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Connecting India and ASEAN Through the North East: The Energy Perspective

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Abstract

India and Southeast Asia are likely to be the basins of growth in the years to come. In this context, the demand for energy will also certainly increase. However, the backdrop for this situation is, on one hand, the unequal availability of energy resources, with some countries being better endowed in some forms of energy and others less so. On the other hand, many countries, especially in South Asia face a continual shortage of energy, which adversely affects households and businesses.

The best way of overcoming the unequal distribution of energy and the rising demand for energy is by engaging in energy trading. Two initiatives have to be undertaken to make energy trade possible. First, by developing Myanmar and the North East of India or the North East Region (NER) as the two nodes that will be the gateways respectively for Southeast Asia and South Asia. Second, by improving connectivity (physical and energy) between both sub-regions.

I. Introduction

India and Southeast Asia are likely to be the basins of growth in the years to come. In this context, the demand for energy will also certainly increase. However, the backdrop for this situation is, on one hand, the unequal availability of energy resources, with some countries being better endowed in some forms of energy and others less so. On the other hand, many countries, especially in South Asia face a continual shortage of energy, which adversely affects households and businesses. As both regions seek to grow the shortage of energy will have to be addressed. It is a problem that can be overcome since there are other countries within the two regions that do have excess supply of energy resources and a redistribution of energy is possible.

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India or the North East Region (NER) as the two nodes that will be the gateways respectively for Southeast Asia and South Asia. Second, by improving connectivity (physical and energy) between both sub-regions.

The paper is organised as follows. The second section discusses the need for economic cooperation between India and ASEAN. It argues that in order to sustain high levels of growth, it is necessary to improve economic cooperation trade agreements. The third section is concerned with establishing the rationale for connectivity and regional initiatives. This is followed by a discussion of the existing arrangements for energy cooperation. The fifth section argues that the North East Region can act as a pivotal point for India in forging a link with Southeast Asia. Finally, a conclusion and some recommendations are offered.

II. India and ASEAN: Growth, Trade and Economic Cooperation

South Asia, in general, and India, in particular has seen rapid growth in the last decade. The same is the case with the Southeast Asian economies that have been growing rapidly despite rather soft global economic growth. Both India and ASEAN have been growing in spite of the risks and uncertainties that have faced the world, and this includes tensions in the Middle East and US-China trade tensions. ASEAN has been expanding tremendously, integrating itself more actively in the regional and global economy, therefore, it has seen the enlargement of regional production networks and witnessed greater connectivity.

Many Southeast Asian economies have been more welcoming to foreign direct investment (FDI) and in order to attract more FDI has relaxed trade and investment barriers. In both South and Southeast Asia there is a growing middle class that is also a great source of demand for consumer goods. As a consequence of burgeoning growth in Bangladesh, economic reforms in India and the end to the civil war in Sri Lanka, South Asia has been performing very well. For different reasons Southeast Asian economies have been witnessing increasing growth. While Singapore and Malaysia have already taken giant strides in their respective economic development trajectories, Vietnam, the Philippines and Indonesia are now the new basins of growth in the region.

It is undeniable that economic interaction between South and Southeast Asia has increased tremendously, but there is still space for further growth that has not been adequately explored (ADBI, 2015). Trade between South Asia and Southeast Asia has increased and was valued at US\$4 billion in 1990. It increased to \$90 billion in 2013. But this is inadequate because Southeast Asia's share of South Asian trade did not increase significantly, rising from a mere 6% to only 10% over the same period. This clearly indicates that there is more room for improvement. Investment between South and Southeast Asia also suffers from the lack of sufficient initiatives being undertaken to increase cross-regional investment. South Asia was the destination for only 9% of Southeast Asian FDI. However, South Asia regarded Southeast Asia more favourably,

with 15% of total South Asian FDI being directed to ASEAN member states during the period 2009-2013.

The fact that trade and investment between ASEAN and South Asia is not at its optimum is reflected in the limited trade and investment between South Asia and ASEAN. Generally, portfolio investments between the two regions is limited. It is only Singapore that accounts for a relatively greater flow of portfolio investment between the two regions due to the status of Singapore being a financial hub and also due to the fact that Singapore has taken a more forward-looking view about investment in India. In order to increase the flow of portfolio investments between India and ASEAN it would be necessary to encourage and increase trade and investment between the two regions.

The full potential in trade and investment leaves much to be desired. This can be captured if there is more progress in developing infrastructure, financial markets and increasing regional cooperation. In this context, India's "Look East" and "Act East" policies are worthy of mention. This is not to say that there is no progress in trade and investment between South and Southeast Asia but only to emphasise there are many constraints. These include inadequate attention being paid to trade facilitation, non-tariff barriers and ease of doing business. Also connectivity between South and Southeast Asia has to be improved, and of special impact is the energy connectivity between both regions.

