Chapter 6

ENERGY AND NATURAL RESOURCES

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Thailand has developed legal regimes relating to electricity generation, upstream petroleum operations, and mining. Governmental oversight in the energy sector is primarily administered through the Ministry of Energy (the "**MOE**"), with various departments operating thereunder. The primary regulator of mining activities in Thailand is the Department of Primary Industries and Mines (the "**DPIM**"), Ministry of Industry (the "**MOI**").

This chapter will provide an overview of the legal regimes affecting independent power producers (including small and very small power producers), as well as private investors in the oil & gas, and mining sectors.

(1) Government Oversight

The regulator that has the most significant authority over the operations of independent power producers is the Energy Regulatory Commission (the "**ERC**"). As for oil & gas producers, the Department of Mineral Fuels (the "**DMF**") is the primary regulator of sector-specific rules. There are various other departments and government agencies that have an influence on energy policies in Thailand, including the Department of Energy Business (the "**DOEB**"), the Department of Alternative Energy Development and Efficiency (the "**DEDE**"), the National Energy Policy Council (the "**NEPC**"), and the Energy Policy and Planning Office (the "**EPPO**").

Mining businesses in Thailand fall under the regulation and supervision of the MOI and the DPIM.

The responsibility for establishing policies and plans for the conservation and management of Thailand's natural resources rests with the Office of Natural Resources and Environmental Policy and Planning (the "**ONEP**"), under the Ministry of Natural Resources and Environment. Its regulations apply across several sectors, including electricity generation, mining, and upstream petroleum production. To that end, the ONEP sets regulations relating to projects that require environmental impact assessments and other mandatory permissions for large-scale energy projects.

(2) Electricity Generation

Electricity generation, transmission, and distribution is dominated by three state-owned utilities: (i) the Electricity Generating Authority of Thailand (the "**EGAT**"); (ii) the Metropolitan Electricity Authority (the "**MEA**"); and (iii) the Provincial Electricity Authority (the "**PEA**"). As its name suggests, the EGAT is responsible for generating electricity at power plants that it owns and operates. In addition, EGAT currently maintains a monopoly on electricity transmission in Thailand and purchases bulk electricity from private power producers, and neighboring countries. EGAT is empowered to sell electricity primarily on a wholesale basis to the MEA and PEA. The MEA is responsible for electricity distribution to end users within Bangkok metropolitan areas, whereas the PEA handles this responsibility for the rest of the country.

Independent power producers ("**IPPs**"), defined as power producers where the capacity of generation exceeds 90 megawatts ("**MW**"), sell electricity directly to EGAT. In addition, there are numerous small power producers ("**SPPs**"), defined as those whose generating capacity is greater than 10 MW but equal to or less than 90 MW, which sell directly to EGAT. Very small power producers ("**VSPPs**"), those whose generating capacity is equal to or less than 10 MW, sell electricity directly to the PEA and MEA.

As of March 2022, approximately 57% of Thailand's electricity was being generated from natural gas, followed by lignite and coal combining for 14.5%, renewables at 9%, hydroelectricity at 3.5%, and fuel

oil and diesel at 0.2%. Imported electricity is responsible for approximately 15% of Thailand's total electricity supply.

Specific legal aspects concerning renewable sources are discussed in greater detail below.

A. BOI Incentives for Renewable Energy Projects

The Board of Investment of Thailand (the "**BOI**") grants incentives for the promotion of investments into renewable energy projects. Developers of renewable energy projects can apply for BOI promotion under category 7.1, i.e., public utilities and basic services. In this regard, there are three possible subcategories that the project may fall under, as follows:

(i) Category 7.1.1.1: production of electricity or electricity and steam from garbage or refuse derived fuel;
(ii) Category 7.1.1.2: production of electricity or electricity and steam from renewable energy, such as solar energy, wind energy, biomass, or biogas, etc. except from garbage or refuse derived fuel; and
(iii) Category 7.1.1.3: production of electricity or electricity and steam from other energy resources.

