A JOINT STUDY OF THE ASIAN DEVELOPMENT BANK AND THE ASIAN DEVELOPMENT BANK INSTITUTE

# Connecting South Asia and Southeast Asia

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# Foreword

The success story of economic growth in Southeast Asia over the past few decades is well known. It resulted from an outward-looking strategy of export-oriented growth, coupled with openness to foreign direct investment by more developed economies both within Asia and outside, generally market-friendly policies, and extensive investment in infrastructure. It led to deep economic integration of Southeast Asian economies, especially the most developed ones, with those of East Asia, manifested most notably in the rapid expansion of regional and global supply chain networks.

South Asia has also emerged more recently as a dynamic growth region as a result of market-oriented reforms. It is now enjoying the advantages of being a latecomer with relatively low wages. However, inadequate infrastructure, high levels of regulation and trade barriers, and inefficient logistics systems mean that South Asia still lags significantly in terms of development of manufacturing sectors and its participation in global supply chain networks. This poses a significant barrier to increasing growth of trade in high value-added products, and the rises in productivity and wages that could result from this.

Trade is clearly a main engine of growth. Although trade between South Asia and Southeast Asia has grown rapidly in the past decade or so, the continued presence of barriers in infrastructure, trade policies, logistics systems, and institutional gaps holds trade between these two regions well below its potential. Easing these barriers could contribute substantially to promoting sustainable growth in the two regions. In this regard, the recent opening up of Myanmar in political and economic terms provides a fresh opportunity to reevaluate the potential for increasing trade between the two regions.

Against this backdrop, the Asian Development Bank and the Asian Development Bank Institute jointly conducted a study of ways to promote trade and investment between the two regions. It focuses on both "hard" infrastructure and associated "soft" infrastructure, including tariffs and non-tariff barriers, trade and transport facilitation, as well as finance and institutional aspects. The aim was twofold: to build the broad case for increased connectivity between the two regions and to identify specific projects that appear to have high potential to promote this general aim.

Asia has a huge demand for infrastructure in areas including transport, communications, and energy, which cannot be accommodated solely by public finance. Some countries may need hard infrastructure at this time,

while others may need soft infrastructure related to trade and transport facilitation, for example. These areas also require further development of financial markets and institutions, including local government finance and private finance, which can help channel funds to worthwhile investment projects that have been more extensively analyzed. Project evaluation is also required to generate lessons learned and best practices in infrastructure investments. Use of public–private partnerships can inject private sector discipline into project selection and implementation, but they are not a panacea, and close attention to the allocation of costs, risks, and benefits is needed to avoid failure.

Greater participation in trade calls for increased competitiveness and productivity. This not only includes promoting technological innovation and diffusion, but also involves creating an environment that fosters the development of new companies that will embody those technologies in new products and services. Furthermore, small firms need greater access to finance to be able to participate in international trade. This requires a higher stage of financial development, including expansion of financing capacity for start-up companies. Since new companies are typically small, improving financial access for small and medium-sized enterprises (SMEs) should be a key aspect of such a strategy. This calls for related activities that include development of venture capital, crowdfunding vehicles such as hometown investment trust funds, and credit market databases such as Japan's Credit Risk Database of SMEs. Financing for SMEs and start-up companies through bank loans can be difficult due to the uncertainty of their business.

Flexible exchange rates can also support competitiveness and growth of trade, subject to the constraint that capital flow volatility is not too great. They can also support more open capital markets that facilitate the freer flow of foreign direct investment and portfolio investment to attractive investment projects.

This study seeks to contribute to a better understanding of the dynamics of the emerging economies in these two regions spearheading Asia's future economic development and to stimulate fresh thinking on policy solutions to emerging development challenges.

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The study was initiated under the overall guidance of a steering committee chaired by Masahiro Kawai (former Dean and CEO of ADBI) and Rajat M. Nag (former Managing Director General of ADB). It was composed of several heads of ADB's operations and knowledge departments, including Iwan Azis, Philip Erquiaga, Juan Miranda, Changyong Rhee, Kazu Sakai, and Kunio Senga. The study was completed under the strategic guidance of Naoyuki Yoshino (Dean of ADBI). Juan Miranda (Managing Director General of ADB) also provided valuable comments.

Michael Plummer (Director, SAIS Europe, and Eni Professor of International Economics, Johns Hopkins University) was the lead consultant for the study. Peter J. Morgan (Senior Consultant for Research, ADBI) served as the project task manager for the study under the supervision of Ganeshan Wignaraja (Director of Research, ADBI).

The final report was written by a team of ADB and ADBI staff and consultants. The final report was prepared by Michael Plummer, Peter J. Morgan, and Ganeshan Wignaraja with substantial contributions from background papers on thematic topics and individual country studies written as part of the project. The authors of the thematic papers include Jean-Francois Gautrin (land transport); David Wignall and Mark Wignall (sea transport); Anthony Bayley (trade facilitation); Shubhomoy Ray (infrastructure finance); Moe Thuzar, Francis Hutchinson, Rahul Mishra, Tin Maung Maung Than, and Termsak Chalermpalanupap (institutions); and Fan Zhai (CGE modeling). The authors of the country studies include Mustafizur Rahman, Khondaker Golam Moazzem, Mehruna Islam Chowdhury, and Farzana Sehrin (Bangladesh); Prabir De (India); Hector Florento and Maria Isabela Corpuz (Myanmar); Pradumna B. Rana and Binod Karmacharya (Nepal); Dushni Weerakoon and Nipuni Perera (Sri Lanka); and Suthiphand Chirathivat and Kornkarun Cheewatrakoolpong (Thailand). Jenny Balboa, Yan Zhang,

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# Abbreviations

| | |
|---|---|
| ADB | Asian Development Bank |
| ADBI | Asian Development Bank Institute |
| AEC | ASEAN Economic Community |
| AEO | authorized economic operator |
| AFTA | ASEAN Free Trade Area |
| AH | Asian Highway |
| AHN | Asian Highway Network |
| AIMS | ASEAN Interconnection Master Plan Study |
| APEC | Asia-Pacific Economic Cooperation |
| ASCOPE | ASEAN Council on Petroleum |
| ASEAN | Association of Southeast Asian Nations |
| ASEAN+3 | ASEAN members, plus the PRC, Japan, and the Republic of Korea |
| ASW | ASEAN Single Window |
| ASYCUDA | Automated Systems for Customs Data |
| BAU | business-as-usual |
| BCP | border crossing point |
| BIMSTEC | Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation |
| BOOT | build–own–operate–transfer |
| C&F | cost and freight |
| CBTA | Cross-Border Transit Agreement |
| CDM | Clean Development Mechanism |
| CCC | customs cooperation committee |
| CGE | computable general equilibrium |
| CGIF | Credit Guarantee and Investment Facility |
| CII | Confederation of Indian Industries |
| CIQS | customs–immigration–quarantine–security |
| DFI | development finance institution |
| DTI | direct trader input |
| EAS | East Asia Summit |
| EATR | effectively applied tariff rate |
| ECA | export credit agency |
| ECE | Economic Commission for Europe |

| | |
|---|---|
| EET | enhanced energy trade |
| EMI | energy market integration |
| EPC | engineering, procurement, and construction |
| ERIA | Economic Research Institute for ASEAN and East Asia |
| EWEC | East–West Economic Corridor |
| FDI | foreign direct investment |
| FTA | free trade agreement |
| GDP | gross domestic product |
| GMS | Greater Mekong Subregion |
| HDS | Haldia Dock System |
| ICD | inland clearance depot |
| ICP | integrated check post |
| ICT | information and communication technology |
| IFC | International Finance Corporation |
| IFI | international financial institution |
| IIFCL | India Infrastructure Finance Company |
| IMF | International Monetary Fund |
| IMTTH | India–Myanmar–Thailand Trilateral Highway |
| JBIC | Japan Bank for International Cooperation |
| JICA | Japan International Cooperation Agency |
| KDS | Kolkata Dock System |
| Lao PDR | Lao People's Democratic Republic |
| LIIT | local infrastructure investment trust |
| LNG | liquefied natural gas |
| MDB | multilateral development bank |
| MFN | most favored nation |
| MGC | Mekong–Ganga Cooperation |
| MIEC | Mekong–India Economic Corridor |
| MOU | memorandum of understanding |
| MPAC | Master Plan on ASEAN Connectivity |
| MRA | mutual recognition agreement |
| NSEC | North–South Economic Corridor |
| NSW | National Single Window |
| NTB | non-tariff barrier |
| OECD | Organisation for Economic Co-operation and Development |
| PPP | public–private partnership |
| PRC | People's Republic of China |
| RCEP | Regional Comprehensive Economic Partnership |
| RIF | regional infrastructure fund |

| | |
|---|---|
| RKC | Revised Kyoto Convention |
| ROO | rules of origin |
| SA/SEA | South Asia/Southeast Asia |
| SAARC | South Asian Association for Regional Cooperation |
| SAFTA | South Asian Free Trade Area |
| SASEC | South Asia Subregional Economic Cooperation |
| SC | Southern Corridor |
| SEC | Southern Economic Corridor |
| SKRL | Singapore–Kunming Rail Link |
| SMEs | small and medium-sized enterprises |
| SPC | special purpose company |
| SPS | sanitary and phytosanitary standards |
| SW | Single Window |
| TAGP | Trans-ASEAN Gas Pipeline |
| TAR | Trans-Asian Railway |
| TBT | technical barriers to trade |
| TFA | Trade Facilitation Agreement |
| TIR | International Road Transport |
| TPP | Trans-Pacific Partnership |
| UNESCAP | United Nations Economic and Social Commission for Asia and the Pacific |
| WCO | World Customs Organization |
| WTO | World Trade Organization |

## Weights and Measures

| | |
|---|---|
| bbl | billion barrels |
| bcm | billion cubic meters |
| DWT | deadweight ton |
| GW | gigawatt |
| GWh | gigawatt-hour |
| km | kilometer |
| KW | kilowatt |
| kV | kilovolt |
| MTPA | million tonne per annum |
| MW | megawatt |
| tcf | trillion cubic feet |
| TEU | twenty-foot equivalent unit |

# Executive Summary

## Context and Outline of Study

The economies of South Asia and Southeast Asia are growing and forging closer economic ties in a fragile world economy beset by risks. This growth process has been fueled by factors including falling trade and investment barriers, expanding production networks and supply chains, a commodity boom, and heightened demand from a rising middle class. However, integration of trade, investment, and financial flows between these two regions, while making progress, has been limited, hindered by bottlenecks and gaps in trade infrastructure, financial markets, trade facilitation, trade barriers, and limited regional cooperation. In particular, South Asia still lags in its participation in supply chain networks.

The recent political and economic reforms in Myanmar—a key land bridge between the two regions—make possible closer economic ties and connectivity that were not feasible a few years ago. A pro-business Indian government provides renewed impetus for deepening domestic economic reforms, furthering India's Look East Policy and enhancing cross-border infrastructure investments. The move toward an Association of Southeast Asian Nations (ASEAN) Economic Community (AEC) in 2015 and beyond provides for a large and more integrated market with notable purchasing power and scale economies. In the aftermath of the 2007–2009 global financial crisis, it has become clear that Asian economies need to rely more on domestic and regional demand to secure sustainable and inclusive growth.

Against this backdrop, the Asian Development Bank (ADB) and the Asian Development Bank Institute (ADBI) conducted this study of how improved physical connectivity and associated soft infrastructure can foster closer economic ties between South Asia and Southeast Asia. Physical connectivity here relates to transport and energy while associated soft infrastructure includes the critical areas of financing of infrastructure, trade facilitation, trade and investment reforms, and institutions for coordination. The study provides a canvas for thinking

about strategic cross-border infrastructure investments and policy reforms and focuses on the following issues:

- Maps evolving economic ties in trade, foreign investment, and finance between South Asia and Southeast Asia.
- Analyzes the current state of cross-border transport and energy infrastructure, including use of an energy supply model, and identifies bottlenecks and priority investment projects that could relieve those bottlenecks.
- Assesses the environment for financing cross-border infrastructure and mechanisms for increasing private financing for projects including public–private sector partnerships.
- Examines the role of trade facilitation and trade policies at national and regional levels to facilitate the flow of goods across borders and promote regional trade.
- Considers institutional risks associated with attempts to improve cross-regional connectivity.
- Using a state-of-the-art computable general equilibrium (CGE) model, quantitatively assesses the economic impact of larger regional integration schemes involving South Asian and Southeast Asian economies.

