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SECURING ENERGY SUPPLY AND MARITIME INTERESTS: SEEKING CONVERGENCE

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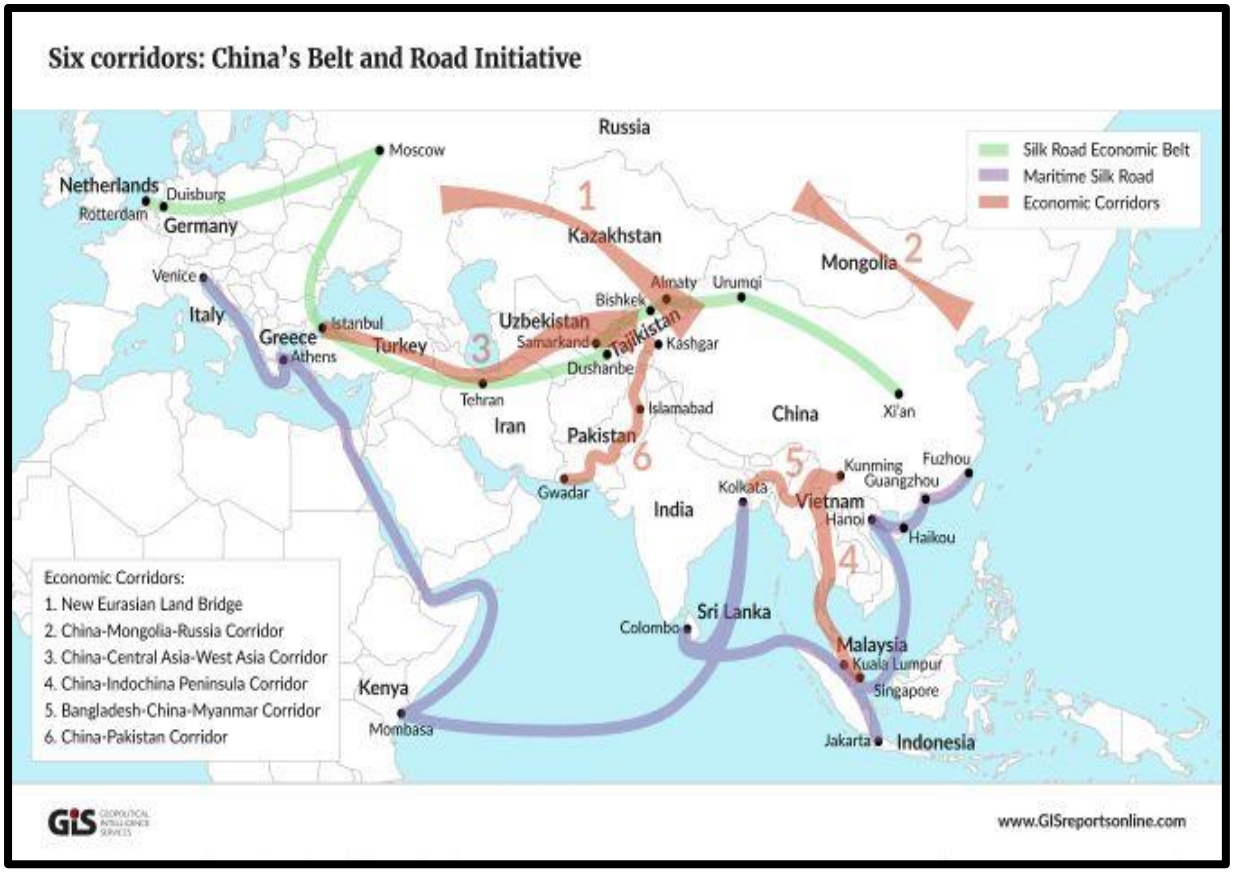
Abstract

As ASEAN’s energy demand is likely to increase by almost two-thirds in the period up to 2040, the regional oil and gas resources in the offshore zones of the ASEAN member states will become even more important for enhancing the energy supply security of both the individual member states as well as for ASEAN as a whole. Accordingly, access to and political as well as physical control and security of these offshore energy resources will receive even more governmental attention. In context of China’s Belt and Road Initiative as well as South China Sea policies and its energy dimensions, they can fuel already existing maritime competition and conflicts in the South China Sea, the Bay of Bengal, the Indian Ocean and the interconnecting sea lanes and regional choke points. This paper analyses the question to what extent are energy security concepts and challenges are interlinked with maritime policies, particularly in regard to the unresolved overlapping claims in the South China Sea and the perceived intensifying naval competition in the Indian Ocean. It also highlights the strategic implications of ASEAN's rising energy demand and growing exploitation of its offshore maritime energy resources for future regional cooperation, enhanced competition and potential strategic rivalries as well as conflicts.

Introduction

China has attracted much international attention and increasing anxiety with its building of infrastructures such as highways, railroads and ports in various countries and across regions. Such efforts are now mostly presented under the Belt and Road Initiative (BRI), which was previously known as One Belt One Road (OBOR). The BRI is apparently designed to open foreign markets, generate employment for Chinese citizens, reduce regional inequalities thereby promoting political stability and security, and restore Chinese spheres of influence in the Eurasian landmass and beyond.[1] In fact, the key drivers of the BRI are linked to China's energy needs and raw material procurement. There are mounting problems and challenges in China's domestic reform relating to energy security. The basic issue is rising energy import dependencies.

Figure 1: The Six Economic Corridors of the BRI



Source: Geopolitical Intelligence Service (GIS) 2017

China has prioritised the expansion of its economic and infrastructure projects along key energy trade and transport routes and markets. A major concern in Beijing is the reliance on foreign energy imports and the vulnerabilities of the sea lanes of communication through the Indian Ocean, the Malacca

[1] See also F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power Industry – New Strategic Opportunities, Commercial Risks and Geopolitical Implications", EUCERS-Strategy Paper No. 11, September 2016, pp. 50 ff.; idem, "China's Infrastructure Initiative – Part 1: Implications for Eurasia, the US and Europe", Geopolitical Intelligence Service (GIS - www.geopolitical-info.com), 6 November 2015, and idem, "Part 2: Investment Opportunities and Security Risks", GIS, 9 November 2015.

Strait and the South China Sea. China has always interpreted energy import dependencies as vulnerabilities and, therefore, has opted for energy independence and self-sufficiency concepts.[2] The strategic objective behind the BRI is to establish secure land and sea routes from China's coast to the Indian Ocean and the Mediterranean Sea as well as to create alternative supply routes overland. This will ensure a diversification of transport routes for China's energy supplies and trade, and secure access to foreign markets in the case of maritime supply disruptions.

Ultimately, the BRI raises the major question of whether the future regional and global order will be based on commonly accepted rules (i.e., international law) that takes the economic and security interests of all countries into account or whether Beijing will revert to its traditional role as the "Middle Kingdom" and seek to define the future rules of the game unilaterally.[3] In ASEAN, suspicions have been raised that the BRI might not only offer new opportunities for economic cooperation and integration; it could also be used by China as a vehicle to undermine unified positions of ASEAN on issues of political and security concern to Beijing.

China's dismissal of the 2016 arbitral tribunal findings of the disputes in the South China Sea (after the Philippines referred its quarrel with China on the status of Scarborough Reef to the tribunal) has upset the status quo in its relations with ASEAN and powers in the region and beyond. Although China ratified and acceded to the UN Convention on the Law of the Sea (UNCLOS) in 1996, it has always interpreted the Law of the Sea and the Convention in its own way to serve its own interests. In turn, the US and other naval powers have increased "freedom of navigation operations" (FONOPs) in the South China Sea. However, US policies have been portrayed as lacking policy and strategy in regard to the territorial disputes in the South China Sea in the aftermath of the arbitral tribunal ruling.[4] Australia has also recently released its views on the situation in the South China Sea which is highlighted as "a major fault line in the regional order".[5] Australia has "a substantial interest in the stability of this crucial international waterway, and its norms and laws that govern it"[6], given that its overall trade is substantially dependent on passage through these waters. For example, Australian liquefied natural gas (LNG) exports are expected to rise and these will mainly pass through the South China Sea to China, Japan, South Korea and Taiwan. In 2016, almost 40 per cent of the global LNG trade had been shipped through the South China Sea.[7]

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2 See also F. Umbach, "Competing for Caspian Energy Resources: Russia's and China's Energy (Foreign) Policies and the Implications for the EU's Energy Security", in M. Amineh/Y. Guang (Eds.), "Secure Oil and Alternative Energy. The Geopolitics of Energy Paths of China and the European Union", Volume II (Koninklijke Brill NV: Leiden-Boston 2012), pp. 75-114.

3 See ibid.

4 See Bill Bray, "How America is Losing the Battle for the South China Sea", National Interest, 28 September 2017; Donald K. Emmerson, "Matching Power with Purpose in the South China Sea: a Proposal", PacNet No. 81 (ed. by the Pacific Forum CSIS), 8 November 2017; Andrew Taffler, "Matching Power with Purpose in the South China Sea: A Proposal (Response to PacNet #81)", ibid., No. 81R, 21 November 2017 and Daniel Chua Wei Boon, "Trump and Southeast Asia: US Should Pivot to ASEAN", RSIS Commentary, No. 215/2017, 15 November 2017.

5 Australian Government, "2017 Foreign Policy White Paper: Opportunity, Security, Strength", Canberra, November 2017.

6 See ibid., p. 46.

7 See Energy Information Administration (EIA), "Almost 40% of Global Liquefied Natural Gas Trade Moves through the South China Sea", Washington D.C., 2 November 2017.

Despite China's focus on the overland highways and railroads in its BRI, the fact is that the South China Sea and the sea lanes through the Indian Ocean are of critical strategic significance to China. Presently, around 90 per cent of its international trade go by sea. Sea transportation will remain far cheaper than most of that via air, railways and highways.

At the same time, ASEAN member states are also keenly looking for oil and gas in the South China Sea. In 2016, ten member states were collectively the world's seventh-largest economy, the fifth-largest destination for foreign investments and accounted for around five per cent of the total global energy demand. ASEAN's GDP grew by around 125 per cent between 2000 and 2016.[8]

ASEAN's energy demand is likely to increase by almost two-thirds in the period up to 2040, while electricity consumption is expected to double from present levels. The regional import demand of oil and LNG might also increase substantially.[9] The regional oil and gas resources in the offshore zones of the ASEAN member states will become even more important for enhancing the energy supply security of both the individual member states (for example, Vietnam, the Philippines, Indonesia) as well as for ASEAN as a whole.

Accordingly, access to and political as well as physical control and security of these offshore energy resources will receive even more governmental attention. They can fuel already existing maritime competition and conflicts in the South China Sea, the Bay of Bengal, the Indian Ocean and the interconnecting sea lanes and regional choke points. The question is: to what extent are energy security concepts and challenges interlinked with maritime policies, particularly in regard to the unresolved overlapping claims in the South China Sea and the perceived intensifying naval competition in the Indian Ocean.

To be sure, the energy transition linked with a significant increase in the regional energy demand also offers new prospects for secure, affordable and sustainable energy supply and consumption patterns as well as new regional cooperation opportunities. The estimated investments to cope with the energy demand challenges have been calculated at US$2.7–2.9 trillion by 2040. In this regard, perceived recent strategic shifts of some ASEAN member states (such as the Philippines) to bandwagon with China's policies, and the continuing building of military infrastructures in the South China Sea by China, while US attention is focused more than ever on North Korea, highlight that the region's security is very much in flux and determined by uncertainties on all sides.[10]

The following report will provide an overview of the ASEAN energy situation. Special attention will be given to regional and national energy supply security issues (i.e., import dependencies) as well as

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8 See IEA, "Southeast Asia Energy Outlook 2017", pp. 17and 47 f.

9 See IEA, "WEO 2017" and IEA, "Southeast Asia Energy Outlook 2017" (Paris: OECD/IEA 2017), pp. 11 ff.

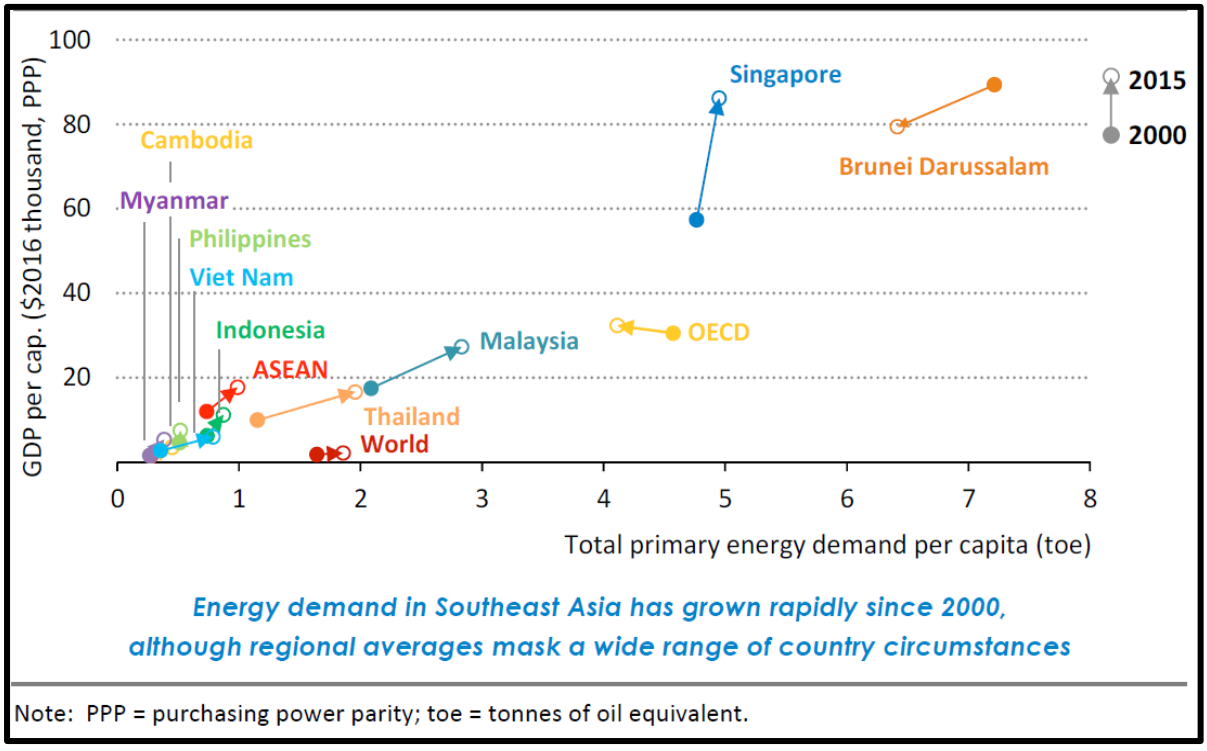
10 See Charles Clover, "Beijing Bolsters its Islands in the South China Sea", FT, 28 December 2017; David Camroux, "Is Trump's America the 'Dispensable' Power in Asia?", East Asia Forum, 31 December 2017 and Greg Torode/Ben Blanchard, 'Beijing See Poised for Fresh South China Sea Assertiveness', Reuters, 31 October 2017.

offshore oil and gas projects in the South China Sea. On the basis of the regional overview, the analysis will then focus on Malaysia, the Philippines, Vietnam and Indonesia, all of which are on the rim of the South China Sea and likely to confront the Chinese presence in the area. Finally, the report will conclude with an analysis of Indonesia's "Global Maritime Fulcrum" doctrine and the question of whether it is complementing China's BRI or countering it.[11]

Overview of ASEAN Energy Outlook

Since the year 2000, the ten ASEAN member states have had to cope with a 60 per cent increase in their collective energy demand.[12] Singapore and Brunei Darussalam have a per capita energy demand twice the global average, while their poorer and larger ASEAN fellows (such as Myanmar) have one of just one-fifth of the world average.[13] Indonesia, as the largest country in ASEAN, accounts presently for more than 35 per cent of the total energy demand of Southeast Asia. As all ASEAN member states have different energy mixes and consumption patterns as well as import demands, they have defined different priorities in their national energy policies, which complicate intra-regional energy cooperation.

