



EA Emerging Risks 2025/2026

Subject	Description
Emerging Risk	Disruptive Technology Risk - Hydrogen vehicles
Category	Technological
Risk Level	High
Description	As largely involved in state-of-the-art technology, it can also be considered as a double-edged sword. On the other hand, successfully implementing the right disruptive technology can lead to business success but it can still lead to serious business challenges. This is because technologies can reduce risks but also introduce new ones. In addition, a fast-change technology can impact the Group's business such as hydrogen vehicles.
Impact	● The Group's core businesses such as biodiesel, renewable energy, and EV ecosystem businesses have required innovative and technological improvement to create value-added products and raise production efficiency. Thus, it needs a lot of capital to invest in such areas. Additionally, it may result in operational complexity, such as requiring new technical expertise. ● Due to rapid technological advancement leading to unprecedented and advanced technologies, it may replace the whole existing technologies as currently adopted by the Group. This scenario could lead to increased market competition and a loss of market share, particularly in the electric vehicle segment. This transition could negatively impact on the Group's business performance, potentially leading to a loss of market share. The emerging risk may lead to slowing down EV ecosystem adoption rates, especially in commercial fleet and public transportation segment, impacting the anticipated growth in EV charging station usage, and returns respectively.
Timeframe of Impact	3 - 5 Years
Mitigating actions	● For the Biodiesel business, the Group intends to diversify energy portfolio. The Group has so far established a research and development arm, called Green Technology Research Company Limited (GTR) to pursue development and add value to Thai agricultural products such Green Diesel (GD), Phase Change Material (PCM) and Sustainable Aviation Fuel (SAF). The Group assigns a dedicated unit to monitor domestic regulations. Additionally, the Group is enhancing employee knowledge regarding SAF (Sustainable Aviation Fuel) and PCM (Phase Change Material) within the organization.



Subject	Description
	● For the EV business, the Group has set up Mine Mobility Research Company Limited (MMR), to develop and invent research in electric vehicles, such as electric cars, electric passenger ferry, and Battery Locomotive as focused on vehicles without pollution and being the environmental friendly, economical, and safe basis. ● Due to the limitations of electric vehicle (EV) charging, the Group has researched and developed improvements to EA Anywhere 's EV charging system. This involves incorporating Ultra-Fast Charge Technology (DC Fast Charge), an innovation capable of charging all types of EVs to 80% in just 15-20 minutes. This DC Fast Charging technology has been implemented to increase charging speed, significantly reducing charging times. Development has progressed from 150 kW to 360 kW. Additionally, the Group is continuously developing its charging station network in Bangkok and major cities nationwide to support the rapid growth of electric vehicles and reduce waiting times for EV charging services. ● In case of Battery Locomotive, Testing of the Battery Locomotive as coordinated by the State Railway of Thailand (SRT) and Thailand's leading educational institution (King Mongkut's Institute of Technology Ladkrabang) was conducted successfully. This project is expected to reach Thailand's needs in terms of production costs and the requirements of the Thai government for energy conservation and emission reduction.