The study was conducted over one and a half years by a team comprising staff and consultants from ADB and ADBI. The study drew on background thematic papers on connectivity and associated soft infrastructure issues and country papers on selected economies in South Asia and Southeast Asia.

## Main Findings and Recommendations

***Economic ties between these two regions, while making progress, have been limited, hindered by bottlenecks in infrastructure, financial markets, trade facilitation, trade barriers, and limited regional cooperation.*** South Asia and Southeast Asia cross-regional trade has increased 23 times from $4 billion to $90 billion from 1990 to 2013. But Southeast Asia's share of South Asian trade rose from 6% to only 10% whereas South Asia's share of Southeast Asian trade doubled from about 2% to 4%. The same story applies to cross-regional investment and cross-regional financial flows. Southeast Asia only accounted for 15% of total South Asian foreign direct investment (FDI) outflows during 2009–2013 and South Asia only received 9% of Southeast Asian FDI. This suggests that there is significant potential for growth of economic

ties between the two regions. In particular, FDI-driven production networks and parts and components trade, which are a key driver of trade expansion in Southeast Asia, have yet to take firm root in South Asia. Small and medium-sized enterprises (SMEs), which constitute the bulk of employment in South Asian and Southeast Asian economies, have limited presence in trade. Furthermore, excluding Singapore, outstanding portfolio investment from Southeast Asia to South Asia was small, totaling only about $775 million in 2012 while outstanding portfolio investment from South Asia to Southeast Asia was only about one-seventh of this figure.

***Improving transport and energy connectivity is the crucial building block for greater economic integration between the two regions.*** Given the diverse geography and range of applicable transport modes in the two regions, a regional and multimodal perspective is the optimal way forward for strategic transport planning and projects. Key land barriers to cross-regional transport are located mainly in Myanmar (the only land bridge between these regions) while other gaps are identified in Bangladesh, Cambodia, India, the Lao People's Democratic Republic (Lao PDR), Thailand, and Viet Nam. Although road connections exist, many segments need to be upgraded, especially in Bangladesh, India, and Myanmar. In contrast, there are no existing rail links between the Greater Mekong Subregion (GMS) countries, with the exception of a connection between the People's Republic of China (PRC) and Viet Nam, nor between the GMS and South Asia. Moreover, the incompatibility of railway gauges (track widths) in India, Bangladesh, Thailand, and Myanmar and other technical differences mean that transshipment will be required even after through rail links are developed. Important seaports for South Asian–Southeast Asian trade—notably Kolkata Port in India, Chittagong Port in Bangladesh, and Yangon Port in Myanmar—suffer from problems relating to limited accessibility for large ships, gaps in facilities, variable operational efficiency, and gaps in connectivity between seaports and rail and road networks.

Energy trade between South Asia and Southeast Asia, except for conventional shipments of coal, gas, and other fuels, does not occur, but there is much unexploited potential to be tapped. This study uses an energy supply model to estimate the potential for cross-regional energy trading. The main opportunities for cross-regional energy trading lie in electric (mainly hydro) power and gas pipelines, plus pooling and interconnection of electric power grids. Myanmar has an important potential role to play in energy trading, given its substantial reserves of hydropower capacity and natural gas, plus its critical position as a gas pipeline location. Various impediments hinder energy trading, including technical barriers relating to grid synchronization and grid codes to

electric power and natural gas pipeline technology as well as regulatory barriers and distorted energy pricing and/or subsidy regimes.

***The total investment costs for projects to enhance cross-regional connectivity (in highways, railroads, ports, and energy trading) are estimated at $73 billion***. This figure includes $18 billion for roads, $34 billion for railways, $11 billion for port projects, and $10 billion for energy trading projects.[1] The high costs and multiplicity of projects as well as human capacity constraints call for a sequenced approach based on priorities. Accordingly, the total costs for priority investment projects in transport are estimated at $8 billion (including $1 billion for roads, $5 billion for railroads, and $2 billion for ports).

Road corridor options to connect South Asia to Southeast Asia have been evaluated and the best option is the 4,430 kilometer Kolkata–Ho Chi Minh City corridor. In the case of rail connectivity, the Kolkata–Ho Chi Minh City corridor and connections through Yunnan Province, the PRC, are the preferred options. However, rail connectivity comes as a second priority after road connectivity due to much higher costs, more extensive gaps, and incompatibilities between national networks. Meanwhile, maritime connectivity deserves more attention as it is the main mode for trade between South Asia and Southeast Asia. Priority seaport projects include construction of new deepwater ports or floating container transshipment terminals at Chittagong and Kolkata, and improvement of the road infrastructure linking Thilawa Port with Yangon.

***Financing cross-regional infrastructure projects remains challenging.*** Cross-border financing vehicles do not exist as risk-averse private investors are hesitant to cross borders alone. Public sector funding plays a major role in financing infrastructure projects but is becoming increasingly subject to fiscal constraints in some economies. In a number of countries, commercial banks are major sources of infrastructure financing. However, following the global financial crisis and the strengthening of banking regulations, bank loans are becoming scarcer, as commercial banks have been reducing their exposure to project finance. The development of Asian financial markets and related initiatives are needed to strengthen access to infrastructure finance. Bond markets can play an increasing role in channeling Asian savings toward infrastructure projects. Guarantees for project bonds may help foster demand for these products by long-term institutional investors (for example, pension funds and life insurance companies).

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[1] The figures only cover projects directly related to connectivity between South Asia and Southeast Asia. Projects related primarily to intra-regional connectivity or connectivity with other regions are not included.

Infrastructure funds, both domestic and international, are valuable, especially if the ASEAN Infrastructure Fund is extended to a pan-Asian infrastructure fund covering South Asia as well. Measures to integrate regional financial markets and ease restrictions on international capital flows can also contribute.

Public–private partnerships (PPPs) provide an important top-up for infrastructure funding, but are not a panacea. India's experience shows that the PPP model can be a useful part of the solution for financing infrastructure projects, not only for energy, but for transport as well, including highways. Improving the transparency, regulatory framework, and governance of PPP projects, together with the addition of political risk guarantees, can increase the attractiveness of this asset class. Furthermore, support from multilateral development banks and international coordination for cross-border projects can help ensure success in PPPs. Increasingly, multilateral development banks may be required to play multiple roles in a project's financial lifecycle particularly in less developed economies.

***Improving trade and transport facilitation would make trading between South Asia and Southeast Asia easier and more stable, with lower transaction costs.*** Businesses complain about excessive documentation requirements for customs clearance and so far there has been only limited adherence in the regions to the World Customs Organization's Revised Kyoto Convention, which is the international best practice for customs modernization. The development of national and regional Single Windows will be an important feature in the next few years. The ASEAN Single Window initiative is now being implemented. Country-level trade facilitation programs are also being undertaken in South Asia and Southeast Asia to accede to the Revised Kyoto Convention and to modernize customs management and administration. There is a need to consider development of a regional single window initiative covering South Asia that could potentially be through the South Asian Association for Regional Cooperation (SAARC), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), South Asia Subregional Economic Cooperation (SASEC), or perhaps a combined SASEC–GMS platform. Streamlining of documents required for customs clearance particularly in South Asia would usefully support a strategy of information and communication technology (ICT) development. The lack of cross-border transit agreements in the two regions is another obstacle that needs to be addressed. Finally, the emphasis should gradually be shifted from customs reforms toward addressing more of the non-customs issues, such as sanitary, quarantine, phytosanitary, veterinary, and trading standards. This might even include the development of regionally-based testing facilities to support

national laboratories, such as that being proposed at Siliguri, India to cover the SASEC countries.

***Tariffs and non-tariff barriers (NTBs) continue to hamper trade and investment flows between South Asia and Southeast Asia.*** Tariffs have typically fallen in both regions but many tariff spikes exist at the product level. An estimated 75%–80% of NTBs that discriminate against foreign commercial interests remain in force. Evidence suggests that the largest economies in South Asia and Southeast Asia also are the most active in imposing NTBs. Room exists for further unilateral reduction of tariffs and NTBs in both regions.

Furthermore, India is the only South Asian country so far that has entered into negotiations on the Regional Comprehensive Economic Partnership (RCEP), which would build the world's largest trading bloc centered around East Asia. This will give India's businesses a greater opportunity to access markets in Southeast Asia and to integrate into production networks in this region. None of the other economies in South Asia except Bangladesh has expressed willingness to join the RCEP, but this may change if they become concerned about the economic effects of being left out of the regional integration group. Also, only four Southeast Asian economies have thus far entered into negotiations on the Trans-Pacific Partnership Agreement (TPP). It is possible that other regional economies may join the process in the future.

South Asian and Southeast Asian economies have adopted managed floating exchange rate with differing degrees of flexibility. Analysis of real effective exchange rates trends indicates that all the currencies have exhibited a degree of volatility. To the extent possible, ensuring more flexible exchange rates will assist in promoting closer South Asian–Southeast Asian trade and economic integration.

A lack of finance is a barrier to business activity by SMEs, including participating in South Asian–Southeast Asian trade and investment. It would be useful to support bank finance for SMEs by reducing information asymmetries through better credit databases, credit guarantee corporations, and innovative schemes to expand collateral. Other initiatives may include hometown investment trust funds for smaller local projects, regulatory systems to strengthen microfinance, and the development of local currency and equity and bond markets.

***Closing coordination gaps in South Asian and Southeast Asian cooperation and integration may require retooling existing institutions and creating new ones to facilitate economic links.*** The current institutional landscape for regional connectivity is populated by several—at times overlapping—institutions under the ASEAN, SAARC, SASEC, GMS, or BIMSTEC arrangements. These institutions vary in relation to their mandates, resources, and capacity to support regional connectivity.

Looking ahead, it may be productive to explore some way to link SASEC with the GMS. Perhaps a pragmatic way to start is to provide observer status for GMS officials at SASEC meetings and vice versa. Subsequently, it may be useful to focus on specific regional connectivity projects and to convene project-specific technical working groups to oversee the planning and implementation of the projects. These projects could, in turn, be included in the agenda of meetings of the relevant GMS and SASEC working groups. To strengthen the capacity of countries such as Myanmar, Bangladesh, and India to realize their potential as the land bridge between South Asia and Southeast Asia, it is important for the bilateral projects and programs to refer to ASEAN commitments in the case of Myanmar, and to emphasize the BIMSTEC and SASEC overlaps for Bangladesh and India.

***The potential gains from connectivity-led closer South Asian–Southeast Asian integration should be large.*** This study used a modern CGE model to explore the potential economic effects of alternative integration schemes involving South Asian and Southeast Asian economies. The scenarios are conservative and are likely to reflect lower bound estimates of what actual effects would be expected to result. The best-case deep integration scenario involves (i) removal of all tariffs associated with South Asian and Southeast Asian trade, (ii) a 50% reduction in interregional non-tariff barriers, and (iii) a 15% reduction in trade costs reflecting improved trade facilitation and investments in infrastructure. The results show that this scenario would raise welfare by $375 billion (8.9% of gross domestic product) in South Asia and $193 billion in Southeast Asia (6.4% of gross domestic product). Most participating countries show large gains, especially smaller countries in South Asia.

Certainly, the process of closer intra-regional economic integration generates potential benefits but may entail some additional costs that need serious review and mitigation measures. For instance, some sectors will lose due to greater competition, and there may be increases in regional inequalities. Also, closer intra- and interregional economic ties and faster growth may entail pollution, environmental degradation, and migration issues. Regional economic integration may also hasten the spread of disease and crime. In addition, the process may exacerbate fears of migration, ethnic tensions, and other security-related issues.

The analysis in this volume suggests that the benefits of greater economic integration far outweigh the costs, especially since they spread the benefits of economic development to isolated areas. Nonetheless, institutional mechanisms will be needed to compensate losers in the integration process and to address some of the undesirable side effects mentioned above. This is likely to require cooperation at the regional level.

CHAPTER 1

# Introduction and Overview

## 1.1 Context and Aim of the Study

South Asian and Southeast Asian economies have grown rapidly during an era of a fragile world economic growth beset by risks and uncertainties. This progress has been fueled by expanding regional production networks, integration with the global economy, foreign direct investment (FDI), falling trade and investment barriers, a commodity boom, and heightened demand from a rising Asian middle class. The results have been positive; the South Asian and Southeast Asian regions are among the most dynamic in the world and have produced impressive socioeconomic improvements.[1] While challenges remain, these regions are on the right path.