Figure 2: Changes in Total Primary Energy Demand per Capita in Southeast Asia



Source: © OECD/IEA 2017 World Energy Outlook, IEA Publishing. Licence: www.iea.org/t&c

[11] See Sanjeevan Prdhan, "China's Maritime Silk Route and Indonesia's Global Maritime Fulcrum: Complements and Contradictions", Institute of Chinese Studies (ICS), New Delhi, Occasional Paper, No. 12, September 2016.
[12] See IEA, "WEO 2017", and IEA, "Southeast Asia Energy Outlook 2017".
[13] See IEA, "Southeast Asia Energy Outlook 2017", p. 19.

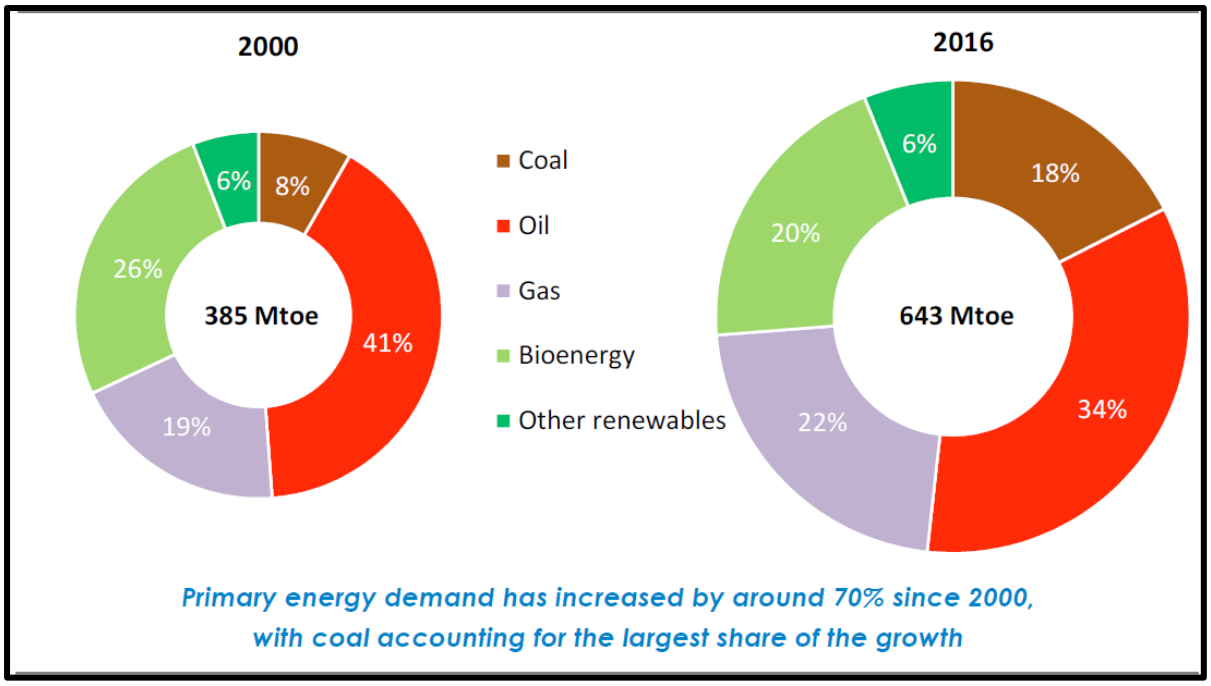
As the total population of Southeast Asia will increase by a fifth and with the number of urban population growing by more than 150 million people by 2040, the regional energy demand has been estimated to grow by almost two-thirds in the period to 2040 — representing one-tenth of the rise in global energy demand.[14] The regional electricity demand will experience the largest growth in final consumption due to the rapidly expanding use of appliances and cooling needs. Installed power generation capacity might more than double from 240 Gigawatts (GW) today to 565 GW by 2040. Coal and renewable energy sources might dominate almost 70 per cent of new capacity.

Due to the dramatic price fall of solar photovoltaics (PVs), the International Energy Agency (IEA) expects that renewable energy sources will account for the largest share of installed generation capacity (~40 per cent), while coal could still dominate the generation mix with around 40 per cent. As the result of much cheaper coal and solar PVs *vis-a-vis* natural gas, the share of gas could decline from presently 43 per cent to just 28 per cent by 2040. Despite the significant fall of the share of natural gas towards coal, the overall regional carbon intensity might decrease by almost one-fifth due to the expansion of renewable energy sources and much more modern as well as efficient coal-fired plants.[15]

While ASEAN will remain an important producer of oil, gas and coal[16], the region will undergo a decline in production. Regional oil production in particular might decrease from 2.5 mb/d in 2016 to 1.7 mb/d by 2040. Regional coal production, mainly dependent on Indonesia, could fall (albeit marginally) due to policy choices rather than any constraints of resource availability or production. Natural gas production might be maintained on current levels, though it could increase with sufficient new investments particularly in Indonesia's East Natuna gas fields.

[14] See ibid, p. 17 f.
[15] See ibid, pp. 12 ff.
[16] See also Sylvie Cornot-Gandolphe, "The Role of Coal in Southeast Asia's Power Sector and Implications for Global and Regional Coal Trade", OIES-Paper CL 4, Oxford Institute for Energy Studies, December 2016 and F. Umbach, "The Future Role of Coal: International Market Realities vs. Climate Protection?", EUCERS-Strategy Paper Six, King's College, London, May 2015.

Figure 3: Evolution of Primary Energy Demand in Southeast Asia (IEA 2017)



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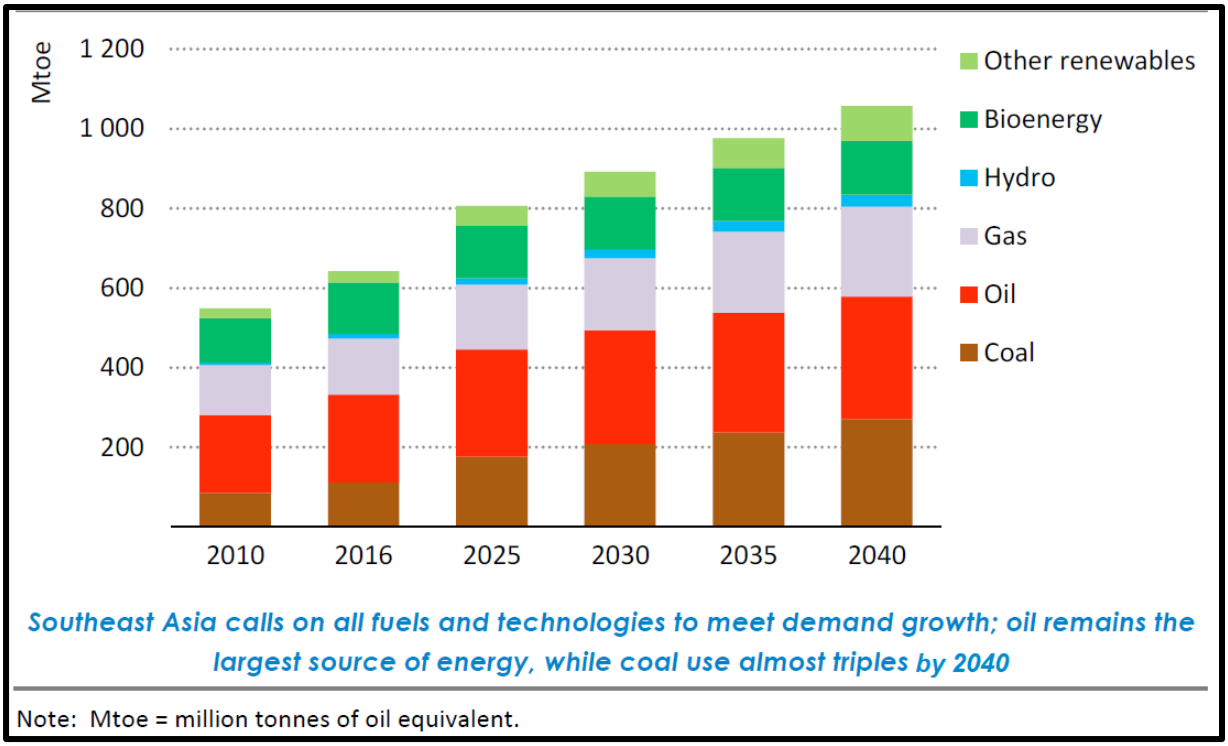
ASEAN member states have made substantial progress on the way to guarantee access to modern energy (i.e., electricity) for its total population of 640 million people. Yet, around 65 million still have no access to electricity and 250 million still rely on solid biomass as a traditional cooking fuel. The regional population is expected to increase by 20 per cent up to over 760 million by 2040.

In 2016, fossil fuels still dominated for almost 75 per cent of Southeast Asia's primary energy mix. Oil is the most important fossil fuel, though its share has dropped by six per cent to 34 per cent in the region since 2000. But the regional oil demand has been boosted by 40 per cent between 2000 and 2016. The increase in the region's energy demand since 2000 has been satisfied by the tripling of its coal supply demand with an annual average growth of 8.8 per cent as coal is abundant and cheaper than other energy sources.

Figure 4: Primary Energy Demand in Southeast Asia in the New Policies Scenario



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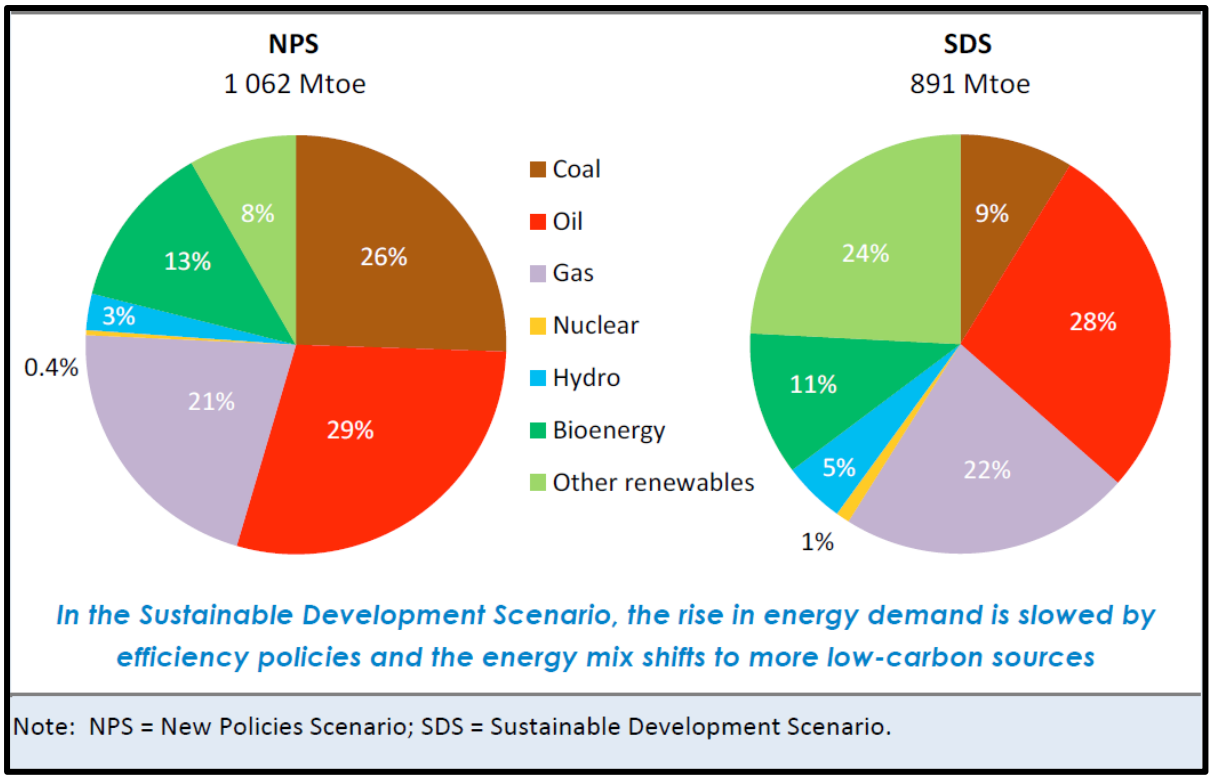
Among renewable energy sources, hydropower has been expanded rapidly, particularly in Cambodia, Myanmar and Laos, whereas wind and solar hitherto have remained a marginal source in the regional primary energy mix. However, due to the dramatic cost reduction of wind and solar sources, the renewable energy sources will grow much more rapidly in the forthcoming years. Nuclear power has not played any role in the region up to now though some ASEAN member states have plans to introduce nuclear capacity to cope with the rise of their national electricity demand.[17]

While coal is the most abundant fossil fuel in Southeast Asia and has been projected to be the largest energy source of growth in the period to 2040, global climate mitigation policies (particularly after the COP22 Paris Agreement in December 2015) and the overcapacities in the global coal markets, leading to declining coal prices worldwide, have weakened smaller coal producers. Particularly affected are those countries exporting low quality coal such as Indonesia or Vietnam. The latter is the second-largest coal producer in ASEAN and produces mainly anthracite, which has higher ash content.

