

# REGULATORY DEVELOPMENTS FOR ENERGY LIBERALIZATION IN THAILAND

**PORNCHAI WISUTTISAK**

Ph.D. in Business Law and Taxation, UNSW, Australia  
 Dean of Faculty of law, Chiang Mai University, Thailand  
 Email: pornchai.w@cmu.ac.th

## Abstract

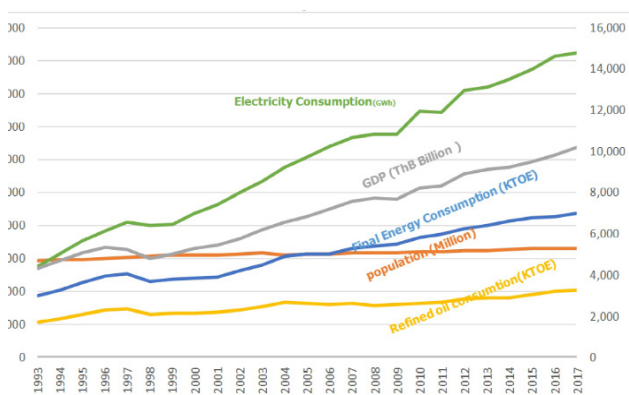
*The paper explores the regulatory developments for energy liberalization in electricity and gas sectors. It displays that government made vital institutional and regulatory reforms to create and implement energy liberalization in Thailand. Nevertheless, the author also points out that there are regulatory issues for implementation of the energy liberalization. The paper proposes some possible plans for regulatory developments with the focus on energy liberalization and competition. It provides an overview of regulatory developments which contribute to liberalization of the Thai energy sectors and describes the regulatory challenges which hinder the process of the energy liberalization. The paper offers suggestions for the regulatory developments in order to ensure the implementation of energy liberalization toward market efficiency and competition.*

**Keywords:** regulatory framework, Thailand, energy

## 1. Regulatory frameworks on Thai energy sector

### 1.1. Overview of Thailand energy sector

The energy sector in Thailand is considered as an important driver for economic development. With a population of around 67 million people, the 2017 energy usage of Thailand is estimated as 14 % of GDP (USD 455.2 billion).<sup>1</sup> The petroleum fuels comprise approximately 80% of Thailand’s total commercial primary energy consumption and more than 60% of total electricity generation.<sup>2</sup> The total electricity usages are around 180,000 GWh (see Graph 1). The energy import to Thailand accounts for 7% of overall GDP.



**Graph 1: Energy Usages, GDP and Population in Thailand.**

Source: EPPO (2018) Energy and Economy in Thailand. EPPO.

Thailand<sup>1</sup> consumed<sup>2</sup> petroleum energy at the average of THB 1,200 Billion (USD 35 Billion) during 2013–2018 (See Table 1).<sup>3</sup> The country also used electricity energy at around THB 650 Billion (USD 19 Billion) during 2013–2018 (See Table 1).<sup>4</sup> The net primary energy imported is around 1,300 thousand barrels of oil equivalent per day.<sup>5</sup> Thailand, while having a significant amount of electricity generation in the country, imports electricity from neighboring countries such as Laos PDR under the ASEAN power grid scheme.<sup>6</sup> The Thai electricity sectors of generation, distribution, transmission and retail are under control of state owned enterprises (SOEs).

The Electricity Generating Authority of Thailand (EGAT) is the sole public enterprise which generates electricity and controls the supply of electricity generation. There are some independent power producers (IPP) and small power producers (SPP) who participate in electricity generation but the IPP and SPP are under the control of EGAT on the enhanced single buyer model (ESB). All electricity must be sold to EGAT for it to resell the electricity to retailers. EGAT also has ownership and control over national transmission systems. The Metropolitan Electricity Authority (MEA) has controls over the distribution, sales and provision of electrical energy services in the Bangkok Metropolis, Nonthaburi and Samut Prakran provinces. The Provincial Electricity Authority (PEA) is the sole distributor and retailer of other provincial areas in Thailand. Thus, the electricity sector is under the SOE oligopoly structure with vertical connection among SOEs. Figure 1 below shows the current market structure of electricity sector in Thailand.

---

<sup>1</sup> EPPO (2018), *Energy and Economy Thailand*, retrieved from [http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders\[publishUp\]=publishUp&issearch=1](http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders[publishUp]=publishUp&issearch=1) [accessed 21 December 2018].

<sup>2</sup> ADB (2016), 'Thailand Energy Sector: Assessment, Strategy, and Roadmap', retrieved from <https://www.adb.org/sites/default/files/linked-documents/cps-tha-2013-2016-ssa-03.pdf> [accessed 21 December 2018].

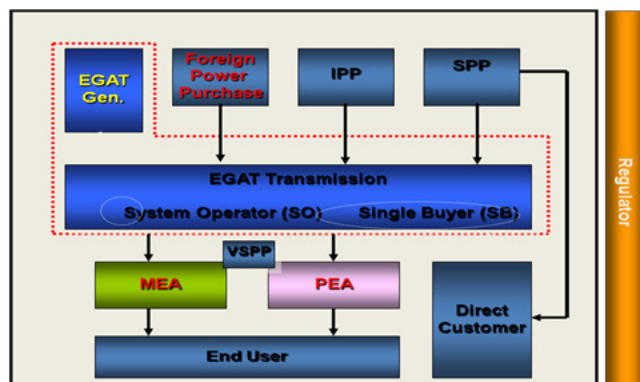
<sup>3</sup> EPPO (2018), 'GDP, Energy, Import and Export of Goods', retrieved from [http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders\[publishUp\]=publishUp&issearch=1](http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders[publishUp]=publishUp&issearch=1) [accessed 21 December 2018].

