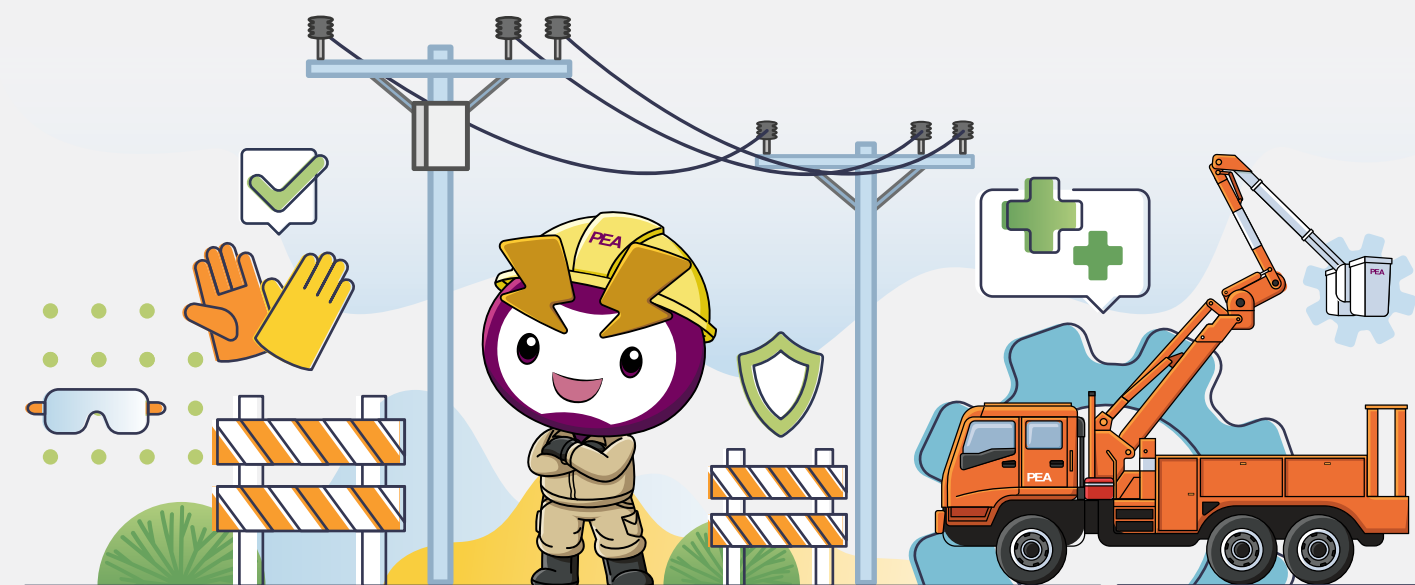


## Work-Related Injuries <sup>(403-9)</sup>

Fatality and injury statistics of employees and workers who are not employees but whose work and/or workplace is controlled by the organization	Number of injuries broken down by type of accident (persons)							
	Electric shock	Impact of objects	Vehicles	Falls from heights	Burns	Slips/trips	Collapsing structures	Collapsing/falling objects
<b>Fatalities and injuries of employees and workers</b>								
Fatalities as a result of work-related injury			2					
High-consequence work-related injuries (excluding fatalities)	2		1					
Recordable work-related injuries (including fatalities)	3	1	5	2	2	1		
<b>Fatalities and injuries of workers who are not employees but whose work and/or workplace is controlled by the organization (contracted workers)</b>								
Fatalities as a result of work-related injury	14		1	2		1	3	3
High-consequence work-related injuries (excluding fatalities)	1							
Recordable work-related injuries (including fatalities)	22	10	4	5	4	1	9	4