However, trade and investment between these two regions, while making progress, has been constrained by bottlenecks and gaps in trade infrastructure, financial markets, trade facilitation, trade barriers, and limited regional cooperation. The growth of trade between South Asia and Southeast Asia has been remarkable—increasing nearly 22 times from $4 billion to $90 billion from 1990 to 2013. But Southeast Asia's share of South Asian trade rose from 6% to only 10% over the same period, whereas South Asia's share of Southeast Asian trade doubled from about 2% to 4%. The same story applies to cross-regional investment. Southeast Asia only accounted for 15% of total South Asian FDI outflows during 2009–2013, and South Asia only received 9% of Southeast Asian FDI. This suggests that there is significant potential for trade and investment growth between the two regions. In particular, FDI-driven supply chain networks that are a key driver of trade expansion in Southeast Asia have yet to develop much in South Asia. Small and medium-sized enterprises (SMEs) that account for

[1] This report follows the convention that South Asia and Southeast Asia are two regions of Asia. South Asia includes Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka, while Southeast Asia includes Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

over half the employment in South Asian and Southeast Asian economies have limited presence in trade. Furthermore, excluding Singapore, outstanding portfolio investment from Southeast Asia to South Asia was small, totaling only about $775 million in 2012 while outstanding portfolio investment from South Asia to Southeast Asia was only about one-seventh of this figure. These developments are described in more detail in Chapter 2.

In the aftermath of the 2007–2009 global financial crisis, it has become clear that Asian economies must rely more on domestic and regional demand to secure sustainable and inclusive growth.[2] Increased connectivity between South Asia and Southeast Asia can play an important role in achieving this goal by improving efficiency and productivity via more efficient industries based on comparative advantage, enlarging the effective market size, and increasing access to it. Better connectivity—through hard and soft infrastructure—lies at the heart of unlocking the full benefits of closer economic ties between the two regions.

This study focuses on how improved connectivity can enhance economic integration between the two regions. Broadly defined, connectivity covers both physical connectivity or hard infrastructure and associated policy-related and institutional connectivity or soft infrastructure.[3] In this study, physical infrastructure includes that related to transport and energy, while software includes the critical areas of financing of infrastructure, trade facilitation, trade and investment reforms, and institutions for coordination. The study thus provides a background for considering strategic cross-border infrastructure investments and policy reforms.

The time is ripe for a study of connectivity between South Asia and Southeast Asia. The recent political and economic reform process in Myanmar—a key land bridge between these two regions—now makes possible connectivity that was not feasible a few years ago. This is particularly the case for land-based transportation—both highways and railroads—and energy infrastructure. Myanmar can benefit from opening up and becoming a bridge between South Asia and Southeast Asia. The country has several sources of comparative advantage, including rich natural resource endowments (for example, petroleum, potential hydropower, natural gas, coal, timber, minerals, and precious stones), abundant low-cost labor for export-oriented industries, and historic sites with tourism potential. These potential gains include contributing to achieving inclusive and sustainable growth, integrating

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[2] See, for example, the discussion of rebalancing in ADB (2010).

[3] See ADB (2006) for further discussion of these concepts.

into regional production networks, and contributing to processes of political reconciliation in the regions.

Also, the start of negotiations in 2013 on a Regional Comprehensive Economic Partnership (RCEP) has aided the prospect of further trade and investment liberalization between the Association of Southeast Asian Nations[4] (ASEAN) member states and major regional economies (including India). This is important in the context of India's Look East policy. In addition, many South Asian and Southeast Asian economies are contemplating second-generation economic reforms to sustain inclusive growth.

There is heightened policy interest in the process of cross-regional integration, and particular interest in further developing economic relationships between South Asia and Southeast Asia. The implementation of the ASEAN–India free trade agreement (FTA) has facilitated cross-regional trade and investment liberalization. Nonetheless, such economic integration faces numerous challenges, including problematic cross-border infrastructure links, ubiquitous difficulties related to weak trade facilitation, a shortage of infrastructure financing, numerous non-tariff barriers (NTBs) and barriers to FDI, relatively limited preferential coverage, and weak institutional coordination. In short, while economic integration efforts have made progress, the process has a long way to go before it can reach its full potential. This study charts a path to get there.

This report sets out key issues in relation to improving connectivity between South Asia and Southeast Asia, traces their implications, and delineates possible policies. It is based on research conducted over one and a half years by staff and consultants of the Asian Development Bank (ADB) and the Asian Development Bank Institute (ADBI). The consultants include specialists in land and sea transport, energy trade, trade facilitation, infrastructure finance, and institutional aspects. Another set of specialists prepared the country papers.

Chapter 2 reviews the evolving economic ties between the two regions and identifies benefits and costs to greater economic integration. Chapter 3 analyzes the current situation of cross-border transport infrastructure between the two regions, identifies bottlenecks and investment projects that could relieve those bottlenecks, and estimates their likely benefits and costs. Chapter 4 examines the potential for energy trading between the two regions and identifies some specific projects. Chapter 5 assesses the environment for financing cross-border infrastructure investment, including the capacity of regional financial markets and issues related to

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[4] ASEAN's 10 member states are Brunei Darussalam, Cambodia, Indonesia, the Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

increasing the share of private financing of such projects, including public–private partnerships (PPPs). Chapter 6 reviews trade facilitation in the two regions and identifies policy initiatives to improve the free flow of trade. Chapter 7 examines national and regional trade policy reforms that can promote trade and investment between the two regions. Chapter 8 reviews the institutional risks associated with attempts to improve cross-regional connectivity, and identifies national and regional policy reforms to address them. Chapter 9 assesses the impacts of greater cross-regional integration, using a computable general equilibrium (CGE) model approach.

The structure of this chapter is as follows. Section 1.2 provides a qualitative description of the benefits and costs of greater economic integration and cooperation between the two regions. Section 1.3 summarizes the overall analytical approach and geographical scope of the study. Sections 1.4 to 1.10 summarize the findings of the individual chapters of the report. Section 1.11 concludes.

## 1.2 Rationale for Greater Economic Integration and Cooperation

A fundamental insight of economics is that international trade improves an economy's aggregate income. According to the World Bank, in the 1990s per capita real income grew more than three times faster for developing countries that lowered trade barriers (5.0% per year) than for other developing countries (1.4% per year) (as cited in OECD 2010). This result follows largely from the reallocation of production factors from less to more efficient activities along the lines of a country's comparative advantage.

Moreover, empirical studies underscore the importance of investments in public infrastructure—physical and institutional—that can support the shift to new areas of economic activity consistent with an economy's evolving factor endowments and factor prices, as well as complementary policies such as trade facilitation and trade finance.

While economic relations between South Asia and Southeast Asia are at an early stage, they have great potential.[5] Potential benefits of closer economic integration and cooperation include:

- Greater economic integration expands the market for goods and services, thereby increasing the scope for economies of scale and greater competition.

[5] Quantitative estimates using a computable general equilibrium (CGE) model are given in Section 1.10 and in Chapter 9.

- Specialization in regionally competitive industries generates a more efficient productive structure in all economies, thereby enhancing regional competitiveness.
- Integration facilitates the extension or movement of production networks from Southeast Asia and South Asia, where development of such networks has lagged, to take better advantage of wage differentials.
- Increased competition within the integrated region could lead producers outside the region to reduce their prices as well, lowering import prices to the region and improving its terms of trade.
- A more integrated region could attract more FDI with its benefits of technology and knowledge transfer, higher productivity, and market access. The entry of export-oriented FDI and foreign buyers is an important means to connect firms with regional production networks and supply chains.
- Large and comprehensive FTAs enable deeper and wider integration among member countries than would be feasible within a multilateral framework. Well-designed agreements, with modern and flexible rules of origin and international standards, can play a role in reducing trade costs for the spread of production networks.
- Cooperation on infrastructure and trade facilitation (for example, transport, customs clearance, and product standards) and services (for example, financial and labor services) would likely lead to a reduction in trade costs and result in welfare gains well in excess of gains from mere tariff liberalization.
- There are potential gains from greater cooperation among existing regional institutions. For example, stronger coordination between the Greater Mekong Subregion[6] (GMS), the South Asia Subregional Economic Cooperation[7] (SASEC) group, and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)[8] group could serve as a platform for developing longer and stronger economic corridors, anchored by cross-border infrastructure projects, and better management of the cross-border spread of infectious diseases as well as reducing drug and human trafficking.

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[6] Cambodia, the Lao PDR, Myanmar, Thailand, Viet Nam, plus Yunnan Province and Guangxi Zhuang Autonomous Region of the People's Republic of China (PRC).

[7] Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka.

[8] Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.

- Finally, greater connectivity can provide the basis for more inclusive growth with greater potential for reducing poverty and closing development gaps. This includes minority groups that have been marginalized in the past, leading to conflict situations. Such developments could have broader benefits of promoting stability and enhancing peace and security in the region, including aspects related to water supply, labor mobility, and possibly defense.

Financial integration can also provide benefits by reducing funding costs and expanding available resources to fund needed investments such as infrastructure projects. This is particularly important for countries with less developed financial markets and institutions. Stable and efficient regional financial markets can help channel savings from around Asia and the rest of the world into productive investments throughout the region.

Certainly, the process of closer intra-regional economic integration generates potential benefits but may entail some additional costs that need review and mitigation measures. For instance, some sectors and regions will lose due to greater competition, and there may be increases in regional inequalities. Also, closer intra-regional economic ties and faster growth may entail pollution, environmental degradation, and immigration issues. Regional economic integration may also hasten the spread of disease and crime and could exacerbate fears of migration, ethnic tensions, and other security-related issues.

Financial integration can also create costs from the increased exposure of economies with immature financial systems to external financial shocks, especially "sudden stops" (rapid and large-scale capital outflows) that can severely affect the real economy. Thus, financial development and integration must be sequenced properly and coordinated with improved national and regional financial surveillance and regulatory institutions.

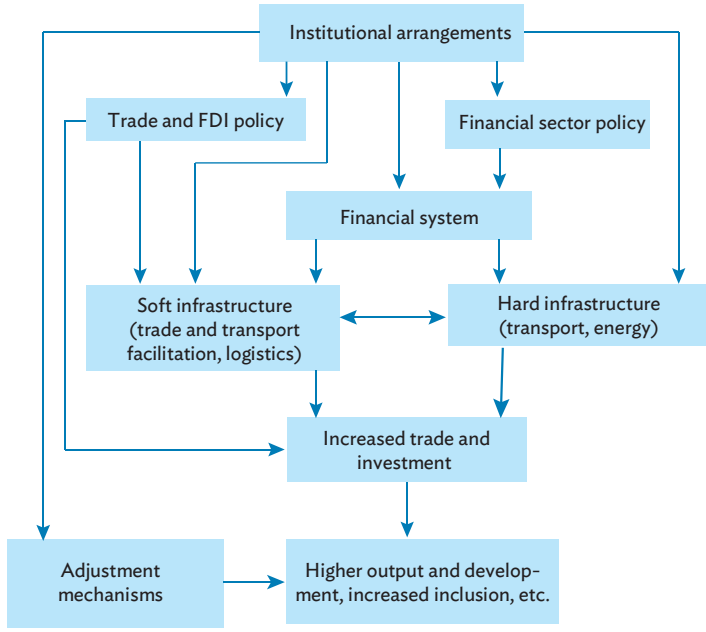
The analysis in this report suggests that the benefits of greater economic integration far outweigh the costs, especially since they spread the advantages of economic development to isolated areas. Nonetheless, institutional mechanisms will be needed to compensate losers in the integration process and to address some of the undesirable side effects mentioned above. This is likely to require cooperation at the regional level.

## 1.3 Analytical Approach

### Relationship of Study Components

Much can be done in South Asia and Southeast Asia to reduce impediments to cross-regional trade and investment and to improve global competitiveness. This report identifies and analyzes measures that could be promulgated by South Asian and Southeast Asian countries and regional groupings to accomplish this—including policies for trade facilitation, regional trading agreements, and investment in infrastructure. Achievement of a comprehensive approach to improving cross-regional integration requires policy interventions at different levels. Figure 1.1 shows the relationships of the key elements that are analyzed in this study.

**Figure 1.1: Key Elements for Promoting Cross-Regional Connectivity**




FDI = foreign direct investment.
Source: Compiled by authors.

First, increased trade and investment are expected to result from improvements in both hard and soft infrastructure. Hard infrastructure includes improvements in transport (roads, railroads, and ports) and energy (generation and transmission facilities). Soft infrastructure includes trade and transport facilitation, including customs procedures, cross-border transit agreements and logistics, and energy trading arrangements.