<sup>4</sup> *Ibid.*

<sup>5</sup> EPPO (2016), 'Thailand Energy Report 2015', retrieved from <http://www.eppo.go.th/index.php/en/energy-information-services/report-2015> [accessed 21 December 2018].

<sup>6</sup> Anton Finenko (2017), Anthony D Owen and Jacqueline Tao, 'Power Interconnection in the ASEAN Region: Lessons Learnt from International Experience', Energy Studies Institute, retrieved from [http://www.kas.de/wf/doc/kas\\_50591-1522-2-30.pdf?171106083353](http://www.kas.de/wf/doc/kas_50591-1522-2-30.pdf?171106083353) [accessed 21 December 2018].

**Figure 1: Thailand Enhanced single buyer model**



Source: IAEA (2017)  
*Thailand-Country  
 Nuclear Power Profiles  
 2017 edition*<sup>7</sup>

In respect of oil and gas sectors, Thailand has some explored reserves of oil and natural gas but the country increasingly imports oil and gas to satisfy surging energy consumption. It causes Thailand to become a net importer in order to sustain its rising fuel demand since 2000.<sup>8</sup> Thailand has two major gas fields of Bongkot and Erawan and the fields are under concession contracts with PTTEP and CHEVRON Thailand E&P respectively.<sup>9</sup> The country also has extensive gas pipeline connection stretching throughout onshore and subsea pipelines. The pipelines connect with the Thai National gas fields and with the pipeline grid from Myanmar (Yadana, Yetagun and Zawtika fields) and Malaysia (Joint JDA).<sup>10</sup> Thailand also imports a significant amount of natural gas in the form of liquefied natural gas (LNG), primarily from Qatar.<sup>11</sup>

Thailand established long-term agreements with Shell and BP to take LNG from their global portfolios starting in 2017 with main gas logistic and business under the PTT Public Company Limited (PTT) which has regasification terminals.<sup>12</sup> PTT is the dominant state enterprise who has significant market shares in the oils and gas sector in Thailand. PTT is a listed company in the stock market, with the Thai government holding the majority of its shares. In general, the energy sectors of electricity, oil and gas are under government regulatory controls in order to maintain the security and sustainability of the Thai economy. The Thai government considers that the energy sectors are essential for economic development and efficiency.

<sup>7</sup> IAEA (2017), *Thailand - Country Nuclear Power Profiles*, 2017 edition, retrieved from <https://www-pub.iaea.org/MTCD/Publications/PDF/cnpp2017/countryprofiles/Thailand/Thailand.htm> [accessed 21 December 2018].

<sup>8</sup> US EIA (2018), 'Thailand Energy', US Energy Information Administration, retrieved from <https://www.eia.gov/beta/international/analysis.php?iso=THA> [accessed 20 February 2018].

<sup>9</sup> Ministry of Energy (2018), *Petroleum Evacuation in Gulf of Thailand*, retrieved from <https://dmf.go.th/public/petroleum/data/index/menu/992> [accessed 21 December 2018].

<sup>10</sup> Khalid Abdul Rahim and Audrey Liwan (2012), 'Oil and gas trends and implications in Malaysia', *Energy Policy*, 262, 50 (2012/11/01).

<sup>11</sup> US EIA, see footnote 9 above.

<sup>12</sup> *Ibid.*

The Thai government always maintains direct supervision over the sectors. The supervision is implemented by the government authoritative orders and issuance of regulation by Minister of Energy, and Energy Regulatory Commission. The discussion on the regulatory frameworks on energy sector will be analyzed below.

**Table 1: GDP, Energy, Import and Export of Goods in Thailand**

Year A.C.	2013	2014	2015	2016	2017	018(Q1-Q)
GDP at Current Prices (Billion Bahts)	12,915.2	13,230.3	13,747.0	14,533.5	15,452.9	12,120.8
GDP CVM at reference year 2002 (Billion Bahts)	9,142.1	9,232.1	9,510.9	9,823.1	10,207.5	7,888.7
Export (Billion Bahts)	6,909.7	7,313.1	7,227.2	7,548.6	8,008.4	6,057.5
Import (Billion Bahts)	7,657.4	7,403.9	6,906.1	6,904.7	7,629.9	6,048.3
Goods and Services	6,239.1	6,004.6	5,994.2	6,140.9	6,665.9	5,137.5
E Energy	1,418.3	1,399.3	911.9	763.9	964.0	910.9
Crude	1,072.2	979.7	594.3	484.8	625.7	610.0
Petroleum Products	139.0	202.3	98.1	102.0	125.5	116.6
Natural Gas	146.7	150.5	151.0	99.6	119.4	106.9
Coal	41.7	47.9	45.3	42.2	49.9	41.3
Electricity	18.5	18.9	23.2	35.3	43.4	36.1
Trade Balance (Billion Bahts)	-747.6	-90.8	321.1	643.8	378.5	9.2
Final Energy Consumption Value (Billion Bahts)	2,222.8	2,279.5	2,073.5	1,948.9	2,079.7	1,688.8
Petroleum	1,326.9	1,336.6	1,136.3	1,069.5	1,199.1	982.6
Electricity	621.3	662.5	662.7	645.5	649.5	506.7
Natural Gas	121.0	124.0	104.0	92.5	101.8	85.0
Coal/Lignite	27.6	33.4	33.6	31.0	37.7	29.6
Renewable Energy	126.0	123.1	136.9	110.3	91.7	85.0
Final Energy Consumption (Ktoe)	79,988.0	82,747.0	84,821.0	85,597.8	87,068.0	66,731.1
Petroleum	36,068.0	36,259.0	38,090.0	39,816.0	40,667.0	30,904.0
Electricity	14,189.0	14,588.0	15,065.0	15,783.0	16,036.0	12,087.0
Natural Gas	8,661.0	8,879.0	8,793.0	8,763.0	8,628.0	6,530.0
Coal/Lignite	7,092.0	8,292.0	8,836.0	8,603.0	9,129.0	7,402.0
Renewable Energy*	13,978.0	14,729.0	14,037.0	12,632.8	12,608.0	9,808.1

Source: EPPO (2018) GDP, Energy, Import and Export of Goods.

