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ASEAN's Regional Approach to Energy Security: taking member states beyond national and commercial interests?

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Abstract

This paper examines ASEAN's regional approach to energy security, which is based on an active agenda of regional collaboration, seeking to minimise the duplication of infrastructure while promoting economic development. The paper considers conventional energy sources, as well as civil nuclear power, and discusses several key initiatives under consideration, including a power grid and trans-ASEAN gas pipeline.

The paper argues that while the ASEAN energy strategy is pragmatic in conception, it struggles in delivery, not least because of the host of technical, commercial and national interest problems confronting the regional plan. It concludes that the key electricity, gas and nuclear power projects are all yet to achieve ASEAN's plans, and that there are real questions as to their eventual implementation.

ASEAN's Regional Approach to Energy Security: taking member states beyond national and commercial interests?

Introduction

Since its formation in 1967, The Association of South East Asian Nations (ASEAN) has sought to engender a regional collaborative focus on a range of economic and security issues.[1] More recently, ASEAN has sought to foster a regionally integrated European Union-style ASEAN economic community (AEC), aiming for it to be in place by 2015.[2] This is likely to be especially challenging for a membership comprising developing nations with widely differing forms of government, levels of economic development, culture and national identity.

Most commentators already point to a gap between ASEAN rhetoric and reality.[3] However, ASEAN achievement needs to be judged carefully against the economic and social conditions at the time of its formation. Centralised national government is a relatively recent phenomenon in Southeast Asia, and sovereignty is somewhat fragile in some member states.[4] ASEAN has, therefore, operated as a collaborative institution which rarely compels national action and seems to be used by some nations more as a hedging mechanism.[5] Despite this, ASEAN nations acknowledge that the closer economic integration they seek will make greater demands on sovereign states.

As rapidly developing countries with a total population over 600 million,[6] the energy demand within ASEAN is growing quickly.[7] Energy security is central to economic development and typically requires significant planning and capital investment. ASEAN overtly links energy security with development of the AEC and well

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1 ASEAN Secretariat, *ASEAN Charter*, ASEAN, Jakarta, 2008, pp. 1-3.

2 ASEAN Secretariat, *ASEAN Economic Community Blueprint*, ASEAN, Jakarta, 2008.

3 See, for example, Anja Jetschke and Jürgen Rüland, 'Decoupling Rhetoric and Practice: the cultural limits of ASEAN cooperation', *Pacific Review*, Vol. 22, No. 2, 2009, pp. 179-182; Philomena Murray, 'Comparative Regional Integration in the EU and East Asia: moving beyond integration snobbery', *International Politics*, Vol. 47, No. 3-4, 2010, pp. 308-323; and M. Caballero-Anthony, 'Non-Traditional Security and Infectious Diseases in ASEAN: going beyond the rhetoric of securitization to deeper institutionalization', *Pacific Review*, Vol. 21, No. 4, 2008, pp. 507-525.

4 Milton Osborne, *Southeast Asia: an introductory history*, Sydney, Allen & Unwin, 2004, p. 253.

5 Jürgen Rüland, 'Southeast Asian Regionalism and Global Governance: "multilateral utility" or "hedging utility"?', *Contemporary Southeast Asia,* Vol. 33, No. 1, 2011, p. 98.

6 ASEAN Secretariat, *ASEAN Statistical Leaflet: selected key indicators 2012*, ASEAN, Jakarta, 2012, p. 2.

7 See, for example, Elspeth Thomson, 'ASEAN and Northeast Asian Energy Security: cooperation or competition', *East Asia,* Vol. 23, No. 3, 2006.

understands the growing international securitisation of energy supply.[8] Collaboration among ASEAN nations has the potential to lower their individual investment burdens and retire security risk.

Conversely, variations in ASEAN members' national wealth and investment capacity, when coupled with commercial and geographic practicalities, all challenge regional collaboration on energy security. Energy security in the medium to longer term, therefore, provides a concrete issue on which to evaluate ASEAN's success in maturing its regional model to solve complex problems, and is itself a security issue worthy of evaluation.