[17] See IEA, "Southeast Asia Energy Outlook 2017", pp. 20-25.

Figure 5: Primary Energy Mix in Southeast Asia by Scenario, 2040



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As Southeast Asia is among the world's most affected and vulnerable regions to climate changes[18], and with a regional carbon intensity of the power sector being around one-fifth higher than the world's average, the energy transition for decarbonising regional energy consumption and production for a non-fossil-fuel age with an ever-increasing share of renewable energy sources will become ever more important for ASEAN and its member states. This offers better perspectives for decreasing Southeast Asia's projected oil and gas import demand (rise). Any decreasing pressure on the need for fossil fuels will also have an impact on regional security considerations. It could mitigate the dependence of maritime energy imports on critical sea lanes and choke points. It could also lessen the pressure on territorial disputes in the South China Sea where ASEAN member states are exploring seabed deposits for fossil fuels.

While wind and solar sources will rapidly expand, they have to cover the region's strong rise in overall energy demand and to replace traditional solid biomass in the residential sector. The IEA has projected in its "New Policies Scenario (NPS)"[19] that the overall share of renewable energy sources in ASEAN's primary energy mix will even slightly fall from 26 per cent in 2016 to 24 per cent in 2040. A

[18] It includes increasing water shortages and related challenges, rising frequency and magnitude of extreme weather events with even more damage to infrastructures and disrupting energy supplies as well as rising sea levels projected to be 10-15 per cent greater than the world average – see also IEA, "Southeast Asia Energy Outlook 2017", p. 44 f.

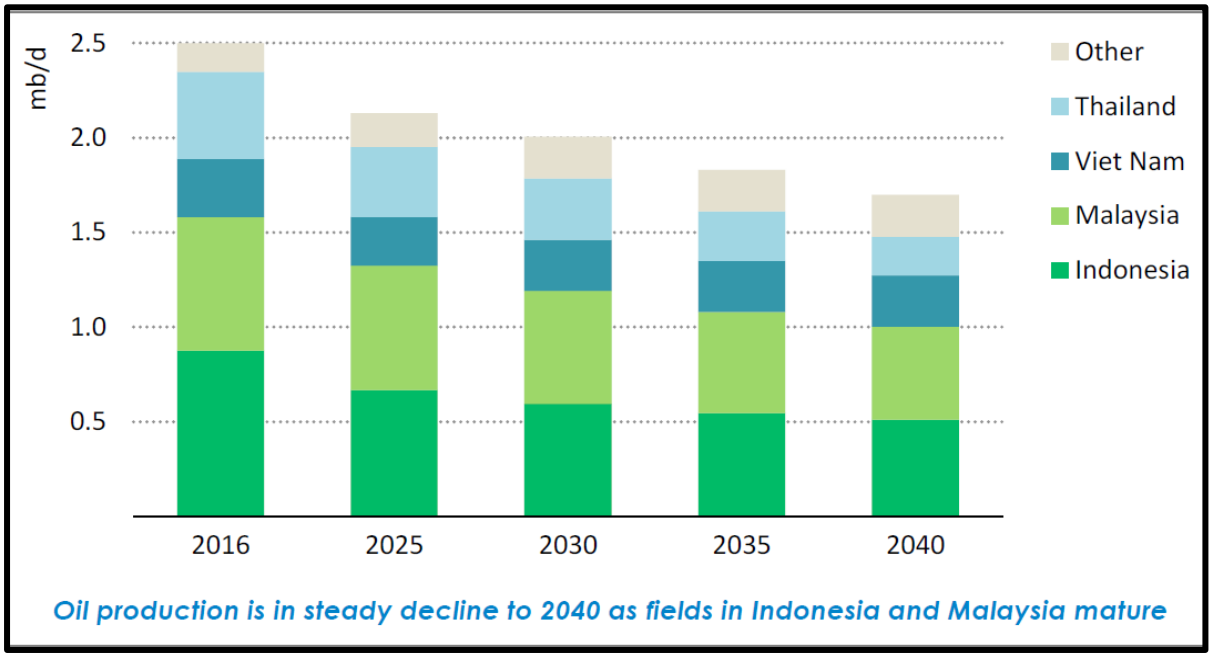
[19] The NPS is the main scenario (not any forecast) of the IEA and takes into account the existing energy policies and measures as well as the planned ones and declared future ambitions, which are officially declared but not fully implemented for the future.

more sustainable energy policy in line with the region's obligations of the global climate mitigation policies would imply that far more radical changes and much higher investments into clean energy sources would be needed in Southeast Asia's energy policies by 2040 as the IEA's "Sustainable Development Scenario (SDS)"[20] indicates. It would allow reducing substantially the overall energy demand of ASEAN by enhancing energy efficiency, switch to cleaner energy sources, improve the environmental situation (i.e., air pollution) and decrease fossil fuel imports.[21]

The forecast of rising energy demand and declining indigenous production will transform ASEAN into a significant net importer of energy by 2040. Net imports of oil could more than double up to 6.9 mb/d due to an oil production fall of 30 per cent. Brunei Darussalam and the Philippines might be the only ASEAN member states able to increase their oil production. But they are both unable to offset the projected production declines of Indonesia, Malaysia, and Thailand. One unknown is the large frontier areas of East Indonesia which are still rather unexplored. There could be significant resources in these areas.

As a result of the rising oil import demand and dependence on the Strait of Malacca (which is a most sensitive choke point) and the uncertainties of the future political stability of the Middle East oil producing countries, Malaysia, Indonesia, Singapore and Vietnam are reported to be planning an expansion of their respective oil storage capacities to stabilise their energy supply.[22]

Figure 6: Southeast Asia – Regional Oil Production in the IEA's New Policies Scenario



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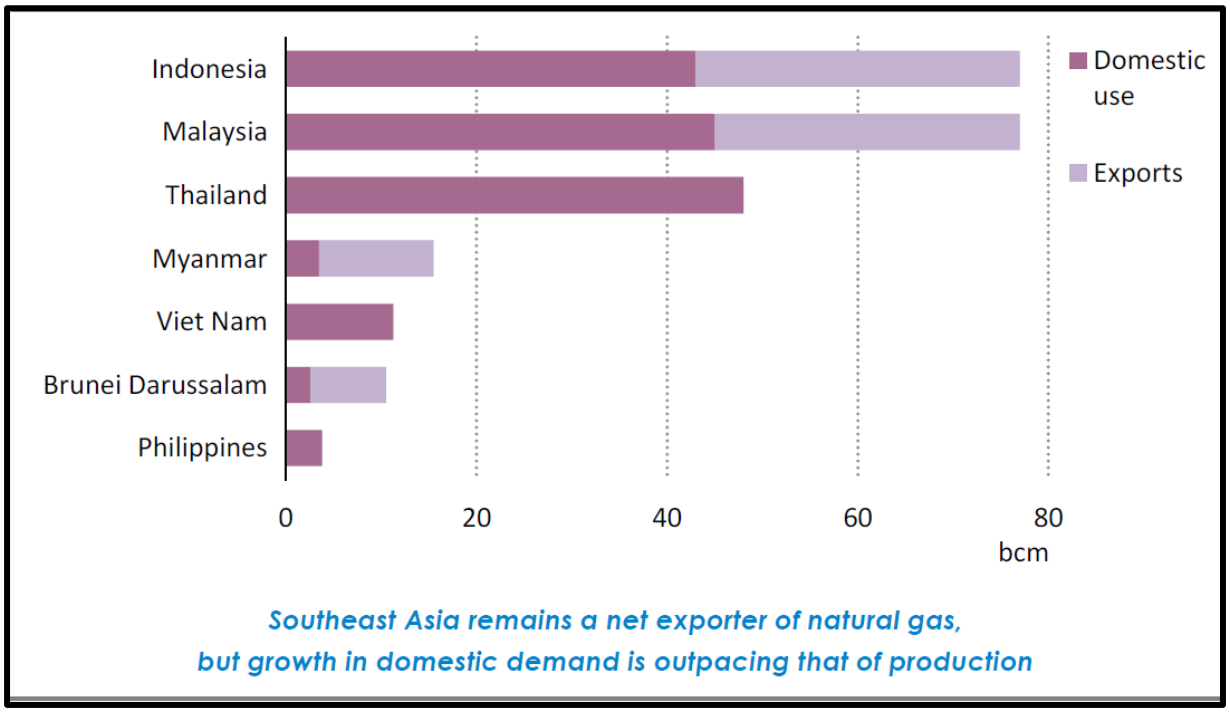
[20] The SDS is orienting at the global climate policies and providing universal access to modern energy services, reducing emissions and pollution as well as long-term qualitative efforts for decarbonisation and energy transformation.
[21] See IEA, "Southeast Asia Energy Outlook 2017", p. 56 f.
[22] See ibid., p. 79 f.

Southeast Asia has been an important net exporter of coal, natural gas and bioenergy. But they are mainly concentrated in Indonesia and Malaysia and often far from demand centres. Indonesia and Malaysia are currently accounting for 70 per cent of the regional proven gas reserves of 8.1 trillion cubic meters (tcm) and two-thirds of the regionally produced 220 bcm in 2016. As a result, many ASEAN member states need to import oil, gas, coal and electricity from neighboring countries and outside the region. These imports will increase in the coming years as indigenous production will decline while the overall demand grows. The production problems and constraints are not only related to depleting resource volumes but due also to unclear legal and ownership issues as well as failing adequate regulations and attractive investment conditions.

Figure 7: Natural Gas Production, Exports and Consumption in Selected Southeast Asian Countries in 2016



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At present, Singapore and Thailand are the largest importers of gas with 16 bcm and 12 bcm respectively. While the Philippines and Vietnam are still self-sufficient, they will become net importers of natural gas (mainly LNG) in the forthcoming years. While ASEAN has debated for years the ambitious plan to build an ASEAN natural gas grid, the regional pipeline network is still limited (consisting of existing bilateral gas pipelines). Only Indonesia and Malaysia are exporting piped gas to Singapore, and Myanmar to Thailand and China. But building a national and regional pipeline network or liquefied import terminals for LNG supplies is particularly expensive. However, the introduction of smaller Floating Storage Regasification Units (FSRUs) for LNG has offered worldwide a new opportunity to open and supply smaller gas markets and will boost LNG supplies also in Southeast Asia in the coming decades.

The present total gas demand in Southeast Asia amounted to 162 bcm in 2017.[23] Given the regional energy demand growth and a projected hydrocarbon production decline by 25 per cent by 2025, the regional gas demand is expected to grow by 14 per cent over the next eight years. LNG consumption can even grow threefold from 11 mt per annum (mtpa) today to 35 mtpa in 2025. In 2017, only 300 million barrel of oil equivalent (million boe) reserves were newly discovered – primarily in Indonesia, Vietnam and Brunei. Production in Malaysia, Indonesia and Thailand declined last year. Total recoverable hydrocarbon reserves in Southeast Asia are currently estimated at 53 billion boe. Gas accounts for around 70 per cent of those total reserves. But only Vietnam might be able to boost its gas production slightly after 2020.[24] New analyses have highlighted that around US$28 billion of investments might be approved over the next two years (to the end of 2020).[25]

Southeast Asia is still a net exporter of more than 50 bcm of pipeline gas and LNG. Although the region might be able to maintain its present gas production level of around 220 bcm by 2040, it will equally become a major importer (i.e., LNG) emanating from a 60 per cent increase in regional gas consumption. By the mid-2020s, it will have to rely much more on LNG supplies. Thus, the need to increase investments in national and regional gas infrastructures, in particular pipeline networks and regasification terminals, both onshore and offshore, including FSRUs. Presently, there are five major LNG export facilities and a number of LNG import facilities. In addition, some 20 terminals are in different planning stages. The regional LNG import capacity might rise from 37 mtpa in 2017 up to 46.7 mtpa by 2020 and 73.6 mtpa by 2025.[26]

But the long-planned "Trans-ASEAN Gas Pipeline" project has still to overcome numerous commercial, regulatory and technical problems in order to increase liquidity of the regional gas trade and supply networks.[27] It also highlights much wider reform needs in the regional gas sector as ASEAN still lacks the flexibility and contestability of liberalised markets as in the US and Europe, including third-party access and transparent hub-based pricing and trading for a fully functioning regional gas market as well as overcoming bilateral structures and systems.[28] Moreover, political risks have increased due to political unrest in Thailand, the Philippines and Myanmar as well as a new wave of economic nationalism, particularly in Indonesia and Thailand.[29]