The specific conditions required for Category 7.1 is that the project must be approved by the relevant government agencies. By receiving promotion under Category 7.1, the promoter will be granted incentives ranging from A1 (for Category 7.1.1.1), A2 (for Category 7.1.1.2), and A4 (for Category 7.1.1.3), which may include the following:

(i) corporate income tax exemptions (A1 – for eight years with no limit; A2 – for eight years accounting for 100% of the investment (excluding the cost of land and working capital and A4 – for three years);
(ii) exemptions on import duty for machinery;
(iii) exemptions on import duty on raw or essential materials used in manufacturing export products for one year, which can be extended as deemed appropriate by the BOI; and
(iv) other non-tax incentives.

B. EGAT Regulations

EGAT is the single buyer of bulk electricity in Thailand; therefore, any power purchase of electricity from either large-scale IPPs or SPPs occurs through EGAT. In an attempt to standardize its licensing for renewable energy, on 18 April 2007, EGAT announced the Regulation for the Purchase of Power from SPP exclusively for the generation of renewable energy.[1] Among other topics, this regulation covers conditions for, costs of, and procedures regarding, power purchase agreements (the "**PPAs**") between SPPs and EGAT. EGAT has published standard forms of PPAs including a Model Non-Firm Agreement.

C. PEA Regulations and MEA Regulations

Upon its receipt of bulk electricity, EGAT circulates the energy to the MEA and PEA. The PEA and MEA may award PPAs to VSPP renewable projects, the parameters for which are established in the PEA's 2006 Regulation for the Purchase of Power from VSPPs for Electricity Generation Using Renewable Energy. The PEA has also published notifications regarding the Prescription of Increments to Power Purchase Prices for Renewable Energy from VSPPs and standard forms of

[1] The Regulation (as amended in 2009) can be found at www.egat.co.th.

PPAs.

D. Solar

Solar energy from various technologies is providing a growing source of energy in Thailand. The country benefits from elevated year-round solar radiation levels, resulting in the maintenance of many Thai solar energy plants/farms. Thai on-grid solar capacity has consequently grown to 2,995.21 MW (as of March 2022) with an additional capacity of 45 MW from floating solar. The MOE has implemented the Alternative Energy Development Plan 2018-2037 (the "**AEDP**") to increase Thailand's solar energy producing capacity even further from 1,570 MW in 2014 to 6,000 MW in 2036. According to the Power Development Plan 2018-2037 Rev.1, Thailand's solar energy producing capacity is expected to increase to 14,754 MW (including the energy from floating solar) by 2037.

E. Wind

Since 1975, the DEDE has conducted studies on the potential of wind power and has since come to the conclusion that (with significant research and infrastructural development) wind energy may one day substitute fossil-based energy in Thailand. Currently, Thailand has 34 wind projects with capacity of 1,523.21 MW (as of March 2022) that have reached commercial operations. Most projects are located in the northeast of Thailand.

F. Biomass

Currently, Thailand has 213 biomass projects with capacity of 3,797.67 MW (as of March 2022) that have reached commercial operations to produce electricity. Biomass organic materials (for the purpose of biomass energy production) are split into five categories, which are: (i) by-products of yearly harvests, which is a common biomass material used as fuel and is tradable; (ii) materials left over after crop processing, which is not as commonly found as organic by-products of harvests, because of higher preparation expenses and the inconvenience of transporting these materials; (iii) natural vegetation; (iv) by-products of raw materials from tree plantations used in industrial production; and (v) by-products from tree plantations used as fuel. Thailand has an abundance of by-products generated from category (v), which may present potential opportunities to investors if properly utilized.

As Thailand's economy is agriculturally based, and the country therefore produces these natural by-products in high volumes, the AEDP expects biomass to serve as an important source of Thai renewable energy in the years to come. The nation produces approximately 18 million tons of agricultural waste a year, suggesting that biomass energy has huge potential. The government has also chosen to include biomass energy in the country's Feed-in Tariff scheme.

G. Biogas

Biogas is produced from the by-products of livestock farms, palm oil production, sugar factories, paper factories, ethanol factories and municipal solid waste. Methane and carbon dioxide, along with other elements, can be extracted from natural decomposition, and repurposed for fuel. The government has also chosen to include biogas energy in the country's Feed-in Tariff system. Currently, Thailand has 180 biogas projects with aggregate capacity of 588.39 MW (as of March 2022) that have reached commercial operations.

