

Chapter 4

Electricity Market Integration in ASEAN: Institutional and Political Barriers and Opportunities

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December 2016

This chapter should be cited as

Wu, Y. (2016), 'Electricity Market Integration in ASEAN: Institutional and Political Barriers and Opportunities', in Li, Y. and S. Kimura (eds.), *Achieving an Integrated Electricity Market in Southeast Asia: Addressing the Economic, Technical, Institutional, and Geo-political Barriers*. ERIA Research Project Report 2015-16, Available at: http://www.eria.org/RPR_FY2015_No.16_Chapter_4.pdf, pp.109-125.

Chapter 4

Electricity Market Integration in ASEAN: Institutional and Political Barriers and Opportunities

Yanrui Wu

Since the announcement of the construction of an integrated ASEAN power grid (APG) almost 2 decades ago, progress in this ambitious project has been slow. Coincidentally, a similar programme in the European Union (EU) has been fully embraced and moved well ahead of ASEAN's. The EU now has the most integrated electricity market. Its experience and lessons have important implications for ASEAN. This report aims to investigate the barriers, especially institutional and political barriers, to electricity market integration in ASEAN. It also discusses practical policy options to accelerate market integration in the ASEAN power sector.

1. Introduction

Electricity market integration was initially promoted by countries aiming to interconnect their domestic grids and develop nationwide integrated domestic power markets. Examples include the United States and the United Kingdom (Wu, 2013). Domestic market integration has naturally been extended to cross-border integration, partly driven by cross-border power trade. Traditionally, the perceived benefits from an integrated market include economies of scale, better management of peak demand and improved efficiency in power supply, and potentially lower electricity prices (Wu, 2013). The development and growth in renewable energies have provided new impetus for the promotion of cross-border electricity market integration aimed to help countries deal better with peak demand and intermittency in production and use abundant renewable energy resources more efficiently. These factors are also cited as the drivers for the development of an integrated electricity market among the economies of the Association of Southeast Asian Nations (ASEAN), particularly the construction of the ASEAN Power Grid (APG). APG aims to ensure regional energy security, enhance cross-border electricity trade, promote efficient utilisation of resources, and share surplus reserve generation capacity between member states (Ibrahim, 2014).

Only 3 percent of total electricity output is exported globally compared to about 64 percent of oil, 31 percent of gas, and 16 percent of coal (Oseni and Pollitt, 2014). ASEAN is a net power importer (from China) and its total trade in electricity accounted for about four percent of total electricity output in 2013 (IEA, 2015a, 2015b). Thus, progress in cross-border trade in

electricity has been slow globally as a result of various economic, social, and geopolitical factors.

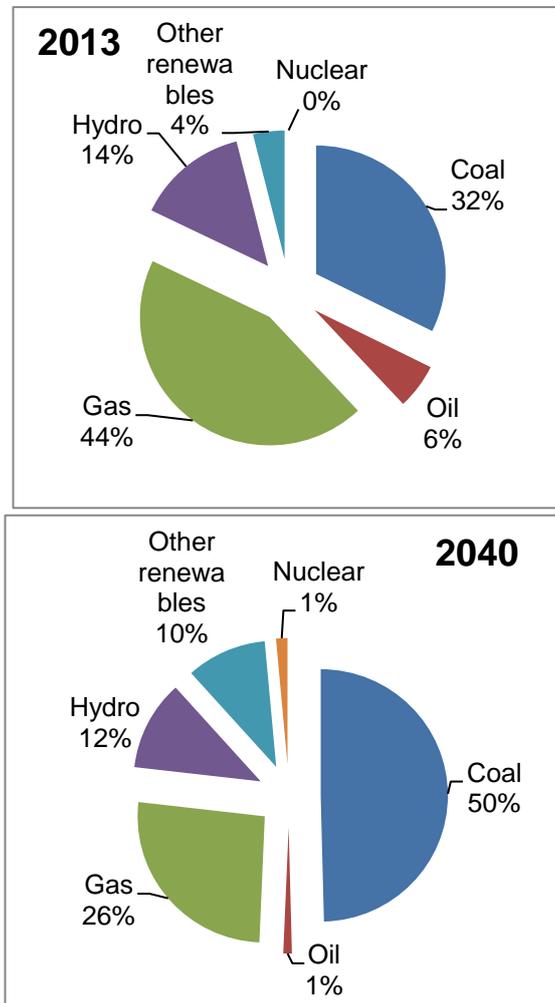
This report aims to explore the institutional and political barriers to electricity market integration in ASEAN and provide policy recommendations for discussion and possible implementation by policymakers. The research method is based on a comparative study of the electricity market of the European Union (EU). Section 2 is a brief review of the electricity sector in ASEAN. Section 3 is an assessment of electricity market integration in the EU. Section 4 discusses the institutional and political barriers to electricity market integration in ASEAN. Policy recommendations are provided in Section 5. The chapter concludes with a summary of the main findings in Section 6.