Investments in hard and soft infrastructure require financing. Where local public funds are insufficient, this will require additional efforts to tap local private funds and international investors. Where current financing arrangements are inadequate, this requires innovations in financial sector policy to develop financial markets and facilitate cross-border flows via capital account liberalization, and development of mechanisms to guarantee credit and other risks, among others.

Outward-oriented trade and foreign direct investment (FDI) policies influence trade and investment flows directly through better price signals and via improvements in soft and hard infrastructure. Expansion of free trade agreements can influence trade and investment directly, while trade and transport facilitation agreements can improve the soft infrastructure. FDI liberalization can also support international financing of infrastructure projects.

These policy developments can be supported by institutional arrangements. For example, closer coordination between regional and subregional entities can pave the way for developments in trade and investment policy, financial sector policy, trade and transport facilitation, and cross-border hard infrastructure. One example is closer cooperation between the GMS, SASEC, and BIMSTEC. Regional cooperation can also develop new regional infrastructure financing entities.

Increased trade and investment is expected to lead to higher output and economic development, as well as increased economic inclusion of isolated areas. However, there will be economic, environmental, and social costs as well. This requires the development of adjustment mechanisms to mitigate these costs, and will also require regional institutional arrangements.

This study employed several estimation methodologies. Scoring methodologies were used to identify preferred transport corridors and investment projects, and this was supplemented with cost–benefit analysis for some projects. A cost minimization model for energy supply was used to estimate alternative paths for energy sector investment. A computable general equilibrium (CGE) model was used to estimates impacts on gross domestic product (GDP), trade, sectoral output, and factor incomes resulting from different scenarios about economic integration.

## Geographic Scope of Study

At the broadest level, this study encompasses all the economies in South Asia and Southeast Asia. Sea trade, and trade and investment agreements can augment trade between any pair of economies in the two regions (and within each region as well). However, land-based transport and energy trading (for electricity and natural gas pipelines) must involve contiguous economies. Therefore, the land transport infrastructure discussion focuses on those countries close to the borders between the two regions, plus the extension of major transport corridors into the GMS. The analysis of ports focuses on those in the Bay of Bengal, which have high costs, and whose improvement could support greater participation of South Asian economies in supply chain networks. The trade facilitation analysis also focuses on these countries, although not exclusively. The analysis of energy trading focuses on Bangladesh, India, and Myanmar, although some projects in Viet Nam and Indonesia are also considered.

## Relation to Earlier Studies

Promoting regional cooperation and integration is a key objective of ADB. This study builds on an extensive body of earlier work on regional integration sponsored by ADB. ADB (2008b) described the landscape of institutions for regional cooperation in Asia and the ways it might strengthen and evolve. ADB and ADBI (2009) provided the first comprehensive estimate of Asian infrastructure needs for 2010–2020, including domestic and cross-border infrastructure, together with an analysis of the potential benefits and costs of such investment and a description of the policy and financing developments needed to support such investment. François, Rana, and Wignaraja (2009) examined the benefits and costs of more closely linking East Asia and South Asia, and that study is most closely related to the current one. The main differences are that this study focuses more closely on Southeast Asia, takes account of recent developments such as the opening up of Myanmar, goes further in the direction of identifying specific investment projects, and employs a more sophisticated model for estimating benefits of integration. ADB and ADBI (2014) examined longer-term growth prospects of ASEAN, India, and the People's Republic of China (PRC), and identified challenges to sustainable growth and policies to assure a cooperative and harmonious outcome. ADBI (2014) focused more specifically on policies, institutions, and cooperative mechanisms that could enable ASEAN countries to achieve a development pattern that is resilient,

inclusive, competitive, and harmonious. Finally, this study relies on ADB technical documents related to regional integration, including pipelines of projects for the GMS and SASEC and other groups such as BIMSTEC.

## 1.4 Cross-Border Transport Infrastructure

Improving physical connectivity in South Asia and Southeast Asia is the critical building block for greater economic integration between the two regions. Chapter 3 assesses the current state of road, rail, and maritime connectivity between the two regions and identifies priority corridors and projects, together with their associated costs and benefits. Given the diverse geography and range of transport modes in the two regions, assessing and planning transport needs require a regional and multimodal perspective. Key physical barriers to cross-regional transport are located mainly in Myanmar, the only land bridge between these regions, while other gaps are identified in Bangladesh, Cambodia, India, the Lao People's Democratic Republic (Lao PDR), Thailand, and Viet Nam. Major ports in the area suffer from constraints in capacity, efficiency, and connectivity to road and rail networks.[9]

### Highways

Several bottlenecks have been identified in road network links between South Asia and Southeast Asia. For instance, in the Asian Highway network[10] the following bottlenecks exist: (i) in India, 431 kilometers (km) are class III roads or below; (ii) in Bangladesh, 88 km of roads are class III or below; and (iii) in Myanmar, over 1,000 km are class III or below. This means that about 51% of the total length of the Asian Highway in South Asia and Southeast Asia are class III or below roads, indicating scope for improvement of the cross-regional road network.

The approach of the study is to identify through "port-to-port" road corridors that connect the two regions. Even though it is unlikely, under current conditions that a driver would travel from one end to the other, the routes generally pass close to major ports along the way.[11] Therefore, they also support an alternative "gateway" approach to cross-regional

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9 Key technical studies provide the bases for these assessments, including ADB (2008a, 2011, 2013, 2014), ERIA (2010), SAARC (2006), and UNESCAP (2006, 2011).

10 The Asian Highway network is the oldest and most comprehensive description of cross-regional road corridors. Information can be found at http://www.unescap.org/our-work/transport/asian-highway.

11 The obstacles to through travel are described in Chapter 6 on trade facilitation.

connectivity centered on feeder networks to major ports. Road corridor options to connect South Asia to Southeast Asia have been evaluated and the preferred option is the Kolkata–Ho Chi Minh City corridor through the Chicken's Neck. A shorter distance with less required investment would be a road corridor through Bangladesh, but it faces numerous obstacles, including the lack of a transit agreement between India and Bangladesh. The road corridor from Kolkata to Hai Phong has too many missing links making it expensive and with fewer economic prospects.

The Kolkata–Ho Chi Minh City corridor is 4,430 km long and will require a total investment of $3 billion to offer adequate road connectivity between South Asia and Southeast Asia. Of the $3 billion, $1.9 billion comes from the road program that India is implementing for the northeastern states. The amount for priority investment projects is smaller at $532 billion, with a focus on upgrading links between Imphal (northeast India) and Yagyi (western Myanmar), Eindu (Myanmar) and Tak (Thailand), and Aranyaprathet (Thailand) and Poipet (Cambodia). Of these, the latter two are likely to realize greater short-term benefits because of larger existing traffic volumes. The costs of the priority projects appear to be manageable.

The social benefits associated with greater connectivity are often overlooked. One of the first impacts of improved corridors is an increase in passenger and tourist movements across borders. An evaluation of GMS transport corridors has revealed that one of the immediate benefits of cross-border road improvements was the significant increases in passenger and tourist movements, some by car, but mostly by bus. Increased cross-border passenger movements have positive effects on economic growth and they also contribute to social bonding among populations.

## Railroads

With respect to the intra-regional rail network, the Trans-Asian Railway (TAR)[12] network includes about 10,500 km of missing links that need to be constructed to provide an unbroken TAR network. There are no existing rail links between the GMS countries, with the exception of a connection between the PRC and Viet Nam, or between GMS and South Asia. Moreover, the incompatibility of gauges (track width) in India, Bangladesh, Thailand, and Myanmar means that transshipment will be required even after through rail links are developed. It is estimated there

[12] The Trans-Asian Railway network is the rail counterpart of the Asian Highway network. Information can be found at http://www.unescap.org/our-work/transport/trans-asian-railway.

are about 2,493 km of critical missing rail links in the TAR connecting South Asia and Southeast Asia. Some of the missing links are along the following routes:

- Jiripam (India)–Kale (Myanmar)
- Thanbyuzayat (Myanmar)–Nam Tok (Thailand)
- Vientiane (Lao PDR)–Mu Gia (Viet Nam)–Vung An
- Bat Deng (Cambodia)–Loc Ninh (Viet Nam)–Ho Chi Minh City

The definition of rail corridors in this study follows the same "port-to-port" principle as that for road corridors. Rail connectivity between South Asia and Southeast Asia was also evaluated with the Kolkata–Ho Chi Minh City corridor and connections through Yunnan Province, PRC, being the preferred options. However, in consideration of the high construction costs and large number of missing links involved, implementation should only come after national railways have realized substantial modernization reforms. Rail connectivity comes as a second priority after road connectivity due to financial and technical issues. The Kolkata–Ho Chi Minh City corridor, with a distance of 4,770 km, will require investments of $4.1 billion even without accounting for gauge conversion and rehabilitation costs in India from Kolkata to Jiripam. The rail connection through Yunnan Province to reach Ha Noi and Hai Phong Port offers substantial savings with a total cost of $1.8 billion and a distance of 4,225 km.

## Maritime Transport

Most trade between South Asia and Southeast Asia is by sea. The approach of the study has been to analyze what investments could contribute most to reducing transport costs at major ports on the Bay of Bengal, including Chennai/Ennore, Kolkata/Haldia, Chittagong, and Yangon/Thilawa. Such improvements would benefit trade of those ports with all regions, but trade between South Asia and Southeast Asia is likely to gain at least proportionately. For example, such improvements should help to promote more efficient container traffic in the region, thereby supporting greater participation of South Asian economies in supply chain networks.

Regarding seaports, studies have identified problems with facilities, operational efficiency, and connectivity between seaports and railway and road networks. The following problems were observed in major ports:

- Kolkata Port (India): The size of vessels that are able to call is limited by the depth of the Hoogly River. Rail and road traffic between the port and the city are subject to severe bottlenecks.

- Chittagong Port (Bangladesh): The size of vessels that are able to call is limited by the width and curvature of the Karnaphuli River. Rail and road traffic between Chittagong Port and Dhaka also experience severe bottlenecks.
- Yangon Port (Myanmar): Limited accessibility to large vessels, poor road conditions between the Thilawa port area and the bridge leading to Yangon, high container charges, obsolete port facilities, frequent blackouts and insufficient generators, and lack of cargo equipment are among the major problems in this port.

In addition, container shipping in the Bay of Bengal faces high costs stemming from the reliance on the hub-and-spoke feeder system that requires transshipment between the smaller ships that access the Bay of Bengal ports and the larger ships that ply the main trade routes, stopping at hub ports such as Colombo and Singapore. This poses a barrier to the development of manufacturing activity in this area, especially manufacturing activity related to global supply chain networks.

A key conclusion of the chapter is that container shipping trade is closely linked with merchandise trade. If South Asian countries want to further develop their manufacturing exports and participate more in global supply chain networks, it is imperative that they undertake investments to reduce the high costs of container shipping. To encourage direct port calls by large container ships in the Bay of Bengal, deepwater port facilities need to be provided, container terminals expanded, road and rail links with ports improved, and more smaller ports developed. If direct calls and in-line transshipment can be attracted in sufficient scale, it is estimated that this could lower the costs of container shipment by 20%–50%, which in turn could lead to a substantial increase of trade volumes. Priority projects include constructing new deepwater ports or floating container transshipment terminals at Chittagong and Kolkata, and improving the road infrastructure linking Thilawa Port with Yangon.

A number of sites in Myanmar are candidates to be developed as deepwater ports for sea–land corridors connecting India and ASEAN such as the Mekong–India Economic Corridor (MIEC), which would link Indian ports with the GMS Southern Corridor (running from Vung Tau and Ho Chi Minh City in Viet Nam, Phnom Penh in Cambodia to Bangkok in Thailand) via Dawei Port in Myanmar. However, the economic case for developing such ports does not appear to be compelling at this time, and development efforts there should focus on Yangon/Thilawa.

## Multimodal and Economic Corridors

Multimodal corridors embrace multiple modes of transport, while economic corridors take an integrated approach to infrastructure along selected routes to maximize logistical efficiency. In the case of GMS economic corridors, gaps and new corridors are identified. For instance, a notable gap is identified in Myanmar along the Western Corridor, tied in with the extension of the East–West Corridor from Kawkareik to Payagyi on the Western Corridor. Establishing this link will connect the Western Corridor that links India at Tamu, to the East–West Corridor. Furthermore, a new GMS corridor has been proposed—the Myanmar–Lao PDR–Viet Nam Trilateral East–West Corridor that would run north of and parallel to the East–West Corridor. It would connect Kyaukpyu along the Bay of Bengal (that is being proposed for the development of a deepwater port) with the eastern end at Hai Phong in Viet Nam. In Myanmar, it would extend 1,340 km from Kyaukpyu to Kyainglat. It would then extend 372 km in the Lao PDR from the border bridge to Tai Chan, and another 561 km in Viet Nam from the border to Hai Phong.