This paper will argue that ASEAN is struggling to achieve a concerted regional approach to energy security. It will first consider how the geographic, resource and economic variation among member states affects their energy security and capacity to collaborate. A brief explanation of the potential value of regional versus national energy security approaches will set the scene for a review of ASEAN's regional energy security agreements and plans. A number of systemic factors complicating regional collaboration will be explored, followed by an analysis of progress in delivering the key projects comprising the ASEAN energy security vision.

The paper will also consider conventional energy sources and the planned introduction of nuclear power within ASEAN, although little emphasis will be put on initiatives for energy efficiency and greenhouse gas emission control. The rise of China and India as major energy consumers in the wider region will not be examined. The paper will also not labour the presentation of more global energy security issues, including peak oil, security challenges to extant energy producing nations in the Middle East or the contestation of Southeast Asian regional energy transportation routes.

ASEAN nations' energy security challenges

ASEAN was formed in 1967 and has grown to encompass Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, The Philippines, Singapore, Thailand and Vietnam.[9] ASEAN operates as a complex framework of institutions designed to foster regional collaboration on a range of economic and security issues.

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8 John Ravenhill, 'Resource Insecurity and International Institutions in the Asia-Pacific Region', *Pacific Review*, Vol. 26, No. 1, 2013, p. 51.

9 ASEAN Secretariat, *ASEAN Charter*, p. 3.

Energy security in ASEAN is defined in an unusual manner to focus on energy availability and affordability, with comparatively little emphasis on sustainability or manageability of the environmental impacts of energy extraction and usage.[10] ASEAN places significant importance on energy security because of the nexus with economic development and the potential for damaging competitive national behaviours in and beyond the region.[11]

There are significant natural energy reserves among ASEAN nations, which are unevenly distributed, with no ASEAN nation other than Brunei being comprehensively energy self-sufficient. ASEAN energy production and consumption by nation is shown in Table 1 and Table 2 respectively, using millions of tonnes of oil equivalent (MTOE) as a unit of convenience.

Country	Production in MTOE				
	Oil	Gas	Coal	Hydro	**Total**
Brunei Darussalam	8.1	11.5			**19.6**
Cambodia					**0.0**
Indonesia	45.6	68.0	199.8	3.5	**317.0**
Lao PDR				0.3	**0.3**
Malaysia	26.6	55.6		1.7	**83.9**
Myanmar		11.2			**11.2**
The Philippines	0.4		2.5	2.1	**5.0**
Singapore					**0.0**
Thailand	13.9	33.3	6.0	1.8	**55.1**
Vietnam	15.9	7.7	24.9	6.7	**55.2**
Total	**110.5**	**187.3**	**233.2**	**16.2**	**547.2**

Table 1 - ASEAN States' Energy Production

Source: (by colour coding)

3rd ASEAN Energy Outlook (2007 Data)

APEC Energy Overview 2011 (2009 Data)

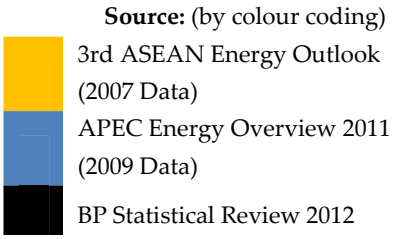
BP Statistical Review 2012

[10] Benjamin Sovacool, 'Reassessing Energy Security and the Trans-ASEAN Natural Gas Pipeline Network in Southeast Asia', *Pacific Affairs,* Vol. 82, No. 3, 2009, pp. 472-474.

[11] Andrew Phillips, 'A Dangerous Synergy: energy securitization, great power rivalry and strategic stability in the Asian century', *Pacific Review,* Vol. 26, No. 1, 2013, p. 24.