Subject	Description
Emerging Risk	Economic & Competitive loss due to misalignment in newly national policy and power development plan
Category	Economic
Risk Level	High
Description	● The Group operates across a range of sectors, including biodiesel, renewable energy production and distribution, electric vehicles (EVs), and related businesses, each governed by specific laws, regulations, and government policies. ● Biodiesel Business: The proportion of biodiesel blended with conventional diesel is determined by government policy. Additionally, fluctuations in palm oil prices and inventory control measures have a direct impact on the biodiesel market. ● Renewable Energy Business: The direction of the renewable power plant business is influenced by the national Power Development Plan (PDP) 2018–2037, formulated by the Ministry of Energy. The plan outlines the pace at which the country aims to increase the share of renewable and alternative energy in its energy mix. ● EV and Related Businesses: The business direction aligns with government policies such as the “30@30” policy, which targets zero-emission vehicles (ZEVs) to account for at least 30% of total vehicle production by 2030. This supports Thailand’s vision of becoming a regional EV hub and a global production base for EVs and related components. Moreover, government incentives allow companies to deduct up to twice the value of locally produced large commercial EVs as business expenses.
Impact	● According to the government policy, the proportion of biodiesel blending of conventional diesel is announced to stay at the B7 diesel at present. This may pose an impact on the Group from the high fluctuations in crude oil prices and impact on the proportion of biodiesel blending. ● A lack of alignment with Thailand’s power development plan (PDP) may result in the Group reputation and revenues. ● Thailand 30@30 policy might raise more competition in the EV market, drawing the attention of other foreign companies, which could potentially affect the revenue of existing companies within the EV ecosystem portfolio. Failure to align with the policy in 3-5 years may result in lagging behind competitors and missing out on tax incentives, leading to increase in operating expenses.



Subject	Description
Timeframe of Impact	3 - 5 Years
Mitigating actions	To reduce and avoid such risks as cited above, the Group then has established the following measures; ● For the Biodiesel business, the Group's production process has been improved and developed to reduce production costs per unit and maintain the quality of the products according to the standards set for the Group. The Group continuously develops innovative products. In 2025, we collaborated with external institutions, including NSTDA and Chulalongkorn University, to develop an additive bio-lubricant and high-value chemical glycerin, respectively. These initiatives aim to meet the demands of a changing global market ● For EV and related businesses, as rising competitions, the Group has been actively seeking for experienced business partners particularly from China to produce lithium-ion battery for EV which helps to capture EV market in Thailand and neighboring countries. ● The Group has signed an agreement with the Lao PDR government to establish a joint venture, "Super Holding Company". This company will centralize the management of clean energy electricity in Lao PDR to develop clean energy businesses, power transmission line infrastructure, and integrated commercial EV transportation systems. The aim is to reduce oil imports and push towards a pollution-free society, with plans to develop energy storage projects and charging stations, and promote Green Tourism through the sale of electric buses and commercial EVs, all working towards the Net Zero goal. ● The Group is researching and developing a Battery Energy Storage System (BESS). This system aims to manage energy and supply power during peak demand, which will ease the strain on the cables that deliver electricity to Remote areas suffer from a lack of electricity. Ultimately, it will boost the stability of the power grid and address electricity shortages in remote areas. This project also supports tourism and local economies, and it advances the integration of Energy Storage technology with Renewable Energy for sustainable solutions to future electricity challenges.



Subject	Description
Emerging Risk	Accelerated incorporation of new technologies for electric utilities sector
Category	Technological
Risk Level	High
Description	● The emergence of new technologies in the energy sector, such as the Internet of Things (IoT), Artificial Intelligence (AI), block chain, and automation, creates uncertainties in their adoption and adaptation to business contexts. These risks not only affect production processes and business outcomes but also extend to data management, customer relationships, and system security. These technologies advancements also come with challenges in regulatory compliance, workforce readiness, and infrastructure planning, highlighting both potential risk and strategic opportunity.
Impact	● There are high initial costs, especially when upgrading or changing technology in existing assets, which can substantially impact an organization's financial burden. Secondly, competition from new players is crucial, as rivals with more advanced technology can offer more attractive alternatives, leading to increased competitive pressure. Furthermore, there's the risk of new technology system failures, which can arise from unpredictable or uncontrollable causes, potentially leading to unexpected operational disruptions. ● New technologies such as IoT, AI, and blockchain also introduce novel cyber threats including data kidnapping, system attacks, or operational disruptions, necessitating prompt prevention and response measures from organizations. Lastly, reputational and misinformation risks are undeniable. Using new technologies to disseminate out-of-context or false information about the Group can severely impact its credibility and stakeholder relationships. Therefore, understanding and preparing for these risks is crucial for the smooth and beneficial implementation of new technologies within an organization. ● Thailand's National AI Strategy and Action Plan (2022–2027), under the AI Thailand program, identifies energy and environment as target industries for AI adoption. As a result, the Group may face emerging risks if it is unable to adequately prepare its workforce, digital infrastructure, data governance, cybersecurity measures, and AI capabilities. Hence, it is important for the Group to align with the national AI roadmap by improving AI literacy and human capability, strengthening digital and data infrastructure, promoting responsible AI adoption, and applying AI to support energy transition, environmental performance, and long-term business resilience. In addition, the inappropriate management related to these emerging technologies may increase the risk of sensitive data being hacked or unintentionally exposed to external parties.