2. ASEAN Electricity Sector

Electricity generation in ASEAN is projected to grow by 3.9 percent annually from 2013 to 2040. This is almost double the two percent growth rate of final energy consumption during the same period (IEA, 2015b). The largest power-consuming sectors are residential and service buildings and industry. In 2013, 82 percent of ASEAN power was generated by fossil fuels with the remainder coming from renewables which are dominated by hydropower. This situation will largely be unchanged by 2040, with 77 percent electricity-generation share from fossil fuels, 22 percent from renewables, and 1 percent from nuclear power (Figure 4.1). Coal-fired power generation will maintain its dominance in ASEAN.

In 1997, APG was proposed as a flagship programme of the ASEAN Vision 2020 and was further promoted in 2003 as part of the plan to establish an ASEAN Economic Community (AEC) by 2015 (Figure 4.2). Its anticipated benefits include effective development and optimal use of power-generation resources, reduced capital investment by capitalising on the difference in peak demand time, and ensured security and reliability of regional electricity supply (Chang and Li, 2013 and 2015; Hermawanto, 2015). It was also argued that an integrated power market would give ASEAN a bigger role politically in regional and global energy affairs and a louder voice at the table when negotiating with the large economic powers (Deloitte, 2015).

Figure 4.1. Electricity Generation Shares by Fuel in 2013 and 2040



Source: IEA.

Although APG and a similar integration programme in Europe were initiated almost at the same time, progress in APG has been much slower than the EU programme (Figure 4.2). In 2015, the EU formally adopted the Energy Union strategy at the same time that the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016–2025 was announced. APAEC is a series of documents on guiding policy to support energy cooperation and advance market integration within ASEAN. The theme of APAEC 2016–2025 is the enhancement of energy connectivity and market integration in ASEAN to achieve energy security, accessibility, and sustainability for all.

Figure 4.2. Timetable of Power Market Integration in Europe and ASEAN

Europe	Year	Southeast Asia
European Economic Community	1959	
	1967	ASEAN
	1992	AFTA
European Union	1993	
First electricity directive	1996	
	1997	APG (ASEAN Power Grid)
Euro	2002	
Second electricity directive	2003	ASEAN community by 2015
Third legislative package	2009	
Energy Union	2015	APAEC 2016–2025

Source: Author's own work.

With the heads of ASEAN power utilities/authorities (HAPUA) coordinating, some cross-border connectivity has been achieved since the implementation of the ASEAN Interconnection Master Plan Study 2003 (AIM I) (Table 4.1). Under the ASEAN Interconnection Master Plan Study 2010, nine projects were supposed to be completed by 2015 and six more after (Wu, 2013). According to Hermawanto (2015), 11 cross-border interconnections with power capacity of 3,489 MW exist. Ten projects with capacity of 7,192 MW are in progress and their completion expected in 2018/2029. Beyond 2020, there will be at least 17 cross-border interconnections with power capacity of 25,424 MW (Hermawanto, 2015).

Table 4.1. ASEAN Power Grid Interconnections and Projects (MW)

Connection	Existing	Ongoing	Future
Lao PDR–Cambodia		300	
Lao PDR–Viet Nam	248	290	
Malaysia–Indonesia		600	
Malaysia–Singapore	450		600
Philippines–Sabah			500
Sarawak–P. Malaysia			3,200
Sarawak–Sabah–Brunei		200	100
Sarawak–West Kalimantan		230	
Singapore–Indonesia			1,200
Thailand–Cambodia	100		2,200
Thailand–Lao PDR	2,111	3,352	1,865
Thailand–Malaysia	380	100	300
Thailand–Myanmar			11,709-14,859
Viet Nam–Cambodia	200		
Total	3,489	5,072	21,674-24,824

Source: Hermawanto.