H. Waste-to-Energy

Energy production from waste occurs by converting municipal solid waste (the "**MSW**") into electrical energy though incineration via heat boilers and power turbines. Currently, there are 46 waste power plants in Thailand. The AEDP seeks to increase these numbers in the coming years and has set a target of 400 MW by 2025. In 2022, the National Energy Policy Council announced plans to purchase MSW derived electricity from 34 projects at a combined capacity of 282.98 MW on the Feed-in Tariff scheme.

(3) Oil & Gas

Thailand has a well-developed legal framework for upstream exploration and production of petroleum. The discovery of commercially viable natural gas fields in the Gulf of Thailand in the 1970s and 1980s has been a significant driver of economic growth over several decades. The midstream and downstream markets are gradually liberalizing, adding complexity to the legal environment.

A. Upstream

The cornerstones of the legal framework governing upstream oil & gas production in Thailand are the Petroleum Act, B.E. 2514 (1971) (as amended) (the "**PA**") and the Petroleum Income Tax Act, B.E. 2514 (1971) (as amended) (the "**PITA**"). The PA was most recently amended in 2017. The PITA was amended most recently in 2019. Some of the salient provisions of the PA are set out below.

(i) Definition of "Petroleum"

For exploration and production, crude oil, natural gas, and condensate fall under the heading of "petroleum" and are subject to the same provisions of the PA.

Oil shale has been explicitly excluded from the definition of "petroleum" under the PA. To our knowledge, there have been no commercially viable discoveries of shale oil made in Thailand as of the date of this writing.

The PA defines "petroleum" as "*crude oil, natural gas, natural gas liquid, by-products and other naturally occurring hydrocarbons in a free state, whether solid, semi-solid, liquid or gaseous, and (petroleum (sic)) shall include all heavy hydrocarbons which can be recovered in site by thermal or chemical processes, but shall not include coal, oil shale or other kinds of rocks from which oil can be extracted by application of heat or chemical process.*"

(ii) Ownership of Petroleum

The PA explicitly sets out that petroleum is owned by the state, and that the only way to explore or produce petroleum is pursuant to a concession, a production sharing contract, or a services contract.

Under Thailand's petroleum concession regime, ownership of petroleum passes from the state to the concessionaire at the wellhead. Thereafter, the concessionaire can sell the petroleum to third parties.

Production sharing contracts and services contracts were introduced under the PA in 2017. Conceptually, under either regime, ownership of petroleum vests with the state at all times. The production sharing contractor will be compensated in the cost petroleum and profit from

petroleum based on the terms set out in the PA as well as the production sharing contract. Under either the production sharing contract or the services contract model, the contractor may be required to enter into a gas sales agreement with PTT Public Company Limited (formerly, the Petroleum Authority of Thailand, ("**PTT**")).

(iii) Transfers of exploration and production rights

The PA sets out three distinct ways for disposal of a party's rights or obligations under a concession agreement, production sharing contract, or services contract.

a. Farm-in Agreements

A farm-in agreement involves a third party acquiring an interest in an existing concession, production sharing contract or services contract as a co-venturer. The co-venturers will sign an amendment to the underlying agreement whereby they will commit to being held jointly liable to the MOE for performance of all obligations of the concessionaire or contractor (as the case may be).

b. Transfers By A Concessionaire or Contractor To Its Affiliate

In principle, permission from the MOE is not required to transfer an interest from a concessionaire or contractor to an affiliate; however, the MOE must be notified of the transfer, which will only be deemed complete after the MOE is satisfied that the transferee meets one of the prescribed categories set out in the PA. In practice, therefore, the MOE can scrutinize the proposed transaction.

c. Transfers To a Third Party

Any such transfer requires the explicit approval of the MOE. The transferee must also possess the relevant necessary qualifications set out in the PA to explore for and produce petroleum.

The PA is silent on indirect transfers, including the transfers of shares in holding companies that own shares in concessionaires or contractors.

(iv) Decommissioning

Existing petroleum concession agreements contain minimal language on decommissioning obligations of the concessionaire. In short, the concessionaires are obligated to transfer all assets to the state or to remove them at the state's direction.

