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Gap Analysis between the Regulatory of License and Permission for Renewable Energy Industry Operations: A Case Study of Thailand

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Abstract

To sell electricity either from fossil fuel or renewable sources on the grid in Thailand, permission based on the regulations and regulatory guidance is required. Thailand plans to use renewable sources to produce electricity for 20,766 MW in the next 20 years. As a result, some of the existing regulations and related guidance documents are either not applicable or partially applicable, because it requires too many processes and takes too much time. This study reviewed existing regulations and regulatory guidance of license and permission for renewable energy industry operations in Thailand, and identified gaps that needed to be reconciled between existing regulatory requirements and regulatory guidance. The scope of the prescribed review included licensing procedure and requirements to obtain electricity generation, distribution, and transmission licenses. Other related regulatory guidance was also reviewed. The role of stakeholders, for example, the Energy Regulatory Commission (ERC), Electricity Generating Authority of Thailand (EGAT), Metropolitan Electricity Authority (MEA), Provincial Electricity Authority (PEA), independent power producers (IPPs), and small power producers (SPPs), were also analyzed.

The results found that regulations by the ERC on renewable electricity licensing and trading mechanism were too bureaucratic, causing administrative hurdles. From stakeholders' perspectives, the energy transition path in Thailand has been slow, due to lack of continuity and coordination in policies among government agencies, supportive measures and implementations, financial supports from the central authority or financial institutions; conflicts between local communities and authorities, inadequate facilities and infrastructure, and weak mindsets of energy users on energy conservation.

Keywords: *Renewable energy, Licensing procedure, Gap analysis*

1. Introduction

Energy businesses are important to the social, economic, and environmental structure of the country. It is well known that renewable energy such as electricity, hydropower, wind power, or solar power are the most outstanding alternative solution to the growing challenges (Tiwari & Mishra, 2012). In addition, the global society has become more alert and interested in

environmental issues. Recently, the Conference of Parties (COP26) for the UN Climate Change was held in Glasgow, Scotland to explore the opportunities of world green economy trend and its effects of the global economy (European Commission, 2021). In the future, renewable energy will become more and more important in both developed and developing countries.

There are plans related to the renewable energy in Thailand such as: Power Development Plan (PDP), Energy Efficiency Plan (EEP), and Alternative Energy Development Plan (AEDP) (Chunark et al., 2017). However, since the implementation of the Energy Conservation Promotion Law in 1992 and the foundation of the Ministry of Energy (MOE) in 2002, Thailand's energy transition has been gradual. Thailand's achievements still lag behind the renewable energy and energy efficiency targets set forth in the PDP, EEP, and AEDP, despite the fact that the energy conservation promotion policy, as well as its measures and programs, have been designed and included in various energy plans to coincide with national development plans (Sirasootorn & Koomsup, 2017).

Policymakers for energy policy in Thailand are Ministry of Energy (MOE) and National Energy Policy Council (NEPC), together with the Energy Policy and Planning Office (EPPO), drawing the Thailand Integrated Energy Plan (TIEP) in 2015 (Traivivatana & Wangjiraniran, 2019). The Energy Regulatory Commission (ERC) was established in 2007, to be responsible for issuing regulations on electricity tariffs, licenses for energy industry operation in the Electricity Supply Industry (ESI) and energy network system business; regulations for power procurement, customer service standards and quality; including measures to protect energy consumers from negative impacts resulting from energy industry operation and levies for the Power Development Fund, and provide comments on energy-related plans to the MOE and the NEPC (ERC, 2011).

Regulation serves as a modern and efficient interface between the public interest, consumer interests, those who supply regulated services under monopolistic conditions, and those who use the monopolistic infrastructure (Vasconcelos, 2005). Regulatory gaps were often founded when the regulation was applied. Many previous works investigated the regulatory gaps. (Noble et al., 2021) studied gap analysis and recommendations for standardizing marine renewable energy testing. They indicated that the development progressed from concept to commercialization, including more complex environmental conditions in testing, accurately modeling and quantifying the power generated, including grid integration, as well as modeling and testing of novel moorings and foundation solutions. Regulatory gap analysis on liquefied natural gas for ship fuel was studied by (Cassar et al., 2021), while Stritof & Krajcar (Štritof & Krajcar, 2011) investigated gap analysis between Croatian and quality dependent model on electricity distribution regulation. However, the published research on energy regulation gap is very rare in Thailand.