In 2002, countries in the Greater Mekong Sub-region (GMS) signed an inter-governmental agreement on regional power trade, after which a regional power trade coordination committee was formed the following year. One of the committee’s tasks is to investigate options for a future GMS power market. By 2016, a formal market is yet to emerge.

Although the process in market integration is slow, some connectivity has already been achieved among the GMS economies (Cambodia, China’s Yunnan province, Lao PDR, Myanmar, Thailand, and Viet Nam). In particular, bilateral trade is expanding (Table 4.2), with China, for example, starting to export electricity to Viet Nam in 2004. China’s total exports reached 5.7 billion kWh in 2010. China also started importing electricity from Myanmar in 2008 that reached a total of 1.7 billion kWh in 2010. China’s exports to Lao PDR started in 2009. In the lower Mekong region, Viet Nam and Thailand are net importers of electricity while Lao PDR is a net exporter (Table 4.2). Electricity exports from Lao PDR amounted to about 30 percent of total national exports and 10 percent of the country’s gross domestic product (Lamphayphan et al., 2015). Cambodian electricity imports amounted to 385 million kWh from Thailand and 1162 million kWh from Viet Nam in 2010 (Poch and Tuy, 2012). Combined, these two sources accounted for about 60 percent of total electricity consumption in Cambodia that year.

Table 4.2. GMS Power Trade, 2010 (GWh)

Member	Import	Export	Total
Cambodia	1,546		1,546
Lao PDR	1,265	6,944	8,210
Myanmar		1,720	1,720
Thailand	6,938	1,427	8,366
Viet Nam	5,599	1,318	6,917
PRC	1,720	5,659	7,379
Total	17,069	17,069	34,138

GWh = gigawatt hour.

Source: Nai.

The latest development is to carry out the Lao PDR, Thailand, Malaysia, and Singapore Power Integration Project (LTMS-PIP), a multilateral trade pilot project, endorsed at the 32nd ASEAN Ministers on Energy Meeting in 2014, that aims to export 100 MW of electricity from Lao PDR to Singapore via Thailand and Malaysia. This pilot project is expected to showcase multilateral electricity trading beyond neighbouring borders in ASEAN. However, a much-anticipated LTMS memorandum of understanding was not signed during the meeting in October 2015 (AMEM, 2015) because Singapore has a competitive bidding system for power supply while the electricity utilities in the other three countries are vertically integrated. The four countries have to figure out how to absorb the 100 MW transmitted power.

Overall, electricity market integration in ASEAN is making slow progress. APAEC 2016–2025, ASEAN’s latest policy document, has no clear timetable. Multiple factors are slowing down progress toward integration, with the unequal level of development of member state economies within ASEAN, poor infrastructure in the power sector, and domestic protectionism as some of the commonly cited economic factors (Ibon, 2015). It was also argued that the December 2015 deadline for the completion of APG was overly ambitious (Dosch, 2015). The political and institutional barriers that slow the progress in market integration are discussed later in this chapter.

3. Electricity Market Integration in the EU

The EU leads the world in electricity market integration. Thus, understanding the EU process of electricity market reform and integration may offer important insights for the development of an integrated power market in ASEAN. While the formation of the EU has its origin in the creation of the European Economic Community in 1957, the idea of developing a single electricity market only emerged in the 1980s (Pellini, 2014). European countries took the first step to integrate their electricity market through the enactment of the first electricity

derivative in 1996 (1996/92/EC). The EU 1996 derivative introduced competition in the production and supply segments of the power industry and allowed non-discriminatory third party access to networks. It was extended and strengthened by the second electricity derivative (2003/54/EC) in 2003 and the third legislative package (2009/72/EC) in 2009. For about 2 decades, EU members have been working on harmonising national market and network rules for the electricity and gas sectors and making investment in these sectors easier. By 2011, the EU's electricity exports of 315 TWh amounted to 10 percent of the total demand of 3,080 TWh (Newbery et al, 2015). In February 2015, the French and Italian grids were connected, linking the major power markets in the EU. In the same year, the EU formally launched the Energy Union strategy, with the new target of reaching 15 percent interconnection capacity by 2030 (IEA, 2015b).