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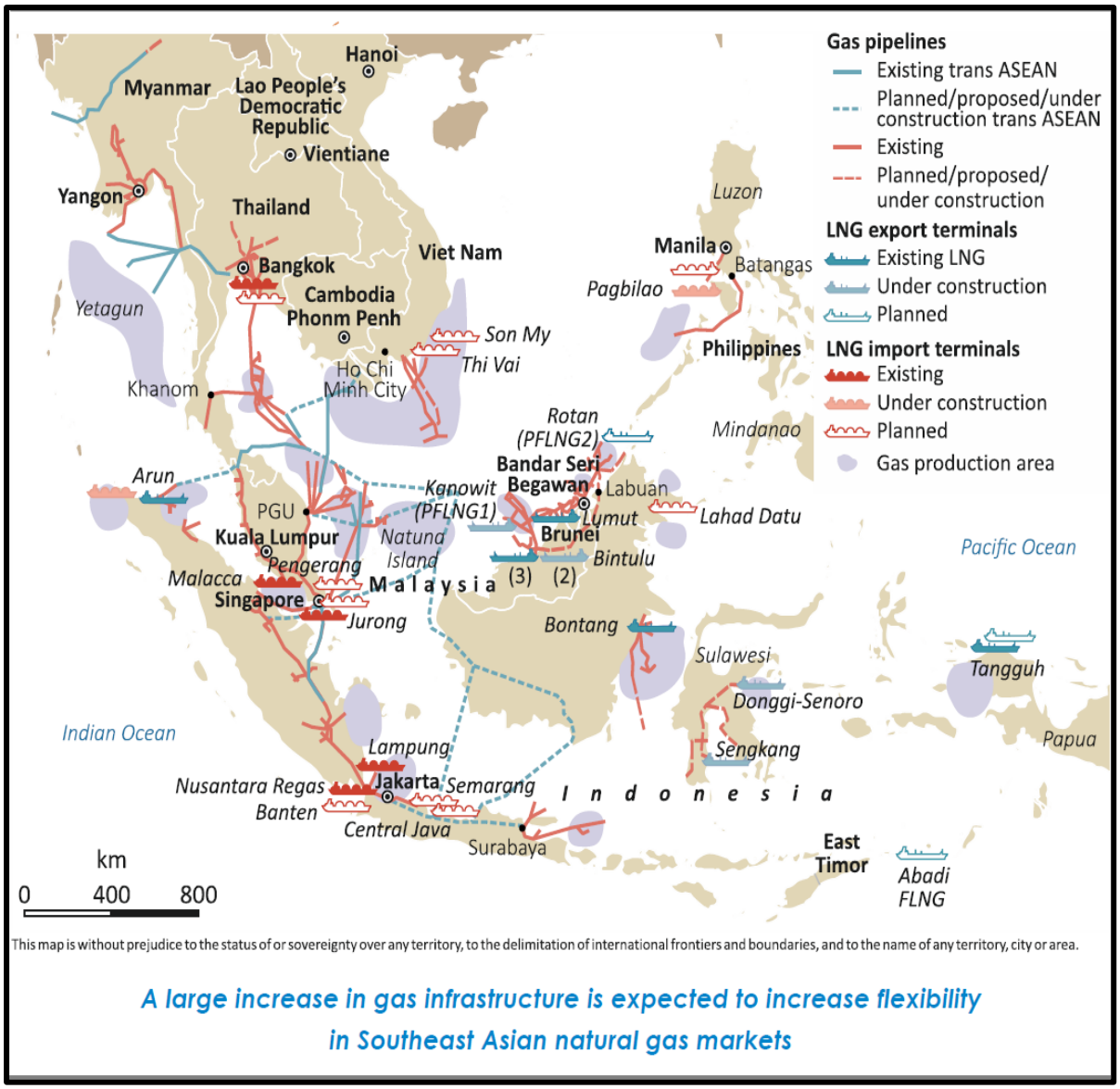
[23] See Catriona Scott, "Southeast Asia Set for LNG Market Growth", in: Interfax Global Energy, "Emerging Gas Markets – Challenges for Investors", Roundtable Special Report, www.interfaxenegy.com, July 2018, p. 3 f.
[24] See Damon Evans, "SE Asian LNG Outlook Bullish as Upstream Wanes", www.interfaxenergy.com, NGD, 16 April 2018, pp. 1-2.
[25] See idem, "Southeast Asia Set for $28bln Investment Wave", ibid., 13 February 2018, p. 5.
[26] See Catriona Scott, "Southeast Asia Set for LNG Market Growth", p. 4.
[27] See IEA, 'Southeast Asia Energy Outlook 2017', p. 86.
[28] See ibid., p. 130.
[29] See also Damon Evans, "Political Risks Rising Across Southeast Asia", www.interfaxenergy.com, NGD, 9 March 2017, p. 5, and idem, 'Threat from Militants Rising in Southeast Asia', ibid., 27 November 2017, p .4.

Figure 8: Key Natural Gas Resources and Infrastructure in Southeast Asia



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Energy Policies and Implications

Malaysia

Malaysia has already achieved almost universal access to electricity supply and modern energy services. While energy efficiency measures have largely been adopted in its electricity sector, there is room for enhancing energy efficiency in its transport, industry and building sectors. Its energy demand will still be overwhelmingly dominated by fossil fuels by 2040. The cost reduction in using solar and wind power could allow Malaysia a more ambitious plan in expanding renewables in the energy mix.

Figure 9: Key Targets of Malaysia Energy Policies

Energy Efficiency	Promoting energy efficiency in the industry, building and domestic sectors with methods of standard setting, labelling, and energy audits and building design.
RES	Increasing the share of non-hydro RES-based power generation capacity to 12.5% by 2025 and 21% by 2030.
Transport	Introducing 100,000 EVs by 2020 with 125,000 charging stations.
Climate Change	Reducing GHG-intensity of GDP by 35% by 2030 from 2005 level, increasing to a reduction of 45% with enhanced international support.

Notes: BAU = business-as-usual (scenario); GHG: Greenhouse Gases (Emissions); RES: Renewable Energy Sources; EVs: Electric Vehicles

Source: IEA, 'Southeast Asia Energy Outlook 2017' (Paris: OECD/IEA 2017), p. 50.

Malaysia has become a net oil importer in 2013. Its primary energy demand might almost double between 2013 and 2040. While natural gas is the leading fuel in its primary energy demand (PED), coal might replace natural gas as the most important one before 2030 as Malaysia has to cope with a declining gas production. The share of coal could increase from 17 per cent in 2013 up to 35 per cent in its PED by 2040. In its power sector, coal could even boost its share from 47 per cent in 2016 to 65 per cent by 2020.[30] Malaysia has used domestic gas supplies for LNG exports and for industrial use rather than to meet domestic demand. But Malaysia has limited own coal resources and they are located primarily in remote and environmentally sensitive parts of Sarawak and Sabah. It is already import dependent for 30 per cent of its coal demand (primarily supplied from Indonesia).

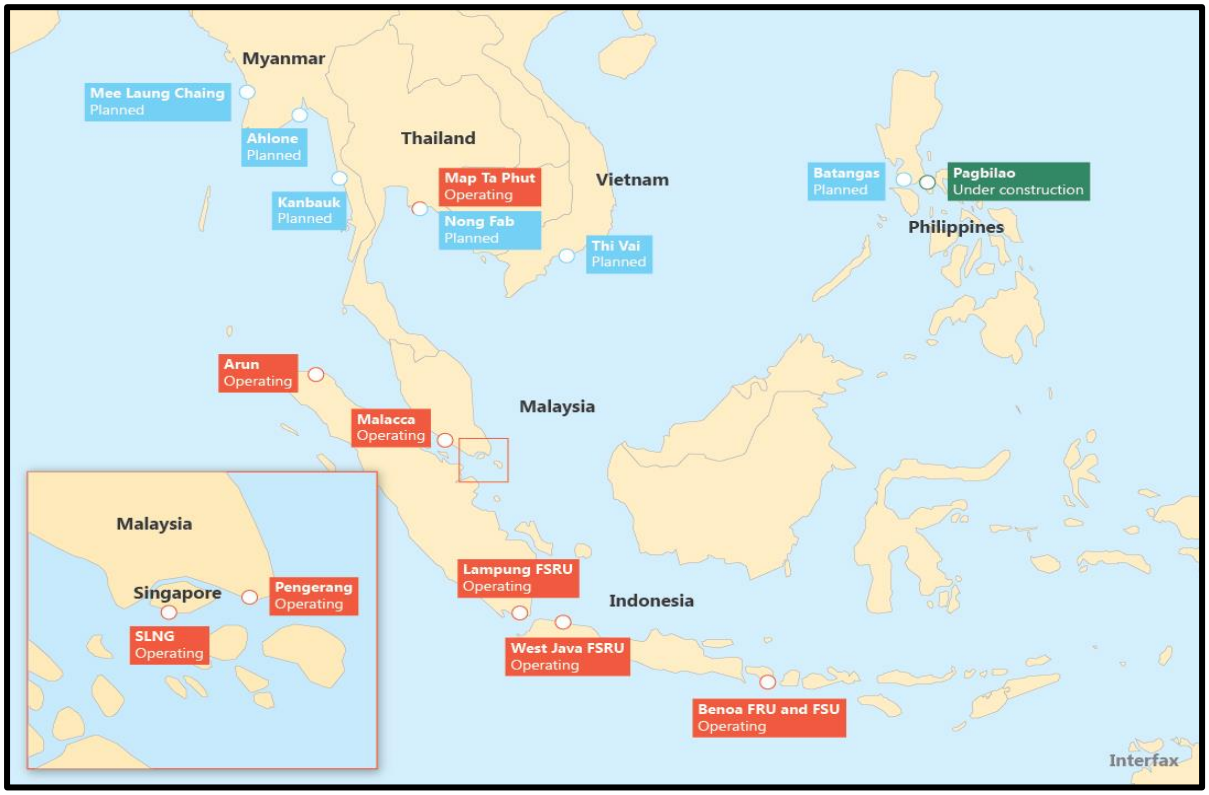
Malaysia's oil import dependence will rise to over 40 per cent. At the same time, its future oil production will become ever more dependent on deep offshore fields near Sarawak and Sabah, where large oil discoveries have been made with potential for more from future exploration.[31]

[30] See Damon Evans, "Malaysia Faciong Surplus of Gas as Output Jumps", www.interfaxenergy.com, NGD, 13 June 2016.

[31] See IEA, "Southeast Asia Energy Outlook 2015", pp. 83 and 97 f.

Since 2014 by phasing out subsidies, gas prices of Malaysia's power sector have surged by 60 per cent. By opening up its gas and LNG infrastructure to third parties, the government hopes to increase the competition on its markets, leading to lower domestic gas prices this year. But new energy companies on the Malaysian gas market have to cope with the dominance of Petronas in both the LNG sector and the downstream market.[32]

Figure 10: Operating and Planned LNG-Terminals in Malaysia and other Southeast Asian Countries



Source: www.interfaxenergy.com 2018

In 2013, Malaysia was worldwide the second-largest LNG exporter. Since then, it was the third-largest exporter of LNG (after Qatar and Australia) and second-largest oil and gas producer in Southeast Asia. Its energy industry is accounting for almost 20 per cent of the national GDP.[33] But its role on both the international gas markets and on its domestic market will further decline. Its natural gas production is expected to increase only slightly from 73.8 bcm in 2016 to around 77 bcm in 2020, but might decrease to around 60 bcm in 2040 despite new incentives for deepwater projects and larger gas fields. Its present gas consumption will increase from 43 bcm in 2016 to 55 bcm by 2040. As a result, its LNG exports were originally projected to fall back from 13 bcm in 2013 to just 7 bcm by 2040.[34] In 2017, it commissioned its second LNG-import terminal with a capacity of 3.5 mtpa. It

[32] See Andrew Walker, "Malaysian Newcomers Hope to Benefit from TPA Law", www.interfaxenergy.com, NGD, 11 January 2018, p. 3.
[33] See EIA, "Malaysia. Country Analysis Brief", Washington D.C., 26 April 2017.
[34] See IEA, "Southeast Asia Energy Outlook 2015", pp. 83 and 97 f.

imported 1.54 mt last year, rising up from 1.35 mt in 2016, despite its own domestic production increased by 4 per cent in 2017.[35]

In December 2017, Malaysia has offered up to nine new oil exploration blocks at shallow and deepwater offshore locations off the Sabah coast at its eastern regions. The Sabah/Baram Delta Basin is expected to contain 3–4 bb of oil equivalent yet to be found. Moreover, in Sabah and Sarawak, some 482 bcm of gas has been discovered. Total national gas reserves had been accounted at 1.03 trillion cubic meters (tcm) in 2016.[36] However, several offered deepwater blocks are lying entirely or partially within areas of the South China Sea claimed by China. Up to now, these areas are not (yet) actively disputed by China though international oil companies are already active. But the investments, particularly for gas production, might be expensive as investors would also have to build costly pipeline interconnectors with the local transport network and then to pipe the gas to Malaysia's LNG plant in Sarawak.[37] Furthermore, the re-election of Mahathir Mohamad as Malaysia's new prime minister, who had been critical of Chinese investment in his country, raises new questions in regard to the country's future stance in regard to China's territorial claims in the South China Sea. The last government did not challenge Beijing's claims to the South China Sea.[38]

The situation has been further complicated by the efforts of the Sarawak state government in March 2018 for control of its resources by assuming full regulatory control over the state's oil and gas industry and to devolve power from the federal government. A court decision in June 2018 rejected the state-owned oil company Petronas's request for a suspension order on the Sarawak government's plans. It has further increased the uncertainties of the regulatory and legal conditions for companies operating in Sarawak's oil and gas sectors.[39]

Philippines

As a net energy importer, the Philippines has become more dependent on energy imports despite the low energy consumption levels — compared with other ASEAN member states — of its more than 100 million population spread over 7,000 islands. Its energy demand has been projected to triple and its electricity demand to grow four times from 2015 to 2040.[40] The Philippines is on track to deliver universal electricity access for its population by around 2022. It achieved a household electricity rate of 91 per cent in 2016. This progress is remarkable as the country is an archipelagic state with more than 7,000 islands.