There are many opportunities for trade and investment growth between Southeast Asia and South Asia and India's new economic diplomacy approach is a worthwhile effort in that direction. Look East and Act East policies that have been promoted by India should also take into account the interest of ASEAN countries in seeing more trade and investment in their own countries. Thus, a two-way cross-investment strategy has to be worked out. This will help to increase trade between both regions. Because of the slow rate at which domestic reforms are being undertaken in India, it has yet to become a production hub as countries in ASEAN already have. Therefore, the liberalisation programme in India has to be jump-started.

One area that India can work on is to develop its industrial activities and attempt to be a part of global production networks. This will function very well within the overall landscape of increasing liberalisation and the investment attractiveness of the country. Being a part of the supply chain networks will help India be a part of the supply chains that should connect it with Southeast Asia, which already is an active participant in global supply chain networks. FDI-driven networks will create a further impetus for trade and investment expansion as well as connecting India with ASEAN.

A pre-requisite for the creation of supply chain networks is connectivity. This is an important variable that India has to develop both in terms of its hard and soft infrastructure. In a sense, much of the rationale for China's Belt and Road Initiative

lies in creating the connectivity between countries, be it by land or sea. In a similar manner, India has to develop the required connectivity so as to draw ASEAN closer to it. This will make available for India a greater market, effectively increasing its access to the Southeast Asian market which it can then penetrate more effectively.

In this respect, connectivity must be considered broadly to include not just transport, but also institutional connectivity, cultural connectivity and people-to-people connectivity, one of the factors of connectivity that ASEAN has been a strong proponent of. To support the development of these connectivities, India must support financing arrangements and markets, standards and mutual recognition of qualifications. Naturally, the mutual understanding of rules and regulatory frameworks as well as transparency will, therefore, have to be addressed more systematically. One of the most important aspects of connectivity that has not been sufficiently explored is energy connectivity.

It is in respect of these issues that the Regional Comprehensive Economic Partnership (RCEP) is a significant agreement. It provides the possibility for further trade and investment liberalization between the Association of Southeast Asian Nations (ASEAN) member states and its trading partners (ADBI, 2015: 26). However, India has indicated that it is not participating in RCEP for the time being, and that may slow down India's deeper integration with the region until its outstanding issues are resolved. There is no doubt that RCEP adds substance in the context of India's Look East policy.

The Regional Comprehensive Economic Partnership (RCEP), which was initiated in 2013 provides an arrangement for trade and investment liberalization between ASEAN member states and its trading partners. Among other things, this offers an important opportunity for India to further its economic integration with ASEAN. In theory, RCEP is timely and could possibly add substance to India's Look East policy and it comes at a time when ASEAN countries are planning to engage in second-generation economic reforms. In the context of ASEAN centrality, ASEAN countries wish to step up their economic growth and increase cross-regional integration so that they are a regional grouping that is the hub for investment. It is envisaged that this will make ASEAN a grouping that can compete with the likes of NAFTA and EU while at the same time driving up growth for member countries.

The ASEAN-India free trade agreement (FTA), which acts as a step towards the RCEP, has laid the foundation for cross-regional trade and investment liberalization. But there are various issues that need to be resolved. Some of the problems that need to be resolved include cross-border infrastructure links, poor trade facilitation measures, inadequate infrastructure financing, the prevalence of non-tariff barriers (NTBs) and barriers to FDI (ADBI:222). These measures have to be attended to as they will support transportation and energy connectivity.

The pre-existing ASEAN-India free trade agreement (AIFTA) offers a platform for cooperation between ASEAN and India. However, RCEP can be expected to go beyond

AIFTA, although the latter does address the issue of trade and investment liberalisation. Until such time as India is able to join RCEP, India should use the instruments available to via AIFTA in developing cross-regional integration with Southeast Asia.

As part of the Act East policy, connectivity between India and Southeast Asia. has to be deepened. There are three aspects to this question. First, the overall , framework of integration has to be addressed. This implies using the instrument of the AIFTA, for the moment, with the possibility of RCEP in the future. Second, the development of Myanmar as a land bridge between India and ASEAN. Political developments in Myanmar as well as the ongoing economic reform process make this possible. The opening up of Myanmar makes it suitable as a link forease of transportation through highways and railroads as well as the development of energy infrastructure. Needless to say, Myanmar has acomparative advantage in energy since it has rich natural resources in petroleumand natural gas It also has potential in hydropower, not to mention an abundant supply of low-cost labour.

Economic relations between India and ASEAN are in the early stages and there is ample scope for a deepening in cooperation and exchange. The notion of closer economic integration is well-known and it is recognised that it brings about an expansion in the market for goods and services and increase the scope for economies of scale. Also, with more integration one can expect greater specialisation, leading to more competitive industries and, thereby, improving regional competitiveness. The increased competitiveness of the firms in the region could lead to two outcomes: one, prices both in the region as well as those of products out of the region could come down and, two, both Indian and ASEAN could, collectively, be in a better position to compete with other regional groupings such as the EU, NAFTA and so forth. Further, it can be expected that if imports into the India-ASEAN region come in at a lower price, this will improve the terms of trade. Thus, these factors will lead to a more vibrant corridor of activity stretching from India to ASEAN.