Amendments to the PA in 2007 introduced the obligation to decommission and post security with respect to assets used in the exploration and production of petroleum. Controversially, the MOE adopted a regulation in 2016 which required concessionaires to assume liability for all assets that are transferred to the state, in addition to assets that are decommissioned and removed. The 2016 Ministerial Regulation continues to be a subject of criticism amongst industry participants.

Under the production sharing contract and service contract regimes, the obligations relating to decommissioning are clearer; in short, the contractors are responsible for decommissioning all installations used in petroleum operations upon the expiry of the contract term.

B. Midstream and Downstream

The midstream and downstream markets for refined products derived from crude oil as opposed to natural gas are subject to different legal regimes and regulators.

(i) Midstream Natural Gas

The midstream natural gas market is primarily governed by the Energy Industry Act, which is under the same statute governing electricity generation and distribution. The main regulatory body for the midstream market is the ERC.

Until recently, PTT had a monopoly on the distribution of natural gas to industrial customers and independent power producers. Since 2015, the ERC has taken steps to ensure that PTT develops a third-party access regime to its transmission pipeline network and LNG receiving terminal. PTT has recently developed third-party access codes, and the ERC has now issued natural gas acquisition and wholesale licenses to third parties, thus increasing competition in the midstream gas market.

(ii) Midstream and Downstream Refined Crude

The midstream and downstream markets for refined petroleum products are governed by the Fuel Oils Control Act, B.E. 2542 (1999) ("**FOCA**") and the Fuel Oils Trading Act, B.E.2543 (2000) ("**FOTA**"), respectively. Both the FOCA and the FOTA are administered by the DOEB.

The FOCA governs requirements relating to storage and transportation of petroleum, including transportation via pipelines. There are currently a few pipelines for refined petroleum products in Thailand.

With respect to the downstream regime, the FOTA sets out a licensing regime for the sale and transportation of refined petroleum products. The FOTA requires the DOEB to take a "hands on" approach to manage supply and prices of petroleum products nationwide.

C. Recent Developments

(i) Gas Supply Industry Reform

Currently, PTT, with few exceptions, acts as the sole purchaser, transporter and distributor of natural gas in Thailand, through a 4,255 km pipeline system.

Thailand's reliance on natural gas for the next 10 to 20 years as a fuel for generating electricity will be coupled by a decline in domestic production. As a result, the country will likely need to invest in additional LNG receiving capacity, or additional pipelines from neighboring countries.

(ii) Overlapping Claims Area (Thailand and Cambodia)

Since 1972, a significant area in the Gulf of Thailand has been off-limits to the upstream petroleum sector due to a dispute over maritime boundaries between Thailand and Cambodia. The area is believed to include commercial fields similar to the Thai sector of the Gulf of Thailand. In 2022, the two governments will reportedly continue discussions on this area based on an MOU between Thailand and Cambodia dated 18 June 2001.

(iii) Auction of Bongkot and Erawan Fields

The tender for the Bongkot and Erawan gas blocks in the Gulf of Thailand was the first time the MOE offered petroleum producers the opportunity to operate under a production sharing contract scheme. The winning bidders were announced in December 2018, with PTTEP winning the Bongkot field and PTTEP and Mubadala Petroleum winning the Erawan field.

(iv) 23rd Bid Round for Thai Onshore Petroleum Concession

The 23rd bid round for petroleum exploration and production consisted of a single onshore area, identified as block L1/64 (in Sukhothai and Kamphaeng Phet Provinces), which was subject to a petroleum concession. The winner was CNPCHK (Thailand) Company Limited.

(v) 24th Bid Round for Thai Offshore Petroleum Production

On 7 April 2022, the MOE announced the 24th bid round for offshore exploration and production of three blocks in the Gulf of Thailand, identified as follows: Block G1/65 (approximately 8,487.20 square kilometers), Block G2/65 (approximately 15,030.14 square kilometers), and Block G3/65 (approximately 11,646.67 square kilometers). These three blocks will be explored and produced under a production sharing contract, with a six-year exploration period (with a possible extension of three years) and a 20-year production period (with a possible extension of 10 years). The announcement of the successful bidders is scheduled to be made around February 2023.