Since the release of the first electricity derivative 20 years ago, the EU electricity markets have become increasingly integrated, even if the targeted completion of the integration process in 2014 was not met. Several factors may have been responsible for the delay. It is argued that legislative adjustment by some member states has been slow due to concerns with national interests (de Menezes and Houllier, 2016). The most important among these concerns is energy security, which is being linked with other economic and political affairs (Karan and Kazdagli, 2011). These concerns are forcing EU member states to maintain significant control of their domestic energy markets and relationship with energy exporters (Belkin, 2008). Some member states also fear that interconnections may affect their energy producers who might resist new investment in infrastructure (Lada et al, 2016). Failure to realise network development plans makes it difficult to trade across borders and could even force markets to split. Zachmann (2015) reckons that energy and climate-change policy-making in the EU is being renationalised, a trend that is hindering the progress of market integration. In some cases, overcapacity of generators has led to lack of incentives for innovation (Karan and Kazdagli, 2011).

However, the Russia–Ukraine and Russia–Belarus disputes in 2005 and 2007, respectively, alerted the members of the EU to the potentially undesirable consequences of relying upon external energy resources. Some observers have characterised the two crises as wake-up calls for the EU's energy security (Karan and Kazdagli, 2011). In March 2007, due to increasing concerns about the EU's energy security and global climate change, its member states agreed to forge an energy policy for Europe and many members set up targets for renewable energy development. For example, the EU/20/20/20 aims to reduce overall greenhouse gas emissions by 20 percent and increase energy efficiency by 20 percent relative to the 1990 levels by 2020. To achieve these goals, the EU targets to generate 20 percent of total electricity required through renewable energies by 2020 (Boethius, 2012). In addition, the EU has also committed itself to reduce emissions by 80–95 percent by 2050.

In summary, apart from economic factors (not discussed in this chapter), political drivers are underlying the EU electricity market integration. Continuous concerns with energy security

are transformed into strong political will among EU leaders to explore and make better use of internal energy resources or renewables. The growing political will has timely coincided with climate change commitments. This is the background for the proposal to establish an energy union in Europe, the objective of which is to provide energy security, promote decarbonisation, and improve competition in the electricity market (Helm, 2015). In addition, it is also argued that an integrated power market could boost the EU's influence on energy matters at the global level (Boethius, 2012).

4. Institutional and Political Barriers in Southeast Asia

Even though the EU missed its target of completing electricity market integration process by 2014, it remains the most successful region in terms of institutional building and market integration and offers important lessons for other regions, particularly Southeast Asia. Given their current economic, social, and political conditions, Southeast Asian economies must overcome several institutional and political obstacles to develop an integrated electricity market.

First, political will is important to develop an integrated power grid in Southeast Asia. In the case of the EU, the desire to achieve energy sustainability, competitiveness, and security of supplies has made the integration of the European electricity markets one of the EU's top political and economic projects (Boethius, 2012). There are many similarities and differences between the EU and ASEAN, among the main differences of which is that, with the exception of Denmark and the Netherlands, almost all EU countries are net importers of oil and gas while ASEAN member states are either net importers or net exporters (Table 4.3). While there is no shortage of official exchanges and cooperation in the ASEAN energy sector, political will still plays an important role in the eventual realisation of APG. It has been reported that governments may be less keen to support APG due to the need to protect their own energy sectors (Kumar, 2015) while others emphasise the priority of developing their national grids (Olchondra, 2016). As the power sector is still dominated by state utilities in most ASEAN economies, a top-down approach could be very effective. The direct involvement of governments in the power sector implies relative ease in reaching internal consensus about rules, regulations, and reforms. Therefore, if ASEAN authorities can work out some consensus-based minimum requirements for power sector integration, these could easily be accepted and implemented by the member states.

Table 4.3. ASEAN Oil and Gas Import Dependency in the 2000s

Member	Oil	Gas
Brunei	Negative	Negative
Malaysia	Negative	Negative
Indonesia	42%	Negative
Myanmar	50%	Negative
Viet Nam	Negative	0%
Cambodia	100%	0%
Lao PDR	100%	0%
Philippines	95%	0%
Thailand	70%	24%
Singapore	100%	100%