The deeper integration of markets and the increased competitiveness will attract more production networks into India and ASEAN. India has lagged behind in the participation of production networks and not all countries in ASEAN are actively participating in these networks. Even those that are involved in the production networks are not necessarily engaged in high value-added economic activities. Therefore, this presents an opportunity for interested firms either to participate in the production process or to upgrade their participation to high value-added production.

Evidence indicates that developing countries that lowered their trade barriers had per capita real income growths that were more than those of other developing countries. It has been shown that in the 1990s, developing countries that lowered trade barriers enjoyed 5% growth as against those in the latter category only enjoyed 1.4% per year (OECD 2010). The removal of trade barriers and other measures that improved efficiency, led to a reallocation of resources to activities that had higher return and

that were in line with a country's comparative advantage. This, of course, must be supported with better public infrastructure and other policies that remove trade barriers, such as customs procedures, transparency, and the implementation of single window. Although most countries in ASEAN have been quick to remove barriers to trade and enhance public infrastructure, this has not been specially undertaken to improve trade and connectivity between India and ASEAN.

Consequently, deeper integration between India and ASEAN will attract more investment along the corridors of economic activity and this investment will both be foreign direct investment as well as domestic investment. With the inflow of more FDI the benefits of technology transfer and export-oriented manufacturing will accrue to producers from ASEAN and India. There will also be more involvement in supply chain networks.

Although an FTA like RCEP will promote more linkages, trade and investment between India and ASEAN, it is not the end of the road for more economic cooperation between the two. It is possible to devise flexible rules of origin and discuss mutually acceptable standards so as to reduce trade costs, even in the absence of an overarching FTA like the RCEP.

III. Rationale for Connectivity and Regional Initiatives

The rationale for energy trading arises due to factors such as differences in energy resource endowments and variations in timing of peak loads. In this case, obviously a country that is less privileged in energy can tap upon the resources of one that is better endowed, subject to there being no excess demand in the second country. Similarly, if there is a difference in timing of peak load, at times when one has lower requirements it can supply to another country that has higher demand at that time.

Another factor that can work to the advantage of a country that has the advantage of good location. Suitable geographical position, as in the case of hydropower, can be taken advantage of and a country can fully develop it, enjoy economies of scale, and supply the unused surplus to another country that has excess demand that it cannot meet. Since energy projects are investment intensive it would make economic sense for them to be allowed to develop economies of scale. It would not be necessary to replicate similar resources at large cost if trading is possible and the distance involved is not a constraint. It, thus, stands to reason that regional power plants be built, and electric power grids be linked.

There are various advantages to be gained from regional energy systems. First, regional specialisation is possible and geographical advantage can be harnessed, particularly in the case of hydropower. Second, countries can depend on a variety of countries for their energy supply. This will mean lower costs as well as the dependability of supply. Third, environmental costs can be minimised since energy facilities need not be built

if there are alternative facilities in the vicinity, even if they are in another country. The presumption is that cross-border connectivity is possible and efficient.

Many states in India face frequent energy shortages. This has negative consequences for industrialisation, businesses and for the well-being of people. This is a situation that need not exist since many ASEAN member states have surplus energy that can be exported. This is a clear example of why energy cooperation and trading would be of mutual value to India and ASEAN. For the development of both groups it is obvious that regional energy integration is a matter of prime importance for economic development. Trading of energy will help to stabilise prices and make demand more elastic. Integrating energy systems could help to stabilize prices and make demand more elastic (ADBI, 2015).

There is a strong demand for energy in South Asia, and India, in particular. India can also be the hub for the import of energy into South Asia, aside from importing energy for its own use. There is, therefore, a need to match supply with demand. Since India has excess demand which it cannot meet with locally generated energy, there is a strong case for cooperation in energy and trading in energy. This is where the argument for turning to energy resources in neighbouring countries comes into the fore. Unless, this option is given due attention, the shortage of energy will simply mean that growth in India and South Asia will be impeded. For an illustration of the extent of loss that will be incurred, it is worth mentioning a study by the United States Agency for International Development which estimated that planned outages in Sri Lanka and Bangladesh cost their economies a loss of about half a percentage point of GDP (USAID 2004). It has been pointed out that regional cooperation on energy in the Greater Mekong Subregion (GMS) could reduce energy costs by nearly 20% (ADBI, 2015). This translates into a savings of \$200 billion over the period 2005–2025. The integration of energy markets in South Asia has efficiency benefits and it can yield increased revenue. It has been estimated that the potential revenue from energy trade arising from the integration of energy markets can result in revenue amounting to between \$12 billion–\$15 billion annually (World Bank 2010). The costs of ignoring energy integration and cooperation have not been calculated, but they are surely huge.