Thailand intends to employ renewable energy sources to generate 20,766 MW of electricity over the next 20 years. Permission is required to sell power generated from fossil fuels or renewable sources on the grid, depending on legislation and regulatory guidance. Although the legislation and regulations are introduced, it is still founded rather conservative with obsolete grounds. This rationale may prevent the process from accomplishing its ultimate goal of serving the interests of all stakeholders (Štritof & Krajcar, 2011). Several existing regulations and guidance materials are either inapplicable or only partially applicable, because they address too many processes and processing times that are too long. This research examined existing legislation

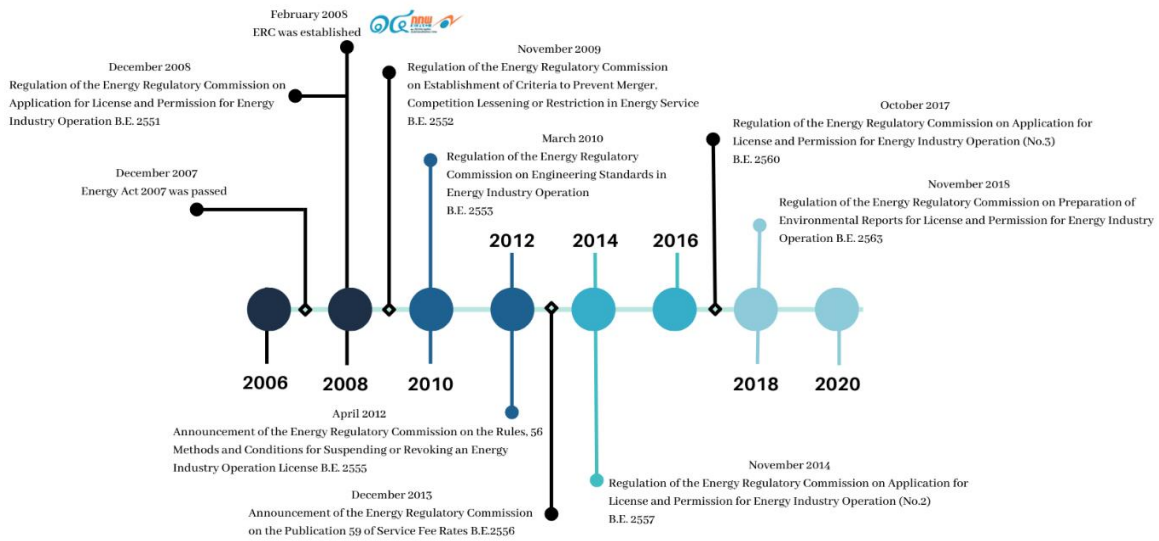
and regulatory guidance for renewable energy industry licenses and permissions in Thailand, with the goal of identifying gaps that need to be bridged between existing regulatory requirements and regulatory guidance.

2. Regulation of license and permission for energy industry operations in Thailand

In 2007, the Energy Industry Act B.E. 2550 was enacted in response to the government policy on National Energy Industry Management Restructuring. The policy-making, regulation, and operational functions of the Energy Industry are hereby distinguished from one another to increase participation of the private sector, communities, and the general public, in order for Energy Industry operations to be efficient, secure, adequate, and widespread, with reasonable prices, quality and standards. This Act is aimed to respond to domestic demand as well as the country's long-term socio-economic and environmental growth.

To regulate the Energy and Gas Industry Operation, the Energy Regulatory Commission has been established on 1st of February 2008 (as Timeline shown in Figure 1). The Commission is in charge of granting licenses in the energy industry, regulating technical standards, safety, and service fees, giving opinions on the Power Development Plan, Energy Industry Investment Plan, Natural Gas Acquisition Plan, and Energy Network System Expansion Plan, and protecting power consumers, as well as issuing subordinate legislation to regulate the energy industry in accordance with the provisions of the law.

The first version of regulation on application of license and permission for energy industry operation was passed in December 2008. In 2014, One Stop Service (OSS) was applied to the license and permission system for convenience, speed, and reliability of entrepreneurs. In later years, the implementation under the Licensing Facilitation Act B.E. 2558 (2015), which was published in the Government Gazette on 22 January 2015, with the goal of being a central law that clearly sets the workflow and timeframe for the granting of licenses, as there had been difficulties in applying for licenses, making it inconvenient for the general public to apply for official permission. As shown in Figure 1, the second and third versions also later published in November 2014, and October 2017, respectively. In the third version, the license application for electric vehicle (EV) charging station establishment was added to the regulation.



Adapted from (ERC, 2010, 2014)

Figure 1 Timeline of regulation for license and permission for energy industry operation in Thailand

3. Methodology

This study was based on qualitative methods, including case analysis, to study the energy policy listing in Thailand. The content analyses on crucial primary documents and secondary documents: NEPC meeting reports, cabinet resolutions on energy policies, NEPC and ERC annual reports, and energy regulations or energy schemes related to ERC decision-making, were reviewed to analyze the transparency of regulatory parameters, defined regulatory goals, and quality regulation. The gap analysis findings were summarized covering legislative, regulatory, and technical aspects, followed by suggestions.

4. Results and Discussion

According to the statistics survey of obtaining license and permission for energy industry operations from renewable energy, the trend of licensees has been increasing. In 2018, the number of licensees was 9,886, which was an increase of 6.7 percent compared to 2017. After that, there was a stable trend between 2018 and 2020. In 2021, the number of licensees increased by 19% compared to 2020, as shown in Figure 2.