Subject	Description
	Without a clear governance framework to oversee the use of AI and other digital technologies, the Group may also face operational risks, regulatory compliance challenges, and ethical concerns related to the misuse of data within organizational operations. ● Meanwhile, new technologies also provide the opportunity for the Group. The adoption of new technologies will boost operational and maintenance efficiency, leading to reduced costs and increased profits. Furthermore, it will enhance data analysis and management, supporting strategic decision-making with accurate and timely information. It can also lead to the implementation of new business models, creating added value for the Group's products and services.
Timeframe of Impact	3 - 5 Years
Mitigating actions	● Promoting Technology and Governance: The Group promotes the adoption of modern technology to enhance production efficiency and supports the integration of new technologies into workflows to elevate operational performance and results. Concurrently, it manages and oversees operations to ensure adherence to ethical principles, business conduct, and the Group regulations, thereby mitigating risks from errors or fraud. Examples include implementing Robotic Process Automation (RPA) in various working and operational processes and providing cybersecurity training for employees to reduce costs and increase operational efficiency. In addition, the Group launched Responsible Artificial Intelligence Policy and data governance framework to manage the ethical and secure use of emerging technologies such as AI and IoT. This includes setting clear data responsibilities, securing data handling processes, and monitoring data usage. ● Collaborative Innovation Development: The Group is committed to collaborating with customers and various organizations on research and development of new technologies to adapt and enhance electricity services, including monitoring and adopting new innovations in this sector for continuous development. Additionally, the Group actively tracks external technological and regulatory developments globally to prepare for strategic adjustments.



Subject	Description
Emerging Risk	New Business Investment Risk
Category	Economic
Risk Level	Medium
Description	The Group has expanded into new businesses to create long-term and sustainable growth for all stakeholders. However, this will also involve diverse investment risks as the Group might not be familiar with such new business before.
Impact	New investment opportunities possibly come up with unprecedented situations. If they cause negative outcomes, it not only affects the Group's business performance, but it also might make stakeholders lose confidence, creditability, and the Group's image and reputation.
Timeframe of Impact	3 - 5 Years
Mitigating actions	● The Group fully considers such risk arising from New Business Investment Risk. Thus, it has implemented the following strategies to subside such risks. ● The Group has rigorously studied each project before making an investment and collaborating with specialized experts to receive decent advice. ● The Group has closely worked together with business partners or Joint Ventures who are experienced in new businesses in order to complete tasks more efficiently, improve performance, and increase market share further. ● Furthermore, the Group has a department that studies and plans to prevent investment risks. In addition, the Group has joint ventures (Joint Ventures) to reduce risks in doing business. For example, the electric bus (EV) assembly business has a joint business with NEX, which specializes in selling electric buses, and Golden Dragon, which has expertise in electric bus production technology. On the other hand, the Group has operated the lithium-ion battery production business as the business partner with Amita-Taiwan that has expertise in lithium-ion battery production technology.