Aside from matching energy deficient economies with energy surplus economies, it is useful to cooperate in the provision of energy generation. Energy cooperation is a useful strategy for several reasons. First, it creates a way of spreading the costs of energy generation, locating them across neighbouring countries. This will reduce the burden of costs as compared to a situation where each country has to bear the full costs of locating plants and other facilities within their own borders. Thus, those countries that can bear the investment costs of energy generation will carry the burden of building these facilities in their own countries and recuperate the costs by engaging in energy trade. Not only are the costs spread, but also the risks, too, are spread, thereby encouraging comparative advantage in energy generation. Cross-border investment in energy infrastructure will also give economies with lower levels of income the

privilege of concentrating their expenditure on other programmes that are necessary for their development and to further the welfare of their economies. This will enable less developed economies to benefit from the energy resources in neighbouring economies and allow them to concentrate on poverty alleviation programmes (Sheng and Shi 2011). This will give an opportunity for the poorer countries to focus on catching up on economic development. It will be possible to achieve economic convergence through investment in integrated energy markets, thereby reducing inter-country income disparities (Sheng and Shi 2011).

This leads us to the question of energy market integration which has many advantages. As we have mentioned, it allows specialisation and reduces the cost burden on poorer countries. It also helps countries to focus on income disparities and poverty issues. As far as the countries investing on production of energy, it helps them concentrate on technology acquisition and infrastructure building. In fact, through integrated energy markets it can be expected that there will be an increase in output and foreign direct investment. The increase in FDI can only be facilitated through tariff cuts, subsidy reductions, and by committing to greater infrastructure investment. The availability of energy will thus be expanded and its distribution to those under energy deficit conditions will have access to more and better energy.

The existing regional institutions such as the Greater Mekong Subregion (GMS), the South Asia Subregional Economic Cooperation (SASEC) group, and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) group offer opportunities for regional cooperation and a basis for expanding upon connectivity. It is this connectivity that will be the platform for energy trading, based as it will be on cross-border infrastructure projects. India's participation in BIMSTEC and SASEC anchor it to South Asia, while its proximity to Myanmar give it the link to Southeast Asia over land. Thus, India is uniquely positioned to reach out to ASEAN and provide opportunities for regional trade in energy between India, South Asia and Southeast Asia. Notwithstanding the presence of trade within these regions in energy, the above-mentioned regional institutions offer more opportunities for trade in hydropower, connection through gas pipelines and interconnection of electricity power grids. In fact, to take an example, linking the electric power grids of the GMS and SASEC will contribute to the power pooling and deeper interconnection.

It is in this context that Myanmar has a substantial role to play in energy trading given its substantial reserves of hydropower capacity and natural gas. Due to its proximity to India on one hand and the rest of ASEAN on the other hand, it possesses a vantage point for the location of gas pipelines. its position as a gas pipeline location. Given Myanmar's low electrification ratio (about 26%), the immediate focus will be in increasing domestic supply, leaving the goal of cross-border trading as a medium-term objective. Indeed, for cross-border trading to take place, it is necessary that the physical and institutional infrastructure connecting Myanmar with the rest of Southeast Asia, and India should be developed.

Myanmar can benefit substantially from opening-up and becoming a bridge between South Asia and Southeast Asia (ADBI, 2015:19 and Florento and Corpuz, 2014). As far as energy connectivity is concerned there are several projects that would link Myanmar with Bangladesh and India, including the Myanmar–Bangladesh–India gas pipeline project and the Tamanti hydropower project to supply electricity from Myanmar to India. But for the proper linking of Myanmar with India, the barriers to connectivity would have to be overcome.

Myanmar has excess resources in natural gas and hydropower. The surplus hydropower that Myanmar possess can be exported to India and Bangladesh for the purpose of electricity production for export to India and Bangladesh. This requires investment in infrastructural facilities. Thus, investment in direct grid connection is required for electricity transmission and, on the other hand, specialised facilities are necessary to carry out natural gas liquefaction and regasification.

Myanmar is exploring the possibility of becoming such energy bridge for inter-regional power connectivity. In the GMS, Myanmar has connected to Yunnan Province (China) via export-oriented hydropower dams. The country has also planned several other hydropower dams to export electricity to Thailand and India. Myanmar is looking at improving its energy connectivity with China. Myanmar faces power shortages particularly during its dry months. In this regard, at least two projects are being discussed, and they include a China-Myanmar-Bangladesh interconnection and an interconnection between Lao PDR and Myanmar. These are in addition to the currently existing 50MW interconnection between Moreh (India) and Tamu (Myanmar) which has effectively promoted border electrification in Myanmar.

However, the barriers that hinder energy connectivity and trading in energy would include those that are technical, infrastructural, financial, institutional, and political in nature. It should be noted that there are differences in norms and codes. This makes grid synchronization difficult. Further, convergence in grid codes to electric power is not always available, and finally there are differences in natural gas pipeline technology. An interconnection between India and Southeast Asia would necessarily run through Myanmar, which national electricity grid still does not cover the entire nation and would require reinforcements to increase its capacity.

The failure of India to participate in RCEP is, for the present time at least, a constraint that could have implications on deeper energy integration and trade between India and ASEAN. FTAs are the overarching framework for institutional standards, processes and agreement which do have an impact on energy cooperation. At a less aggregative level the resolution of regulatory barriers is important to support energy trading, which is further restricted through distorted energy pricing and the prevalence of subsidies.