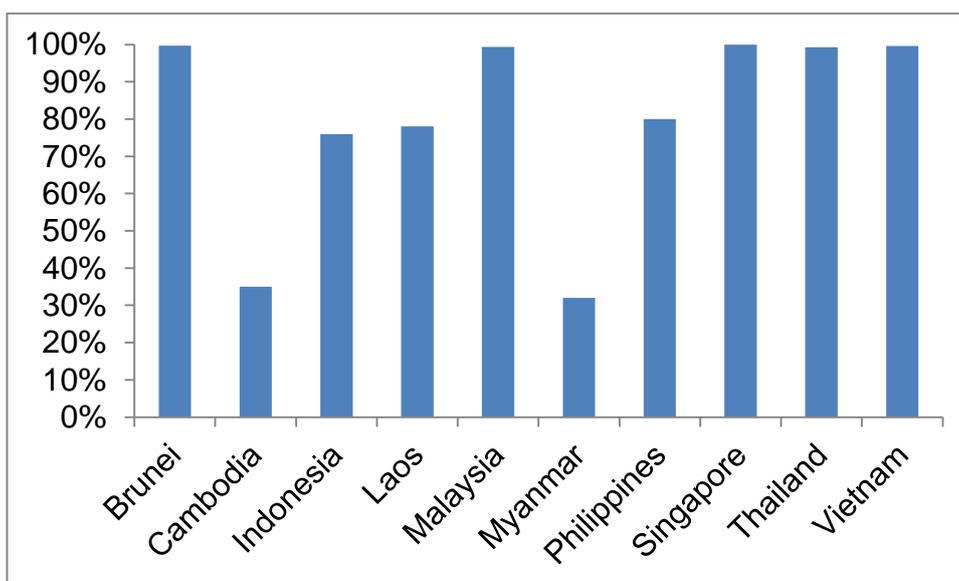
Source: Author's own work using information from Boethius (2012), Swe (2013), Enerdata (2014), and Sinocruz et al. (2015).

Second, while the top-down approach toward electricity market integration may be important, an integrated power market cannot be developed without the participation of the private sector. It is argued that achieving interconnection in ASEAN depends on how its member states and involved companies cooperate and deepen their relationships (IEA 2015b). In fact, the private sector plays a key role in electricity market integration in Europe (Boethius, 2012). Through public-private partnerships, the EU has made strategic investment in European energy infrastructure, energy research, and clean energy production. The private sector in Europe has also become a key stakeholder, actively lobbying for the integration of the EU electricity markets. In 2014–2015, a research project on 'public-private partnership (PPP) to be applied to the APG' was conducted by the HAPUA Working Group 4 (Ibrahim, 2014). It seems ASEAN policymakers are addressing this matter with public-private partnership guidelines through formal discussions (Zen and Regan, 2014; ERIA 2015).

Third, the role of international organisations, especially regional organisations such as the Asian Development Bank and the Asian Infrastructure Investment Bank, is important. Many countries in the region are underdeveloped in terms of transmission grids and other electricity infrastructure. For example, the rate of electrification in some ASEAN member countries is still very low (Figure 4.3). The construction of APG needs substantial investment in capacity building (Kutani and Li, 2014; Li and Chang, 2015). Other regions in the world have to overcome the same problem in their pursuit of electricity market integration. For example, the central African power market, established in 1998, received substantial financial support from multilateral lenders, with the Inter-American Development Bank providing over half of

the initial funding (Oseni and Pollitt, 2014). One of the main factors that underline the success of the Nordic power market is its sufficient transmission capacity (Boethius, 2012). To achieve the goal of an integrated electricity market, ASEAN needs financial support from regional and international organisations.

Figure 4.3. Electrification Rates in ASEAN, 2012



Note: The rates for Brunei, Cambodia, and Laos (Lao PDR) are from information collected in 2011 and that for Thailand in 2013.

Source: IEA.

Fourth, it is argued that cross-border trade in electricity may lead to more use of low-cost coal for power generation or more development of hydropower and that these may worsen the natural environment situations in power-exporting countries. This argument, however, is not supported by empirical evidence. On the contrary, Antweiler et al. (2001) have argued that electricity trade can help the spread of low-emission technology and thus is generally good for the environment. In Southeast Asia, where hydropower plays an important role in cross-border trade, the environmental impact of said power resource is not limited to the exporting countries as multiple countries share water systems such as the Mekong River. Damming the river could have serious environmental consequences and might lead to conflicts between neighbours. The Lao PDR government has already been criticised for relying exclusively on hydroelectricity and for its inaction in development of renewables (Pryce, 2015). ASEAN member states have to work together to minimise negative externalities and expand the production of wind and solar power.