The South Asian Association for Regional Cooperation (SAARC) initiated its Regional Multimodal Transport study to enhance multimodal transport connectivity among member states (SAARC 2006). Phase I of the study identified 10 regional road corridors, 5 regional rail corridors, 2 regional inland waterways corridors, 10 maritime gateways, and 16 aviation gateways that could serve as SAARC corridors for inter-country movement.

## Investment Costs

Table 1.1 summarizes the investment costs associated with cross-regional connectivity projects in the areas of highways, railroads, ports, and energy trading. Total investment costs are estimated at $73.1 billion. The figure includes $17.8 billion for roads, $33.7 billion for railroads, $11.1 billion for port projects, and $10.5 billion for energy trading projects. By country, the largest amounts are for India and Myanmar. The high costs and multiplicity of projects included in Table 1.1 call for a sequenced approach based on priorities. Of these, the total costs for priority investment projects are estimated at $8.4 billion, including $990 million for roads, $5.1 billion for railroads, and $2.4 billion for ports.

Table 1.2 summarizes priority projects at the national level in the areas of transport infrastructure and energy trading, together with other measures related to financial market development, trade and transport facilitation, trade agreements, and institutional aspects that are discussed in subsequent chapters.

**Table 1.1: Summary of Connectivity-Related Transport and Energy Infrastructure Projects**

| Countries | Road Projects (km) | Road Projects ($ million) | Rail Projects (km) | Rail Projects[a] ($ million) | Port Projects ($ million) | Energy Projects ($ million) | Total ($ million) |
|---|---|---|---|---|---|---|---|
| **South Asia** | **2,271** | **12,634** | **772** | **3,700** | **5,318** | **5,000** | **26,652** |
| Bangladesh | 648 | 11,064 | 261 | 1,604 | 1,100 | 500 | 14,268 |
| India | 1,623 | 1,570 | 511 | 2,096 | 2,210 | 4,500 | 10,376 |
| Sri Lanka | 0 | 0 | 0 | 0 | 2,008 | 0 | 2,008 |
| **Southeast Asia** | **3,429** | **5,112** | **7,021** | **30,040** | **5,809** | **5,500** | **46,461** |
| Cambodia | 45 | 85 | 696 | 1,276 | 90 | 0 | 1,451 |
| Lao PDR | 1,042 | 780 | 1,125 | 11,465[b] | 0 | 0 | 12,245 |
| Myanmar | 1,593 | 1,587 | 4,247 | 7,860 | 5,660 | 5,500 | 20,607 |
| Thailand | 569 | 2,250 | 824 | 1,539 | 59 | 0 | 3,848 |
| Viet Nam | 180 | 410 | 129 | 7,900 | 0 | 0 | 8,310 |
| **Grand Total** | **5,700** | **17,746** | **7,793** | **33,740** | **11,127** | **10,500** | **73,113** |

km = kilometer; Lao PDR = Lao People's Democratic Republic.

Notes: Totals may not add up due to rounding.

[a] Only new rail projects; rail connections to Yunnan Province (People's Republic of China) not included.

[b] Lao PDR rail costs include $4,200 million for Savannakhet–Lao Bao build–own–operate–transfer (BOOT) project.

Sources: Gautrin (2014); Wignall and Wignall (2014); ADB (2013, 2014); authors' estimates.

## 1.5 Energy Infrastructure and Trading

Chapter 4 finds that there are substantial opportunities for cross-regional energy trading between South Asia and Southeast Asia. While significant levels of intra-regional energy take place in both regions, cross-regional energy trading is still to be tapped. The main opportunities for energy trading between South Asia and Southeast Asia lie in the areas of electricity (mainly hydropower) and gas pipelines, plus pooling and interconnection of electricity power grids. Myanmar has an important potential role to play in energy trading, given its substantial reserves of hydropower capacity and natural gas, plus its position as a gas pipeline location. (Certainly, Myanmar's electrification ratio is an estimated 26%, so for the short to medium term, domestic supply may be prioritized over cross-border trading.) The key challenge will be to develop both the physical and institutional infrastructure that can enable such trading to take place.

## Table 1.2: Country-Level Priority Proposals for Improving Connectivity between South Asia and Southeast Asia

| | Transport Projects | Energy Projects | Finance | Trade/Transport Facilitation | Trade Agreements | Institutional |
|---|---|---|---|---|---|---|
| **South Asia** | | | | | | |
| **Bangladesh** | **Ports:** Chittagong (new deepwater port, road and rail access) | **Natural gas:** Develop Myanmar–Bangladesh–India gas pipeline project | **Bond market:** Develop infrastructure bonds<br>**PPP:** Improve environment | **Trade facilitation:** Transit agreements with India and Myanmar<br>**Border operations:** Streamline documentation and procedures | | Promote role of state governments in supporting connectivity |
| **Bhutan** | | | **Bond market:** Develop private sector bond market | **Border infrastructure:** Develop border clearance facilities | | |
| **India** | **Highways:** Imphal–Moreh, Chennai Port expressway<br>**Railroads**: Jiripam–Imphal, Imphal–Moreh<br>**Ports:** Kolkata/Haldia (new deepwater port, road and rail access) | **Natural gas:** Myanmar–Bangladesh–India gas pipeline project, LNG import terminals and port facility development<br>**Hydroelectricity:** Import from Tamanti Project, Myanmar | | **Transport facilitation:** Transit agreements with Bangladesh and Myanmar<br>**Border infrastructure:** Modernize border facilities | RCEP | Speedy implementation of the recommendations of the North-East Region Vision 2020.<br>Promote role of state governments in supporting connectivity |

*continued on next page*

*Table 1.2 continued*

| | Transport Projects | Energy Projects | Finance | Trade/Transport Facilitation | Trade Agreements | Institutional |
|---|---|---|---|---|---|---|
| **Nepal** | | | **Bond market:** Develop private sector bond market<br>**PPP:** Improve environment | **Border operations:** Streamline documentation and procedures<br>**Border infrastructure:** Improve border facilities | | |
| **Sri Lanka** | | | **Bond market:** Develop private sector bond market<br>**Trade finance:** Improve<br>**PPP:** Improve environment | **ICT:** Development of NSW | | |
| **Southeast Asia** | | | | | | |
| **Cambodia** | **Highways:** Aranyaprathet–Poipet Railroads: Poipet–Phnom Penh, Phnom Penh–Loc Ninh | | **Bond market:** Develop private sector bond market | **Border operations:** Simplify documentation requirements<br>**ICT:** Development of NSW | RCEP | |

*continued on next page*

*Table 1.2 continued*

| | Transport Projects | Energy Projects | Finance | Trade/Transport Facilitation | Trade Agreements | Institutional |
|---|---|---|---|---|---|---|
| **Myanmar** | **Highways**: Eindu–Myawaddy, Tamu–Yagyi, Thilawa port road connections<br>**Railroads:** Tamu–Kale, Kale–Mandalay, Three Pagodas, Lashio–Ruili, Dawei–BCP<br>**Ports:** Yangon/Thilawa road connections | **Natural gas:** Offshore Shewa gas field development, Myanmar–Bangladesh–India gas pipeline project<br>**Hydropower:** Tamanti Project | **Bond market:** Develop private sector bond market<br>**PPP:** Develop environment | **Transport facilitation:** Transit agreements with India and Thailand<br>**Border infrastructure:** Modernize facilities<br>**ICT:** Development of customs systems and NSW | RCEP | Coordinating role for Union of Myanmar Federation of Chambers of Commerce and Industry |
| **Thailand** | **Highways:** Myawaddy–Mae Sot, Mae Sot–Tak<br>**Railroads:** Bangkok–Aranyaprathet, Three Pagodas, BCP–Nam Tok | | **Bond market:** Develop private sector bond market<br>**PPP:** Develop environment | **Transport facilitation:** Transit agreements with India and Myanmar | RCEP | |
| **Viet Nam** | **Railroads:** Loc Ninh–Ho Chi Minh City, Ha Noi–Lao Cai | **Coal:** Coal bed methane extraction and energy generation | **Bond market:** Develop private sector bond market | **Border operations:** Simplify documentation requirements<br>**ICT:** Development of NSW | RCEP | |

BCP = border crossing point; ICT = information and communication technology; LNG = liquefied natural gas; NSW = National Single Window; PPP = public-private partnership; RCEP = Regional Comprehensive Economic Partnership.

Source: Compiled by authors.

Myanmar can benefit substantially from opening up and becoming a bridge between South Asia and Southeast Asia. The study has identified several major projects that would link Myanmar with Bangladesh and India, with a total investment cost of $10.5 billion (Table 1.1). These include the Myanmar–Bangladesh–India gas pipeline project and the Tamanti hydropower project to supply electricity from Myanmar to India.

However, cross-regional energy trade faces numerous barriers, including:

- technical barriers, in particular grid synchronization and grid codes to electric power and natural gas pipeline technology;
- difficulty in negotiating trade arrangements resulting from varying levels of economic development and different security concerns;
- infrastructure and financial barriers;
- regulatory barriers and distorted energy pricing and subsidy regimes;
- environmental issues involving construction of multipurpose projects; and
- political resistance to energy trade in some economies.

Removing existing barriers to energy trading between the two regions would have a positive effect on cross-regional trade and would generate substantial welfare gains to both regions. The key challenges will be to develop both the physical and institutional infrastructure that can enable such trading to take place. For example, further advantages could be obtained by linking the electric power grids of the GMS and SASEC to deepen power pooling and interconnection arrangements. The following areas need attention:

- *Developing a policy and institutional framework:* The lack of institutional development and appropriate policies is a major factor behind the absence of energy trade between the two regions despite there being ample opportunities. The GMS provides a good example of how cooperation and gradualism can help move forward energy and power trading. A goal for connecting the two regions' energy sectors is therefore needed, which should be supported by national governments as well as subregional, regional, and international institutions.
- *Mobilizing investment in regional energy infrastructure projects:* Regional energy projects face difficulties in attracting finance due to their inherent problems, including risk factors and lengthy time for recouping the investment.

- *Identifying bankable projects:* The ASEAN Interconnection Master Plan Study has identified several intra-regional projects (ASEAN Secretariat 2011). Similarly, cross-regional bankable projects should be identified on a priority basis.

## 1.6 Financing Infrastructure

Financing infrastructure projects remains challenging, even more so for cross-border projects where the countries involved have different financial capacity, levels of development, and prospective benefits from the projects. Chapter 5 assesses the current state of infrastructure finance in the two regions; identifies barriers for infrastructure financing, including limited levels of domestic financial capacity and regional financial integration; and proposes policy measures to improve the regions' capacity to finance infrastructure investment.

Cross-border financing vehicles do not exist as risk-averse private investors are hesitant to cross borders alone. Public sector finance plays a major role in financing connectivity-related infrastructure investments, but it is insufficient and becoming increasingly subject to fiscal burdens. Therefore, public funding for regional projects needs to be supplemented by finance from regional and multilateral institutions and the private sector. However, the traditional source of private sector financing in Asia—bank loans—is becoming scarcer as well. Following the global financial crisis of 2007–2009, and the strengthening of banking regulations and credit shrinkage, conventional commercial banks have been reducing their exposure to project finance. Funding by multilateral development banks is limited as well.

Therefore, the options for financing cross-border connectivity (and other) infrastructure needs to be expanded to adequately support the demand for such investment. The problem is not a shortage of savings overall, as Asia has abundant savings, but rather that they are distributed across Asia in a very uneven way. South Asia typically has lower savings resources relative to demand than Southeast Asia, and there are many missing markets. The challenge is to develop attractive financial instruments and promote the size, depth, and integration of Asian financial markets so that needed funds can be channeled to worthwhile investments. Options should include public finance, off-budget financing, public–private partnerships (PPPs), financial intermediary lending, bond markets, and regional infrastructure funds and facilities.

A multipronged effort is required to strengthen and integrate Asian financial markets, and to develop an enabling environment that makes

infrastructure investment more attractive to the private sector. The analysis has identified various credit market interventions and credit enhancement mechanisms that are likely to promote the channeling of contractual institutional and retail savings into infrastructure financial assets. Infrastructure funds, both domestic and international, can play a role, especially if the ASEAN Infrastructure Fund is extended to a pan-Asian infrastructure fund. Measures to integrate regional financial markets and ease restrictions on international capital flows can also contribute.