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35 See Catriona Scott, "Southeast Asia Set for LNG Market Growth", p. 3 f.
36 See Damon Evans, "Malaysia Facing Surplus of Gas Output Jumps", www.interfaxenergy.com, NGD, 13 June 2016, pp. 1-2.
37 See idem, "Malaysia to Award up to Nine Offshore Blocks", ibid., 13 December 2017, p. 4.
38 See Andrew Walker, "Malaysia May be Next in the (Nine-Dash) Firing-Line", www.interfaxenergy.com, NGD, 5 June 2018, p. 4.
39 See Damon Evans, "Fight for Control of Oil and Gas Grips Malaysia", ibid., 29 June 2018, p. 5.
40 See Darrin Zammit, "Philippines Shortlists Six Countries for $2bln LNG Hub, to Pick One Partner", Reuters, 20 July 2017.

Figure 11: Key Targets of the Philippines Energy Policies

Energy Efficiency	Reducing 40% energy intensity by 2030 from 2010 level; decreasing annual energy consumption by 1.6% against baseline forecasts by 2030.
Electrification	Achieving 100% electrification by 2022.
RES	Tripling the installed capacity for RES-based power generation from 2010 level to 15 GW by 2030.
Climate Change	Reducing GHG-emissions by 70% from BAU level by 2030 with the condition of international support.

Notes: BAU = business-as-usual (scenario); GHG: Greenhouse Gases (Emissions); RES: Renewable Energy Sources

Source: IEA, "Southeast Asia Energy Outlook 2017" (Paris: OECD/IEA 2017), p. 50.

The Philippines might have the biggest potential in the region for wind power. The wind power target on its "National Renewable Energy Program" with 2.3 GW capacity in 2030 is still very modest and can certainly be expanded.[41]

Manila is currently planning to build its first US$2 billion LNG import terminal, which will also include a storage capacity of five mtpa and is expected to start operation by 2019 by receiving the country's first LNG imports. Another three LNG projects are under discussion. The Department of Energy envisages a share of gas (including LNG) for 30 per cent of its long-term energy mix (presently 25 per cent). But given the modest gas demand, a liberalised electricity market that does not subsidise power any longer, and with continued gas from its Malampaya field near Palawan (supplying 1/5 of its power supply, but depleting by 2022–2024) as well as coal and hydropower cheaper than LNG, the perspective is for just one LNG terminal project over the next five years. The plan of the Philippines' National Oil Co. (PNOC) to construct a new US$2 billion LNG terminal in Batangas, however, has not attracted much interest at potential foreign partnering companies due to the uncertain gas demand of the country and the proposed facility's specifications.[42]

Critics have lamented that the government still lacks a master plan and has no clear understanding about the role of LNG in the country's energy policies.[43] If the Philippines would give up its territorial claims and the 320-km exclusive economic zone (EEZ) in the South China Sea, overlapping deeply with China's 9-Dash Line, it would also lose significant oil and gas resources. As one of the biggest oil

41 See IEA, "Southeast Asia Energy Outlook 2017", p. 90.
42 See Andrew Walker, "IOCs Show Lack of Interest in PNOCs LNG Terminal", www.interfaxenergy.com, NGD, 6 February 2018, pp. 1-2.
43 See Damon Evans, "Manila Seeks World Bank Help for LNG Plans", www.interfaxenergy.com, NGD, 14 September 2017.

and gas field in the South China Sea, Reed Bank, for instance, is believed to have 115 mb of oil and 4.6 tcf of natural gas resources. Its exploration has been suspended in 2014 following Manila's decision to go to the arbitral tribunal in The Hague to question China's claim over the area.[44] According to UNCLOS and the arbitral ruling, Reed Bank falls exclusively within the Philippines's EEZ. But the Philippine government has also offered Reed Bank for a joint development zone (JDZ) with Chinese companies.[45]

Although the arbitral tribunal confirmed most of the Philippine positions in regard to the Chinese claims, President Rodrigo Duterte downplayed the overall significance of the arbitral ruling and favoured a less contentious relationship with China. Beijing has used the opportunity to extend aid and investments to Manila. This could result in a state of limbo in the efforts of the Philippines to develop its potential oil and gas resources in the South China Sea.

Both sides are currently discussing a number of resource-sharing agreements for joint exploration in the South China Sea. While Manila might benefit economically in the short-term perspective, it might come with considerable political costs as any agreement might implicitly accept Beijing's sovereignty claims and therewith weaken Philippine sovereignty policies in the mid-and longer-term as well as any collective policy of ASEAN *vis-à-vis* Beijing's maritime territorial claims based on its 9-Dash Line. Some Philippine supporters see JDZs with China as a factor for improving bilateral economic and political relations for greater economic opportunities. They also consider the JDZs as "feasible" on the basis of a "standalone joint development agreement along the lines of a commercial arrangement", that would not undermine the basic position of Philippine sovereignty in the South China Sea.[46]

Other experts criticise such thinking as "naïve" and ignoring the long-standing Chinese motivations and strategic interests. In their view, a bilateral JDZ with China cannot be compared with similar JDZs agreed among ASEAN member states. China has repeatedly denied access by ASEAN member states to disputed areas claimed by China. Beijing is seen as pressuring ASEAN member states into JDZ projects of maritime areas in the South China Sea, which are inside its 9-Dash Line, but not legitimised by UNCLOS.[47] As Beijing has promoted JDZ projects with political attachments and conditions, it ultimately weakens the sovereignty claims of the ASEAN claimant states as well as ASEAN collective stance towards China's South China Sea claims. If the optimists are right and China supports JDZ projects without any political conditions, it might signal a significant change in Chinese South China Sea policies.

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[44] See Peter Wood, "Philippine Choose Chinese Investment over Territorial Defense", China Brief, 20 April 2017 and Damon Evans, "Philippines Seeks LNG to Avert Supply Crunch", www.interfaxenergy.com, NGD, 25 July 2017.

[45] See also Damon Evans, "China and Phiippines near Upstream Exploration Deal", www.interfaxenergy.com, NGD, 9 April 2018, pp. 1-2.

[46] Lucio Blanco Pitlo III, "Joint Development in the West Philippine Sea: an Idea Whose Time Has Come", PacificForum, PacNet, No. 22, 19 March 2018 and idem, "Reviving Prospects for Joint Development in the West Philippine Sea", www.chinausfocus.com, 24 October 2017.

[47] See also Andrew Walker, „Gunboat Diplomacy on the Rise in South China Sea", www.interfaxenergy.com, 6 April 2018, p. 3.

Vietnam

Over the past decade, Vietnam has become an important oil and gas producer in Southeast Asia. It has boosted its exploration of hydrocarbon resources and allowed greater investments from and cooperation with foreign energy companies alongside introducing some limited market reforms.

No other ASEAN member state has as much overlapping claims with China in the South China Sea as Vietnam. The Vietnamese position has become more precarious since 2014, when the China National Offshore Oil Corporation (CNOOC) moved an exploratory oil rig (Haiyang Shiyou 981) into Vietnam's EEZ, which sparked a major bilateral crisis. In June 2017, Talisman Vietnam began drilling for gas at the edge of Vietnam's EEZ after the Vietnamese government had granted a drilling licence. But after massive Chinese pressure and an open threat of force, Vietnam suspended its drilling in block 136/3 in its EEZ, as the drilling region overlaps with China's 9-Dash Line. Neither ASEAN nor the US seriously responded or supported Vietnam's delicate position.[48] Only Japan and India have backed Vietnam's maritime claims in the South China Sea.

In March 2018, Vietnam cancelled a major oil project off its southeast coast in the South China Sea for the second time within a year due to Chinese pressure. The Spanish energy firm Repsol might lose up to US$200 million of investment already made for the joint "Red Emperor" project at "Block 07/03", containing 45 mb of oil and 172 billion cubic feet of gas. In July 2017, Repsol had been ordered to suspend its drilling near "Block 136/03" to avoid confrontation with China. Together with Malaysia, Brunei and the Philippines, Vietnam has come under increasing pressure from China to concede "joint development" in areas where UNCLOS gives them sole rights under international law.

In April 2018, China's PLA Navy conducted its largest naval exercises in the South China Sea as another "gunboat diplomacy" to intimidate Vietnam and other ASEAN member states.[49] A month later, China also warned the Russian state-owned oil and gas producer Rosneft to stop its drilling plans in the disputed offshore waters of Vietnam.[50] Beijing has also criticised the Vietnam's invitation for increasing Indian investments in the South China Sea and the bilateral security cooperation in the South China Sea to counter Chinese policies and influence in the region.[51]

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48 See Robert Sutter/Chin-Hao Huang, "Steady Gains in South China Sea. China-Southeast Asia Relations", Comparative Connections (ed. by the Pacific Forum CSIS, Honolulu), Vol. 19, No. 2, September 2017, pp. 53-62 (p. 56).

49 See James Pearson, "As Rosneft's Vietnam Unit Drills in Disputed Area of South China Sea, Beijing Issues Warning", Reuters, 17 May 2018; John Reed/Charles Glover, "Repsol Halts Vietnamese Gas Project after Chinese Pressure", FT, 23 March 2018; Andrew Walker, "Gunboat Diplomacy on the Rise in the South China Sea", www.interfaxenergy.com, NGD, 6 April 2018, p. 3.

50 See Andrew Walker, "Malaysia May be Next in the (Nine-Dash) Firing-Line", www.interfaxenergy.com, NGD, 5 June 2018, p.4

51 See "China: Beijing Objects after Vietnam Invites Indian Investment in the South China Sea", Stratfor.com, 11 January 2018.

Vietnam's originally projected rising import dependence of LNG has decreased considerably with new gas production growth expectations, which will more than double its present production level of 22.7 mcm/d. In addition to its two biggest offshore gas fields ("Blue Whale" led by ExxonMobil and Block B developed by state-owned Petro Vietnam) with a combined 113 bcm of resources and an expected production plateau of 13.14 mcm/d, Vietnam will also import gas via the "Nam Con Son" pipeline from Indonesia's Tuna block in its section of the Natuna Sea (see Figure 13 on Vietnam's New Offshore Gas Projects). Hence, the building and operation of two LNG terminals by 2023–2025 — as outlined in the Vietnamese "Master Plan for Gas Industry Development" of 2017 — may no longer be needed.[52]

Figure 12: Key Targets of Vietnam Energy Policies

Energy Efficiency	Increasing commercial electricity savings to more than 10% of total power consumption by 2020 relative to BAU.
Electrification	Ensuring most rural households have access to electricity by 2020.
RES	Increasing the share of non-hydro RES-based power generation capacity to 12.5% by 2025 and 21% by 2030.
Climate Change	Reducing GHG-emissions from BAU level by 8% by 2030 and by 25% with international support.

Notes: BAU = business-as-usual (scenario); GHG: Greenhouse Gases (Emissions); RES: Renewable Energy Sources

Source: IEA, "Southeast Asia Energy Outlook 2017" (Paris: OECD/IEA 2017), p. 50.

Vietnam is also expanding its coal-fired generation capacity by some ten GW by 2020, which will also decrease its overall gas demand rise. The share of coal in Vietnam's primary energy mix is projected to increase from 34.4 per cent to 53.2 per cent in 2030. Vietnam has sought financial support from the Russian and US governments as well as commercial banks for new coal projects.[53] In contrast, the share of natural gas in power generation will decline from 30 per cent to 16.8 per cent in the same period according to Vietnam's Power Development Plan 2011–2030.[54]

Vietnam can also create much more capacity in wind power along its 3,000 km coastline as only a small fraction of its estimated capacity of around 27 GW has been developed up to now. It has recently revised its Power Development Plan, which seeks to expand its solar power capacity up to a modest 850 MW by 2020 and a more ambitious target of 12 GW by 2030. Overall, there is still much

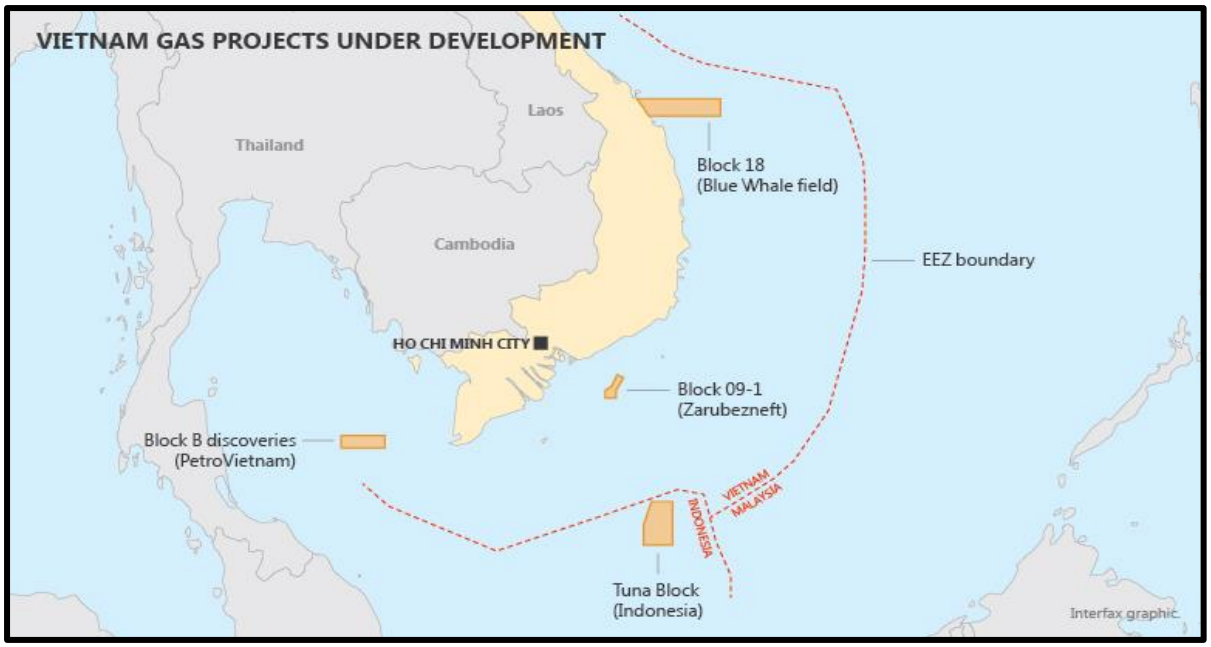
[52] See Andrew Walker, "Vietnam's Upstream Success Set to Delay LNG", www.interfaxenergy.com, NGD, 21 November 2017. To previous projections and plans see Robert Sullivan, "Vietnam's Wait for LNG Continues", ibid., 5 December 2015, p. 5 and Therese Robinson, "Vietnam Strives to Court Foreign Players", ibid., 17 July 2015, p. 7.