5. Policy Recommendations

This section summarises five policy recommendations for ASEAN policymakers. These recommendations call for institutional capacity building, coordination in national capacity building and reforms, increasing cross-border power trade and establishment of sub-regional electricity markets, public–private partnership, and promotion of renewables.

5.1 Strengthening and Building Institutional Capacity

In general, ASEAN has been successful in building institutional capacity in the region since its inception in the late 1950s. In the energy arena, HAPUA was initially created by ASEAN-5 (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) in 1981. Other ASEAN member states joined later.

It has been commented that ASEAN’s tendency to focus on reforms within individual member economies rather than between countries may be a major barrier to the progress of APG (IEA, 2015a). HAPUA could adopt some consensus-based minimum requirements for implementation by member countries as the EU did through its electricity derivatives in 1996, 2003, and 2009 (Jamasp and Pollitt, 2005). Given that most ASEAN member states are still developing their own regulatory systems and reforming their power sectors, consensus-based minimum standards could be adopted with relatively little resistance and their implementation would lay a good foundation for the eventual market integration. These minimum standards could be related to technical, legal, and regulatory aspects and would serve as key building blocks for important ASEAN institutions in the near future.

Improving coordination in national capacity building and reforms

ASEAN countries are still expanding their power facilities and undertaking regulatory reforms. Ideally, national capacity building and reforms could accommodate some of the consensus-based objectives of regional market integration. Achieving this goal involves coordination between individual member states and ASEAN. Without interfering in a member state’s internal affairs, ASEAN could work with relevant authorities so that the national capacity building and reforms of the member state are at least partially if not fully aligned with the goals of an integrated ASEAN power market. This could be a cost-effective way of minimising differences between member states and accelerating regional integration.

Encouraging bilateral or sub-regional power trade

International experience shows that market integration is realised through three steps. The first is the emergence of bilateral cross-border trade. In the case of ASEAN, this took place in 1972 when the first dam was commissioned in Lao PDR and hydropower was sold to Thailand (Lamphayphan et al., 2015). The second step is encouraging sub-regional power trade. Currently, GMS is the leader in ASEAN. A subregional power market involving GMS countries

may emerge in the future. It is argued that bilateral and subregional trade is much less complicated than multilateral trade as the latter involves many specific and technical issues which ASEAN can deal with in the future. Using bilateral and subregional trade as a catalyst for an integrated market has also been adopted in other regions. For example, the EU promoted the Nordic, UK–Ireland, Western Europe regional markets as intermediate stage toward full interconnection before market integration (Jamasp and Pollitt, 2005). Empirical evidence also shows that geographically close or well-connected electricity spot markets have longer periods of price convergence (de Menezes and Houllier, 2016). Another example is the Southern African Power Pool established in 1995 (Oseni and Pollitt, 2014). South African power generation is dominated by coal (74 percent) and hydro (20 percent). Initially, South Africa’s bilateral trade accounted for 90–95 percent traded energy. While bilateral trade agreements provide security of supply, these are not flexible enough to accommodate varying demand and price profiles. South Africa’s cross-border trading led to a rise in investment in national capacity building and a day-ahead market was introduced in 2009. Although only six percent of energy demand was traded in the day-ahead market in 2012–2013, the Southern African Power Pool has now become the most integrated system in Africa (Oseni and Pollitt, 2014). Thus, while the construction of APG is slow, ASEAN could adopt policies to encourage more bilateral and subregional trade.

In addition, it is argued that ASEAN’s achievements so far are based on the so-called ‘ASEAN way’ (Deloitte, 2015), a uniquely Southeast Asian approach to multilateralism that rests firmly on the principles of consensus, non-binding, non-interference, and non-confrontation (Bosch, 2015). Although it has served ASEAN well for decades, it has its share of criticisms for its lack of regulatory advancement. It is due to the ‘ASEAN way’ that progress in integration has been slow but steady (Deloitte, 2015). Bosch (2015) reckons that ASEAN is still the most ‘effective and coherent organisation’ outside the EU. When consensus is hard to reach, a mechanism such as the ‘ASEAN-X’ system can help move things forward by exploring the options of establishing subregional markets first. Possible candidates include GMS, BIMP, and ASEAN-4 (Indonesia, Malaysia, Singapore, and Thailand) regions. A GMS market is possible because of existing interconnection facilities and trading activities. The ASEAN-4 market could be an option because of the geographic closeness and relative economic prosperity of these countries. However, these markets should be established within the framework of the broad regional market development.