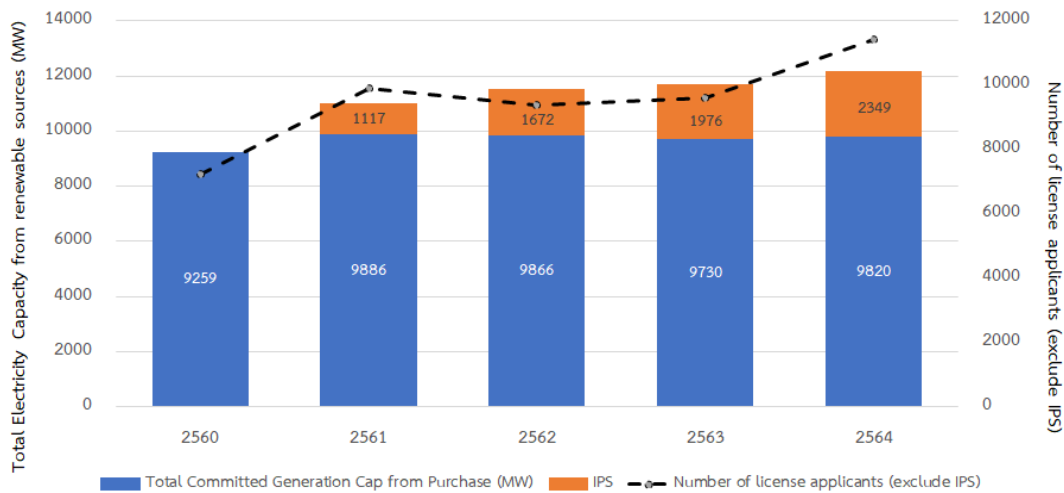


Figure 2 Number of license applicants and electricity capacity from renewable sources in Thailand between B.E.2560-2564

This was because the system on application of license and permission for energy industry operations was developed by ERC. One stop service was used, and other regulations were enacted to enhance the workflow and reduce processing time for the granting of licenses. When determine in each category, we found that Independent Power Supply (IPS) license has surprisingly high growth rate in 2021, with 110% compared to 2018. The license of electricity supply to the grid has steady growth rate between 2561 – 2564.

Table 1 Comparison of electricity capacity from renewable sources with AEDP target

Years	Electricity from renewable sources (MW)	AEDP Target in 2036 (MW)	Remaining capacity to achieve the target AEDP (MW)	Percentage of achievement (%)
2018	11,318	16,778	5,873	67.46%
2019	11,538	16,778	5,240	68.77%
2020	11,706	16,778	5,072	69.77%
2021	12,169	16,778	4,609	72.53%

When considering the Alternative Energy Development Plan (AEDP) Target in 2036, the percentage of achievement to replace fossil fuel with renewable sources has increased continuously, as shown in Table 1. Electricity from renewable sources increased from 11,318 MW in 2018 to 12,169 MW in 2021, or accounted for 7.5%. To achieve the target in the next 15 years, there need to add 4,609 MW from renewable sources. Therefore, the law and regulations still need to be improved to accommodate new renewable energy sources that have never been regulated. Thailand’s achievements still lag the renewable energy targets as stipulated in the PDP and AEDP.

The gap identification of the system on application of license and permission for energy industry operation can be shown in Table 2.

Table 2 Gap identification

Framework	Gap identification
1. Regulations	<ul style="list-style-type: none"> • The ERC's renewable energy licensing and trading mechanism regulation is overly bureaucratic and creates administrative barriers. • Due to lack of coordination among energy institutions, mismanagement and poor implementation and incentives in Thailand, the renewable energy targets are unlikely to be achieved.
2. Policy uncertainty	<ul style="list-style-type: none"> • Due to a lack of consistency in policies, measures, and implementations, lack of financial support from the central authority, weak policy coherence and coordination among government agencies, conflict between local communities and authorities, inadequate facilities and infrastructure, and weak mindsets of energy users on energy conservation, Thailand's energy transition has been slow.
3. Infrastructure	<ul style="list-style-type: none"> • Grid infrastructure constraints in the transmission and distribution networks are a roadblock for renewable energy providers looking to sell power back to the grid.

5. Conclusion

In this study, the gap analysis of the license and permission for renewable energy industry operations in Thailand was investigated. The qualitative methods including case analysis to study the energy policy listing in Thailand were employed. Regulation by the ERC on renewable electricity licensing and the trading mechanism was too bureaucratic, and created administrative hurdles. The growth rate of license applicants and electricity capacity from a renewable source to sell on the grid was unnoticeable compared with IPS. It was concluded that three gaps needed to be fulfilled: (1) Efficient regulation and process of the license application; (2) Provision of financial supports from the central authority or financial institutions; and (3) Minimize infrastructure constraints to increase the electricity on the grid from renewable sources.

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