- Notes:**
- 1) High-consequence work-related injuries (excluding fatalities) refer to Injury Level 3 to 4 according to PEA's criteria, which result in 180 lost workdays or more, excluding fatalities.
  - 2) Recordable work-related injuries include all work-related injuries, fatalities, high-consequence work-related injuries, lost-time injuries, and non-lost-time injuries.
  - 3) The rate of work-related fatalities/injuries is calculated based on 200,000 hours worked.
  - 4) The number of hours worked by employees and workers is calculated using the formula: Number of employees \* Number of working hours per day \* Number of working days in a week \* Number of weeks in a year, including the number of hours that employees/workers work on shift as of 31 December 2022.
  - 5) The number of hours worked by contracted workers is calculated using the formula: Number of contracted workers \* Number of working hours per day \* Number of working days in a week \* Number of weeks in a year as of 30 December 2022.
  - 6) Disabling Injury Index is calculated using the formula  $D.I.I. = IFR * ISR / 1000$ , according to the American National Standards Institute (ANSI) standards. It is used to indicate the relationship between the number of work-related accidents and the severity of those accidents in PEA in relation to the number of hours worked. The  $\sqrt{DI}$  is used as a measure of safety quality among similar government enterprises (PEA, MEA, and EGAT). The index was initially determined by the State Enterprise Policy Office.

Cutting/stabbing	Clamping/pulling	Chemicals/poisonous	Total (persons) only injuries included in the calculation of $\sqrt{DI}$	Total (persons) only injuries excluded in the calculation of $\sqrt{DI}$	Total (persons)	Number of hours worked	Rate of fatalities/injuries (calculated based on 200,000 hours worked)
			2	0	2	71,614,816	0.0056
			3	0	3		0.0084
			12	2	14		0.0391
1			11	13	24	56,055,168	0.0856
			2		2		0.0071
2	2	1	39	25	64		0.2283