PPPs provide an important top-up for infrastructure funding, but are not a panacea. India's experience has shown that the PPP model can be a part of the solution for financing energy and transport infrastructure projects. Nonetheless, such projects are complex, and to avoid failure require various preconditions, including (i) mechanisms to ensure transparency and accountability of bidding processes; (ii) development of government PPP units and transparent processes to facilitate all aspects of the PPP approval, procurement, and delivery processes; enable all links, permits, and approvals; and have a transparent interface with the authorities that approve projects; (iii) creation of an independent regulatory environment without conflicts of interest that can monitor project progress, commissioning, and operation; and (iv) investment in human resources for PPP to improve skills and knowledge across a spectrum of specialties.

Regulatory constraints include restrictions on the assets that institutional investors such as insurance companies and pension funds can purchase and restrictions on private and foreign ownership of infrastructure. Institutional constraints include lack of market infrastructure and insurance mechanisms that reduce risk for private investors, immature regulatory frameworks, volatile and non-transparent political environments, and legal and regulatory changes that can affect returns to investors, thereby discouraging participation in PPP projects.

Governments must play a key role in creating enabling policy environments and financial infrastructure to ensure larger private participation in cross-border integration projects, as there are externalities that would otherwise not be reaped. These include easing regulatory restrictions on infrastructure investment by institutional investors and reducing ownership restrictions on private and foreign investors. Improving the transparency, regulatory framework, and governance of PPP projects, together with the addition of political risk guarantees, can increase the attractiveness of this asset class. In the case of cross-border projects, international coordination is critical for success.

Multilateral development banks can play multiple roles in a project's financial lifecycle: starting as a provider of development support to the host; evolving to that of a policy influencer, technical advisor, and honest broker; at financial closure, committing capital and debt to the project and leveraging their network among other multilateral development banks; and, finally, providing credit enhancements through partial credit and political risk guarantees.

## 1.7 Trade Facilitation

Chapter 6 examines issues and solutions related to trade facilitation. Trade facilitation includes all factors affecting the time and monetary cost of moving goods. Trade facilitation measures are critical to ensure that the benefits of infrastructure investment result in an actual reduction in trade-related costs. The case for overall enhancement of the trade facilitation environment is compelling in support of economic growth in both regions. Improvements in trade facilitation would make trading easier and more stable, with potentially lower transaction costs, and should enable the realization of any latent trade between the regions which may not be moving due to existing non-tariff barriers (NTBs).

Trade facilitation should encompass both port and transport facilitation, as they can often also represent NTBs. The majority of trade between the two regions will continue to be by sea, other than between immediate neighbors, and therefore ensuring the ease of movement between the surface and maritime interfaces should generate savings in transactions costs, as well as improve performance.

South Asian economies and a number of lower-income Southeast Asian countries rank poorly in the World Bank's Doing Business survey,[13] which is used as an international benchmark comparing the relative performance of countries in making business easier. The World Bank's Logistics Performance Index measures how efficiently trade is being moved. India does not fare too badly, but other South Asian countries and lower-income Southeast Asian countries have poor rankings. Rankings in governance-related indicators such as corruption tend to be relatively low in the two regions, with the exceptions such as Singapore.

Excessive documentation requirements seem to be the single biggest problem in trade facilitation. Second, there is only limited adherence to the World Customs Organization's Revised Kyoto Convention that

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[13] The World Bank *Doing Business* survey can be found at http://www.doingbusiness.org/rankings.

represents an international development "road map" for customs modernization and international best practice by providing a series of time-based recommendations covering a spectrum of customs activities designed to enhance overall performance. Third, the implementation of information and communication technology (ICT) within the customs environment has in many cases widened the gap between the most developed and least developed countries in the region. This situation has evolved partly as a result of differences in the application and funding of ICT and the ICT expertise available within particular customs organizations. The end result in many of the countries in both regions is that the automated and manual systems are being operated in parallel, with little increase in overall efficiency. The development path of the National Single Window (NSW) is tending to replicate the overall ICT situation in this regard.

Other problems include lack of transparency regarding export requirements, legislative constraints on the ability to reform customs procedures, diverse conformity assessment practices and the use of individual standards and approaches persisting in different countries, poor border infrastructure resulting in long queues at border ports and delays in transit, inadequate port facilitation measures, delays in transit for landlocked countries such as Bhutan and Nepal, lack of cross-border transit arrangements, and the absence of effective consultation mechanisms, both at an inter-institutional and stakeholder level.

Improving trade and transport facilitation would make trading between South Asia and Southeast Asia easier, more stable, and more predictable, with lower transactions costs. The development of trade facilitation is largely a national issue with a regional dimension. In general, national trade facilitation procedures are relatively common and do not discriminate between the origin and destination of the cargo being processed. This suggests it may be difficult to isolate particular trade facilitation measures that will specifically enhance trade between South Asia and Southeast Asia, rather than improving the national trade facilitation environment as a whole, except in the cases of specific border infrastructure projects and the promotion of bilateral or multilateral transport agreements.

NTBs are predominantly due to constraints within a particular country, and therefore the resolution of these issues will need to be nationally focused. Less developed countries have a higher incidence of NTBs than the developed countries. This underscores the need for national assistance, though within a regional framework. The objective should be to raise the standards in the less developed countries, thus attempting to close the widening gap between them and the more developed countries.

The development of national and regional Single Windows in both regions is likely to be the most important feature in the next few years. The ASEAN Single Window initiative is being implemented and member countries are engaged in realizing this initiative. Country-level trade facilitation programs are also being undertaken in South Asia to accede to the Revised Kyoto Convention and to modernize customs management and administration. Countries in the two regions that have not signed the Revised Kyoto Convention should do so, that is, all those except Bangladesh, India, Sri Lanka, and Viet Nam.

There is a need to consider the development of a regional NSW initiative, similar to the ASEAN Single Window, but also covering the South Asian region (or possibly SASEC only). This could potentially be through BIMSTEC, or a combined SASEC–GMS dialogue platform. The objective is not to provide direct ICT interconnectivity, but to provide a framework where all countries would be engaged in the planning and development process of NSWs. In some cases, external assistance will be needed to facilitate the planning activities.

Reliance on an ICT development strategy will need to be supported by other measures. Clearing and forwarding agents in South Asia in particular cite the major problem is the time taken to collect and copy the necessary documents to support an electronic declaration, not the time taken to process and clear a shipment. More emphasis is needed to rationalize and reduce documentation, rather than relying on increased automation in ensuring progress toward paperless systems.

While cross-border transit agreements have been partially successful in Southeast Asia, they may not be the optimal concept for developing through transport in South Asia or between the two regions. A more logical approach would be to seek the application of bilateral arrangements that may be capable of evolving into a multilateral agreement. Agreements should focus on transport-related issues, rather than diversifying into customs and border infrastructure issues. In order to pursue the goal of through land transport between the regions, specific assistance may be required for Myanmar, because its trade facilitation environment is not compatible with those of its trading partners.

It would be beneficial to increase the number of stakeholders in trade facilitation initiatives, including traders, carriers, and forwarding agents, since they can determine the best way to satisfy demand.

The emphasis should gradually be shifted from customs reforms toward addressing the non-customs issues, such as sanitary, quarantine, phytosanitary, veterinary, and trading standards. This shift will require identification of a few key components to address, rather than attempting to address too much in the context of such a broad subject. This might even include the development of regionally-based testing facilities to

support national laboratories, such as that being proposed at Siliguri, India, to cover the SASEC countries.

## 1.8 National and Regional Policy Reforms

Chapter 7 examines issues related to national and regional policy reforms including tariffs and NTBs, exchange rates, and access to finance for SMEs. A major focus of the chapter is on the way that tariffs and NTBs continue to constrain the scope for trade and investment between South Asia and Southeast Asia and it identifies policy measures to improve the situation. While tariff barriers have fallen with the exercise of most favored nation (MFN) rates, the application of preferential tariff rates, which are lower than MFN tariff rates, has not been significant. The effectively applied tariff rates on cross-regional trade by both regions are close to the MFN applied tariff rates, which means that there is still room for reducing tariff barriers between the two regions as a means of boosting trade, FDI, and economic growth.

An estimated 75%–80% of NTBs that discriminate against foreign commercial interests remain in force. The largest economies in the region also are the most active in imposing NTBs. In South Asia, India was responsible for 260 out of 307 discriminatory non-tariff measures, followed by Pakistan and Sri Lanka. In Southeast Asia, Indonesia accounted for 65 out of 148 measures, followed by Viet Nam and more developed economies.[14]

Trade barriers, including tariffs and NTBs, continue to constrain the scope for trade and investment between South Asia and Southeast Asia. Expanding FTAs between the two regions is another way to reduce these barriers and promote greater trade connectivity.

There is still scope to reduce remaining tariffs and NTBs to help the two regions sustain their improving trade momentum and further benefit from greater cross-regional trade and investment. The average MFN tariff applied by South Asia remains higher than the World Trade Organization's member average of 8.8%.[15] Moreover, averages do not tell the whole story; for both South Asia and Southeast Asia, many tariff spikes exist at the product level, suggesting further room for liberalization. Tariff reduction could be accomplished by extending progressively deeper and broader coverage of preferential tariff rates

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[14] Global Trade Alert Database. http://www.globaltradealert.org/site-statistics/table/12 (accessed 14 Oct 2014).

[15] World Integrated Trade Solution. http://wits.worldbank.org/wits/ (accessed 9 Oct 2014).

on trade between the two regions through unilateral liberalization or FTAs.

Among South Asian countries, only India and Pakistan are active players in establishing FTAs. India is the only South Asian country so far that has entered into the negotiations on the Regional Comprehensive Economic Partnership (RCEP), which would build up the world's largest trading bloc covering 40% of world trade. This will give Indian businesses a greater opportunity to access markets in Southeast Asia and to integrate into production networks in this region. None of the other economies in South Asia has expressed willingness to join except Bangladesh, but this may change if they become concerned about the economic effects of being left out of the regional integration group. Also, only four Southeast Asian economies have thus far entered into negotiations on the Trans-Pacific Partnership Agreement (TPP). It is possible that other regional economies may join the process in the future.

Exchange rate regimes, to the extent that they allow exchange rates to diverge from economic fundamentals, can distort trade, investment, and SME business activity. South Asian and Southeast Asian economies have adopted managed floating exchange rates with differing degrees of flexibility. An analysis of real effective exchange rates trends indicates that all the currencies have exhibited volatility. To the extent possible, ensuring more flexible exchange rates will assist in promoting closer South Asian–Southeast Asian trade and economic integration.

SMEs are the workhorses of many South Asian and Southeast Asian economies, making up a significant share of employment and GDP. Accordingly, a vibrant SME sector can support inclusive growth and better regional integration. However, a lack of access to finance is a barrier to SME business activity including participating in South Asian–Southeast Asian trade and investment. It would be useful to support bank finance for SMEs by reducing information asymmetries through better credit databases, credit guarantee corporations, and innovative schemes to expand collateral. Other initiatives could include hometown investment trust funds for smaller local projects, regulatory systems to strengthen microfinance, and development of local currency and equity and bond markets. Providing affordable and high quality technical, marketing, and other business support systems are also important to develop successful SMEs.

## 1.9 Institutional Risks to Connectivity

Chapter 8 examines the institutional risks to increased cross-regional connectivity. Building institutions that will improve cross-regional coordination and address coordination gaps in areas such as cooperative

planning and implementation processes is a challenge. National level coordination alone is already an arduous process, but problems rise geometrically when coordination policies need to be developed across two or more countries since these involve the coordination of diverse political and legal systems, economic institutions, and sociocultural traditions.

There are many risks associated with developing connectivity between the two regions. These include the developing roles of political interest groups, lack of capacity in governments, overlapping responsibilities among government and donor agencies, social issues such as illegal migration and human trafficking as well as narcotics use and drug trafficking that could be further be aggravated by greater connectivity, security issues such as ethnic conflicts and insurgencies in border areas, perceptions of unequal benefit and uneven development from cross-border projects, gaps in the stages of intra-regional economic integration under the different regional arrangements, and the existence of sectors and regions negatively impacted by greater integration and trade liberalization, requiring compensatory mechanisms.