Other issues that impede the flow of energy include political issues, such as security and considerations regarding the sphere of influence that countries choose to align

themselves with. These issues go beyond technical and economic frameworks but are nonetheless present and have to be overcome. It is, indeed, possible to overcome these issues if ASEAN centrality is promoted with India as a partner in this process. Two other issues that have to be addressed include financing for infrastructure and energy projects and environmental assessments. The latter arises because environmental objections hamper the development of energy projects, although the need for environmental impact assessments cannot be denied.

In order to encourage energy trading to take place between South Asia and Southeast Asia it would be necessary, aside from improving financial support, it would be imperative to develop both the physical and institutional infrastructure. As a step towards this it would be essential to increase power pooling and energy interconnection between the two regions. Towards this end the electric power grids of the GMS and SASEC should be linked. The GMS is a good arrangement to achieve progress in energy and power trading. But it requires more institutional support in order to achieve the goals that are envisaged. Primarily, it means connecting the energy sectors in India and ASEAN, supported by subregional and international agencies.

Aside from connecting the energy sectors in India and ASEAN, it is also necessary that commercially viable energy projects be identified, as was done in the ASEAN Interconnection Master Plan Study (ASEAN Secretariat 2011). In spite of the long gestation periods that would be involved, and the risks associated with the projects, there must be the political will to see the long-term advantages of inter-regional energy initiatives weighing over short term problems.

IV. Energy Cooperation in South and Southeast Asia

South Asia

The need for energy cooperation was present in South Asia going back as far as the late 1950s. There were attempts at coming out with policies to deal with the energy supply since back then. The issue is more pressing now with supply shortfalls and the high value of electrical outages since they are obviously factors that do not contribute to economic growth. These issues present an opportunity for the creation of a power system that stretches across the Asia Pacific region.

Although SAARC had wider objectives that were in the nature of economic and political cooperation within the South Asian regional framework, cooperation within the scope of SAARC was also considered. SAARC was formed in 1985. The Technical Committee on Energy was established in 2000 and a specialized Working Group on Energy in 2004. In 2014, the SAARC Intergovernmental Framework Agreement on Energy Cooperation was concluded.

India has the capability to be a hub for power in South Asia. It has cross-border interactions with South Asian countries such as Bangladesh, Bhutan, Myanmar and Nepal. The usual modus operandi for cross-border electricity trade is usually through government-initiated agreements rather than the integration of electricity grids. Nevertheless, this provides electricity for economic activities near the borders. Some of the cross-border electricity interconnections are as follows (Anbumozhi et al, 2019: 49):

- Bangladesh is currently connected to India through two 500 MW HVDC links of 400 kV transmission lines from Bahrapur (India) to Bheramara (Bangladesh),
- connection with north-eastern India from 400 kV Tripura (India) to Comilla (Bangladesh).
- Nepal shares about 21 interconnections for electricity exchange with India (mostly through the Indian State of Bihar) through 11 kV and 33 kV distribution lines, and 132 kV and 400 kV transmission lines with a total capacity of up to 500 MW
- an 11-kV distribution link from Manipur was established in India to export up to 3MW power to Myanmar

Other interconnections are being explored and they include possible proposals that are being examined by the India-Bangladesh Joint Technical Committees. Bangladesh has been active and it signed an MOU with Bhutan and Nepal to facilitate power trading between Bangladesh, Bhutan and Nepal. Another agreement on power trading between Bangladesh, India and Bhutan is also on the table.

A masterplan for the transmission of power from hydropower projects in Arunachal Pradesh in the north-east salient region to other parts of India foresees the construction of a number of HVAC and HVDC lines. This line will be made to run through Bangladesh, with Bangladesh importing up to 2,000 MW. Connect India and Sri Lanka through the towns of Madurai and Anuradhapura . this will be through a 400 kV HVDC submarine cable with a capacity of up to 1,000 MW. There are also plans to link India to Pakistan from Amritsar in India to Lahore in Pakistan.

With agreements between more countries in South Asia, often involving India, there will be more integration of participating grids. This is a necessary development since it is estimated that South Asia will require 43.2 GW additional cross-border capacity by 2036, which can be fulfilled by a more interconnected and market-oriented system.

Southeast Asia

The Southeast Asian energy market is fast changing since the demand for energy consumption is increasing and there is an increasing tendency to find substitutes for fossil fuels. The growth rates of countries like the Philippines, Indonesia and Vietnam

is increasing and that will require more energy to sustain these growth rates. Forecasts indicate that ASEAN's dependency on oil will increase from 44 per cent in 2011 to 75 per cent in 2035. With the exception of Brunei and Indonesia, the other ASEAN countries will be oil importers in the years to come. Therefore, there attempts will be made to shift away from oil in the interests of energy security. Although presently the price of oil is low, this cannot be taken for granted given the volatile situation in the Middle East and the external forces affecting the oil market.