(4) Mining

Thailand produces mainly industrial minerals, including basalt, granite, lignite and limestone. The mining industry has been less active in recent years due to the gold mining policy and the restriction on the use of agricultural land, among other reasons.

The principal law regulating the mining industry is the Minerals Act, B.E. 2560 (2017) (the "**Minerals Act**") and its subordinate regulations. $

A. Laws and Regulations

Prior to the enactment of the new Minerals Act in 2017, the principal laws regulating the mining industry were the Minerals Act, B.E. 2510 (1967) and Mineral Royalty Rates Act, B.E. 2509 (1966). The new Minerals Act contains transitory provisions stating that all ministerial regulations, notifications, rules, or orders issued under the old Minerals Act, B.E. 2510 (1967) and the Mineral Royalty Rates Act, B.E. 2509 (1966) that were effective before the date the Minerals Act came into force, continued to be effective to the extent that they are not contrary to nor inconsistent with the Minerals Act. Any application submitted before the effective date of the Minerals Act 2017 is deemed an application under the Minerals Act and will be considered under the rules as specified in the Minerals Act. Furthermore, any prospecting license, mining lease, or license issued under the old laws, before the effective date of the Minerals Act are deemed issued under the Minerals Act and will be effective until that license expires or is revoked. Any obligation under any agreement made with the Thai government by the MOI and DPIM before the effective date of the Minerals Act will remain effective until the expiration of that obligation.

The Minerals Act and ministerial regulations, notifications and other subordinated laws issued thereunder place significant new obligations on mining businesses. The Minerals Act aims to

provide stricter environmental controls, decentralize administrative power, encourage the use of newer mining technologies, and provide more protection for those living in mining areas.

B. Administration

The Minerals Act is administered by the MOI and the DPIM at the central level, and by local mineral industry officials ("**LMIO**") at the provincial level.

Under the Minerals Act, there are three committees responsible for mining issues:

(i) the National Mineral Administrative Policy Board is mainly responsible for proposing national strategies and plans on minerals management to the Cabinet, including monitoring the implementation process;
(ii) the Mineral Committee is charged with advising ministers on bidding and issuance of subordinate regulations, license-related matters, considering complaints and providing assessments of the health and environmental impact; and
(iii) the Provincial Mineral Committee is responsible for a wide range of issues for mining leases under Category 1 (discussed below).

On 31 July 2018, the Cabinet approved a 20-year mineral management strategy for 2017 – 2036 and a five-year mineral management master plan for 2017 – 2021 (effective until 31 December 2022) to integrate Thailand's mineral resources management while focusing on the environment and health of the people affected. In the approved strategy, four points of emphasis are the classifications of mineral zones, the formulation of a mineral policy, the development of a regulatory mechanism, and the promotion of the general public's participation.

C. Rights for Exploration and Mining

(i) Exploration Rights

A prospecting license must be granted for mineral exploration activities. There are three kinds of prospecting licenses that investors may apply for, namely: (i) a general prospecting license (the "**GPL**"); (ii) an exclusive prospecting license (the "**EPL**"); and (iii) a special prospecting license (the "**SPL**"). All three licenses are non-renewable and non-transferable.

A GPL grants non-exclusive rights for mineral prospecting and exploration within a designated area of an administrative district or a province. A GPL is issued by the LMIO and is valid for one year.

An EPL grants exclusive mineral prospecting and exploration rights within a designated area. An EPL is issued by the director-general of DPIM and is valid for no more than two years for an area of up to 2,500 rai (equal to four square kilometers or 400 hectares).[2]

[2] The units of land measurement in Thailand are Wah, Ngan, and Rai. Conversion factors between Thai measurements and other measurements are:

Thai Measurements		Other measurements	
1	Wah	2	Meters
1	Square Wah	4	Square Meters
1	Ngan (= 100 Square Wah)	400	Square Meters
1	Rai (= 4 Ngan or 400 Square Wah)	1,600	Square Meters
≈ 2.50	Rai	1	Acre

An SPL is suitable for large projects entailing high-value minerals or substantial investment capital. An SPL is issued by the director-general of DPIM with approval of the Mineral Committee and is valid for duration of five years. The exploration area that may be granted under an SPL is up to 10,000 rai (equal to 16 square kilometers or 1,600 hectares), except for applications to explore offshore, which may be granted for up to 500,000 rai (equal to 800 square kilometers or 80,000 hectares) each. An application for an SPL must include a work plan and an estimate of expenses for each year for the whole project, as well as an offer of 'special benefits' to the government. The special benefits will further bind the holder of the SPL upon receiving a mining lease for mining operations in the area that the SPL has been granted. The SPL holder will generally get preferential rights to acquire a mining lease for the area the SPL covers.