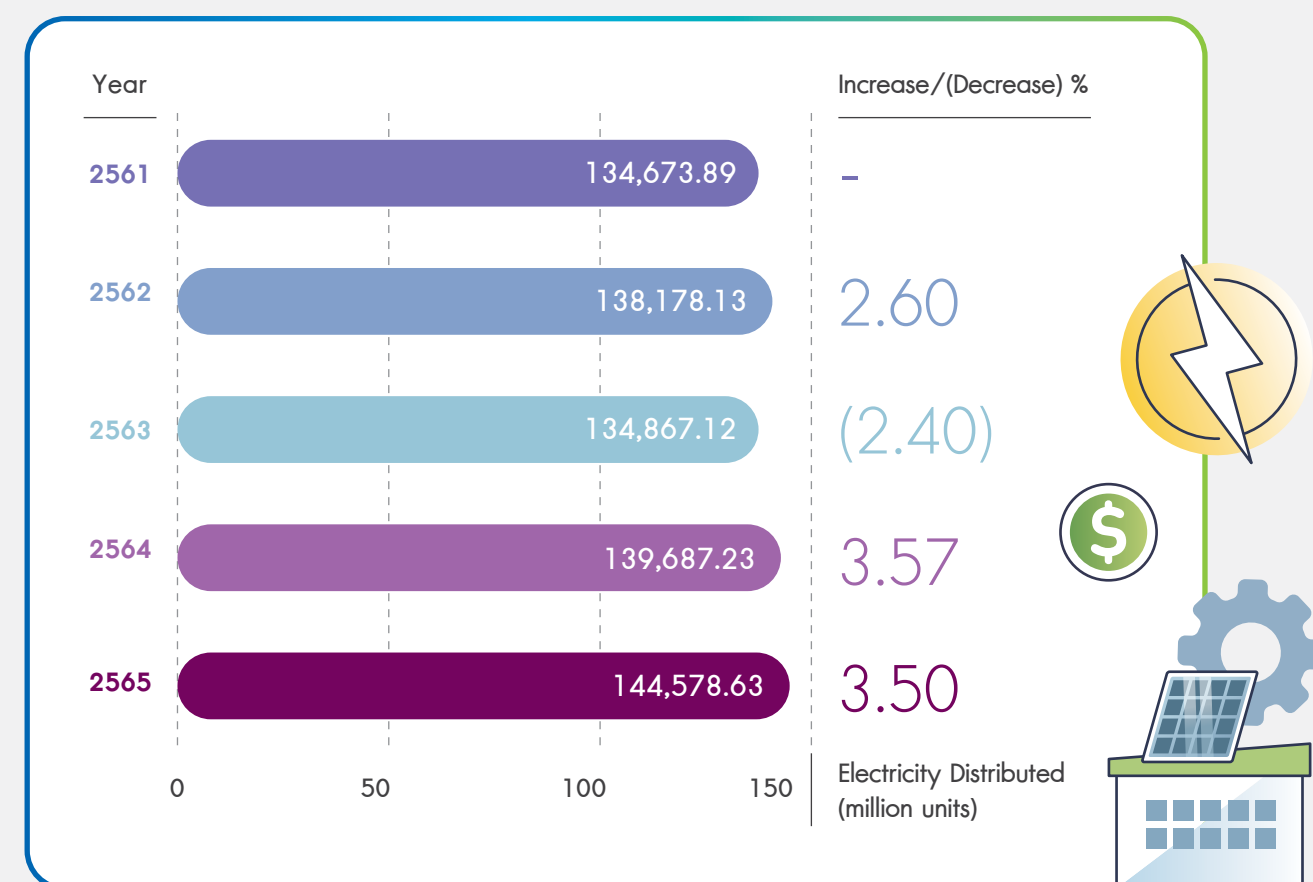




## Work-Related Ill Health <sup>(403-10)</sup>

Ill health statistics of employees and workers who are not employees but whose work and/or workplace is controlled by the organization	Total (persons)
Number of fatalities as a result of work-related ill health	0
Number of cases of recordable work-related ill health	0
Work-related fatalities and ill health of workers who are not employees but whose work and/or workplace is controlled by the organization (contracted workers)	Total (persons)
Number of fatalities as a result of work-related ill health	0
Number of cases of recordable work-related ill health	0

## Economic Indicators



## Environmental Indicators

Scope	Greenhouse Gas Emissions Indicators	Items	Quantity					Unit
			2018	2019	2020	2021	2022	
1	PEA’s power generation	Amount of diesel used in production	12,007,362	13,290,417	11,709,758	8,122,485.33	7,914,815	litre
		Amount of electricity produced	46,519,469.25	51,490,339.42	45,366,478.27	31,468,502.95	30,663,938.10	kWh
	Power substation and system maintenance and engineering	Amount of transformer oil purchased	973,200	670,218	1,641,600	1,683,400	1,571,800	litre
		Amount of SF <sub>6</sub> consumed	978.6	560	820	480	360	Kg
	Vehicle fuel	Amount of diesel used in vehicles	20,442,645	21,167,266	20,882,952	19,780,029	18,627,208	litre
	Production of concrete electric poles	Self-manufactured electric poles	18,015	14,786	20,347 <ul style="list-style-type: none"><li>● Steel 8,969,515.52 kg</li><li>● Cement 27,269,741.35 kg</li><li>● Sand 55,986.73 kg</li><li>● Gravel 19,835,741.82 kg</li></ul>	22,542 <ul style="list-style-type: none"><li>● Steel 9,289,747.21 kg</li><li>● Cement 29,368,324.13 kg</li><li>● Sand 58,362.84 kg</li><li>● Gravel 84,397.32 kg</li></ul>	43,244.04 <ul style="list-style-type: none"><li>● Steel 10,521,531.40 kg</li><li>● Cement 32,575,580.45 kg</li><li>● Sand 59,855.49 kg</li><li>● Gravel 87,072.81 kg</li></ul>	ton
	Refrigerant leak	Amount of R-22 refrigerant consumed	2,985.72	2,037.62	1,454	956.76	1,057.19	Kg
		Amount of R-410A refrigerant consumed	30	387	44	-	31	Kg
		Amount of R-134A refrigerant consumed	8.3	153	32	-	20	Kg
		Amount of R-32 refrigerant consumed	17.7	149	39	-	38.90	Kg
	2	PEA’s services	Amount of electricity consumed in offices <sup>(302-1)</sup>	119,246,722	136,115,090	143,544,716	142,813,195	146,708,695
Distribution loss		Amount of distribution loss	7,622,929,052.80	7,837,142,184.70	7,809,717,354.10	8,049,384,018.10	7,939,860,740.40	kWh
3	PEA’s services	Amount of A4 paper consumed	217,624	129,731	127,498	132,538	131,547	ream
		Amount of thermal paper consumed	19,128,320	38,292,340	6,133,184	6,351,278	1,682,879	unit
		Amount of municipal water consumed	1,159,986.44	1,268,641	1,513,664	1,580,738	1,682,742	m <sup>3</sup>