Country	Consumption in MTOE				
	Oil	Gas	Coal	Hydro	**Total**
Brunei Darussalam	0.64	0.31			**0.9**
Cambodia	1.5				**1.5**
Indonesia	64.4	34.1	44.0	3.5	**146.0**
Lao PDR	0.5		0.1	0.3	**0.9**
Malaysia	26.9	25.7	15.0	1.7	**69.2**
Myanmar	1.8	3.1	0.1		**5.0**
The Philippines	11.8	3.2	8.3	2.1	**25.4**
Singapore	62.5	7.9			**70.4**
Thailand	46.8	41.9	13.9	1.8	**104.4**
Vietnam	16.5	7.7	15.0	6.7	**45.9**
Total	**233.2**	**123.9**	**96.3**	**16.2**	**469.7**

Table 2 - ASEAN States' Energy Consumption



The pace of economic development and consequent growing energy demand within ASEAN is outstripping the capacity to exploit regional energy reserves, and some national energy reserves, such as Indonesian oil, are actually approaching depletion; consequently, Indonesia has become a net importer of oil and has recently left the Organisation of Petroleum Exporting Countries (OPEC).[12] A period of sustained low global oil prices after the oil shocks in the 1970s inhibited global investment in energy exploration and production until relatively recently, so there is some potential for improved production within ASEAN as investment recovers.

Despite this potential, the overall picture is of rapidly growing demand that already exceeds supply. ASEAN states are particularly dependent on imported oil for transportation. Electricity generation via coal is feasible, with Indonesian reserves offering regional self-sufficiency in the medium term, should the environmental

[12] Françoise Nicolas, 'ASEAN Energy Cooperation: an increasingly daunting challenge', available at <http://ifri.org/>, accessed 2 April 2013.

impacts be deemed acceptable. Singapore has already moved completely away from using coal. Liquefied natural gas (LNG) is the other alternative available for electricity generation and there are appreciable but not globally significant reserves in the region. Nuclear power is being considered by several nations and has obvious potential.

The outlook for ASEAN economic growth is intrinsically linked with the delivery of energy security. In Table 3, population and energy data on ASEAN countries is contrasted with aggregate North American data to demonstrate the potential for regional energy demand growth as regional economies mature. By way of example, if Indonesian economic growth reached the levels of energy intensity seen in North America, it would dramatically increase the regional demand for energy imports.

Country	**Population** (2011)	**GDP per capita** ($US, 2011)	**Access to Electricity** (%, 2009)	**Energy Consumption Per Capita** (Kg Oil Equivalent, 2011)
Brunei Darussalam	406000	40301	99.7	4263
Cambodia	14305000	897	24	301
Indonesia	242326000	3495	64.5	652
Lao PDR	6288000	1303	55	unavailable
Malaysia	28859000	9977	99.4	1526
Myanmar	48337000	1144	13	269
The Philippines	94852000	2370	89.7	255
Singapore	5188000	50087	100	4664
Thailand	69519000	5318	99.3	1224
Vietnam	88792000	1392	97.6	552
North America	347563000	48155	99.8	4925

Table 3 - ASEAN Economic and Energy Outlook

Source: 'UN Economic and Social Commission for Asia and the Pacific'[13]

[13] UN, 'UN Eonomic and Social Commission for Asia and the Pacific', available at <http://www.unescap.org/>, accessed 23 April 2013.

The speed of population and economic growth is also important to understanding the likely future energy demand growth. In Figure 1, the generally high positive annual GDP growth rate in ASEAN demonstrates the potential, when combined with the previous GDP per capita and energy intensity data, for significant growth in energy demand. The formal energy outlook produced by ASEAN with Japanese technical assistance suggests that energy demand will most likely triple by 2030, outstripping development and the capacity of regional reserves.[14]