### 1.2. Regulatory framework on gas sector

The establishment of the gas sector in Thailand can be traced back to the early 1940s when the government aimed to introduce the use of gas to households because people did not widely accept gas as a source of energy. The junta government under Prime Minister Plak Pibulsonggram set up the state enterprises and supported gas trading throughout Thailand. Later, the government formed the Petroleum Authority of Thailand (the former name of PTT) to be a monopoly SOE in gas sector. During 1950–1990, gas became a main source of energy for households, industries, and power plants. With the economic boom during 1990–1995, gas is one of vital sources to fueling up the economic boom. However, at the same period during 1990–1995, there was a significant wave of policy on privatization and liberalization on SOEs. The Thai government was concerned that it must build up the national policy to reform the gas sector. Thus, in 1998, Thai government established the National Energy Policy Office (NEPO) which had duties as a planning agency for energy liberalization, including oil gas and electricity.

The NEPO proposed plans to privatize SOEs and liberalize the oil and gas sectors to Thai government by requesting the amendment to the Petroleum Authority of Thailand Act.

The plan was also to conduct structural reform of the oil and gas sectors by unbundling of gas transmission and distribution functions under control of PTT. With reference to the plan, the government adopted the Royal Decree Stipulating Time Clause for Repealing the Law Governing PTT, BE 2543 (2010). This royal decree was to remove the government owned status of the PTT. The government also passed the Royal Decree Stipulating Powers, Rights and Benefits of PTT PCL, BE 2543 (2001) which contributed to the privatization via IPO of PTT in Thai stock exchanges. However, the privatisation reform on PTT did not adhere to the NEPO plan, in which the government did not adopt structural separation of the gas sector and establishment of access to essential facilities of gas pipeline. The government only implemented privatisation of PTT via IPO and made the stock floats of the PTT.<sup>13</sup> The adoption of privatisation without restructuring then contributed to the dominant position of PTT in the oil and gas market. Although there are some market participants, the privatised PTT still maintains its dominant position. After privatisation, PTT seems to achieve organisation efficacy after it became more business-oriented. PTT gained significant development on business in both upstream and downstream oil and gas businesses. PTT PLC is thus considered as a national energy champion and became the largest listed company in Thai stock exchanges.

PTT, as a listed company under the State control, is the dominant entity which controls the gas sector in Thailand. With the tight controls on gas import and transportation, PTT is a dominant firm that can control gas trading from upstream (gas exploration and supply) toward downstream (gas retail to households and industries). Currently, there are two laws considered as the main regulations supervising the gas sector-The Petroleum Act 1971 (Amended 2007) and the Petroleum Income Tax Act 1971 (Amended 1989). The Petroleum Act 1971 (Amended 2007) obligates the contract and fiscal terms for oil and natural gas concessions to allow Thailand's government to retain greater production revenues.<sup>14</sup> The Petroleum Act 1971 (Amended 2007) establishes the Petroleum Committee which has significant power to decide concessions of any petroleum explorations and businesses.<sup>15</sup> The Petroleum Committee also has power to provide advice to Ministers with regard to the petroleum businesses.<sup>16</sup> The Petroleum Act 1971 (Amended

<sup>13</sup> Pornchai Wisuttisak (2012), 'Liberalization of the Thai energy sector: a consideration of competition law and sectoral regulation', *The Journal of World Energy Law & Business* 60,(5)(1) (March 1, 2012).

<sup>14</sup> US EIA, see footnote 9 above.

<sup>15</sup> *The Petroleum Act* (1971) (Amended 2007) section 16

<sup>16</sup> *The Petroleum Act* (1971) (Amended 2007) section 16

2007) set up concession to oil and gas enterprises to pay back into production of oil and gas in the sliding scales system which is 5–15% in each petroleum exploration field.<sup>17</sup> In addition, the Petroleum Income Tax Act 1971 (Amended 1989) sets up taxation of the petroleum production and business in Thailand. There are 2 vital changes to the Petroleum Income Tax Act (in the years B.E. 2522 (1979) and 2532 (1989)) creating three different tax ratios. Each petroleum concessionaire classified covered under one or more of the three ratios. The ratios are according to the Table 2 below.

**Table 2: Tax ratio of three petroleum status of concessionaires**

Tax Ratio of three petroleum status of concessionaires	
Act 1971 (status 1)	Only annual return. No need for half year return. Interest not allowed as expense. Royalty allowed as tax credit. No levy of special remuneratory benefit tax. High tax rate of 50%
Act 1979 (status 2)	Only annual return. No need for half year return. Interest allowed as expense but a high withholding tax of 50% on interest paid is levied. Royalty allowed as expense. No levy of special remuneratory benefit tax. Low tax rate of 35% High profit remittance tax of 23.08%
Act 1989 (status 3)	Annual and half yearly returns required. Interest not allowed as expense. Royalty allowed as expense. Additional levy of special remuneratory benefit tax. High tax rate of 50%

Sources: *Thai Revenue Department, 2018, Petroleum Income Tax*<sup>18</sup>

Thus, all the corporates in the petroleum business must be subjected to the tax ratio and the regulation under the Petroleum Act 1971 (Amended 2007) and the Petroleum Income Tax Act 1971 (Amended 1989). The current situation of the gas sector is that PTT is the only main importer of the gas by utilising gas pipelines throughout Thailand. Nevertheless, the government by the National Energy Policy Committee in 31 July 2017 announced that it will allow EGAT to be prepared to become a new LNG provider with the objective of creating full liberalization of the natural gas business in the future.<sup>19</sup> The change of the gas import sector is due to the establishment of codes for the third party access (TPA) which allow other companies to be able to access the gas pipelines which are usually under PTT's control. It is also noted that the EGAT is the dominant buyer of gas from PTT for EGAT's electricity production. With the permission to open market of gas importation, the PTT and EGAT will then be two main competitors in gas sectors. The recent news on government policy in November 2018 presented that Thai government

<sup>17</sup> *The Petroleum Act* (1971) (Amended 2007) sections 82-100

<sup>18</sup> Thai Revenue Department (2018), *Petroleum Income Tax*, retrieved from <http://www.rd.go.th/publish/38686.0.html> [accessed 20 February 2019].