A mixture of policy responses can be anticipated in Southeast Asia. These include moving away from dependence on oil and a shift to renewable energy and environment-friendly sources of energy since ASEAN countries will want to reduce CO₂ emission levels. Two processes can be anticipated in dealing with this situation. First, ASEAN will visit the issue of energy cooperation and connectivity more seriously. Second, ASEAN will plan for energy generation on the basis of non-fossil fuel resources. ASEAN is well – suited to low-carbon energy resources such as geothermal resources, solar and biomass energy. More cost-effective hydropower is another route that some ASEAN countries can take.

ASEAN has the necessary framework to evolve a robust energy connectivity programme because of the regional integration architecture that has been proposed in the ASEAN Economic Community (AEC) in 2015 and further put forward in the AEC Blueprint 2025. AEC 2015 had already mentioned the need for an integrated region that addresses growth challenges as well as energy security. The AEC Blueprint 2025 consists of the following five pillars (ASEAN Secretariat, 2015):

- A highly-integrated and cohesive economy;
- A competitive, innovative, and dynamic ASEAN;
- Enhanced connectivity and sectoral cooperation;
- A resilient, inclusive, people-oriented and people-centred ASEAN; and
- A global ASEAN.

Connectivity is explicitly mentioned as one of the goals that ASEAN aspires to achieve, and it includes energy connectivity since, without it, it would not be possible to achieve “a competitive, innovate, and dynamic ASEAN” neither would it be possible to achieve ASEAN centrality such that ASEAN can fully integrate in the global economy. The AEC Blueprint 2025 explicitly mentions the ASEAN Power Grid (APG) and the Trans-ASEAN Gas Pipeline as part of the agenda for regional energy connectivity. The APG is an attempt to achieve energy interconnection of all ASEAN member states. Aside for interconnections that will link all the member states, the ASEAN Power Grid seeks to extend energy connectivity to neighbouring countries such as Australia and China. China is connected via the Greater Mekong Subregion (GMS) power framework. In 2017, ASEAN exchanged about 51.7 TWh with Yunnan and Guangxi provinces. This was done through cross-border transmission lines passing

through Myanmar, the Lao People's Democratic Republic and Vietnam. Australia, for its part, is examining the possibility of exporting solar electricity to Singapore using submarine cable technology. The prospects of ASEAN emerging as a hub for power connectivity emerges in view of South Asia's interest in exploring the possible of energy cooperation using the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) as an instrument to encourage energy connectivity.

The ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 prioritises the following three projects although there are others in the pipeline (ASEAN Centre for Energy, 2015):

- System A (North System), located in the Cambodia, the Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam.
- System B (South System), located in Thailand, Indonesia (Sumatra, Batam), Malaysia (Peninsular), and Singapore; and
- System C (East System), located in Brunei Darussalam, Malaysia (Sabah, Sarawak), Indonesia (west and north Kalimantan) and the Philippines.

The Association of Southeast Asian Nations (ASEAN) has developed the ASEAN Plan of Action for Energy Cooperation (APAEC) 2010–2015. The APAEC is a plan that addresses the energy issues that are related to the ASEAN Economic Community (AEC) Blueprint 2015. The AEC, through APAEC, seeks to ensure a secure and reliable energy supply for ASEAN, aside from other means, through the ASEAN Power Grid and Trans-ASEAN Gas Pipeline (TAGP). APAEC also seeks to promote cleaner coal use, energy efficiency and conservation. It also emphasises the need to turn to renewable energy which includes biofuels and nuclear energy as alternative sources of energy to drive economic activities and industrialisation (Irawan, 2017).

The ASEAN Interconnection Master Plan Study (AIMS), which was completed in two phases, first in 2003 and then in 2010, had a proposal to set up a regional transmission network that links ASEAN power systems. This was supposed to be undertaken in three stages, first on cross-border bilateral terms, subsequently on a sub-regional basis and, finally, expanding to an all-ASEAN basis that reaches out to an integrated Southeast Asian system. One outcome of this process of integration would be an ASEAN power grid system. Another proposal is electricity connection between Myanmar and Thailand (Ibrahim 2014).

Yet another initiative undertaken on a regional basis is the Trans-ASEAN Gas Pipeline which is seen as a regional gas grid that links all the existing and planned pipeline networks of by linking the existing and planned gas pipelines that belong to ASEAN members. This was a component of the ASEAN Council on Petroleum (ASCOPE)-TAGP Master Plan 2000. It involves the construction of 4,500 kilometers (km) of pipeline, worth an estimated US\$7 billion, that is largely supposed to be beneath the sea. The gas pipeline infrastructure had grown from 815 km in 2000 to 2,300 km

of cross-border gas pipelines in 2008. This project is made up of eight bilateral gas pipeline interconnection projects. These pipelines form part of the TAGP, but all are bilateral in nature (Suryadi 2011).

Transboundary power trade is quite common between countries in ASEAN. In 2016 the power trade capacity reached 5.5 GW; this is about 2 per cent of the installed generation capacity. (APAEC, 2015). The ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 is a regional initiative that attempts to go beyond bilateral arrangements for the trade in power and achieve multilateral connection frameworks.