[53] See Mike Ives, "The US May Back a Vietnam Coal Plant. Russia Is Already Helping", NYT, 26 January 2018.

[54] See Anessandro Vitelli, "Vietnam's Reliance on Coal Delays Gas and Renewables", www.interfaxenergy.com, NGD, 14 July 2017, p. 1.

room for expanding renewable energy sources in Vietnam's energy mix and reducing its reliance on fossil fuels if the right framework conditions are installed.[55]

Figure 13: Vietnam's New Offshore Gas Projects



Source: www.interfaxenergy.com 2018

Indonesia

Although Indonesia still maintains its official long-held position of not being directly involved as a claimant state and party to the disputes in the South China Sea, it has become much more concerned about China's assertive territorial claims as the 9-Dash Line overlaps with Indonesia's continental shelf and its EEZ extending from its Natuna Islands.[56] Beijing has allowed its fishing vessels to violate Indonesia's EEZ, which has escalated into two naval confrontations in June 2016. While Indonesia's navy fired on Chinese fishing vessels and arrested a Chinese fishing crew, China's coast guard forced the release of the fishing crew when it rammed the Indonesian coast guard ship. Officially, Jakarta downplayed the naval clash. Since these events, Indonesia has sought to reinforce its naval activities around the Natuna Islands, has explored the building of a naval base there, and strengthened its security ties with India and Australia, including considering joint patrols with Canberra. In July 2017, Indonesia renamed the northern part of its EEZ as "the North Natuna Sea".[57]

As one of the architects of UNCLOS and being an archipelagic state with more than 17,000 islands, Indonesia could be one of the biggest losers if Beijing is able to control the South China Sea unilaterally, based on Beijing's own self-serving regime and regional order. Jakarta's present

[55] See IEA, "Southeast Asia Energy Outlook 2017", p. 89; and Margareth Sembiring, "Vietnam's Vision for a Renewable Energy Future", East Asia Forum, 12 August 2016.
[56] Hongzhou Zhang, "Rethinking China's Maritime Militia Policy", The Diplomat, 10 March 2015.
[57] See Christopher Roberts, "The South China Sea: Beijing's Challenge to ASEAN and UNCLOS and the Necessity of a New Multi-tiered Approach", RSIS Working Paper No. 307, 29 August 2017, p.15 f.

concerns are in particular directed towards infringement activities by Chinese fishing vessels. Those concerns might increase as Jakarta has a strategic interest to explore new offshore oil and natural gas fields, particularly in the Natuna Sea.

Indonesia has made remarkable progress in reducing the number of people without access to electricity from around 100 million people in 2000 to around 23 million in 2016, even though the population increased by almost 25 per cent. Thus, Indonesia accounts for 55 per cent of the regional net decrease of people having no access to electricity. The country might be able to reach nation-wide electricity access for its entire population in the mid-2020s if it is able to use all the instruments at its disposal.[58] During the last years, it has reoriented its hydrocarbon energy production from serving primarily its export markets to generate hard currency revenue to meeting its growing domestic energy consumption.[59]

Figure 14: Key Targets of Indonesia Energy Policies

Energy Efficiency	Reducing energy intensity by 1% per year to 2025.
Electrification	Achieving electrification ratio of 99.7% by 2025.
RES	Increasing the share of RES in primary supply to reach 23% by 2025 (up from presently 7%) and 31% by 2050.
Climate Change	Reducing GHG-emissions 26% and 29% BAU level by 2020 and by 2030, respectively, and 41% by 2020 with international support.

Notes: BAU = business-as-usual (scenario); GHG: Greenhouse Gases (Emissions); RES: Renewable Energy Sources

Source: IEA, "Southeast Asia Energy Outlook 2017" (Paris: OECD/IEA 2017), p. 50.

In addition to the expansion of renewable energy sources and enhancing energy efficiency, the country has also promoted and supported the geothermal project alongside of its Geothermal Law of 2003 and Blueprint for Geothermal Development of 2004. The plan envisaged the development of 6 GW capacity by 2020 and 13.5 GW by 2040.[60] The country also seeks to boost its solar capacity to reach 5 GW by 2020. It has reformed its FIT-system in February 2017 to encourage faster deployment of renewable energy sources.[61] A more ambitious expansion of renewables would also decrease Indonesia's GHG-emissions, which makes Indonesia the sixth-largest GHG-emitter worldwide.[62]

58 See IEA, "Southeast Asia Energy Outlook 2017", pp. 95 ff.
59 See also EIA, "Indonesia. International Energy Data and Analysis", Country Briefs, Washington D.C. 7 October 2015.
60 See ibid., p. 91.
61 See ibid., p. 89.
62 See Damon Evans, "Gas Could Help Solar Shine in Eastern Indonesia", www.interfaxenergy.com, NGD, 8 March 2017, p. 4 and Kurnya Roesad/Frank Jotzo, "Can Indonesia's Energy Path be Nudged Away from

Indonesia remains heavily dependent on the use of fossil fuels. It is by far the largest coal producer and consumer in Southeast Asia as well as one of the world's biggest coal exporters.[63] Indonesia's projected coal production will decrease from 461 mt in 2017 down to 425 mt in 2018, whilst consumption is expected to grow from 97 mt to 114 mt. But its 2017 coal output was considerably higher than its target of 413 mt and above the 456 mt in 2016, though its consumption in 2017 was below the initial projection of 121 mt.[64] Despite government plans to promote cleaner fossil fuels (i.e., natural gas), coal will still dominate the country's electricity generation mix over the next five years as it will fuel around 60 per cent of the new power capacity until 2020. The coal-fired power demand is expected to soar by 18.4 per cent in 2018. The coal demand growth could also slow down its national gas consumption growth. The present utilisation of gas-fired plants is just 30–40 per cent as coal is the cheapest energy source for its baseload supply security.[65]

Indonesia is currently the world's fifth-largest LNG exporter. The government has prioritised its domestic gas market above any export projects. Indonesia started importing LNG in 2012. Given its supply-demand balance, it does not need to import LNG until 2020. In 2020, its LNG production is estimated to decrease to 16.5 mt from 19.3 mt in 2016, with domestic demand reaching 7 mt in 2020. The government has encouraged more LNG imports as they could be cheaper than domestic supplies.[66] It is also responding to the oversupply on the LNG markets and its problems in its own gas sector by expanding small-scale LNG and related import infrastructure projects, such as FSRUs and *Floating Liquefied Natural Gas* ships (FLNGs). By 2020, the government planned to have nine operational FSRUs (up from two in 2016), but the timeline is no longer realistic.[67]

As Indonesia will remain Southeast Asia's largest gas market, it is expected that its gas demand will more than double from 44 bcm to almost 100 bcm by 2040.[68] Indonesia will remain the region's largest gas producer. However, while it is currently exporting 40 bcm a year, it is not able to satisfy its rapidly increasing future domestic gas consumption with its production increase based on the presently planned projects. It could become a net importer of natural gas by the mid-2030s. The manifold uncertainties in Indonesia's oil and gas sectors have also blocked the development of

Coal?", East Asia Forum, 26 September 2016, and Avantika Chilkoti, "Joko Widodo Enters Firefight to Damp Climate Censure", FT, 1 December 2015.

63 See BP, "Statistical Review of World Energy 2017", June 2017, pp. 38 ff.

64 See "Asia Energy Stories of Today", Reuters, 11 January 2018.

65 See Damon Evans, "Indonesia Faces LNG Glut as Coal Remains King", www.interfaxenergy.com, NGD, 28 November 2017, p. 6.

66 See ibid., and "LNG Import Is a Cheaper Option: Luhut", Jakarta Post, 22 August 2017 and Andrew Walker, "EnergyHub Profile: Indonesia", ibid., 14 January 2016, p. 8.

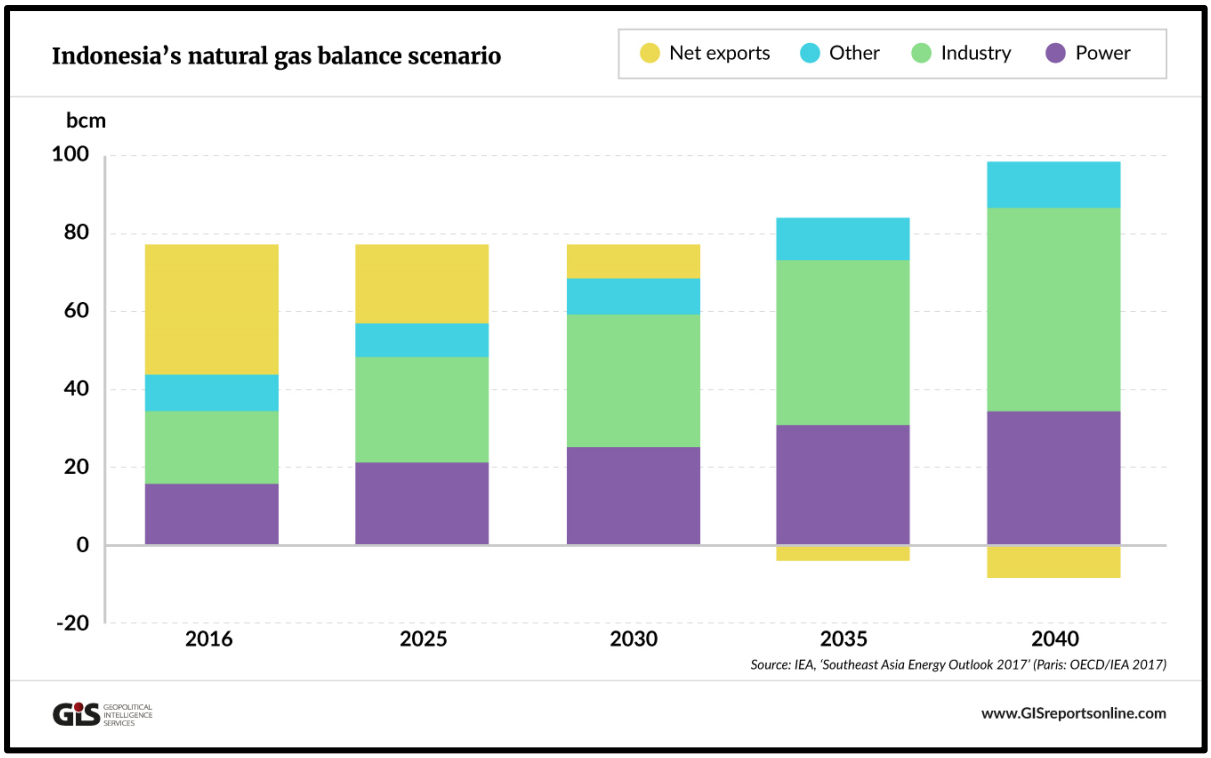
67 See Andrew Walker, "Indonesia Looks to Expand Small-Scale LNG Network", www.interfaxenergy.com, NGD, 21 February 2017, p. 5; idem, "Floating Power Plants Ofer Respite to Indonesia", ibid., 22 April 2016, pp. 1-2; idem, "Indonesia to Start Small-Scale Gas-to-Power Project", ibid., 11 April 2016, p. 4, and idem, "Indonesia Eyes FSRUs to Meet Demand", ibid., 23 June 2016.

68 See IEA, "Southeast Asia Energy Outlook 2017", p. 87 f.

unconventional gas resources although Indonesia has five promising basins with technically recoverable shale gas resources of 1.38 tcm.[69]

[69] See also Robert Sullivan, “Indonesian Shale Gas on Hold amid Uncertainty”, www.interfaxenergy.com, NGD, 20 February 2014, pp. 1-2 and Banda Acah Muchlis, “Govt Should Start Shale Gas Projects”, Jakarta Post, 10 October 2015.