# 13 GRI Content Index














**CONTENT INDEX  
ESSENTIAL SERVICE**  
+ SDG MAPPING ADD-ON

2023









For the Content Index - Essentials Service, GRI Services reviewed that the GRI content index is clearly presented, in a manner consistent with the Standards, and that the references for disclosures 2-1 to 2-5, 3-1 and 3-2 are aligned with the appropriate sections in the body of the report. The service was performed on the English version of the report.





For the SDG Mapping Add-on, GRI Services reviewed that the GRI disclosures included in the content index are appropriately mapped against the SDGs.

Statement of use	Provincial Electricity Authority (PEA) has reported in accordance with the GRI Standards for the period start 1 January and end of 31 December 2022.
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard	Not Applicable

















GRI Standard / Other Source	Disclosure	Location	Omission		SDG mapping
			Reason	Explanation	
General Disclosures					
GRI 2: General Disclosures 2021	2-1 Organizational details	23,33			          
	2-2 Entities included in the organization’s sustainability reporting	172,189			
	2-3 Reporting period, frequency, and contact point	189-190			
	2-4 Restatements of information	32			
	2-5 External assurance	186-187			
	2-6 Activities, value chain and other business relationships	27-31			
	2-7 Employees	34-35			
	2-8 Workers who are not employees	34-35			
	2-9 Governance structure and composition	32, 35-41			
	2-10 Nomination and selection of the highest governance body	42			
	2-11 Chair of the highest governance body	42			
	2-12 Role of the highest governance body in overseeing the management of impacts	43			
	2-13 Delegation of responsibility for managing impacts	43			
	2-14 Role of the highest governance body in sustainability reporting	43, 189			
	2-15 Conflicts of interest	43			
	2-16 Communication of critical concerns	52-55			
	2-17 Collective knowledge of the highest governance body	44			
	2-18 Evaluation of the performance of the highest governance body	44			




















GRI Standard / Other Source	Disclosure	Location	Omission		SDG mapping
			Reason	Explanation	
	2-19 Remuneration policies 2-20 Process to determine remuneration 2-21 Annual total compensation ratio 2-22 Statement on sustainable development Strategy 2-23 Policy commitments 2-24 Embedding policy commitments 2-25 Processes to remediate negative impacts 2-26 Mechanisms for seeking advice and raising concerns 2-27 Compliance with laws and regulations 2-28 Membership associations 2-29 Approach to stakeholder engagement 2-30 Collective bargaining agreements	45-46 45-46 46 4-5 87-91 87-91 71 52-55 156 47 96-107 141			  
<b>Material Topics</b>					
GRI 3: Material Topics 2021	3-1 Process to determine material topics 3-2 List of material topics	108 110			
<b>Economic performance</b>					
GRI 3: Material Topics 2021	3-3 Management of material topics (Economic performance)	130-138			
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	136, 172			 
<b>Anti-corruption</b>					
GRI 3: Material Topics 2021	3-3 Management of material topics (Anti-corruption)	48-49, 61			
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption 205-2 Communication and training about anti-corruption policies and procedures 205-3 Confirmed incidents of corruption and actions taken	56 56 57			  