<sup>19</sup> Thai PRD (2017), 'Liberalization of the Natural Gas Business and Energy Situation', Thai Government Public Relation Department, retrieved from [http://thailand.prd.go.th/ewt\\_news.php?nid=5609&filename=index](http://thailand.prd.go.th/ewt_news.php?nid=5609&filename=index) [accessed 21 December 2018].

will soon liberalise. The Energy Commissioner is in preparation to advice cabinet to liberalise gas sector by providing more licenses for gas operators, issuing new market –oriented rules, opening the gas stations and pipelines to new entrants, and creating a calculated prices for the gas storages and transport through pipelines.<sup>20</sup> The preparation and announcement will be an important step for facilitating market opening and competition in gas sectors.

### **1.3. Regulatory frameworks on electricity sector**

During the early period of electricity in Thailand, there was no government policy as to ensure the establishment of sustainability of electricity. The electricity sector was dispersed from government central control to more than 200 separate small cooperative, municipal or privately owned electricity utilities.<sup>21</sup> Later in 1954, Thai government passed the Provincial Electricity Authority Act, B.E. 2503 (1960) which set up the State enterprise named as Provincial Electricity Authority of Thailand. The Provincial Electricity Authority Act authorizes PEA to trade electricity in all provincial areas.<sup>22</sup> The Provincial Electricity Authority Act also permits PAE to produce, distribute, and trade electricity with neighboring countries.<sup>23</sup> PAE also has the right to expropriate the people's land asset and property in order to operate its electricity businesses. In 1968, government passed the Electricity Generating Authority of Thailand Act, B.E. 2511 (1968) which establishes EGAT to be a monopoly of electricity generation and transmission.<sup>24</sup> By the Electricity Generating Authority of Thailand Act, EGAT, then, became an important State enterprise that dominated the generation and transmission of electricity for entire nation. MEA, PEA and EGAT are thus by laws monopolies in their respective section of the electricity sector. The MEA is a monopoly over trading of electricity in Bangkok Metropolitan Area. The PEA is a monopoly over trading of electricity in all other provincial areas. The EGAT is the monopoly of all upstream electricity- generation and transmission. With the impact from the policy on privatisation and liberalisation, Thai government initiated the plan to reform the electricity sector under SOEs by permitting private participants with the introduction of SPPs and IPPs during 1980–1998.

The government by the NEPO later adopted the privatisation plan on SOEs in electricity sector in 1999. The privatisation contained step plan of privatisation and liberalisation on electricity sector toward competition. The plan was to create entity separation in the electricity generation, transmission,

<sup>20</sup> Energy News Center (2018), 'ERC plan to liberalise gas market', Energy News Center, 15 November 2018, retrieved from <http://www.energynewscenter.com/กทพ-วางเกณฑ์รับเปิดเสรี/> [accessed 20 February 2019]

<sup>21</sup> Supannika Wattana, Deepak Sharma and Ronnakorn Vaiyavuth (2008), 'Electricity Industry Reforms in Thailand: A Historical Review', 2 *GMSARN international journal*, p. 42.

<sup>22</sup> *Provincial Electricity Authority Act B.E. 2503 (1960) (PAE Act) s 6*

<sup>23</sup> *Provincial Electricity Authority Act B.E. 2503 (1960) (PAE Act) s 6 and 8*

<sup>24</sup> *Electricity Generating Authority of Thailand Act B.E. 2511 (1968) s 6*

distribution and retails in order to ensure that vertical connection would not affect the liberalisation process in the sector. Nevertheless, the Thai government revised the plan to implement the privatisation of the Electricity Authority of Thailand (EGAT) by passing two decrees: (1) Royal Decree stipulating powers, rights and benefits of EGAT Pcl, B.E. 2548 (2005) and (2) Royal Decree stipulating time clause for repealing the law governing EGAT, B.E. 2548 (2005). The decrees then led to the IPO of EGAT in the Thai Stock Exchanges. The two decrees are important regulatory frameworks for reform on the SOEs, but there was concern that the decrees adopted the “Enhanced Single Buyer” that would confer monopoly power of electricity purchasing in Thailand to privatised EGAT. Nevertheless some activists challenge the two decrees in the Thai administrative court with the argument that the decrees were unconstitutional and could create private monopoly in electricity sector without regulatory governance. The administrative court decided that the decrees were unconstitutional and the privatisation plan be stopped. The court contended that the liberalisation of electricity should be implemented under the establishment of an energy regulatory commission.