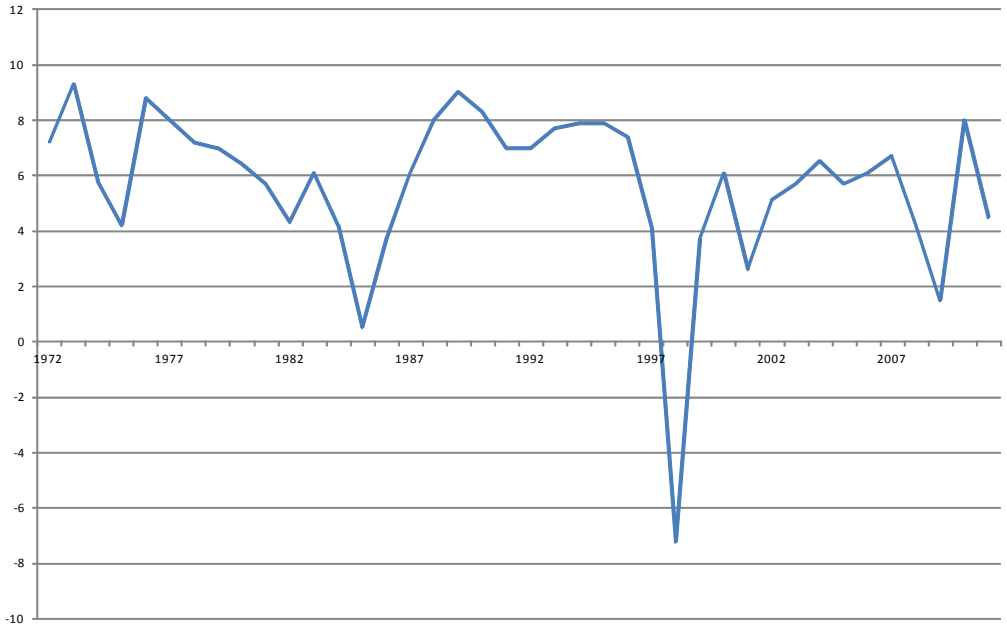


Figure 1 - Combined ASEAN GDP Annual Percentage Change

Source: UN, 'UN Economic and Social Commission for Asia and the Pacific'.

ASEAN regional approach to fostering energy security

ASEAN has a series of foundation agreements and plans which guide member states' energy planning. Its *ASEAN Vision 2020* provided an overarching set of economic development and integration goals.[15] The subordinate 2008 *ASEAN Economic Community Blueprint* for economic integration set an ambitious target for achieving a single market within ASEAN nations by 2015, expediting the previous

14 Japan Institute of Energy Economics, *The 3rd ASEAN Energy Outlook*, ASEAN Centre for Energy, and National ESSPA Project Teams, Japan Institute of Energy Economics, Tokyo, 2011, p. 25.

15 ASEAN Secretariat, *ASEAN Vision 2020*, available at <http://www.asean.org/news/item/asean-vision-2020>, accessed 23 April 2013.

goal of integration by 2020. This document specifically recognised the importance of transforming energy production, electricity generation and power distribution within ASEAN as a critical enabler of economic activity.[16] A previous ASEAN meeting had already established emergency petroleum sharing agreements and committed to establishing national fuel reserves.[17]

A series of detailed energy-specific agreements have evolved within ASEAN to guide specific projects in energy security, most recently culminating in the third-generation ASEAN plan for energy cooperation in the period 2010 to 2015.[18] This plan specifically calls for:

1. an ASEAN power grid (APG) to share electricity between member states;
2. a trans-ASEAN gas pipeline (TAGP) to share gas between member states;
3. investment in clean coal usage, energy efficiency and renewable energy;
4. establishment of a regional energy policy and planning capacity; and
5. development of civil nuclear power.

Challenges to a regional approach

Achieving the energy security planned within ASEAN is complicated by a range of geographic and political factors. The maritime geography which defines the region separates potential cooperating partners, complicating energy distribution. Taxation rates for energy products also vary significantly by state and are often counter-productive in total effect, encouraging the use of higher polluting fuels, such as coal, and further hampering regional energy integration and trading.[19]

There is also a practical political issue in that many ASEAN states have subsidised domestic energy to some extent,[20] a difficult practice to maintain when integrating a regional energy market. Indonesia was still spending an unsustainable 18.9 per cent of its national budget on fuel subsidies in 2008, and changes to subsidies have always been politically charged.[21] The fall of the Soeharto Government in 1998 was attributed at least in part to his intent to reduce Indonesian kerosene subsidies and

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16 ASEAN Secretariat, *ASEAN Economic Community Blueprint,* p. 22.