GRI Standard / Other Source	Disclosure	Location	Omission		SDG mapping
			Reason	Explanation	
Free and fair competition					
GRI 3: Material Topics 2021	3-3 Management of material topics (Advocate free and fair competition)	66-67			
GRI 206: Anti-com- petitive Behavior 2016	206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	66-67			
Power system reliability					
GRI 3: Material Topics 2021	3-3 Management of material topics (Reliability of the electrical system)	113-119			
GRI G4 Sector Disclosures: Electric Utilities	EU6 Management approach to ensure short and long-term electricity availability and reliability EU10 Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime EU28 Power outage frequency EU29 Average power outage duration	114, 171-172 114, 167-169 115, 171 115, 171			  
Power system accessibility					
GRI 3: Material Topics 2021	3-3 Management of material topics (Access to the electrical system)  Number of new electricity users	157-158  167			
Customer health and safety					
GRI 3: Material Topics 2021	3-3 Management of material topics (Customer health and safety)	153-156			
GRI 416: Customer Health and Safety 2016	416-1 Assessment of the health and safety impacts of product and service categories 416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	154  156			



GRI Standard / Other Source	Disclosure	Location	Omission		SDG mapping
			Reason	Explanation	
Customer privacy					
GRI 3: Material Topics 2021	3-3 Management of material topics (Customer privacy)	125-129			
GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	129			
Response to stakeholders					
GRI 3: Material Topics 2021	3-3 Management of material topics (Responding to Stakeholders)	96-107			
GRI 2: General Disclosures 2021	2-29 Approach to stakeholder engagement	96-107			
Greenhouse gas emissions					
GRI 3: Material Topics 2021	3-3 Management of material topics (Greenhouse gas emissions)	159-165			
GRI 302: Energy 2016	302-1 Energy consumption within the orga- nization	179			
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	162			              
	305-2 Energy indirect (Scope 2) GHG emissions	162			
	305-3 Other indirect (Scope 3) GHG emissions	162			
	305-4 GHG emissions intensity	163			
	305-5 Reduction of GHG emissions	165			
Occupational health and safety					
GRI 3: Material Topics 2021	3-3 Management of material topics (Occupational health and safety)	144-152			

GRI Standard / Other Source	Disclosure	Location	Omission		SDG mapping
			Reason	Explanation	
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	147, 175			
	403-2 Hazard identification, risk assessment, and incident investigation	146			
	403-3 Occupational health services	146			
	403-4 Worker participation, consultation, and communication on occupational health and safety	150-151			 
	403-5 Worker training on occupational health and safety	152			
	403-6 Promotion of worker health	145			
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	145			
	403-8 Workers covered by an occupational health and safety management system	175			
	403-9 Work-related injuries	147-149, 176-177			  
	403-10 Work-related ill health	147-149, 178			  
<b>Non-discrimination</b>					
GRI 3: Material Topics 2021	3-3 Management of material topics (Non-discrimination)	139-143			
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	143			 



# 14 External Assurance <sup>(2-5)</sup>

**Deloitte.**

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## INDEPENDENT LIMITED ASSURANCE REPORT ON SUSTAINABILITY REPORT 2022

To The Governor of Provincial Electricity Authority (“PEA”)

Provincial Electricity Authority (“PEA”) has engaged Deloitte Touche Tohmatsu Jaiyos Audit Co., Ltd. (“we” or “us”) to perform limited assurance procedures on selected subject matters (“the Subject Matter”) for the year ended December 31, 2022, presented in the sustainability report 2022 (“the Sustainability Report”) in accordance with the reporting criteria (“the Criteria”).

### Subject Matter

The Subject Matter chosen by PEA comprises:

- Environmental dimension performance indicators expressed numerically.
  - Greenhouse gases emission scope 1 (tCO<sub>2</sub>e)
  - Greenhouse gases emission scope 2 (tCO<sub>2</sub>e)
  - Ratio of greenhouse gases emission intensity (kgCO<sub>2</sub>e/kWh)
- Social dimension performance indicators
  - Number and rate of fatalities as a result of work-related injury, high-consequence work-related injuries, recordable work-related injuries and number of hours worked
  - Number of fatalities as a result of work-related ill health, number of cases of recordable work-related ill health
  - Number of incidents of non-compliance with regulations resulting in fine or penalty, warning, and voluntary codes

### Criteria

The selected Subject Matter above included in the Sustainability Report has been assessed according to the reporting principle prepared by the PEA in “About this report” section which is in accordance with the Sustainability Reporting Standards issued by the Global Reporting Initiative (“GRI Standards”), where relevant.