One of the early projects of this nature is that linking Lao People's Democratic Republic, Thailand, Malaysia, Singapore Power Integration Project (LTMS-PIP). LTMS-PIP uses Thailand's transmission grid and allow Malaysia to purchase up to 100 MW of electricity power from the Lao PDR. With the launch of this project it will be possible to extend the network beyond the initial countries involved, thereby creating a network for multilateral electricity trade. This will extend the APG beyond neighbouring borders (ASEAN Centre for Energy, 2017b).

In 2017 the Lao People's Democratic Republic, Thailand and Malaysia signed a cross-border power and transmission agreement, with electricity trading beginning the following year. Lao PDR began electricity trading with Malaysia using Thailand as a component in the network by sharing the transmission network.

While Cambodia, the Lao PDR and Myanmar have good hydropower resources, there is excess demand for power in Thailand, Malaysia, Singapore and Vietnam, creating an ideal situation for trade in power. There is, therefore, potential for a vibrant energy market in ASEAN to meet intra-regional energy needs. This, of course, implies that the appropriate domestic infrastructure be built along with the necessary cross-border interconnections.

V. North East India as India's Energy Pivot

The NER has an enviable geographical location that positions it suitably within India, and also in close proximity to some of the South Asian states such as Bangladesh and Bhutan. At the same time the NER is also in close proximity to Southeast Asia, since it is close to Myanmar. Thus, the NER can act as a connecting corridor between South and Southeast Asia, enabling energy trade along cross-border lines. The importance of the NER arises from the potential that Bhutan and Bangladesh have in increasing their energy generation potential. The latter has great potential for hydropower generation and Bangladesh for thermal power capacity. The NER itself has the capability to increase its power generation capabilities and it should, if it is to meet increasing demand for electricity within its areas and also in the surrounding region. Not only will the North East be a centre for the generation of power, which can then be traded, but it will also be a link for cross-border energy trade.

With Modi's Look East and Act East policies, the NER can both transform itself and the surrounding region. However, this can be done only if there is energy sector cooperation and the supporting infrastructure and institutional frameworks are improved and strengthened. To achieve this, several steps have to be taken, and this involves, increasing the energy generation in North East India, improving infrastructure investment, connectivity, and people-to-people connectivity.

This is not to deny the challenges required to be overcome in establishing the NER as a hub for energy exchange. The primary challenge are the borders that have to be crossed in those regions for energy connectivity to be established and this brings into question a realignment in thinking on security issues, state-centre relationships, technological hurdles and cross-border institutional liberalisation. The other related issue concerns the natural resources, environment and settlements along those regions, particularly where energy generation is to be established and pipelines or grids constructed. Cross-border energy trading requires, as a first step, proper planning along socio-political lines in order to create the right framework for its implementation. Only then is energy integration possible.

One good reason why the capacity of NER should be fully exploited is because with such an effort India can gradually scale down its use of coal-fired power plants, but so long as coal is used as a source of energy, there has to be a mechanism for sharing the cost of emissions in the regions. This could be based on the extent of reliance of energy from exporting countries, the logic being that emissions are increasing not only for the good of the exporting country but also for the good of the importing countries, which therefore would need to bear some portion of the costs. However, there is no doubt that there has to be a shift from fossil fuels. Bangladesh can do this by importing electricity, rather than using thermal power plants fired by coal. Nepal, Bhutan, and Myanmar are known to suffer from seasonal downturns in hydropower which can be sourced from the NER if it succeeds in generating sufficient energy.

The NER is in a critical position that enables it to integrate the Bangladesh, Bhutan and Nepal (BBIN) subregion (Anbumozhi, 2019). This sub-regional arrangement is expected to work well because in the coming years Bangladesh and Nepal will become net importers of energy in view of their inability to meet their own energy needs. In that case, the NER could become the source of energy supply. But until the NER becomes a source of energy it has to import energy from Bhutan. Thus, one observes an increasing interaction between these countries in energy trade interactions.

There are various initiatives to further integrate the region. Many regional organisations such as SAARC, BBIN, BIMSTEC and the proposed Bangladesh–China–India–Myanmar Forum for Regional Cooperation initiative see the potential that can be realised by connecting the NER with the rest of the region. In view of this possibility several infrastructure projects have been proposed (Anbumozhi, 2019: 80). Some of the infrastructure initiatives include the following:

- A. Asian Highway Link,
- B. Trilateral Highways,
- C. Asian Railway Network, and
- D. a natural gas pipeline grid.

Various models are available for the emergence of interlinkages with Southeast Asian countries. One model is through bilateral exchanges between India and Bhutan and Bangladesh and Nepal. In this model, Bhutan, which has the highest per capita consumption of energy seeks to generate 10,000 MW and export to other South Asian countries as well as Myanmar. Another model is through integration along subregional lines, particularly in the context of arrangements between BBIN and GMS. A third model is through the creation of a regional power pool that is located in the NER- Myanmar junction. The notion of a regional energy pool has gained currency in the Nordic region and in Africa (South African Power Pool) (Anbumozhi, 2019: 3). Fourthly, it is possible to form interconnections between generators and loadcentres, such as between Palatana (Tripura) and Comilla (Bangladesh). This project has started exporting power to NER and Bangladesh. Finally, energy grids could be built in the form of a 'virtual energy grid' like that implemented by India between eastern and western Bhutan and the NER and connecting it with Bangladesh and Southeast Asia.