Later in 2008, the Thai government passed the Energy Industry Act, B.E. 2550 (2007). The Energy Industry Act was purported to reframe regulatory controls by distinctly separating the functions of policy-making, regulation and operation from Ministry of Energy and SOEs. By the Energy Industry Act, the Energy Regulatory Commission (ERC) was established in 2008. However, with the privatisation and liberalisation plans still in suspension since the establishment of ERC. The current market structures of Thai electricity sector are thus still under the regulatory frameworks which permit oligopoly structure under SOEs. The SOEs are vertically connected and control generation, transmission, and distribution and retail sections with no market competition. The regulatory framework permits that EGAT, MEA and PEA together manage the enhanced single buyer system shown in Figure 1 above. While there are some electricity supplies from IPP, SPP, and Very Small Power Producers (VSPP), by laws all electricity trading must be traded with SOEs—MEA, PEA, and EGAT. The government tends to have a tight control by way of regulatory frameworks and authoritative orders to the SOEs. The electricity prices are also under regulated schemes by the calculation of fuel tariff (Ft) plus other expenses.<sup>25</sup> The prices are set by the committees come from various parties including, Ministry of Energy, ERC, PEA, MEA and EGAT.

The recent policy development on energy sector is that the National Energy Committee, on 24 January 2019, announced after its meeting that

<sup>25</sup> ERC (2018), ‘Electricity Price Calculation in Thailand’, retrieved from [https://www.erc.or.th/ERCWeb2/Front/StaticPage/StaticPage.aspx?p=276&Tag= สาระน่ารู้เกี่ยวกับค่าไฟฟ้า&muid=23&prid=114](https://www.erc.or.th/ERCWeb2/Front/StaticPage/StaticPage.aspx?p=276&Tag=สาระน่ารู้เกี่ยวกับค่าไฟฟ้า&muid=23&prid=114) [accessed 20 February 2019]



the National Power Development Plan 2018 will be revised as to ensure that the electricity sector is under liberalisation approach by reducing shares of EGAT's electricity generation from 35% to 24% during the period 2018-2047.<sup>26</sup> The plan will reduce EGAT's dominant position in power generation by opening sector to more private investors especially the renewable energy from solar and wind energy.<sup>27</sup> Furthermore the modernisation of grid connection will be implemented by increase efficiency of management and trading system of electricity grid by EGAT. Thus, the regulatory frameworks on electricity sector is on the process of reform in order to facilitate the electricity liberalisation and competition.

## **2. Regulatory challenges and energy liberalization**

This part of paper will discuss the challenges on the regulatory frameworks and energy liberalization in Thailand. The challenges are: 1) the regulatory intervention approach, 2) the regulatory supervision without equal information, 3) regulatory framework with the political economy of SOEs, and 4) regulatory framework with changing innovation.

### **2.1. The regulatory intervention approach**

Energy regulation in Thailand both in electricity and gas sector tends to be under intervention approach where the government must have a close supervision. It is accepted that the regulation intervention can ensure the energy security and certainty but intervention also affect the efficiency and innovation of the sector. The government maintains the regulations that permit the monopoly position of the SOEs in the energy sector. By the regulation, the energy certainty has been established and the regulation becomes the main mechanism for Thai government to manage the energy sectors. However, the regulation can affect the aim to create energy liberalization and energy competition in the long term. The energy regulation although has been transformed by the waves of liberalization policy but the regulation still does not fully support liberalization and market competition. The example is on the case of electricity regulation. The electricity regulation was changed to permit new market entrants as power producers but the regulation still maintains that the electricity sector must be under SOEs' control under enhanced single buyer with the oligopoly structure of SOEs. Apart from the SOEs' control, the government still maintains their regulatory control on the electricity prices which may serve best for the return on investment for SOEs. It is accepted that the electricity prices in Thailand may not be very

<sup>26</sup> Energy News Center (2019), 'National Energy Policy Committee agreed on new PDP with EGAT reduction of market shares', retrieved from <http://www.energynewscenter.com/กพรเห็นชอบpdpฉบับใหม่-ลด/> [accessed 20 February 2019].

<sup>27</sup> *Ibid.*

high comparing to other countries in ASEAN countries.<sup>28</sup> However, the regulatory intervention on the prices will normally guarantee the return on investment of SOEs' sunk cost plus the profit of business operations.<sup>29</sup>

There is a similar situation in the gas sector. While the regulation has been changed by the repealing of the law permitting monopoly position of PTT, but the regulation still permits the dominant position of the PTT. PTT, as the dominant gas importer and trader is able to rely on regulation that intervenes with gas prices for their profits. The Thai government continues regulating prices of the gas in order to maintain the certainty of gas markets and make sure that the PTT can earn sufficient return for their investment plus additional profits. Also, there is no open access to gas pipelines for transportation of gas import or gas explored in Thailand. With the preservation of the regulatory intervention which does not open the gas pipelines, there is less room for the creation of liberalization and competition in the gas market. The paper notes that the regulatory intervention is vital to manage the energy security and certainty. However, the balance of regulatory intervention which opens rooms for liberalization and competition for energy efficiency should be a preferred policy for Thai government.

## ***2.2. Regulator with asymmetric information***

The ERC is the main regulatory agency supervising energy sectors. It was established for the important task to oversee energy sectors toward market efficiency and competition. The ERC can issue a regulation and approve energy licenses for energy enterprises. It also has support offices to work on energy supervision. However, the ERC may have less information on complex electricity businesses. Monopoly SOEs as the energy operators have more information when compared to the ERC. This leads to asymmetric electricity information and it can result in the situation where the ERC is not able to govern the SOEs. The ERC has been established for almost 10 years; however it does not have direct access to electricity information from the SOEs -EGAT, PEA and MEA. The ERC has an authoritative power to order the SOEs to submit all electricity information such as electricity load, costs of power plants operation, transmission costs, and grid management costs. However, in practice the ERC cannot easily order the SOEs, which are considered as state agencies, to submit all the required information to

<sup>28</sup> Eppo News Center (2015), 'Energy Ministry: Electricity Tariffs in Indonesia Most Stable in Southeast Asia', retrieved from <https://energy.go.th/2015/energy-ministry-electricity-tariffs-in-indonesia-most-stable-in-southeast-asia/> [accessed 21 December 2018]; Emiri Yokota and Ichiro Kutani (2018), 'Comparative Analysis of Power Prices in the Philippines and Selected ASEAN Countries', ERIA, retrieved from <http://www.eria.org/research/comparative-analysis-of-power-prices-in-the-philippines-and-selected-asean-countries/> [accessed 20 February 2019].

