Chapter 4

Key Barriers and Enablers

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Chapter 4

Key Barriers and Enablers

1. Trade Barriers

Regionalism is defined as inter-governmental cooperation to attain common interests through socialisation and institutionalisation (Sridharan, 2007). The economic growth of member countries can be enhanced through regional integration, which will facilitate trade, technology, and investment prospects, as well as increase opportunities and scope for economic development and welfare gains (Javed, 2019). Examples of regional trade agreements include the North American Free Trade Agreement, Central American-Dominican Republic Free Trade Agreement, the European Union, and Asia-Pacific Economic Cooperation.

South Asia is often described as the world's least-integrated sub-region. Intra-regional merchandise trade in South Asia is less than one-third of its potential. It was at $26.8 billion in 2014 against a potential of $81.2 billion, as estimated by the UNESCAP South Asia Gravity Model (2017). Moreover, the intra-regional trade share in total merchandise trade of South Asian economies is merely about 5% as compared to more than 20% of Southeast Asia (UNESCAP, 2017). The potential of intra-regional trade in services, as well as investments, also remains untapped. Due to insufficient domestic reserves, intra-regional trade in fossil fuel also remains negligible. However, the focus on non-fossil fuel energy sources has opened intra-regional trade potential due to the complementarity in demand and supply.

Therefore, South Asia has significant potential for improvement in terms of renewable energy trade integration. Countries such as Bangladesh, Bhutan, Nepal, and Sri Lanka are yet to achieve their bilateral renewable energy trade potential, while there is great scope of improving the trade within the region.

Due to obstacles to regional cooperation, countries are rather more interested in bilateral cooperation than regional cooperation. The air trade corridor between India and Afghanistan is a classic example of bilateral cooperation in South Asia, which was not otherwise possible in regional cooperation where Pakistan is involved. Huda (2016) found that cooperation is held back by security issues, concerns about relative gains, and mistrust, along with a lack of communication and problematic implementation.

South Asian countries have established several institutional frameworks for developing regional economic integration, such as South Asian Association for Regional Cooperation (SAARC), as well as the South Asia Free Trade Agreement (SAFTA), to enhance the volume of trade. SAFTA was signed on 6 January 2004 at the 12th SAARC Summit and came into force on 1 January 2006.

SAFTA is driven by the principles of the World Trade Organization, espousing reciprocity, and awareness of the needs of least-developed SAFTA countries (Bangladesh, Nepal, Bhutan, and

Maldives) (Maqbool, Chattha, and Azeem, 2007). The agreement also targets the elimination of tariffs, para-tariffs, and non-tariff barriers (USAID, 2005). Studies by Srinivasan and Canonero (1995) and Srinivasan (1994) also indicate that, although there can be substantial potential gains from regional trade liberalisation, these gains are larger for smaller economies. Srinivasan also argues that gains for South Asia are substantial when dealing with other collective regional arrangements rather than the individual establishment.

However, SAFTA has only been a limited success and has been hampered by its narrow scope. Because of the narrow export base of these countries, there has been more competition than cooperation in this region and, thus, very low complementarity. The SAARC-envisioned progressive trade liberalisation programme has not been sufficient to ensure the full implementation of the SAFTA, due to the existence of non-tariff barriers, while SAARC's focus has remained tariff reduction alone.

Furthermore, the trade liberalisation objectives of SAARC are not achieved due to the slow finalisation of schedules of specific commitments in South Asia. Banik and Bhaumik (2014) pointed out that, due to high barriers to trade, including domestic regulations, mainly services trade is occurring informally. Various obstacles in the form of exorbitant transportation costs and a dearth of regional transit trade agreements and cross-border infrastructure are also adversely affecting the volume of trade for goods and services in the South Asian region (Manzoor et al., 2019). Jayaram (2016) comments on the negligible impact of SAFTA on the various trade barriers in the region, which are largely driven by political and social issues.

Trade and regional economic integration can provide critical and transformative support in terms of sustainable development. It can also improve economic and social welfare. While economic cooperation and integration at the sub-regional level have worked as a powerful tool in empowering neighbourhoods in many parts of the world, the South Asia sub-region has lagged in harnessing its full potential due to the discussed barriers and challenges. Therefore, the region continues to underperform in poverty reduction and other indicators of development.