(ii) Mining Rights

Mining rights are granted by the MOI under the Minerals Act through the issuance of a mining lease. The Minerals Act states that no person can mine in any area, regardless of any person's right over the surface area to be mined unless a mining lease has been obtained. In Thailand, minerals belong to the state and mining rights do not grant title to minerals in the ground.

Mining leases are classified into the following three categories depending on the size of the mining area and the type of mining:

1) Category 1: mining with an area of not exceeding 100 rai (equal to 0.16 square kilometers or 16 hectares) and not requiring an EIA report; the mining lease will be issued by the LMIO on approval of the Provincial Mineral Committee in the province where the mine is operated;
2) Category 2: mining with an area not exceeding 625 rai (equal to one square kilometer or 100 hectares) and not requiring an EHIA report; the mining lease will be issued by the director-general of the DPIM with approval of the Mineral Committee; and
3) Category 3: mining which is: (a) not Category 1 mining or Category 2 mining; (b) offshore mining; (c) underground mining; (d) gold mining); (e) coal mining; (f) radioactive mineral mining; (g) a mining project which must be approved by Cabinet; and (h) mining which directly involves activities or related activities that require an EHIA; the mining lease will be issued by the director-general of the DPIM with approval of the Mineral Committee.

There is no limit on the number of mining leases that may be acquired by one person. Therefore, in practice, if granted several mining leases it is possible for a leaseholder to mine over a larger area than the prescribed area limits in one mining lease.

The exploration rights and mining rights under the Minerals Act do not include any rights to the surface land. Surface rights over the mine vary depending on the type of land. Before applying for a mining lease, an applicant must acquire the right to use the surface land from the public or a private owner.

The maximum duration of mining rights is 30 years and may not be transferred without the approval of the mining lease issuers. The mining leaseholders may relinquish their rights in whole or in part by submitting an application and surrendering the leases to the LMIO

Thai Measurements		Other measurements	
≈ 6.25	Rai	1	Hectare

provided that there are no unpaid debts, the area has been completely rehabilitated, and other conditions have been complied with.

D. Mineral Royalties and Special Contributions

The Thai government collects mineral royalties from mining and mineral production. The Minerals Act provides that the persons subject to regulations under the Minerals Act, including the mining lease holder and metallurgical operator, must pay mineral royalties, fees, and special contributions. The mineral royalty rate for each type of mineral is determined by a ministerial regulation issued under the Mineral Act and will not exceed 30 % of the market price for that mineral.

A Ministerial Regulation issued in 2018 (the "**Royalty Rate MR**") prescribes mineral royalty rates, based on a market price per metric ton announced by the director general of DPIM, at the following rates:

(i) tin ore, mineral ore with tungsten oxide, and gold ore – 2.5 to 20%;
(ii) lead ore and zinc ore – 2 to 15%;
(iii) gemstones – 10%; and
(iv) other mineral ores, as per the annex to the Royalty Rate MR, at rates between 4 to 10%.

Mining leaseholders must pay a special contribution at the rate of 5% of the mineral royalty of the minerals produced under the mining lease.

E. Investment by Foreign Investors

The current government policy is not to grant mineral rights to foreign nationals (including companies in which ownership by foreign nationals exceeds 49%). However, it is possible to grant mineral rights to a foreign company under a special agreement. Majority foreign-owned companies wishing to operate a mining business must obtain a license granted by the Minister of Commerce with the approval of the Thai cabinet as required under the Foreign Business Operations Act, B.E. 2542 (1999). A majority foreign-owned company can operate a mining business only if at least 40%, or (with approval of the cabinet) at least 25% of the capital is held by Thai nationals or Thai entities and at least two-fifths of the directors are Thai nationals.

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