<sup>29</sup> See the Ft calculation for electricity price at MEA, Calculation of Electricity Ft at [https://www.mea.or.th/upload/download/file\\_d08ca0f19da6e000bfddbf1d0761698.pdf](https://www.mea.or.th/upload/download/file_d08ca0f19da6e000bfddbf1d0761698.pdf).

ERC. The SOEs tend to ask the reason why the ERC would like to have their electricity information and the result is that the ERC is persuaded not to ask for the information. The situation of asymmetric information also occurs in the oil and gas sector where the PTT has the upper hand of inside information and it is difficult for energy regulator to access the information. The lack of access or the difficulty to receive the information from SOEs in the energy sector thus amounts to a difficulty for ERC to perform its regulatory role in governing the electricity markets.

In addition, the complexity of asymmetric information is that there are many state agencies who have or ought to have information for governing the energy sector. The Energy Policy and Planning Office (EPPO) also has the information to manage and recommend national energy policies and plans to the Ministry of Energy and the Cabinet.<sup>30</sup> The National Committee on Energy Policy also has a set of information for setting up energy policy.<sup>31</sup> The energy information is dispersed and all agencies may not be on the same page in respect of energy information. With the lack of shared information and under asymmetric information among energy agencies and the SOEs, it can constitute to regulatory difficulty in energy sector.

### **2.3. Regulation and political economy of SOEs**

While the Energy Industry Act 2007 sets out mandates to the ERC to reform and to build up energy liberalization in Thailand, the Energy Industry Act 2007 also supports the dominant roles of SOEs in the energy sector. Section 7 of the Energy Industry Act 2007 stipulates the objectives which aim to:

- “(1) promote adequate and secure energy service provision, while maintaining fairness for energy consumers and licensees;*
- (2) protect energy consumers’ benefits in terms of both tariffs and service quality;*
- (3) promote competition in the energy industry and prevent abusive use of dominance in the energy industry operation;*
- (4) promote fairness and transparency of the service provision of the energy network systems, without unjust discrimination;*
- (5) promote the efficient energy industry operation and ensure fairness for licensees and energy consumers;*
- (6) protect the rights and liberty of the energy consumers, local communities, general public and licensees in terms of participation, accessibility, utilization and management of energy under rules that are fair for all parties;*

<sup>30</sup> EPPO (2018), *EPPO Company Profile*, retrieved from <http://www.eppo.go.th/index.php/en/about-us/company-profile> [accessed 20 February 2019].

<sup>31</sup> EPPO (2018), *Composition and Power of National Committee on Energy*, retrieved from <http://www.eppo.go.th/index.php/th/committees-subcommittees/committees> [accessed 20 February 2019].

(7) promote economical and efficient use of energy and resources in the energy industry operation, with due consideration of the environmental impact and equality of the natural resources; and

(8) promote the use of renewable energy that has less adverse impact on the environment in the electricity industry operation.”

The overall objectives are to promote efficiency, competition and adequate energy supply. However, Section 8(5) of the Energy Industry Act 2007 states that the Thai government must;

*“Promote electricity industry for fundamental public utilities, preservation of security and reliability of power system, with the state being responsible for power network system operation, power system operator, hydropower plant, which the Electricity Generating Authority of Thailand is the power transmission operator, the Metropolitan Electricity Authority and the Provincial Electricity Authority are the power distribution system operators and maintenance of appropriate proportion of power generation capacity of state electricity business.”*

From the above, Section 7 may conflict with Section 8(5) in the sense that, whereas the Energy Industry Act 2007 aims to promote efficiency and competition in energy, it also requires the persistence of dominant position of SOEs in the energy sectors. These conflicting sections are the legacy of the bargaining political power of the SOEs to maintain their market status in the energy sectors. When the ERC has to deal with SOEs, in applying the Energy Industry Act 2007 to regulate the energy sector, it would have to be in the limbo decision in supporting competition and promoting SOEs in the energy sectors. In addition, with regard to the political influence, the SOEs are considered as political institutions which have higher political bargaining power. This is because the SOEs as the state agencies have maintained their influential connection among state agencies longer than the ERC. This is why the SOEs in electricity such as PEA, and MEA are still under the control of Ministry of Interior rather than being transferred to Ministry of Energy. The reasons of not transferring the SOEs to the Ministry of Energy is the energy profits from the SOEs. Thus, the regulatory frameworks are under the political economy of SOEs, Ministries and Energy regulator.

#### **2.4. Regulation and energy innovation**

With the rapid transformation of energy technology, the regulatory frameworks of energy sector may face with a challenging point. EGAT as a dominant SOE in electricity generation by owing many coal and gas power plants<sup>32</sup> may not happily accept the rapid technology changes of energy generation by renewable energy such as the solar or wind energy. What can

<sup>32</sup> EGAT (2015), *EGAT Operation in 2015 and Direction in 2016, 2017*, retrieved from [https://www.egat.co.th/en/index.php?option=com\\_content&view=article&id=303&Itemid=146](https://www.egat.co.th/en/index.php?option=com_content&view=article&id=303&Itemid=146) [accessed 21 December 2018].

be seen is that the Thai government has to maintain regulation sustaining the dominant position of EGAT due to the consideration on the sunk costs of EGAT's power plants.<sup>33</sup> The sunk costs require Thai government not to reform regulation and to accept liberalization of market by energy innovation. In another words, the regulation will be a significant barrier for use and development on the energy innovation.<sup>34</sup> Similarly in the oil and gas sectors, the regulation concerning with the sunk costs can become a regulatory barrier for new innovation energy innovation. The PTT, as an SOE can maintain its dominant power over oil and gas with the high amount of government investment in oil and gas business operation. The regulation tends to be in favor for PTT investment and business operation. Therefore, when considering the restraint on government's sunk costs with high profit, it will be difficult for the government to rapidly reform the regulation on oil and gas sectors in order to open room for new energy innovation and competition. The example of innovation is the electricity car which creates less impact on the environment when compared to gas-fuel car. The Thai government will not be in an easy position to swiftly transform regulation as to accept the electricity car. It is because the PTT still utilizes argument of sunk costs with a high return of profit with the Thai government.