### Basis of our work and level of assurance

We carried out limited assurance in accordance with International Standard on Assurance Engagements 3000 (“ISAE 3000”) “Assurance Engagements other than Audits or Reviews of Historical Financial Information”.

To achieve limited assurance ISAE 3000 require that we review the process and systems used to compile the areas on which we provide assurance. It does not include detailed testing of source data or the operating effectiveness of processes and internal controls. This provides less assurance and it substantially less in scope than a reasonable assurance engagement.

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

We have applied International Standard on Quality Management 1 and accordingly maintains a comprehensive system of quality management including documented policies and procedure regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

### Inherent limitation

Inherent limitation exists in all assurance engagements due to the selective testing of the information being examined. Therefore fraud, errors or non-compliance may occur and not be detected. Additionally, non-financial data may be subject to more inherent limitations than financial data, given both its nature and the methods used for determining, calculating and estimating such data. Greenhouse gases quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.



Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited (“DTTL”), its global network of member firms, and their related entities (collectively, the “Deloitte organization”), DTTL (also referred to as “Deloitte Global”) and each of its member firms and related entities are legally separate and independent entities, which cannot obligate or bind each other in respect of third parties. DTTL and each DTTL member firm and related entity is liable only for its own acts and omissions, and not those of each other. DTTL does not provide services to clients. Please see [www.deloitte.com/about](http://www.deloitte.com/about) to learn more.

### Deloitte Touche Tohmatsu Jaiyos Audit

ดีลอยท์ ทูเช่ โทมัทสு ไชโย สอบบัญชี

### Key assurance procedures

Considering the risk of material error, we planned and performed the work to obtain all the information and explanations considered necessary to provide sufficient evidence to support our assurance conclusion.

The assurance procedures included the following work:

- interviewing the PEA’s management and those with operational responsibility for performance in the areas we are reporting on
- visiting the Head Office of the PEA
- completing analytical procedures
- reviewing the appropriateness of management review and reporting processes
- reviewing the process which the management used in materiality assessment
- performing testing of selected data on sampling basis, and
- reviewing the process for consolidating data at a PEA level

As a limited assurance engagement generally comprises of making enquiries, primarily of management, and applying analytical procedures and the work for a limited assurance engagement is less detailed than for a reasonable assurance engagement.

### Respective responsibilities of the Management and Independent assurance provider

The management of the PEA is responsible for the preparation of the Sustainability Report which is in accordance with the Sustainability Reporting Standards issued by the Global Reporting Initiative (“GRI Standards”), where relevant, and determining the adequacy of the Criteria to meet the reporting needs of the PEA. Management’s responsibility also includes designing, implementing and maintaining of the internal control system relevant to the preparation and fair presentation of the selected Subject Matter that is free from material misstatement, whether due to fraud or error.

Our responsibility is to independently express limited assurance opinion in according with ISAE3000 on the Subject Matter.

### Limitation of use

This report has been prepared in accordance with our engagement terms, solely for the governor of PEA as a body, for the purpose of reporting on the selected Subject Matter within the Sustainability Report. To the fullest extent permitted by the law, we do not accept or assume responsibility to anyone other than the Board of Directors for our work or for this report, or for any other purpose other than that for which this report was prepared.

### Our conclusion

Based on the work described above, nothing has come to our attention that causes us to believe that the selected Subject Matter for the year ended December 31, 2022, included in the Sustainability Report has not been prepared, in all material respects, in accordance with the Criteria.

Kasiti Ketsuriyong  
Partner  
Deloitte Touche Tohmatsu Jaiyos Audit Co., Ltd.

Bangkok, Thailand  
June 7, 2023



## 15 About This Report



### Background <sup>(2-3)</sup>

PEA has published a sustainability report annually for six consecutive years. This Sustainability Report 2022 was prepared in accordance with the GRI Standards to disclose the organization's sustainability performance across the economic, social, and environmental dimensions, covering the reporting period from 1 January to 31 December 2022. In addition, PEA has adopted the Electric Utilities Sector Reporting Guidelines developed by the Global Reporting Initiative (GRI) to ensure the reporting is accurate, complete, and in alignment with the organization's business operations.