17 ASEAN Secretariat, *ASEAN Petroleum Security Agreement*, ASEAN, Jakarta, 2009.

18 ASEAN Secretariat, *2010 ASEAN Plan of Actions on Energy Cooperation (APAEC) 2010-2015*, ASEAN, Jakarta, 2009.

19 David M. Newbery, 'Why Tax Energy? Towards a More Rational Policy', *The Energy Journal,* Vol. 26, No. 3, 2005, p. 2.

20 Ditya Agung Nuridianto and Buddy Praesetyo Resosudarmo, 'Prospects and Challenges for an ASEAN Energy Integration Policy', *Environmental Economics and Policy Studies,* Vol. 13, 2011, pp. 107-110.

21 Nuridanto and Resosudarmo, 'Prospects and Challenges for an ASEAN Energy Integration Policy', p. 109.

President Soekarnoputri was also publicly forced to abandon subsidy reform in 2003.[22]

There are also commercial challenges in delivering regional energy integration due to the interplay between government and industry. While many regional countries have nationalised energy companies owned in whole or part by the state, their somewhat commercial nature can still limit their ability to participate in strategically important but otherwise unprofitable ventures.

For example, the electricity demand from Sabah is too low to make connection from peninsula Malaysia economically viable, despite the security implication.[23] Attracting the foreign investment required in most cases to underwrite large energy infrastructure projects is also dependent in part on the economic rationality of individual projects, not the security benefits accruing to national governments.

Evaluation of the ASEAN power grid initiative

The APG project seeks to connect national electricity grids into a single generation and distribution marketplace.[24] The initiative is estimated to cost US$5.9b and save around US$662m per annum.[25] For this to occur, infrastructure construction is required in every member state to provide the necessary physical links, as are new regional systems of demand management, cost attribution and spot pricing.[26] To complete the project, some 14-16 major new electrical transmission pathways would be required.[27]

Actual progress on the APG has been slow and may not improve.[28] Deadlines are routinely renegotiated and only five physical projects have been completed, four are

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22 Elspeth Thomson, 'Energy Security: an ASEAN perspective', in William Tow and Kin Wah Chin (eds.), *ASEAN India Australia: towards closer engagement in a new Asia*, Singapore, Institute of Southeast Asian Studies, 2009, pp. 103-104.

23 Biswa Nath Bhattacharyay, 'Infrastructure for ASEAN Connectivity and Integration', *ASEAN Economic Bulletin*, Vol. 27, No. 2, 2010, p. 209.

24 ASEAN Secretariat, *Memorandum of Understanding on the ASEAN Power Grid*, ASEAN, Singapore, 2007, p. 1.

25 Nuridianto and Resosudarmo, 'Prospects and Challenges for an ASEAN Energy Integration Policy', p. 105.

26 Bhattacharyay, 'Infrastructure for ASEAN Connectivity and Integration', p. 208.

27 Note that ASEAN documentation itself has several subtly different sets of scope of works for the APG; they do not all have the same number of projects, complicating assessment of total works actually planned.

28 Suthep Chimklai, 'Briefing on ASEAN Power Grid', available at <http://portal.erc.or.th/aern/images/Panel%201-1%20Briefing%20on%20ASEAN%20Power%20Grid.pdf>, accessed 26 April 2013, pp. 35-38.

'in work' and the remainder are designated 'future activities'.[29] Progress on the regional energy management framework is also slow. ASEAN aspires to complete eight outstanding construction projects by 2015; however, indications are that this will not be accomplished for a range of commercial and practical reasons.