### **3. Regulatory developments for liberalization toward market efficiency and competition**

From the overview of the regulatory framework on energy sector and the changes over the energy regulation, the paper in this part provides some recommendations in order to address those regulatory challenges of energy sectors. The recommendations are: 1) the implementation of liberalization with consideration on competition, 2) the assurance of regulatory capacity with harmonized energy information, and 3) the differentiation between national interest and SOEs' interest.

#### ***The implementation of liberalization with consideration on competition***

The paper recommends that there should be reestablishment of market reform for liberalization and competition in energy sector. As mentioned in the second part of the paper, regulations on energy were reformed by the aims toward energy liberalization but the reform was deviated to be only privatization with less consideration on liberalization and competition. Thus, the government should reevaluate its work on the regulatory reforms and should brush up its real objectives to make the energy sector under liberalization and competition instead of maintaining dominant position of

<sup>33</sup> Pornchai Wisuttisak (2018), 'Regulation, Competition and Disruptive Innovation: Cases on Thai energy and transport sectors', *CUTS-CIRC Vth Biennial Conference on Competition, Regulation & Development Jaipur*.

<sup>34</sup> *Ibid.*

SOEs. While it seems difficult for the government to reform the regulation, the reform still possible when considering the benefit of reform on economic developments. The recent announcement from the National Committee on Energy Policy on the Power Development Plan (PDP) 2018-2047 directs the possible reform on energy sector by requiring the SOEs' capacity on electricity generation. The plan then paves a way to reduce the role of SOEs and raises the private participations in energy sector. The announcement also shows a bright sign for regulatory reform which helps facilitate liberalization and competition in the market. The only concern is that the implementation of the reform may face with political influence of the SOEs and the implementation of the policy may not easily achieve the target of energy liberalization and competition.

***The assurance of regulatory capacity with harmonized energy information***

The paper suggests that sharing of energy information must be established as to craft effective regulatory governance. The ERC should be a cohort agency for keeping and updating all energy information and the SOEs must submit the updated energy information to the ERC. By this approach of information sharing, the ERC would have information and databases of energy in order to make an analysis for building its regulatory capacity to ensure effective energy governance. The sharing of information can balance the regulatory asymmetry in energy sector and create transparency in this sector. The sharing of information would create pro-transparency initiatives undertaken by energy participants. Moreover, a real effort must be focused on coordinating information for the transparency among interdependencies SOEs, ERC and Ministry of Energy.<sup>35</sup> The sharing of information not only leads to transparency but it can lead to a common understanding among stake holders in energy sectors. This common understanding then can contribute to free and fair market liberalization and competition in the long term. The example of how to establish information sharing for ERC in Thailand can be seen from the “*EU Guidelines of Good Practice on Information Management and Transparency in Electricity Markets*”. The guideline stipulates that all important information of electricity must be shared and open for access. The guidelines obligate that all agencies share information of system load (load per control area), transmission and access to interconnections, generation, balancing of electricity and wholesale markets.<sup>36</sup> Thus, in Thailand, the guidelines of the sharing of energy information should be established and give the ERC

<sup>35</sup> See the example of study on benefit of information sharing in energy sector from Emanuela Michetti (2011), *Transparency in the European Wholesale Energy Markets: Filling the Regulatory Gaps*, 3 Policy Brief- Florence School of Regulation.

<sup>36</sup> Council of European Energy Regulators (2006), *Guidelines of Good Practice on Information Management and Transparency in Electricity Markets*, retrieved from <https://www.ceer.eu/documents/104400/-/-/f587e759-76f7-728a-685c-84b11f4db312> [accessed 21 December 2018].

opportunity to use the information for its role of regulator. The sharing of the information would also strengthen the roles of ERC as the main energy regulator in Thailand.

### *The differentiation between national interest and SOEs' interest*

It is important to create regulatory development for energy sector in Thailand by focusing on the differentiation between the national interest on energy sectors and SOEs' interest in the energy sectors. In other words, the paper suggests that there must be regulatory reform having objectives to create efficacy of the national energy sectors by not maintaining the SOEs' interests in the energy sectors. The Thai government in the past 20 years seems to focus its main policy on maintaining the SOEs' interest and show that the SOEs' interests can benefit the national energy interests. However, in practice, the maintenance of SOEs' interests in the energy sectors allows the SOEs' rent seeking behaviors behind regulatory barriers. The barrier contributes to energy inefficacy because there is no market competition. Thus, the paper emphasizes that the regulatory reform on the energy sector must focus on national energy interest by building up energy liberalization and competition.

## **4. Conclusion**

The paper presents the overview of the energy sector and the development of regulatory frameworks in the energy sectors in Thailand. The energy sectors of electricity and gas are increasingly important to economic development of Thailand. The energy sectors in Thailand are mainly under regulatory intervention where government still maintain its role of control over the energy sectors by regulation and by employing SOEs. There were also regulatory reforms in order to implement privatization but the reforms failed to achieve energy liberalization and competition. The SOEs still play as dominant market controllers under government support via the regulatory barriers. In addition, the paper shows that there are issues of asymmetry of energy information among agencies and it can contribute to futile energy governance. The political influence of the SOEs in the energy sectors can affect the works of energy regulator and can lead to market barrier hindering the use of energy innovation in Thailand.