Subject	Description
Emerging Risk	Geopolitical Risk
Category	Geopolitical
Risk Level	Medium
Description	As countries globalize, they become exposed to various forms of risks including Geopolitical and Economic Risks. The Group is aware of such risk which may affect business activities. Such avoidance can be considered a long-term risk that may have an impact over a period of three years or more.
Impact	● Geopolitical Risk like trade-war may cause pros and cons in the Business context. As Manufacturing Moving Away from China. Some electric vehicle companies have been relocating to Southeast Asia including Thailand to bypass trade restrictions between China and the US. This will bring business opportunities for the Group to do business with Chinese companies (Joint Ventures) or other foreign companies moving to Thailand. ● From time to time, Geopolitical Risk might trigger rising oil prices. If such a situation occurs, this might bring a positive impact on the Group's business operation. Increase in an oil price possibly expedites EV adoption, creating potential opportunities for the Group. Also, higher oil prices will also drive electricity cost, including FT rate as the input factor for revenue stream from the Group's power business. ● Although rising energy prices will have an impact on transportation costs, the proportion as compared to total cost is insignificant.
Timeframe of Impact	3 - 5 Years
Mitigating actions	● The Group has systematically managed and worked out a risk management framework to ensure that its business operation can be executed without severe impact as triggered by Geopolitical Risk. ● The Group has also formulated a long-term financial plan, alongside monitoring and management of liquidity. Therefore, the Group has a solid cash flow structure that can build confidence among creditors, trade partners, and all other stakeholders, ensuring that the Group has a good cash flow position and stable financial status for its business operation. ● Thus, the Group has continued to build good relationships with various financial institutes for a long time while most financial institutions are willing to lend loans to green businesses which



Subject	Description
	are considered as the Group's core business such as solar and wind turbine farms, battery factories, and electric vehicle factories. ● Thus, it could make the Group receive the potential interest structure and sufficient source of funds that are paramount for our business expansion and create long-term growth for the Group's stakeholders. ● High geopolitical uncertainty, such as tariffs from the United States, has both positive and negative impacts on the global economy. While it creates trade pressure, it also encourages Asian countries, including Thailand, to foster greater economic cooperation among themselves. Examples include participation in free trade frameworks like the RCEP (Regional Comprehensive Economic Partnership), which helps expand markets within the Asian region without relying on the U.S. It also opens up opportunities for cooperation with other regions, such as the European Union, to diversify risks and reduce over-reliance on any single country.



Subject	Description
Emerging Risk	AI-Induced and Green Workforce Transition Risk
Category	Economic
Risk Level	High
Description	The convergence of artificial intelligence advancement and the green economy transition is reshaping workforce requirements, creating demand for specialized skills in digital technologies and sustainability. Organizations face growing talent shortage risks if they fail to attract, develop, and retain employees with the necessary competencies. Without proactive upskilling and knowledge-transfer strategies, this skills gap could impair operational performance and long-term competitiveness.
Impact	Technological transformation, particularly the advancement of artificial intelligence (AI), alongside the transition toward a green economy is driving increased demand for a highly skilled workforce. This includes capabilities in digital technologies, advanced technical fields, and sustainability competencies. As a result, risks related to talent shortages may arise if the required specialized skills cannot be effectively attracted, developed, and retained.
Timeframe of Impact	3 - 5 Years
Mitigating actions	● Workforce Transition Strategy: Encourage employee participation in seminars and training programs in digital technology, clean energy, and sustainability, tailored by role and business function to build adaptive capabilities. ● Internal Knowledge Development: Establish internal training delivered by subject-matter expert employees to transfer critical skills across departments, fostering a shared learning culture and building the Group's internal Skills Pool.