Closing coordination gaps in South Asian and Southeast Asian cooperation and integration will require retooling existing institutions and creating new ones to facilitate economic links, identify and prioritize emerging and long-run obstacles to cross-regional connectivity and cooperation, and help contribute to the solutions. The recommendations of this report reflect the imperatives of regional connectivity—at times overlapping—under the ASEAN, SAARC, SASEC, GMS, or BIMSTEC arrangements, but also attempt to link national and bilateral priorities with the broader regional picture. Without domestic support and commitment to achieve multilateral objectives, many plans and programs have a habit of stalling. Incentives should also be considered at the regional government levels.

It may be productive to find some way to link the SASEC and/or BIMSTEC with the GMS, since the GMS has arguably been the most successful example of cooperation in the two regions. A pragmatic way to start could be to provide observer status for GMS officials for attendance at SASEC meetings and vice versa. Subsequently, it may be useful to focus on specific regional projects and to convene technical working groups to oversee the planning and implementation of the projects. These projects could, in turn, be included in the agenda of meetings of the relevant GMS and SASEC working groups. As secretariat of both the GMS and SASEC, ADB can facilitate this process, with other development partners also providing assistance.

To strengthen the capacity of countries such as Myanmar, Bangladesh, and India to realize their potential as the land bridge between South Asia and Southeast Asia, it is important for the bilateral

projects and programs to refer to ASEAN commitments in the case of Myanmar, and to emphasize the BIMSTEC and SASEC overlaps for Bangladesh and India. For Myanmar, this is relevant in the context of the government's recognition that the current reforms should be consistent with ASEAN's economic integration objectives.

The development of communication and transportation links in the project areas should be prioritized under national and bilateral plans. Additionally, governments may need to evolve a calibrated policy framework for developing or strengthening soft infrastructure for better connectivity. Governments and business communities need to agree on how PPPs would be carried out in national and cross-border contexts. It is important to ensure that the partnerships are equal. It is equally important to ensure the accountability of all concerned. The countries most concerned in South Asian–Southeast Asian connectivity will need to develop a shared framework for PPPs that specifies roles, responsibilities, and risks for cross-border connectivity projects, as well as the internal connectivity projects linking to these cross-border initiatives.

India can accelerate the implementation of the recommendations of the North-East Region Vision 2020 that provides eight recommendations to connect northeast India with Southeast Asia. Useful steps would be to develop an implementation plan and budgetary commitments to achieve the recommendations. Recommendations pertaining to the rail link to Bangladesh and developing the Asian road link through Myanmar to Thailand and the Lao PDR are priority areas.

State governments in India also have a role in promoting connectivity. For multimodal projects linking the three countries, the state governments have the primary responsibility to implement (and support) the projects funded by the central government. To boost private sector partnership, the Confederation of Indian Industries (CII) has set up the CII–Northeast Council to work with the northeast state governments in making that region a new hub for domestic and foreign investments. Similar arrangements should be explored for the local governments in the states bordering Bangladesh. On the Myanmar side, the Federation of Chambers of Commerce and Industry can play a key coordinating role with counterparts from India and Bangladesh; but for this to happen, the Myanmar government will need to provide more information on the benefits to be reaped from greater private sector involvement in projects.

Development partners need to support Myanmar's economic reforms, especially in the border areas, due to lack of capacity there. Myanmar's National Economic and Social Advisory Council has

identified transport, railway, information technology, and energy as priority sectors for connectivity initiatives, for which external technical and financial assistance is required. Myanmar is seeking this assistance under bilateral and regional (ASEAN) cooperation frameworks. Requirements for institutional connectivity include trade liberalization, National Single Window implementation, investment, transport facilitation, cross-border procedures, and tourism and culture for people-to-people connectivity.

## 1.10 Impacts of Improved Connectivity

The potential gains from closer cross-regional economic integration are analyzed in Chapter 9. There have been some earlier studies of the benefits of Asian regional integration. One study using a different regional unit of analysis (ASEAN+3[16] and South Asia) estimates large gains (about $260 billion, or 2% of GDP) from an East Asian and South Asian free trade area, under conservative assumptions (François, Rana, and Wignaraja 2009: 28, Table 1.6). Countries obtaining large positive income impacts (over 2%) included the Republic of Korea, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam, and Sri Lanka. As mentioned earlier, the process of closer cross-regional economic integration generates potential benefits but may entail additional costs that need review and mitigation measures.

### Modeling Methodology and Scenarios

This study uses a modern computable general equilibrium (CGE) model to gauge the potential effects of integration scenarios from the perspective of the entire economy, including on real income, trade, structural change, and the distribution of the income gains. CGE models have been used frequently in the economic literature to estimate the potential effects of policy changes. The model used in the study incorporates recent empirically consistent innovations in trade theory into a global CGE framework. The model features intra-industry firm heterogeneity in productivity and fixed costs of exporting, which enables an investigation into the intra-industry reallocation of resources and the exporting decision by firms with trade liberalization, including tariffs and various types of non-tariff barriers (NTBs) in goods and services

[16] ASEAN members plus the PRC, Japan, and the Republic of Korea.

trade. Certainly, any model has inherent limitations in terms of structure, data, and behavioral assumptions. However, there are grounds to believe that it underestimates the impacts of greater economic integration.

Given that there are many possible paths that policymakers can choose to enhance interregional integration, a broad range of possible South Asian–Southeast Asian (SA/SEA) policy scenarios is considered, allowing for greater insight into the sources of the gains from enhanced connectivity. The scenarios of greatest interest are:

- SA/SEA1: Removal of all tariffs across South Asian and Southeast Asian economies.
- SA/SEA2: SA/SEA1, plus 50% removal of NTBs between South Asia and Southeast Asia.
- SA/SEA3: SA/SEA2, plus 5% reduction in trade costs associated with South Asian and Southeast Asian trade.
- SA/SEA4: SA/SEA2, plus 15% reduction in trade costs associated with South Asian and Southeast Asian trade.

Liberalization of these barriers to trade is assumed to take place over 2016–2025 and is compared relative to the baseline forecasts, with projections ending in 2030. The simulations allow for the following country breakdowns at the regional levels: (i) South Asia: Bangladesh, India, Nepal, Pakistan, Sri Lanka, and "other South Asia"; and (ii) Southeast Asia: Cambodia, Indonesia, the Lao PDR, Malaysia, the Philippines, Singapore, Thailand, Viet Nam, and "other ASEAN," which is composed of Myanmar, Brunei Darussalam, and Timor-Leste. The model also includes 21 sectors (7 in primary products/agriculture, 9 manufacturing sectors, and 5 service sectors).

## Impact Estimates

The fourth scenario, SA/SEA4 is the most ambitious and has the largest estimated impacts. South Asia shows larger absolute and percentage gains than Southeast Asia, with real income gains in the former region coming to as much as $375 billion or 8.9% of GDP under SA/SEA4 in 2030. All South Asian countries show substantial gains, including India (8.7% of GDP relative to the baseline), Pakistan (7.0%), and larger percentage increases for Bangladesh (6.9%), Sri Lanka (14.1%), Nepal (30.0%), and other South Asia (31.7%). Export gains are the key drivers of higher growth.

Real income in ASEAN rises by $193 billion (6.4% of GDP in 2030) under the SA/SEA4 scenario. At the country level, the biggest gains from South Asian–Southeast Asian economic integration vary considerably,

from –0.1% for the Lao PDR and 0.6% on average for Cambodia to 14.4% for Singapore and 9.7% for Malaysia. Again, exports drive income gains, with exports rising by 18.1% on average for all of ASEAN led by Indonesia (38.5%), Singapore (19.7%), and Malaysia (17.4%), though Viet Nam registers impressive export gains as well (13.0%).

While deeper South Asian–Southeast Asian initiatives can be expected to generate large welfare gains and increases in employment, it is essential for regional governments to take into account the mixed effects on the distribution of these gains and act accordingly in order to ensure that the benefits are fairly spread and that the "winners" will compensate the "losers." While an extensive analysis of the options that might be pursued in order to create adequate compensation mechanisms is beyond the scope of the chapter, establishing effective social safety nets, including social protection floors—which in most South Asian and Southeast Asian countries tend to be underdeveloped—needs to be an important priority as integration deepens. Other impacts, including those on the environment and security, also need to be addressed.

## 1.11 Conclusions

This report highlights the economic ties between the two regions and the key role of physical connectivity and associated soft infrastructure in strengthening cross-regional economic integration. Three major findings are worth noting. First, much progress has already been made in relation to strengthening economic ties between the two regions, but it is not enough, and considerable potential exists for strengthening economic ties. Second, there are substantial economic benefits to greater cross-regional integration, but possible costs will need to be mitigated. Third, an integrated and broad-based approach to connectivity is needed to move forward. Such an approach would include investment in cross-border transport and energy infrastructure, improvements in trade facilitation, development of infrastructure financing at national and regional levels, implementation of national and regional policy reforms (including ensuring more flexible exchange rates and better access to finance for SMEs), and building institutions that will improve coordination and address coordination gaps.

Table 1.2 summarized national-level projects and measures and shows that, while transport and energy infrastructure projects are country specific, there are many common themes across countries in finance, trade and transport facilitation, and trade agreements. Regarding trade facilitation, accession to the Revised Kyoto Convention and adoption of NSWs are key milestones for most countries.

Regional-level projects chiefly involve institutional aspects, such as the promotion of greater cooperation between subregional bodies, including ASEAN, SAARC, SASEC, GMS, and BIMSTEC. Multilateral development banks can play an important role in this, especially in relation to financing cross-border infrastructure projects. Trade and transport facilitation is another area requiring cooperation, especially in cross-border transit agreements and harmonization of customs procedures. The extension of the ASEAN Single Window concept to South Asia is one example. Cooperation is also required in energy trading. Participation in regional FTAs is another key area of cooperation. As mentioned, only India is currently involved in the RCEP negotiations, but there is potential for other South Asian countries to join. Likewise, more regional economies may wish to participate in TPP negotiations.

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CHAPTER 2

# Current State of Cross-Regional Economic Ties

## 2.1 Introduction

This chapter describes the evolution of trade, investment, and financial relations between South Asia and Southeast Asia, including trade values, foreign direct investment, and portfolio investment. It gives focus to the development of supply chain networks that are highly developed in Southeast Asia, but less so in South Asia, and to the role of Myanmar as the link between the two regions. Section 2.2 describes trade links, while Section 2.3 looks at supply chains. Sections 2.4 and 2.5 describe investment links, and Section 2.6 concludes. Box 2.1 at the end of the chapter describes in more detail the current situation of Myanmar.

## 2.2 Trade Links

The growth of South Asian and Southeast Asian cross-regional trade has been remarkable, from very little ($4 billion) in 1990 to a considerable amount ($90 billion) in 2013, an increase of almost 22 times (Figure 2.1). Both regions embraced outward-oriented reforms to deepen links with the global economy over this period. From 2000 to 2013, effective applied manufacturing tariffs fell from 22% to 12% in South Asia and from 9% to 6% in Southeast Asia, making Southeast Asia arguably the most open in the developing world (see Chapter 7). This liberalization has been an important driver behind the internationalization of these economies; for example, the exports to gross domestic product (GDP) ratio of the Association of Southeast Asian Nations (ASEAN) rose to 57% and that of India increased to 18% (ADB 2013). Cross-regional trade growth was even faster: Southeast

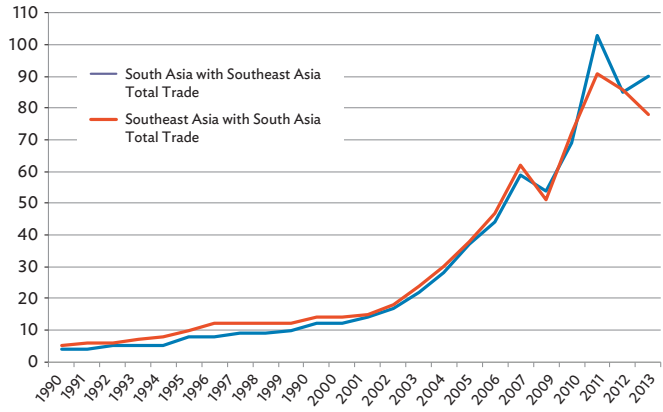
Asia's share of South Asian trade rose steadily from 6% in 1990 to 10% in 2013, whereas South Asia's share of Southeast Asian trade doubled from about 2% to 4% (Figure 2.2). This suggests that while cross-regional trade is low compared to trade with the rest of the world for both regions, it has risen from being insignificant to being important to both regions, particularly South Asia.