ASEAN has established a Centre for Energy Management but all trans-national power sales have been purely bilateral, suggesting the operation as a regional grid remains aspirational.[30] If the linking of the Indonesian archipelago is reckoned a purely national initiative, the interconnection of Thailand, peninsular Malaysia and Singapore remains the principal APG outcome. Given the difficulties, the most likely scenario is that the APG proceeds slowly and is never completely realised.

Evaluation of the trans-ASEAN gas pipeline initiative

The TAGP project is somewhat similar in conception to the APG: connect the reserves of natural gas in Indonesia, the Gulf of Thailand and Myanmar to the rest of ASEAN to provide relatively clean and affordable energy.[31] While a better strategy than wholesale adoption of coal-fired power generation, the TAGP again requires many separate national and international projects to be realised. More worryingly, the long term investment strategy may be flawed, in that Southeast Asia has only 8.3 per cent of the world's known reserves of natural gas and is expected to be a net importer of gas before 2030.[32]

Differences in the economic capacity of ASEAN member states can mean that the capacity to invest in major projects is not necessarily aligned with the national benefits accrual.[33] By way of example, integration of Indonesia's principal islands into a single gas pipeline network greatly benefits that nation and is affordable domestically in the context of a large and growing economy. Conversely, connection of The Philippines' archipelago would be highly complex and extremely expensive, likely requiring significant investment by other ASEAN nations. ASEAN will most likely have to reconcile itself to very significant internal capital investment and increasing reliance on foreign investment if the benefits of the regional energy architecture are to be realised.

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29 Chimklai, 'Briefing on ASEAN Power Grid', p. 30.

30 ASEAN Secretariat, *Agreement on the Establishment of the ASEAN Centre for Energy*, Jakarta, 2013.

31 ASEAN Secretariat, *2010 ASEAN Plan of Actions on Energy Cooperation (APAEC) 2010-2015*, pp. 15-17.

32 Sovacool, 'Reassessing Energy Security and the Trans-ASEAN Natural Gas Pipeline Network in Southeast Asia', p. 474.

33 Nicolas, 'ASEAN Energy Cooperation: an increasingly daunting challenge', pp. 22-23.

National interests can sometimes undermine the regional agenda of the TAGP, as a regional energy strategy introduces genuine interdependencies which require significant trust. ASEAN states are very aware that Singapore already has a marked lead in petroleum refining capacity and that Indonesia has the bulk of coal reserves. The development of a regional gas distribution system which concentrates political power in certain countries is problematic for individual nations, especially given internal ASEAN sovereignty concerns.

ASEAN states have noted the security implications of Russia's heavy-handed control over gas supplies to Eastern Europe and have likely pondered if any regional partner could be trusted with that type of opportunity.[34] Overall, progress on the TAGP has materially lagged the ASEAN plan for all the reasons previously outlined and it seems unlikely that the plan will ever be completed.[35]

Evaluation of ASEAN's nuclear power aspirations

ASEAN aspires to a civil nuclear power industry in order to generate electrical power cheaply, with minimal greenhouse gas emissions.[36] Specifically, Thailand, Vietnam and Indonesia all plan to construct nuclear power stations, while Malaysia and The Philippines are studying the option. Indonesia has perhaps the most advanced plans for nuclear power plant construction,[37] while The Philippines actually retains a Marcos-era reactor that has never been activated.[38]

The development of a nuclear power industry brings a host of technical, international and national concerns which would seriously challenge the ASEAN industrial base and the international credibility of its governments. Nuclear power is complex to acquire and operate, requiring a host of supporting industries and an advanced technological basis if it is to be safely and widely introduced.[39] The more advanced countries within ASEAN probably have the industrial capacity to adopt

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34 Ian Bremmer and Robert Johnston, 'The Rise and Fall of Resource Nationalism', *Survival: Global Politics and Strategy,* Vol. 51, No. 2, 2009, pp. 150-151.