Building public–private partnership

Most ASEAN member states are still confronted in their power sectors with the problems of accessibility and affordability. Investment infrastructure is facing a shortage of capital. PPP not only brings important sources of funding from the private sector but also provides skills and knowledge to private investors by way of their involvement in similar projects in other places of the world. With the private sector’s participation, ASEAN governments or regional authorities can focus on their regulatory roles to create a legal environment for rule-based and transparent market institutions. In addition, ASEAN could also partner with other regional

and international organisations such as the Asian Development Bank and World Bank to leverage additional capacities and knowhow which can contribute to the realisation of APG.

Table 4.4. Renewable Development Targets by ASEAN Member States

Member	Commitment	Year
Brunei	10% power	2035
Cambodia	More than 2 GW hydropower	2020
Indonesia	23% of total primary energy	2025
Lao PDR	30% of total energy consumption	2025
Malaysia	34% of installed capacity	2050
Myanmar	15–20% of installed capacity	2030
Philippines	15 GW of installed capacity	2030
Singapore	350 MW solar capacity installed	2020
Thailand	25% of total energy consumption	2021
Viet Nam	6% of power generation	2030

Source: Velautham.

Promoting renewable energies

The growth of renewable energies has been the new driver for electricity market integration as interconnection allows better accommodation of intermittency. This is particularly the case in regions where renewable resources are abundant. According to APAEC 2016–2025, ASEAN aims to increase the share of renewable energy to 23 percent of total energy demand by 2025. Some member states are expected to reach a higher level (Table 4.4). This growth in renewables could be exploited to help promote interconnectivity and attain electricity market integration. Currently, ASEAN’s renewables are dominated by hydropower. Policy makers could explore the possibility of expanding other forms of renewables such as wind and solar energies.

6. Conclusion

This report discusses the political and institutional barriers to the formation of an integrated ASEAN electricity market. A brief review of the power sector development in ASEAN identifies considerable progress toward cross-border power interconnection or APG, one of the broad ASEAN economic integration goals. However, compared with the EU integration process, the progress in ASEAN has been very slow. Many economic, social, institutional, and political factors underline the slow progress. This report focuses on the institutional and political aspects. First, although politicians in Southeast Asian countries have for several decades shown leadership in building ASEAN as a community, their political will could have been compromised due to vested interests, nationalism, and so on. Second, one of the factors underlying the EU’s success is the participation of the private sector through the integration process. ASEAN, particularly APG, is pretty much an inter-governmental and consensual

programme with little input from the private sector. This may reflect the inter-governmental approach toward integration in ASEAN, in contrast with the EU that adopts a legalistic approach based on a stringent regulatory framework. The latter provides a necessary level playing field for the private sector. The absence of the private sector's participation hinders access to the much needed private capital and expertise. Third, large disparity exists among member states in terms of economic and infrastructure development. The requirement for investment is far beyond the resources available in ASEAN. Thus, apart from the private sector, regional and international organisations should play a crucial role in ASEAN's capacity building. Experience from other regional integration practices shows that expertise and funds from regional and international organisations can accelerate market integration. Finally, due to development gaps and diversity among member economies, bilateral cross-border power trade could be encouraged as an intermediate step toward multilateral trade and eventually a fully integrated ASEAN power market.

Given the institutional and political barriers discussed, this report offers the following policy recommendations for ASEAN authorities.

- *Strengthen and build institutional capacity.* HAPUA could adopt some consensus-based minimum requirements for implementation by member states.
- *Improve coordination in national capacity building and reforms.* Member states can align domestic reforms and capacity building with consensus-based regional market integration objectives.
- *Encourage bilateral and sub-regional power trade.* As bilateral trade expands, trading partners are likely to clamour for more changes and compliance which form the basis for more connectivity and eventual integration.
- *Build public–private partnership.* Private sector capital and experience gained in other parts of the world can help build an integrated ASEAN power market.
- *Promote renewable energies.* Renewable growth demands a large interconnected grid and helps ASEAN member states meet their emissions control obligations.
- *Explore the possibility of subregional market integration.* This can be used as an intermediate step toward full market integration.

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