Figure 15: Indonesia's Natural Balance in the New Policies Scenario (NPS 2016–2040)



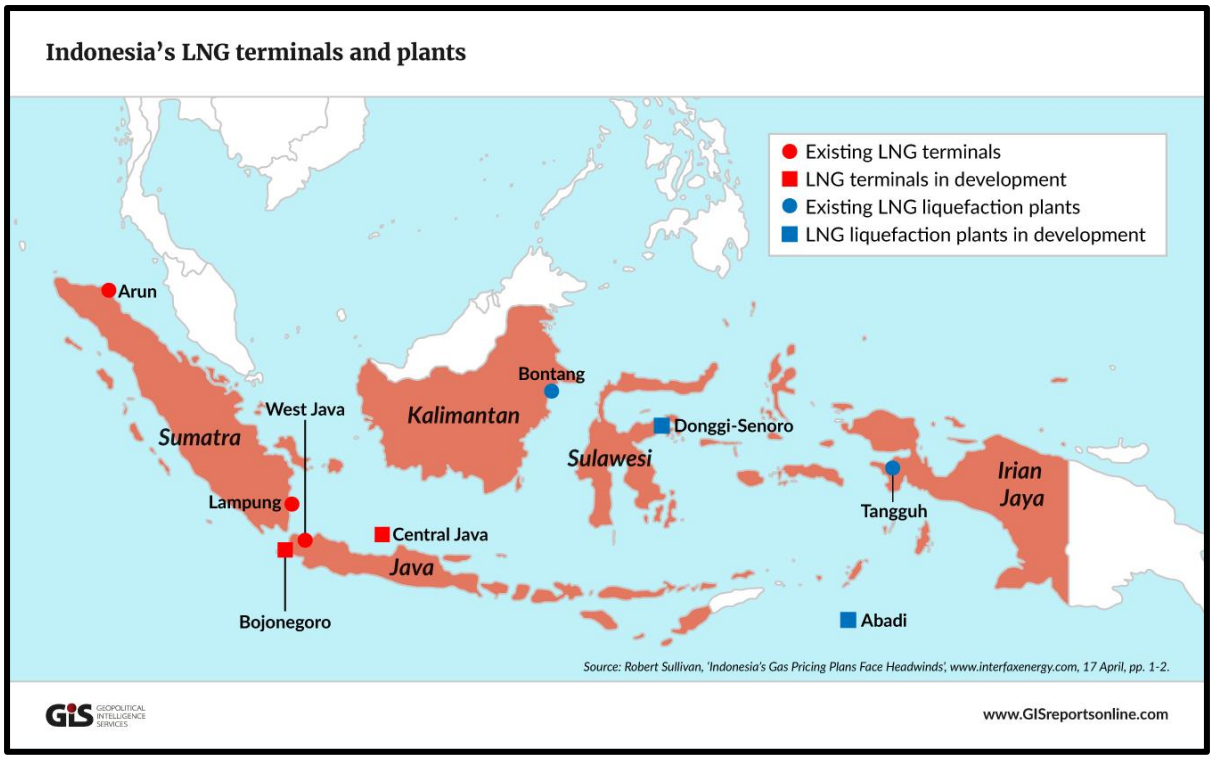
Source: Geopolitical Intelligence Service 2018

The prospect may change when Indonesia is able to develop Asia's largest untapped gas field in East Natuna with an estimated 6.3 tcm resources (located in the Natuna Sea off the coast of Western Kalimantan). But the deepwater project would be expensive and complicated by the high CO_2 content of its gas (with a concentration of >70 per cent). The internal rate of return for contracted investors for new deepsea projects should be more than 20 per cent, but Indonesia's is with just 11 per cent in 2016.[70] As the global gas markets have already to cope with overcapacities, including LNG supplies, and given the present oil as well as gas prices (though oil and gas prices have increased), they could fall again in the next years.[71]

[70] See Damon Evans, "Jakarta Eyes Gas-Rich Deep Waters", www.interfaxenergy.com, NGD, 8 June 2016, p. 6.

[71] See also F. Umbach, "Global Outlook 2018: The Energy Revolution and its Growing Uncertainties", Geopolitical Intelligence Service (GIS), 30 January 2017.

Figure 16: Indonesia's LNG Terminals and Plants



Source: Geopolitical Intelligence Service (GIS) 2018

Other deepwater projects, such as off the coast of Eastern Kalimantan, are continuing and will be a crucial factor for boosting Indonesian gas production in the years ahead alongside of its considerable coalbed methane (CBM) resources in Eastern Kalimantan and Sumatra.[72] Discussions are also underway for developing new offshore gas fields (i.e., "Greater Sunrise JV") with Timor Leste, where 142 bcm reserves are estimated. The UN-backed Conciliation Commission has helped to mediate a long-standing maritime boundary dispute between Timor Leste and Australia. Both sides completed a draft treaty for a permanent maritime boundary last October.[73]

The newly-elected new government of East Timor in May 2018 has restarted negotiations with the stalled Woodside Petroleum-led consortium on a development model for the "Greater Sunrise" project. The commercially viable option for piping its gas to Australia would allow East Timor to receive 80 per cent of the royalties. But the government and the leader of the National Congress for Timorese Reconstruction (CNRT), Xanana Gusmao, have favored the idea that the gas is liquefied and exported from a proposed LNG plant at Beaco on East Timor's southern coast. Independent experts, however, consider the piping of gas to an LNG-terminal with a capacity of 5 mtpa as commercially unviable.[74]

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72 See IEA, "Southeast Asia Energy Outlook 2017". pp. 53 ff. and 83 ff.

73 See Damon Evans, "Oil Companies Talk Greater Sunrise Options", www.interfaxenergy.com, NGD, 17 October 2017, pp. 1-2, and idem, 'East Timor Open to Greater Sunrise Options', ibid., 20 November 2017, pp. 1-2.

74 See Damon Evans, "East Timor Restarts Sunrise Talks after Elections", ibid., 25 June 2018, p. 3.

The Indonesia Government has strengthened its national control over joint venture projects by introducing new production-sharing contracts in January 2017 and other measures, which have complicated the investment conditions for international oil companies. The overall direction of Indonesia's "resource nationalism" is threatening the plans to expand its gas and LNG sectors. The lack of drilling success and commercialisation has weakened the country's outlook in an increasingly competitive environment. By 2019–2023, it might no longer be just a net importer of oil, but could already become also a net importer of gas unless the government implements a strategic energy plan to boost domestic production.

Given the often confusing and contradictory policies, coupled with the absence of a long-delayed oil law, fiscal as well as regulatory uncertainties and a rather long exploration and development lifecycle of around 10–15 years, Indonesia's oil and gas sector is seen by experts as "almost uninvestable".[75] Chevron, for instance, has threatened to withdraw from Jakarta's first "Indonesia Deepwater Development" (IDD) project as it is not sure that the agreed production-sharing contracts (PSCs), which will expire for the two gas blocks in 2027 and 2028, will be renewed. The IDD would be one of Indonesia biggest gas projects. Its second phase, whose production is planned to start in 2023, demands an investment of US$10 billion. Industry experts claimed that Indonesia's state-owned Pertamina does not have sufficient human, technological and financial resources to implement costly projects under the new gross-split contract schemes.[76]

Overall, the political risks, regulatory uncertainties and the often unattractive conditions for foreign investors are expected to last at least until the next presidential and national parliamentary elections in April 2019. This will hinder the much needed timely investments for Indonesia's energy security.[77] Under these political circumstances, the previously presumed capital spending of US$6.6 billion for the development of 19 oil and gas fields containing an estimated of 1.01 billion to be approved by the Indonesian government by 2020 appears rather unrealistic.[78] While the merger of Pertamina and Perusahaan Gas Negara (PGN) may strengthen the Indonesian gas sector by creating a unified gas player and large integrated company across the whole value chain, it might also hinder competition in

[75] See Karlis Salna//Yoga Rusmana, "Whatevever Happened to Indonesia's Mighty Oil and Gas Industry?", Bloomberg, 14 August 2017; Damon Evans, "Jokowi's Wrath Triggers Shake-up at Ministry", www.interfaxenergy.com, NGD, 7 August 2017, p.4; idem, "Jakarta Shocks Upstream with Latest Regulatory Blow", ibid., 28 July 2017, pp. 1-2; idem, "Jakarta Pin's Upstream Hopes on New Law", ibid., 13 June 2017,pp.1-2, idem, "Indonesian Imports Set to Rocket as Crisis Bites", ibid., 19 May 2017,p. 5; idem, "Jakarta's Upstream Incentives Miss the Mark", ibid., 5 October 2016, pp. 1-2; idem, "Uncertainty Clouds Indonesian Licensing Round", 24 August 2016, p. 5; "Indonesia Ups Mahakam Offer for Total and Inpex", ibid., 15 December 2017, p. 4, and Andrew Walker, "Concerns Raised Over Indonesia's New Gas Law", ibid., 3 September 2015, p. 6.

[76] See also Damon Evans, "Jakarta's Nationalist Drive Casts Doubt on Chevron's IDD", www.interfaxenergy.com, NGD, 2 August 2018, pp. 1-2; idem, "Pertamina Told to up its Game for Expiring PSCs", ibid., 12 January 2018, pp. 1-2, and Fergus Jensen/Agustinus Beo Da Costa, "Indonesia Pricing Policy Dispute Fuelled Pertamina Shake-up", Reuters, 25 April 2018.

[77] See Damon Evans, "Elections Pose Risk for Indonesian Oil and Gas", www.interfaxenergy.com, NGD, 21 June 2018, p. 5.

[78] See Damon Evans, "Southeast Asia Set of 28$ bln Investment Wave", ibid., 13 February 2018, p. 5.

the national market and offers a striking contrast to the liberalisation efforts in other ASEAN gas markets such as in Singapore, Thailand and Malaysia in recent years.[79]

Indonesia's Global Maritime Fulcrum

Indonesia is the only ASEAN state which has declared a regional and global maritime vision, which can be seen as a comparable concept with China's Maritime Silk Road strategy within the BRI. In 2014, Indonesian President Joko Widodo introduced his country's Global Maritime Fulcrum (GMF) vision. The GMF identified Indonesia as a maritime country with vast maritime interests, which must assert itself as a geographic force and "gatekeeper" between the Indian Ocean and the Pacific Ocean.[80]

The GMF has outlined five pillars: rebuild maritime culture, manage marine resources, develop maritime infrastructure and connectivity, advance maritime diplomacy, and boost maritime defence forces. But the GMF was not clearly defined. It did not offer any strategy for implementation. Hence it could be interpreted inside and outside Indonesia in different ways. Despite its five pillars, the content of the GMF policy remained still nebulous and highly rhetorical.[81]

On 1 March 2017, the Indonesian President released a new decree on "Indonesian Ocean Policy (IOP)" to facilitate the acceleration of the GMF vision. According to the new document, the GMF shall now contribute to peace and security, following national interests.[82]

The GMF is further detailed by two appendices, which include a long-term framework (with 37 pages) and a short-term scheme (with 198 pages) as an Action Plan for 2016–2019.[83] It is also linked with Indonesia's "Blue Economy concept" of 2012 promoting a sustainable development in the maritime region, its "Sea Toll Road" project to improve inter-island connectivity and port infrastructures within its archipelagic state, and the Master Plan on ASEAN Connectivity (MPAC) of 2010 to improve the regional maritime infrastructures and facilities as an integral part of strengthening the ASEAN Economic Community.[84] With the ISP of 2017, the five pillars of the GMF have now been expanded to seven.

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79 See Damon Evans, "Pertamina-PGN Merger Closer to Completion", www.interfaxenergy.com, NGD, 12 February 2018.

80 See "Indonesia's Global Maritime Fulcrum Challenges and Trajectories", Event Report. Institute of Defence and Strategic Sudies/RSIS, Singapore, 23 July 2015, p. 11.

81 See Adelle Neary, "Jokowi Spells Out Vision for Indonesia's Global Maritime Nexus", CSIS, 26 November 2017.

82 See The President of the Republic of Indonesia, "Presidential Decree of the Republic of Indonesia Number 16 of 2017 Concerning Indonesian Ocean Policy", Jakarta, 1 March 2017.

83 See Evan Laksmana, "Indonesian Sea Policy: Accelerating Jokowi's Global Maritime Fulcrum", Asia Maritime Transparency Initiative, CSIS, 23 March 2017, and Keoni Marzuki, "Indonesia's Global Maritime Fulcrum Policy", Australian Naval Institute, 2 April 2017.

84 See Siwage Dharma Negara/Sanchita Basu Das, "Challenges for Indonesia to Achieve its Maritime Connectivity Plan and Leverage on Regional Initiatives", ISEAS-Perspective, Issue 217, No. 3, 10 January 2017; Dedi Dinarto, "Indonesia's Blue Economy Initiative: Rethinking Maritime Security Challenges", RSIS-

These seven pillars were further detailed into 76 programmes and 425 activities to achieve 330 targets. In general, the GMF has two major dimensions: strategic and economic. The strategic dimension envisions Indonesia and its naval forces as a regional maritime power. Consequently, Indonesia has increased its defence spending to boost its naval modernisation. The economic dimension envisages the role of an interconnected Indonesia capitalising on its geographic location. The better integration of Indonesia's islands with global maritime trade routes demands more investments in its ports, fisheries and shipping industry as well as to decrease the economic development gaps between the main and smaller islands.[85] The economic dimension, which also seeks to strengthen the role of the state in the overall economic development of Indonesia, has been seen as superior *vis-à-vis* the outlined security element.[86]

Figure 17: The 7 Pillars of Indonesia's Global Maritime Fulcrum

- Marine and human resource development;
- Naval defence (maritime security and safety at sea);
- Ocean governance, institutionalisation;
- Maritime economy, infrastructure and welfare;
- Environmental protection and ocean space management;
- Nautical Culture; and
- Maritime Diplomacy.

Source: Evan Laksmana, "Indonesian Sea Policy: Accelerating Jokowi's Global Maritime Fulcrum", CSIS, 23 March 2017

Indonesian and foreign experts have continued to criticise the GMF. They noted the lack of a concerted action plan and an effective institution to fully implement the GMF. Planning, budget and execution of the programmes are left to the respective ministries – though the Coordinating Ministry for Maritime Affairs is now tasked with monitoring, coordinating and evaluating.[87]

There are also multiple stakeholders in the country's maritime security domain. There are 13 agencies that need to be integrated under a single command as the present situation is linked with overlapping, often confusing authorities and responsibilities, leading to miscommunication, lack of coordination and ineffective implementation of its national maritime policies.[88]

Commentary, No. 206, 1 November 2017, and idem, "Security Challenges to Indonesia's 'Blue Economy'", East Asia Forum.

85 See I.G.B. Dharma Agastia, "3 Years Later. Where Is Indonesia's 'Global Maritime Fulcrum'?", The Diplomat, 22 November 2017.

86 See also "Indonesia's Global Maritime Fulcrum Challenges and Trajectories", p. 13.

87 See Evan Laksmana, "Indonesian Sea Policy: Accelerating Jokowi's Global Maritime Fulcrum", Asia Maritime Transparency Initiative, CSIS, 23 March 2017.