Furthermore, as part of its commitment to sustainable development, PEA has aligned its operations with the 17 Sustainable Development Goals (SDGs) set by the United Nations, which are featured throughout this report.

### Reporting Boundary <sup>(2-2)</sup>

This report discloses information and impacts of PEA's operations throughout the value chain. The reporting boundary covers the head and regional offices, power plants, and substations, as well as stakeholders but does not include operational activities conducted by PEA's affiliated companies.

### Sustainability Report Assurance

The PEA Board of Directors and senior management have the responsibility to monitor, review, and provide advice on the reporting processes, as well as approve important information disclosed in this report. Their involvement ensures the completeness and integrity of the report content and creates shared value for all stakeholders. <sup>(2-14)</sup>

Furthermore, PEA engaged a third-party service to perform external assurance and enhance the credibility of the report in line with the reporting in accordance with the GRI Standards. <sup>(2-5)</sup>

### Reporting Quality Improvement

All stakeholders are encouraged to provide feedback on the Sustainable Report 2022 through a reader survey. The feedback received will be analyzed to further improve and enhance our future sustainability reporting. This ensures that the reporting meets the needs and expectations of all stakeholders effectively.



### Inquiry <sup>(2-3)</sup>

If you have any questions or additional suggestions, you can contact the Sustainability and Stakeholder Engagement Management Division, Stakeholder Engagement and Corporate Communication for Sustainability Department, Provincial Electricity Authority Head Office, LED Building.



○ Address: 200 Ngamwongwan Road, Ladyao, Chatuchak, Bangkok 10900



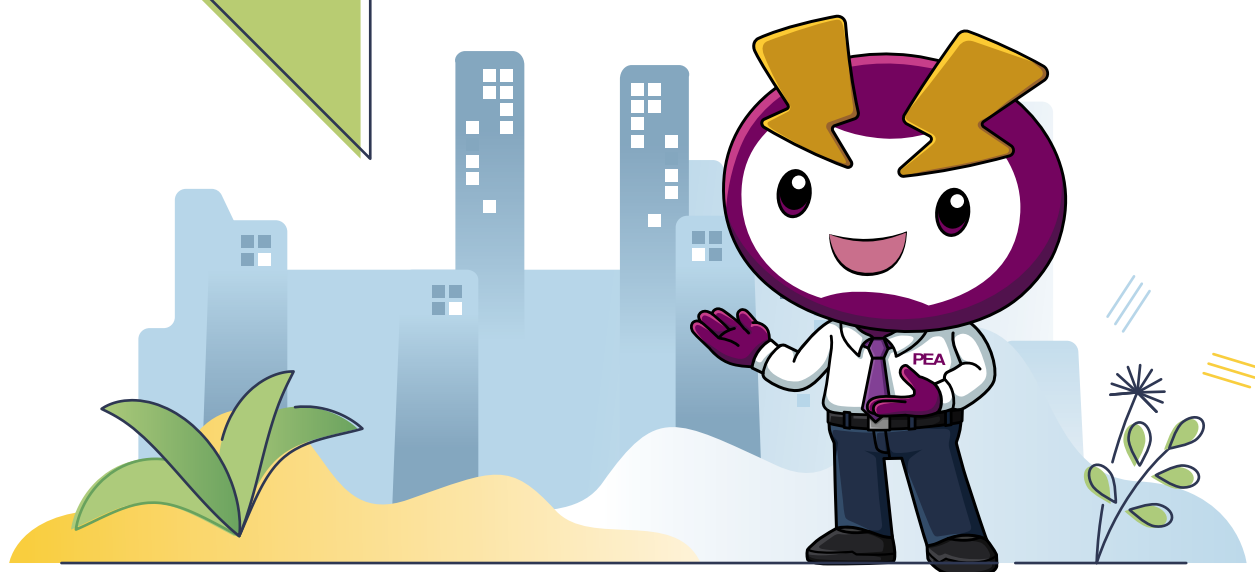
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Questionnaire