As we can see, some of the models are consistent with the Act East policy and put cooperation between India and Southeast Asia at the centre of their initiatives. This is particularly so in the case of arrangements between BBIN and GMS, which are carried out in the spirit of India-ASEAN cooperation. Creating a power pool will also connect NER and Myanmar. The model based on virtual energy grids is yet another way to implementing India-ASEAN energy linkages. Arrangements based on bilateral linkages are a less suitable way to build the energy linkages that can be strengthened by the requisite institutional platform.

The integration of Bangladesh, Bhutan, India and Nepal (BBIN) as a subregion is crucial as a mechanism to facilitate cross-border energy trading (CBET). In the context of BBIN, the NER is set to play a prominent role because of its geographical position and also because of its status as an energy-surplus centre. The NER is calculated to have a potential of about 58,900 megawatts (MW). NER can supply as much as 40 per cent of national needs. Since Bangladesh and Nepal as well as the surrounding states in India are likely to be energy deficit, the NER can export energy to these areas. However, for that to happen the NER infrastructure has to be upgraded and transmission networks have to be built within the NER. This will be the first step to be followed by networks linking NER to other states within India, before then proceeding to connect with neighbouring countries.

The NER can be the core of the BBIN subregion and it can connect with Bhutan, Nepal on the South Asia side and even extend to Lao PDR by linking through Myanmar.

Thus, a corridor can be created by creating power-generating hubs and transmission lines. Several pre-requisites have to be met for this strategy to materialise. First it is necessary to create the right security framework as well as develop the supporting vision from an international relations perspective. An atmosphere of mutual suspicion will damage energy cooperation. India will have to take the lead in determining the right foreign policy approach. Second, the unharnessed hydropower potential has to be tapped. Third, there should be a willingness to shift to green, renewable energy rather than depend on fossil fuels.

It should be noted that there are many regional and sub-regional arrangements that can make a BBIN-NER-Southeast Asia corridor work. Among the frameworks that can help in this regard are the following:

- a. ASEAN–India Free Trade Area,
- b. Mekong–Ganga Cooperation,
- c. Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation,
- d. Bangladesh– China–India–Myanmar Forum for Regional Cooperation,
- e. South Asian Association for Regional Cooperation, and at some point
- f. Regional Comprehensive Economic Partnership

Other initiatives such as the Central Asia–South Asia Project, the China-led growth quadrangle in the Greater Mekong Subregion, the China–Pakistan Economic Corridor, and One Belt One Road initiatives in Asia have implications for trade and could significantly change the scope of energy trading in this region. For example, the \$60 billion+ China–Pakistan Economic Corridor project, which is based on a strategy of ‘one corridor multiple passages’, consists of 51 planned and undertaken projects; of these, 24 are energy-related, with an installed capacity of 17,608 MW. At least seven projects are now at the completion stage under its early harvest category (China–Pakistan Economic Corridor).

Initiatives taken by the Government of Bangladesh in engaging with their counterparts in Bhutan and Nepal indicate a strong possibility and acceptance on the part of India to permit the use of its grids for multiple trans-border energy flows and exchanges. In fact, this essentially bilateral framework could be a stepping stone to trilateral and multilateral frameworks for use in the BBIN subregion, and extended to other neighbouring countries in South East Asia and beyond.

VI. Conclusion

South Asian and Southeast Asia are set to grow in the years to come; they are the new growth centres of the global economy, aside from China. This increases the need for regional cooperation and integration, which can be done through the architecture

of multilateral trade agreements. More specifically, within the framework of such institutional arrangements, other initiatives are necessary. Initiatives with respect to building energy cooperation and regional initiatives are specifically necessary in order to drive growth.

There are traditional opportunities for trade in energy resources between South Asia and ASEAN; this is mainly in coal and petroleum products. But there is a shift from fossil fuels to other forms of energy, and these lie in hydropower and natural gas. It is in these areas that India and ASEAN should concentrate moving forward.

More investment is necessary in LNG liquefaction capacity and new exploration. It is also necessary to lay more natural gas pipelines, build power grids and extend hydropower facilities. For this purpose, credit availability and financing have to be extended and the credit constraint has to be relaxed. The electricity sector is another area in need of investment.

From a policy perspective, the pivotal role of the North East Region is the most significant point. NER forms the bridge between India and ASEAN, and while there is more potential for the development of energy connectivity between India and ASEAN there is also an increased role that the North East can play in this respect. To take advantage of its geographical vantage point, the NER should be developed and fully equipped with the necessary infrastructural facilities. These considerations should be kept in mind in the development planning of the NER.

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