1.1. Trade Barriers to Electricity/Renewable Energy

Trade in electricity can be considered as trade in renewable energy if the entire generation of power is from renewable energy sources. Trade in renewable energy (considered to be trade in services), which cannot be stored for a long time and has severe fluctuations in generation patterns across time and season has a somewhat different nature (compared to conventional trade in products). The absence of suitable infrastructure is one of the most important challenges for trade in electricity. Proper network connectivity needs to be ensured for electricity trade. Trade in electricity is only possible when there is an exportable surplus after meeting domestic demand. To increase exportable electricity, the technology needs to be upgraded, which can enable higher generation capacity as well as proper demand management (to meet domestic demand through the surplus generation and better export surplus). Generation capacity can be arranged if technology and financing are available, but in the case of South Asian countries, there is a lack of indigenous manufacturing capacity in renewable energy generation. Solar panels, windmills, and their components along with energy storage need to be imported primarily from China. India has taken various initiatives (e.g.

regulatory and financial incentives including loans, grants, tax rebates, and usage of biogas recovery systems other than production-linked incentives) to develop indigenous renewable energy manufacturing capacity. But the raw material (rare earth material) required for renewable energy manufacturing is not available domestically; rather, the international market is monopolised by China.

Transmission and distribution (T&D) loss is also another challenge for such infrastructure development to facilitate renewable energy trade. T&D loss in South Asian countries is relatively high (as indicated in Table 4.1) compared to the global standard.

Table 4.1. T&D Loss in South Asian Countries, 2010–2021

(% of Generation)

Country	2010	2015	2016	2017	2018	2019	2020	2021
Afghanistan	32.47	44.12	48.57	48.65	54.94	62.46	82.99	80.81
Bangladesh	11.24	19.27	16.23	16.56	17.26	11.99	12.45	11.67
Bhutan	0.26	0.86	3.37	0.76	2.68	5.88	5.88	5.55
India	21.23	18.05	17.65	17.41	17.03	16.75	15.97	15.10
Maldives	0.00	0.00	0.00	3.23	3.32	3.29	3.57	3.40
Nepal	34.60	38.02	33.95	30.60	22.39	18.91	24.15	26.16
Pakistan	16.21	15.32	19.07	16.04	11.99	12.78	13.15	11.99
Sri Lanka	14.24	7.27	7.28	5.63	9.41	8.64	9.60	9.17

T&D = transmission and distribution.

Source: Energy Information Administration, 2022.

Dense forests exist between India and Bhutan/Nepal and deep sea between India and Sri Lanka/Maldives, making a connectivity network a real challenge for effective renewable energy trade between these countries. Even if the technology is available, the network needs to be cost-effective and eco-friendly.

Political issues also hinder renewable energy trade. For example, it is difficult for India to import power from Nepal or Bhutan as part of a renewable energy plan if it is developed by China. Moreover, the sovereignty of natural resources (such as land and water) is also an issue; for example, River Brahmaputra water-sharing issues between India and China impede the construction of hydropower projects.

Different countries have their own norms and regulations for renewable energy generation and distribution. The absence of a common protocol also poses challenges to effective multilateral renewable energy trade. Without such a protocol, it is beneficial for the countries to engage in bilateral agreements instead of having a multilateral arrangement, even though that could be more beneficial.

Moreover, trade in renewable energy has its own challenges like generation variability (across time and season) and frequency variability, which can have a severe impact on grid stability. Trade in renewable energy, if based on single/limited renewable energy sources, cannot be sustainable.

Although the South Asian region is endowed with various renewable energy sources, cross-border investment and cooperation in renewable energy trade still lag. Based on the above paragraphs, the barriers to renewable energy trade in South Asia can be briefly categorised as follows:

Economic barriers

- High front-end capital and project development costs per kW of installed electricity generating capacity, although the operation and maintenance costs are low.
- Higher cost of investment in renewable energy projects compared to conventional energy projects.
- Longer payback period and a lower rate of return in initial phases.
- Lack of cost-reflective pricing with a regional disparity in generation capacity and lower operational efficiency.
- Limited involvement of the private sector.