88 See I.G.B. Dharma Agastia, "3 Years Later, Where Is Indonesia's 'Global Maritime Fulcrum'?".

In contrast to China's BRI maritime strategy, the main focus of the GMF and the IOP is still domestic policies, reflecting "an inherently inward-looking concept". It is primarily a "bureaucratic umbrella" for pre-existing policies and programmes. As the Indonesian expert Evan Laksmana lamented, Indonesia won't be a real "force" but rather still a "missing middle" between the two Oceans.[89] Other experts meanwhile recognise a certain shift in Indonesia's maritime outlook from its traditional introverted nature with an increasing role for maritime diplomacy. But they also concede that the GMF is a "work in progress" and a full implementation as well as recognition for its maritime diplomacy and the foreign policy implications will only take place when Indonesia has a stronger domestic consensus "that the way to the future is outward, rather than inward."[90]

For Indonesia's Foreign Ministry, 23 action plans have been defined as part of the GMF and the ISP, including the need to definitely settle border and territorial disputes with its neighbours. The growing tensions in the South China Sea were mentioned. The action plans, however, only refer to "optimising diplomacy", "active participation" in various international organisations and "safeguarding Indonesia's interests and enforcing Indonesia's sovereignty in the South China Sea" without specifying any concrete further actions to defuse the South China Sea tensions.[91]

Despite the pronouncements on the GMF and the ISP, Indonesia still lacks a real grand strategy. There is "not enough credible force to back Indonesia's diplomacy" and, thus, to match ends and means in its GMF. As a pre-condition, Indonesia needs to clearly define and enunciate its strategic interests.[92] The rapidly changing geopolitical landscape in Asia Pacific requires Indonesia to address the most critical and challenging issues for its future security policies such as China's assertive South China Sea policies.[93] Overall, Indonesian experts have downplayed larger expectations for the GMF.

Indonesia's GMF and IOP differ in other respects towards China's BRI and maritime vision. Most importantly, Indonesia lacks the financial power to implement its huge infrastructure needs and future plans. Instead, it is heavily dependent on foreign investors and de facto relying considerably on Indonesian economic cooperation with China.

While one could certainly identify an energy-security nexus on the side of Indonesia, this nexus is not clearly defined and addressed in the GMF and the ISP. Wider public debates are still focusing on illegal fishing, depleting of regional fish resources, foreign shipping intrusions into Indonesia's EEZ challenging its maritime sovereignty alongside other non-traditional security challenges such as human trafficking

89 Evan Laksmana, "Indonesian Sea Policy: Accelerating Jokowi's Global Maritime Fulcrum".
90 I.G.B. Dharma Agastia, "Indonesia's Global Maritime Fulcrum: An Updated Arhcilpelagic Outlook?", The Diplomat, 17 December 2016.
91 See Yohannes Sulaiman, "Global Maritime Nexus: Toward a Grand Strategy for Indonesia?", Jakarta Post, 4 April 2017.
92 See ibid.
93 See I.G.B. Dharma Agastia, "Indonesia's Global Maritime Fulcrum: An Updated Archipelagic Outlook?'".

and smuggling as well as climate change and maritime pollution.[94] The dynamics of Indonesia's rising energy import dependencies, the increasing number of deepwater offshore oil and gas projects and its related security dimensions as well as foreign policy implications are only touched on in general terms. Only the IOP has recognised that the "great potential of natural resources" in its Exclusive Economic Zone (EEZ) of 5.8 million km^2 "may become an alternative to the fulfillment of Indonesia's needs of energy and mineral".[95] It also critically admits that Indonesia has not optimally utilised and exploited its offshore oil, gas and mineral resources, which "should be the main priority of the development of Indonesia in the future".[96]

The energy-security nexus is not well regarded as a major driver of the projects under the GMF. Theoretically, the GMF allows Indonesia to present itself as the conduit of the world's largest direct energy corridor and supply chain between the Middle East and Asia. Indonesia's OPEC membership could help to build mutual maritime partnerships in Southeast Asia, and along the Indian Ocean and the Gulf region.[97]

The reason for this shortcoming is not just rooted in the focus on domestic policies. It is possible that the Indonesian political elite is unwilling to open up a more comprehensive and critical debate on China's policy in the South China Sea. This could be the result of a lack of political consensus concerning China's perceived policies in Southeast Asia. Given also ASEAN's lack of consensus on how to deal with China, particularly *vis-à-vis* Chinese territorial claims in the South China Sea, the Indonesian Government still follows the country's traditional non-aligned policy and non-balancing posture of not choosing sides. Indonesia presented itself as a "honest broker" — at least until China would clearly challenge Indonesia's EEZ, and maritime sovereignty and projects.[98] This effectively leaves the security challenges and threats in the South China Sea unchallenged and, therewith, ignores also the challenges for Indonesia's GMF, IOP and the Blue Economy concept.

Notwithstanding this unwillingness, the increased spending on Indonesia's naval forces suggests some disquiet in certain quarters in Indonesia over China's ambitions in Southeast Asia. Indonesia's modernisation of naval infrastructures also includes the naval base on Natuna Island against both potential non-traditional and traditional security threats.

As analysed above, Indonesia's energy import dependencies will increase alongside the expansion of its offshore deep water oil and gas projects in its EEZ. Hence, the importance of the related maritime

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94 See Prashanth Parameswaran, "Indonesia's War On Illegal Fishing Nets New China Vessel", The Diplomat, 6 December 2017; Siwage Dharma Negara/Sanchita Basu Das, "Challenges for Indonesia to Achieve its Maritime Connectivity Plan and Leveage on Regional Initiatives".

95 See The President of the Republic of Indonesia, "National Document of Indonesian Ocean Policy. Annex I Presidential Decree of the Republic of Indonesia", Number 16 of 2017 Concerning Indonesian Ocean Policy', Jakarta, 1 March 2017, p. 12.

96 Ibid., p. 19.

97 See also "Fueling Indonesia's Regional Strategy", Stratfor, 13 November 2015.

98 See Emirza Adi Syailendra, "China in Indonesia's Foreign Policy: Maintaining a Non-Balancing Posture", RSIS Commentary, No. 168/2017, 14 September 2017, and Sanjeevan Prdhan, "China's Maritime Silk Route and Indonesia's Global Maritime Fulcrum: Complements and Contradictions".

security challenges for Indonesia's EEZ and sea lanes of communication (SLOCs) will inevitably get higher attention in Jakarta's energy-security nexus. This is an important factor in the future evolution of Indonesia's GMF vision.

Conclusion

The ten member states of ASEAN in Southeast Asia have to cope with increasing populations, disruptive technological changes, a digitalising economy, and the granting of universal access to electricity for their citizens. Therefore, energy demand will rise rapidly. At the same time, indigenous fossil fuel energy production is declining and the energy mix as well as production and consumption patterns are moving towards cleaner energy sources. These countries have to manage energy supply security and sustainable use of energy resources and to balance the strategic objectives with each other. Southeast Asia is also required to decrease its environmental problems (i.e., air, water and ground pollution) and mitigate climate change and air pollution, particularly of big cities.

The rising energy import dependencies of ASEAN member states will both strengthen existing and create new intra- and inter-regional linkages, which might fuel both new trade opportunities and wider security concerns, particularly in the maritime domain. Enhancing regional cooperation (i.e., ASEAN Power Grid and Trans-ASEAN Gas Pipeline) and optimising the management of national and regional energy systems will be one of the key challenges and tasks of ASEAN as the grouping continues its community building. The IEA and others have recognised that the potential for expanding renewable energy sources is much larger than currently promoted.

ASEAN member states have partly responded to the increasing dependence on energy imports by decreasing the state subsidies for energy consumption and expanding oil stockpiling. In contrast to oil storage sites, the region has hardly created any gas storage sites. Given the overall increase of gas consumption in the region and dependence on rising imports, these gas storage sites become ever more important though they are costly to construct.

Figure 18: Southeast Asia Projected Energy Trends

- In 2016, fossil fuels still dominated, accounting for 75 per cent of Southeast Asia's primary energy mix.
- As the result of much cheaper coal and renewable energy sources (solar PVs), the share of gas could decline from presently 43 per cent to just 28 per cent by 2040.
- Among renewable energy sources, hydropower has been expanded rapidly, particularly in Cambodia, Myanmar and Laos, whereas wind and solar hitherto have remained a marginal source in the regional primary energy mix.
- While ASEAN will remain an important producer of oil, gas and coal, the region will undergo a decline of oil and coal production.
- Regional oil production might decrease from 2.5 mb/d in 2016 to 1.7 mb/d by 2040.
- Indonesia and Malaysia are currently accounting for 70 per cent of the regional proven gas reserves of 8.1 tcm and two-thirds of the regionally produced 220 bcm in 2016.
- The introduction of smaller FSRUs for LNG has offered worldwide new opportunities to open and supply smaller gas markets. It will also boost LNG supplies and imports in Southeast Asia in the future.
- Given Southeast Asia's imbalance between its rising energy demand and declining indigenous production, it will transform ASEAN into a significant net importer of energy by 2040.
- Net imports of oil could more than double up to 6.9 mb/d due to an oil production fall of 30 per cent in the region.

Source: F. Umbach, based on IEA and other projected energy trends for Southeast Asia

The energy policies of four ASEAN member states geographically located on the rim of the South China Sea have been briefly highlighted. They are developing more offshore oil and gas resources in reducing their rising oil and LNG imports as part of their energy supply security strategy. Accordingly, those offshore oil, gas and mineral resources will play a much more important role in their future national maritime economic and security policies. In doing so, they are likely to encounter China's territorial claims in the South China Sea. So far, there is little public information to indicate that the energy policies of these four countries have factored in the security concerns arising from China's assertive policy in the South China Sea. Where direct confrontation occurs (i.e., over fishing intrusions), bilateral interests have been accommodated in an interim manner. This heightened the concern that the disputes could eventually lead to wider conflagration.

An interesting litmus test for China's South China Sea policy could be Malaysia's Sabah/Baram Delta Basin with an estimated 3–4 billion barrels of oil equivalent yet to be found. Several offered deepwater blocks are lying entirely or partially within areas of the South China Sea claimed by China. Up to now, these areas are not (yet) actively disputed by China though international oil companies are already active there. Another question is whether the Philippines will give up its territorial claims and its entire EEZ. The Filipino case overlaps with China's 9-Dash Line in many places. The Philippines could lose significant oil and gas resources. Reed Bank, for instance, is believed to have 115 million barrels of oil

and 4.6 trillion cubic feet of natural gas resources, whose exploration has been suspended since 2014.

Another litmus test could be the proposed bilateral development of JDZ projects between China and the Philippines as it raises the question whether these projects will be only defined by commercial standards or whether they will come along with political conditions, weakening Manila's sovereignty claims and bolster Beijing's own territorial claims based on its 9-Dash Line.

Meanwhile, a further drift of ASEAN into China's economic orbit and sphere of influence can be observed. This could lead to a strategic appeasement towards China, as the US focus is directed towards the Korea Peninsula and North Korea's nuclear ambitions as well as the trade conflict with China. Even if ASEAN and China would be able to agree to a regional "Code of Conduct", it may not have any significant impact on resolving the territorial disputes. Time appears to be on China's side and its "creeping" control of the South China Sea.

There is also no strategic outlook evident as yet in connecting the BRI of China with the energy strategies of the highlighted ASEAN member states. The BRI implications on the region's energy-security nexus have not been articulated in a systematic way as each individual country's priorities in its energy supply and demand situation preoccupy policy thinking and decisions. Indonesia's GMF vision comes closest to a big-picture strategic response to the BRI. Yet, the GMF appears more of a domestic initiative for better accountability and governance than a foreign policy to balance the BRI. According to Southeast Asian experts, no dramatic move will take place unless and until the ASEAN leaders express a political will to protect their collective interests as a regional body.

Going forward, the energy transition in ASEAN is likely to be determined by ad hoc policy measures. The rising regional offshore oil and gas projects and growing energy import dependencies can fuel more political tensions as the disputes in the maritime domain remain unresolved. At the same time, increasing investments in the offshore projects in the South China Sea and coping with higher energy import dependencies as well as related costly security investments can also promote more regional security cooperation within ASEAN. This will enhance the regional energy-security nexus.

About the Author

Frank Umbach has been appointed as Adjunct Senior Fellow in RSIS with effect from 22 September 2017. Dr Umbach graduated from the University of Bonn with a M.A. degree in Political Science and a PhD ("Dr. phil"). He is presently the Research Director of the European Centre for Energy and Resource Security (EUCERS) at King's College in London as well as a Senior Associate at the Centre for European Security Strategies (CESS GmbH), Munich and a Visiting Professor at the College of Europe in Natolin (Warsaw) in Poland, teaching on "EU External Energy Governance". Furthermore, he is also an Executive Advisor at Advisor *at Proventis Partners GmbH* (a M&A company), Munich, and a consultant for the Gerson Lehrman Group (GLG) and Wikistrat.com. Since 2014, he is an independent "Subject Matter Expert (SME)" on international energy security of NATO's annual "Strategic Forecasting Analysis (SFA)" and a regular presenter at high-level NATO conferences on energy security. He is an internationally recognised expert on global energy security, geopolitics, critical (energy) infrastructure protection/CEIP, and (maritime) security policies in Asia Pacific as well as Russia/Central Asia.

Previously, he was also a (Non-Resident) Senior Fellow of the Atlantic Council of the United States (ACUS) in Washington D.C. between 2010 and 2015. From 2003 to 2007, he was a Co-Chair of the European Committee of the Council for Security Co-operation in Asia-Pacific (CSCAP-Europe). From 1996 to 2007, he was the head of the programmes "Security Policies in Asia-Pacific" and "International Energy Security" at the German Council on Foreign Relations (DGAP) in Bonn and Berlin; a research fellow at the Federal Institute for East European and International Studies (BIOst) from 1991 to 1994 and a visiting research fellow at the Japan Institute for International Affairs (JIIA) in Tokyo from 1995 to 1996.

Dr Umbach has done consultancy work and testimonies for the German Ministries of Foreign Affairs and Defence Policies; European Commission and European Parliament, US-State and Energy Departments, US-China Economic and Security Review Commission (US-Congress), the Lithuanian Government, the House of Lords (British Parliament), the Polish Foreign and Economic Ministries, Hungarian Foreign Ministry, South Korean Foreign Ministry, NATO, OSCE, World Energy Council (WEC), Federation of the German Industries (BDI), energy and consultancy companies (incl. APCO and Roland Berger) and has advised international investors (via GLG). He is also the author of more than 500 publications in more than 30 countries worldwide, including being a contract author of the Geopolitical Intelligence Service (GIS) in Liechtenstein since 2011.

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