35 Toby Carroll and Benjamin Sovacool, 'Pipelines, Crisis and Capital: understanding the contested regionalism of Southeast Asia', *Pacific Review,* Vol. 23, No. 5, 2010, pp. 634-636.

36 ASEAN Secretariat, *2010 ASEAN Plan of Actions on Energy Cooperation (APAEC) 2010-2015,* pp. 27-28.

37 Sulfikar Amir, 'Nuclear Revival in Post-Suharto Indonesia', *Asian Survey,* Vol. 50, No. 2, 2010, pp. 266-267.

38 International Energy Agency, *Energy Policy Review of Indonesia*, OECD, Paris, 2008, pp. 191-202.

39 Ryan Clarke, Nur Azha Putra, Mely Caballero-Anthony and Rajesh Basrur, 'Nuclear Energy in Southeast Asia: will it enhance human security?', *RSIS Commentaries,* S. Rajaratnam School of International Studies, Singapore, 2010, available at <http://www.rsis.edu.sg/publications/commentaries.html>, accessed 29 May 2013.

nuclear power but only if a suitable source of foreign nuclear technology becomes available.

The advent of nuclear power has traditionally been closely linked with nuclear weapons proliferation potential, so that nuclear technologies and fuels are one of the most highly regulated areas of international trade.[40] Governance, political stability and transparency are essential to the legal acquisition of nuclear capacity, and the ASEAN states may not yet be deemed by potential technology partners to have made sufficient progress in these areas.

Lastly, the population of a nation state can choose to oppose the development and use of nuclear power, to the point where the resulting political cost becomes too high, as has recently been the case in Germany and Japan.[41] Indonesia is beginning to see the emergence of such a movement before any reactors are even completed.[42] In summary, ASEAN plans for a nuclear power industry are in their infancy, and while the concept has some forceful advocates, there is no clear pathway to its realisation.

Conclusion

The ASEAN states have an active agenda of regional collaboration on energy security, which seeks to minimise the duplication of infrastructure while promoting economic development, especially within the context of the planned AEC. While there are some oil and gas reserves in ASEAN, it is a net energy importer already, and demand growth will dwarf local production. Coal is relatively abundant, especially in Indonesia, but air pollution is already a practical and political issue.

The medium term ASEAN energy security strategy is to integrate electricity distribution via a single grid and convert most electricity generation to natural gas, a relatively clean alternative. A regional gas pipeline network would deliver gas from the fields in Indonesia and the Gulf of Thailand, enabling relatively affordable and highly reliable power generation. As the regional gas reserves are finite, a longer term strategy to introduce nuclear power would assist with affordability and pollution control. Transportation will continue to be fuelled by oil, increasingly imported and refined in the region, unless an unexpected technological breakthrough occurs.

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40 Andrew Symon, 'Southeast Asia´s Nuclear Power Thrust: putting ASEAN´s effectiveness to the test?', *Contemporary Southeast Asia,* Vol. 30, No. 1, 2005, pp. 119-120.

41 Alexander Glaser, 'From Brokdorf to Fukushima: the long journey to nuclear phase-out', *Bulletin of the Atomic Scientists,* Vol. 68, No. 6, 2012, pp. 11-13.

42 Amir, 'Nuclear Revival in Post-Suharto Indonesia', pp. 265-267.

While the ASEAN energy strategy is pragmatic in conception, it struggles in delivery. A combination of ineffective consensual planning from ASEAN itself fails to surmount the host of technical, commercial and national interest problems confronting the regional plan. Ultimately, national interests tempered by the commercial realities of working with investment partners tend to define which energy infrastructure projects are delivered, rather than ASEAN's declared aspirations.

As a result, the key electricity, gas and nuclear power projects are all currently lagging ASEAN's plans, and there would seem to be real questions as to whether a number of them will ever be completed. Overall, the issue of energy security demonstrates the challenges faced by ASEAN in progressing national action by its members that would result in collective benefits, unless that action clearly aligns with the national interests and capacity of the individual member states.

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