Technical and capability barriers

- Discrete and non-integrated supply chain for energy and energy-based services.
- Lack of flexibility in renewable energy knowledge and technology transfer in the region that would require well-defined area-specific protocols and agreements.
- In the initial phases, the knowledge of specific skills, technicality, and cost-effective operations far outweigh the benefits of first mover advantage.
- Lack of sufficient infrastructure (insufficient grid network and high T&D loss) to enhance renewable energy electricity trade across countries within the region.

Financial barriers

- Lack of sustainable mechanism for subsidy in the context of investment in cross-border renewable energy projects.
- Lack of flexibility in finance by commercial banks and international organisations, even though there has been a recent rise in different financial initiatives by the World Bank, ADB, and national governments.

Regulatory, legal, and institutional barriers

- Lack of proper regulation in the planning, execution, and operation of renewable energy projects.
- Under-utilisation of the positive externalities arising out of varied natural regional advantages such as rough terrain, proximity to coasts and tides, and offshore-onshore mix of generation opportunities.
- Information barriers in renewable energy services and generation.

2. Enablers for Renewable Energy Trade in South Asia

Although the South Asian region is unique in its energy resource diversity, renewable energy trade and cooperation are still limited to some inter-governmental bilateral negotiations. Proper political will and indigenous involvement are required to extend the spill-over benefits over the region and move forward from a bilateral to a multilateral arrangement. The key enablers in the current situation can be identified as follows:

- The geography of South Asia's power grids offers many power connection opportunities at border interfaces, with India as the centre of many power exchange opportunities as an energy supplier, exporter, or transit country (ESCAP APEF, 2018).
- Regional renewable energy trade through a common pool of power with diversified renewable energy sources can help to reduce the risk of grid instability arising out of variable generation patterns.
- An integrated regional power market with quality renewable energy supply availability and trade infrastructure can enable cooperation in the region (Chen, 2022). For example, energy cooperation is the main focus of South Asia Sub-Regional Economic Cooperation (SASEC).
- Significant complementarity in renewable energy supply potential and demand pattern for the region.
- Facilitating a decentralised structure of regional grids (the US model of energy cooperation) rather than a centralised one (the EU model of energy cooperation) as it would allow individual countries to maintain their control over respective grids (isolation in the case of emergencies) while enhancing higher coordination and information sharing for renewable energy trade and cooperation (S&P Global, 2021).
- Improving investment environment and ease of doing business for the private sector for both renewable energy generation and transmission by flexible approval and regulation.
- Harmonising legal and regulatory frameworks for cross-border renewable energy transfer and transaction along with the possibility of a Renewable Energy Charter Treaty for the region.
- Individual commitments toward climate change and decarbonisation targets can enable renewable energy cooperation across the region while facilitating surplus renewable energy export to other countries.
- Because of diversified renewable energy resource endowments, national investment in renewable energy infrastructure becomes expensive in some countries and environmental commitment can be alternatively fulfilled by imports from neighbouring countries.
- Counterintuitively, global oil price shocks can also act as the key enabler of renewable energy trade and regional cooperation for energy security requirements.
- The 'One Sun One World One Grid' (OSOWOG) initiative of India to develop trans-national grid across the globe to transport solar power to different load centres all over the world, can also enable regional renewable energy trade. While another Indian initiative, 'One Nation One Grid One Frequency', integrates grids within the country, OSOWOG envisages to integrate grids across the countries.

The detailed discussion on barriers and enablers of renewable energy trade in South Asia based on literature review and stakeholder consultation suggests that, due to a lack of mutual trust in the region, the countries are mostly engaged in bilateral agreements for renewable energy/energy cooperation. However, factors such as lack of proper infrastructure and unutilised renewable energy potential can also act as important barriers. Thus, the null hypothesis B1 H0 proposed in Chapter 2 can be partially accepted. This helps the study to conclude that ensuring political trust is necessary but not sufficient for effective regional renewable energy trade and cooperation. Even in the presence of mutual trust, without a proper arrangement of infrastructure, cross-border renewable energy trade and cooperation cannot be enhanced. On the other hand, the presence of complementarity in electricity demand and the source of renewable energy supply are not the only important enablers for regional renewable energy trade and cooperation. Additional factors such as national climate commitment and secure sustainable energy supply resistant to global geo-political shock can also play an important role as an enabler for the global renewable energy trade and cooperation. Thus, the null hypothesis (B2 H0) corresponding to research Question 2 can be accepted because the demand–supply complementarity cannot be completely substituted by the premise of national climate commitment.