Subject	Description
Emerging Risk	Geeconomic Confrontation and Trade Barrier Risk
Category	Geopolitical
Risk Level	High
Description	Escalating geopolitical and economic tensions between countries are driving the adoption of trade barriers such as tariffs and stringent environmental regulations, threatening the competitiveness of Thai businesses in global markets. For clean energy producers, these tensions introduce significant supply chain vulnerabilities, particularly in sourcing critical raw materials and components, potentially leading to higher production costs, procurement delays, and disrupted operations.
Impact	International economic and political tensions may give rise to trade barrier measures in various forms, including the imposition of tariffs on exports to trading partner countries or the enforcement of increasingly stringent environmental regulations, potentially affecting the competitive positioning of Thai businesses. Such conditions may also create supply chain risks for the clean energy business, particularly in relation to the import of key raw materials and critical components essential to the production process. If international trade volatility or restrictions materialize, production costs may increase and delays in procuring essential raw materials may occur, adversely affecting business operations.
Timeframe of Impact	1 - 3 Years
Mitigating actions	● Organizational and Product-Level GHG Reduction Plans: Develop GHG emission reduction plans at both the organizational and product levels to enhance competitive positioning and mitigate exposure to increasingly stringent environmental regulations imposed by trading partner countries, as well as the risk of trade barrier measures. ● Alternative Material Technology Investment: Assess and evaluate the feasibility of investing in technologies capable of utilizing substitute or domestically sourced raw materials, to reduce reliance on imported inputs and mitigate long-term supply chain risk. ● Business Continuity Plan (BCP): Develop and regularly review the BCP to address risks associated with import/export restrictions, tariff changes, and trade regulations that may affect production processes and operations, ensuring the Group can effectively respond to emergency situations and minimize business disruption.



Subject	Description
Emerging Risk	Technological Obsolescence Risk in Green Energy
Category	Technology
Risk Level	High
Description	Rapid advancements in clean energy technology continuously introduce more efficient, cost-effective, and sustainable solutions. This creates pressure on the Group to upgrade or replace existing assets, machinery, and production processes to remain competitive. Failure to adapt in a timely manner may result in asset underutilization, rising operating costs, oversupply risks, and diminished market positioning in an increasingly innovation-driven energy landscape.
Impact	The rapid advancement of clean energy technology may generate new solutions that are more efficient, lower-cost, and more sustainable. This may place pressure on the Group to consider adjustments to certain assets, machinery, or equipment within its production processes to support the transition toward technologies aligned with future market demands. If timely adaptation or investment in appropriate technologies cannot be achieved, competitive risks may arise, including the risk of oversupply. This may adversely affect production efficiency, operating costs, and long-term market competitiveness.
Timeframe of Impact	5 - 10 Years
Mitigating actions	● Continuously follow green technology updates: The Risk Management Committee, in collaboration with the Investment function, regularly monitors, analyzes, and assesses developments in clean energy technology to anticipate material changes and plan technology investments or transitions in a timely manner. ● Strategic Partnerships for Innovation Access: Foster collaboration with partner companies, research institutes, and universities to accelerate access to new technologies and innovations, including knowledge and experience exchange to enhance adaptability and reduce long-term obsolescence risk.



Energy Absolute Public Company Limited

89 AIA Capital Center Building, 16th Floor, Ratchadaphisek Road, Dindaeng Sub-District
Dindaeng District, Bangkok 10400

Subject	Description
Emerging Risk	Renewable Energy Supply Chain Disruption Risk
Category	Environment
Risk Level	High
Description	Clean energy production depends on specific scarce raw materials that are susceptible to global supply constraints. Shortages driven by market volatility, surging cross-sector demand, or import restrictions can cause production delays or stoppages, directly reducing output and revenue. Without resilient procurement strategies and diversified supplier relationships, the Group remains exposed to significant supply chain disruptions that could undermine operational continuity.
Impact	Clean energy production relies on certain scarce key raw materials, some of which require repurposing. Shortages or insufficient supply may cause production delays or stoppages, reduce output volumes and directly affect the revenues. This reflects broader supply chain risk, which may be affected by market volatility, increased demand from other industries, or imports and procurement constraints.
Timeframe of Impact	1 - 3 Years
Mitigating actions	● Long-term Procurement Agreements: Partner with key raw material suppliers through long-term procurement agreements to enhance supply security, reduce market volatility exposure, and support production continuity. ● Supplier Diversification: Diversify raw material sourcing across multiple domestic and international suppliers to reduce dependency on any single source and enhance long-term supply chain resilience.