The paper suggests that there must be a reform on regulatory frameworks in order to ensure the creation of liberalisation and competition in Thai energy sectors. The sharing of information can facilitate the energy transparency with the result to enhance the ERC's regulatory capacity. Under the development of the reform, there must be support for liberalisation and competition, not the support for the SOEs' interests. However, there are needs for further research for deeper understanding on how to make sure that the regulatory reform keeps its focus on liberalisation and competition in Thai energy sector. ●

## Reference

- [1] ADB (2016), 'Thailand Energy Sector: Assessment, Strategy, and Roadmap', retrieved from <https://www.adb.org/sites/default/files/linked-documents/cps-tha-2013-2016-ssa-03.pdf> [accessed 21 December 2018]
- [2] Energy News Center (2018), 'ERC plan to liberalise gas market', Energy News Center, 15 November 2018, retrieved from <http://www.energynewscenter.com/กพท-วางแผนก๊าซเปิดเสรี/> [accessed 20 February 2019]
- [3] Energy News Center (2019), 'National Energy Policy Committee agreed on new PDP with EGAT reduction of market shares', retrieved from <http://www.energynewscenter.com/กพท-เห็นชอบพจนานุกรมใหม่-สกัด/> [accessed 20 February 2019]
- [4] Eppo (2018), *Composition and Power of National Committee on Energy*, retrieved from <http://www.eppo.go.th/index.php/th/committees-subcommittees/committees> [accessed 20 February 2019]
- [5] Eppo (2018), *Energy and Economy Thailand*, retrieved from [http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders\[publishUp\]=publishUp&isearch=1](http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders[publishUp]=publishUp&isearch=1) [accessed 21 December 2018]
- [6] Eppo (2018), *Eppo Company Profile*, retrieved from <http://www.eppo.go.th/index.php/en/about-us/company-profile> [accessed 20 February 2019]
- [7] Eppo (2018), 'GDP, Energy, Import and Export of Goods', retrieved from [http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders\[publishUp\]=publishUp&isearch=1](http://www.eppo.go.th/index.php/en/en-energystatistics/energy-economy-static?orders[publishUp]=publishUp&isearch=1) [accessed 21 December 2018]
- [8] Eppo, (2016) 'Thailand Energy Report 2015', retrieved from <http://www.eppo.go.th/index.php/en/energy-information-services/report-2015> [accessed 21 December 2018]
- [9] Eppo News Center (2015), 'Energy Ministry: Electricity Tariffs in Indonesia Most Stable in Southeast Asia', retrieved from <https://energy.go.th/2015/energy-ministry-electricity-tariffs-in-indonesia-most-stable-in-southeast-asia/> [accessed 21 December 2018]
- [10] ERC (2018), 'Electricity Price Calculation in Thailand', retrieved from <https://www.erc.or.th/ERCWeb2/Front/StaticPage/StaticPage.aspx?p=276&Tag=สาระน่ารู้เกี่ยวกับค่าไฟฟ้า&muid=23&pid=114> [accessed 20 February 2019]
- [11] Anton Finenko (2017), Anthony D Owen and Jacqueline Tao, 'Power Interconnection in the ASEAN Region: Lessons Learnt from International Experience', Energy Studies Institute, retrieved from [http://www.kas.de/wf/doc/kas\\_50591-1522-2-30.pdf?171106083353](http://www.kas.de/wf/doc/kas_50591-1522-2-30.pdf?171106083353) [accessed 21 December 2018]
- [12] MEA, *Calculation of Electricity Ft*, retrieved from [https://www.mea.or.th/upload/download/file\\_d08ca0f19da6e000bfd0761698.pdf](https://www.mea.or.th/upload/download/file_d08ca0f19da6e000bfd0761698.pdf)
- [13] Michetti, Emanuela (2011), *Transparency in the European Wholesale Energy Markets: Filling the Regulatory Gaps*, 3 Policy Brief- Florence School of Regulation
- [14] Ministry of Energy (2018), *Petroleum Evacuation in Gulf of Thailand*, retrieved from <https://dmf.go.th/public/petroleum/data/index/menu/992> [accessed 21 December 2018]. [18] Rahim, Khalid Abdul and Audrey Liwan (2012), 'Oil and gas trends and implications in Malaysia', *Energy Policy*, 262, 50 (2012/11/01)
- [15] Thai PRD (2017), 'Liberalization of the Natural Gas Business and Energy Situation', Thai Government Public Relation Department, retrieved from [http://thailand.prd.go.th/ewt\\_news.php?nid=5609&filename=index](http://thailand.prd.go.th/ewt_news.php?nid=5609&filename=index) [accessed 21 December 2018]
- [16] US EIA (2018), 'Thailand Energy', US Energy Information Administration, 2018, retrieved from <https://www.eia.gov/beta/international/analysis.php?iso=THA> [accessed 20 February 2019]
- [17] Pornchai Wisuttisak (2012), 'Liberalization of the Thai energy sector: a consideration of competition law and sectoral regulation', *The Journal of World Energy Law & Business* 60,(5(1) (March 1, 2012))
- [18] Pornchai Wisuttisak (2018), 'Regulation, Competition and Disruptive Innovation: Cases on Thai energy and transport sectors', *CUTS-CIRC Vth Biennial Conference on Competition, Regulation & Development Jaipur*
- [19] Emiri Yokota and Ichiro Kutani (2018), 'Comparative Analysis of Power Prices in the Philippines and Selected ASEAN Countries', ERIA, retrieved from <http://www.eria.org/research/comparative-analysis-of-power-prices-in-the-philippines-and-selected-asean-countries/> [accessed 20 February 2019]