Trade between South Asia and Southeast Asia is higher than intra-regional trade in South Asia. In 1990, cross-regional trade with Southeast Asia was three times higher than intra-regional trade within South Asia. Intra-regional trade ties in South Asia showed a large improvement in 2013 as trade value reached $28 billion. Cross-regional trade between South Asia and Southeast Asia, however, remained higher than South Asian regional trade, but by a much smaller margin of $4 billion. In contrast, Southeast Asia had been enjoying vibrant trade relations since the 1990s. By 2013, intra-regional trade value was $297 billion, a sixfold increase from the 1990s level. Trade with South Asia also increased—from $4 billion in 1990 to $89 billion in 2013, as noted above. Despite weak transport connectivity between the two regions, trade ties have been steadily improving in the past two decades (Figures 2.1 and 2.2). Improvements in trade and transport facilitation could further help unlock the economic potential of intra-regional trade between the two regions (Table 2.1).

One way to gauge whether cross-regional trade is underperforming is to utilize an econometric model of trade determination that allows separation of regional and non-regional effects. The most popular model in international trade literature used for this purpose is the gravity model, which posits bilateral trade flows to be a function of distance-related variables, economic characteristics of the trading economies, and additional explanatory variables, including binary fixed-effect (or dummy) variables like regions. By isolating influences beyond potential regional effects, such an approach allows us to determine whether trading with a region leads to a positive or negative bias. One such study of South Asian trade estimates a statistically significant, positive Southeast Asian effect: over 2003–2008, Akhter and Ghani (2010) estimate that South Asian trade with ASEAN was 2.4 times higher than one would expect, controlling for all other variables.[1] This would suggest that the impressive rise in cross-regional trade has some ASEAN-specific underpinnings. However, this effect is less impressive when compared with other studies employing gravity models to capture regional effects. For example, in a

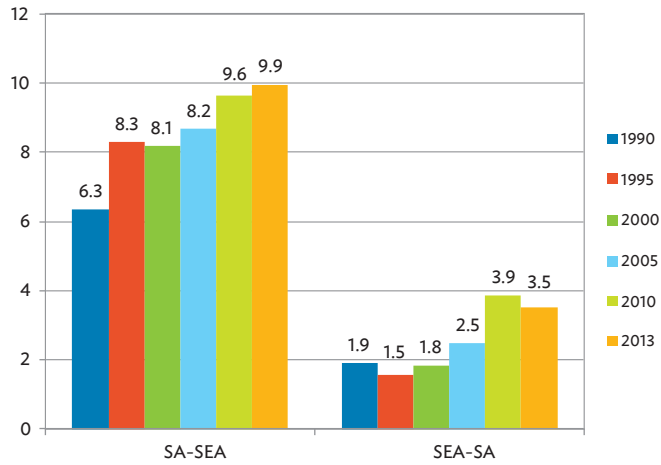
[1] Akhter and Ghani (2010, Table 4) note that the estimated coefficient of the ASEAN binary variable is 0.889; to infer the actual trade bias, one must take the exponent of 0.889, which is 2.43.

**Figure 2.1: Total Trade between South Asia and Southeast Asia, 1990–2013** ($ billion)




Source: World Integrated Trade Solution. http://wits.worldbank.org/ (accessed 26 Sep 2014).

**Figure 2.2: Share of South Asian and Southeast Asian Cross-Regional Trade to Their Total Trade, 1990–2013** (%)




SA = South Asia; SEA = Southeast Asia.

Note: Figures reported by importers.

Source: World Integrated Trade Solution. http://wits.worldbank.org/ (accessed 29 Sep 2014).

## Table 2.1: Value of Merchandise Trade between South Asia and Southeast Asia, 1990, 2000, and 2013 ($ million)

| | Imports | | | | | | Total Trade | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | South Asia | | | Southeast Asia | | | South Asia | | | Southeast Asia | | |
| **Partner Economy** | **1990** | **2000** | **2013** | **1990** | **2000** | **2013** | **1990** | **2000** | **2013** | **1990** | **2000** | **2013** |
| **South Asia** | **749** | **2,882** | **7,865** | **1,705** | **3,980** | **24,205** | **1,656** | **5,571** | **28,819** | **5,290** | **14,423** | **32,070** |
| Afghanistan | 19 | 65 | 521 | 0 | 3 | 2 | 74 | 217 | 3,032 | 82 | 21 | 523 |
| Bangladesh | 64 | 137 | 613 | 50 | 163 | 386 | 478 | 1,064 | 7,407 | 608 | 1,593 | 999 |
| India | 377 | 1,998 | 5,000 | 1,282 | 3,310 | 22,674 | 451 | 2,455 | 5,945 | 2,985 | 9,773 | 27,674 |
| Maldives | 6 | 31 | 17 | 28 | 11 | 74 | 20 | 105 | 209 | 125 | 195 | 91 |
| Nepal | 16 | 262 | 377 | 6 | 9 | 6 | 69 | 405 | 3,559 | 88 | 159 | 384 |
| Pakistan | 185 | 253 | 758 | 272 | 327 | 716 | 281 | 496 | 3,017 | 908 | 1,467 | 1,473 |
| Sri Lanka | 82 | 137 | 579 | 66 | 156 | 347 | 283 | 829 | 5,649 | 494 | 1,215 | 925 |
| **Southeast Asia** | **2,764** | **8,368** | **50,511** | **22,329** | **80,676** | **247,241** | **4,073** | **11,684** | **89,656** | **48,057** | **177,388** | **297,753** |
| Brunei Darussalam | 0 | 1 | 766 | 308 | 775 | 1,578 | 2 | 7 | 807 | 965 | 1,586 | 2,345 |
| Cambodia | 1 | 3 | 14 | 29 | 138 | 762 | 2 | 14 | 204 | 40 | 1,177 | 776 |
| Indonesia | 268 | 1,677 | 16,633 | 514 | 4,770 | 39,476 | 432 | 2,202 | 22,371 | 1,007 | 8,247 | 56,109 |
| Lao PDR | 0 | 0 | 112 | 45 | 183 | 1,380 | 0 | 5 | 174 | 111 | 670 | 1,492 |
| Malaysia | 945 | 2,217 | 11,820 | 9,732 | 29,162 | 70,726 | 1,129 | 2,815 | 17,565 | 17,453 | 60,766 | 82,546 |
| Myanmar | 102 | 253 | 1,386 | 216 | 467 | 4,510 | 106 | 301 | 2,143 | 535 | 1,717 | 5,896 |
| Philippines | 11 | 97 | 474 | 636 | 6,637 | 10,019 | 76 | 314 | 2,043 | 2,030 | 14,126 | 10,493 |
| Singapore | 1,025 | 3,079 | 9,571 | 8,134 | 24,269 | 64,715 | 1,571 | 4,038 | 23,942 | 18,424 | 58,919 | 74,286 |
| Thailand | 337 | 994 | 6,619 | 2,533 | 12,098 | 37,113 | 658 | 1,707 | 10,997 | 7,248 | 24,140 | 43,732 |
| Viet Nam | 75 | 48 | 3,116 | 182 | 2,177 | 16,962 | 97 | 280 | 9,409 | 245 | 6,041 | 20,078 |
| **Total South Asia and Southeast Asia** | **3,513** | **11,251** | **58,377** | **24,034** | **84,656** | **271,446** | **5,728** | **17,255** | **118,475** | **53,348** | **191,811** | **329,823** |

Lao PDR = Lao People's Democratic Republic.

Note: Figures reported by importers.

Source: World Integrated Trade Solution. http://wits.worldbank.org (accessed 29 Sep 2014).

comprehensive study of trading blocs throughout the world, Frankel (1997) estimates that ASEAN had almost three times as large an effect on intra-ASEAN trade flows.[2]

## 2.3 Supply Chains and Small and Medium-Sized Enterprises

### Supply Chain Networks

As noted above, intra-regional trade is much greater in Southeast Asia than in South Asia. Indeed, the gravity model used by Akhter and Ghani (2010) found a negative bias in intra-South Asian trade, whereas many studies have found a strong, positive intra-ASEAN effect. While there are many reasons for this asymmetric regional performance—including the degree of regional economic cooperation—the prominence of regional production networks in Southeast Asian trade is a key factor, whereas these networks are far less important in South Asia.

Production networks refer to the breaking up of production processes into fragmented segments that can be carried out in different cross-border locations and eventually coordinated for assembly into final products. Southeast Asia has been particularly successful in attracting regional production networks because of its differences in wage and labor productivity levels across countries; regional trade and investment liberalization through initiatives such as the ASEAN Free Trade Area, the ASEAN Comprehensive Investment Area, and the ASEAN Economic Community; increasingly strong intra-regional and international links that result in lower production and logistics costs; and investment in modern and cost-competitive infrastructure (Plummer and Chia 2009; Athukorala 2010). Production networks have played a significant role in influencing trade by relocating labor-intensive segments to low wage economies, resulting in rapidly growing intra-industry trade in parts and components. Production networks make use of each economy's advantages to boost productivity and cut costs, while bolstering investment and technology transfer. They have also permitted low-income countries to plug into the global economy in ways that would have been impossible two decades ago.

South Asia is less integrated into production networks than Southeast Asia. As shown in Figure 2.3, Southeast Asia accounts for

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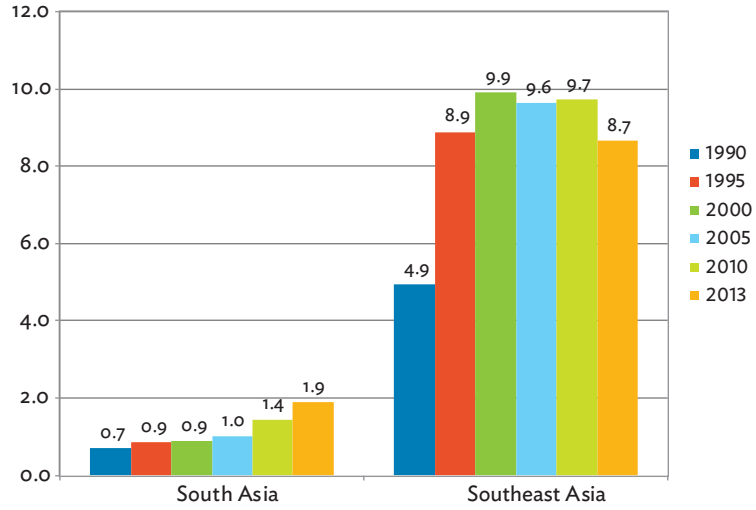
[2] The estimated coefficient was 1.965 [exp(1.965)=7.13].

8%–10% of global production network exports between 1995 and 2013—impressive as the global total includes intra-regional networks in the European Union, the North American Free Trade Agreement, as well as the People's Republic of China (PRC). The corresponding figures for South Asia are much smaller at 1%–2%, respectively, from 1995 to 2013. Given the benefits of these production networks for growth and poverty reduction, this is one area in which South Asia can improve; closer links with Southeast Asia would facilitate this. Studies suggest that many policy ingredients are necessary for South Asian economies to emulate the success of Southeast Asian economies in production networks, including investing in better cross-border infrastructure, multimodal transport systems, and logistics, creating export processing zones and industrial parks, increasing the depth and business use of free trade agreements, reducing trade barriers and cumbersome business procedures, upgrading education and training, reforming labor markets, and promoting the development of high value-added manufacturing (Kathuria, Kedia, and Balakrishnan 2014; Hoda and Rai 2014; Wignaraja 2014).

**Figure 2.3: Share of South Asian and Southeast Asian Production Network Exports in World Total, 1990–2013** *(%)*




Note: Production network trade is defined as trade in parts and components using the gross trade approach of Athukorala (2010).

Source: Compiled from UN Comtrade database (accessed 26 Sep 2014).

## Potential Role of Small and Medium-Sized Enterprises

Another critical issue relates to the prospects for small and medium-sized enterprises (SMEs) in furthering economic ties between South Asia and Southeast Asia in areas such as trade, foreign direct investment (FDI), and production networks. SMEs are the workhorses of Asian economies and a force for more inclusive growth. In the five major ASEAN economies (ASEAN 5),[3] SMEs account for over 50% of employment in all cases, and the share of output in GDP ranges from 32% to 58% (Table 2.2). The corresponding shares for South Asia are lower, but still high. However, the performance of SMEs in terms of their share of total exports lags behind their share of employment or output, averaging 21% in the ASEAN 5 and 24% in South Asia.

The smaller share of SMEs in total exports suggests that such firms are likely to be minor players in South Asian–Southeast Asian trade, at least in the short to medium term. The limited trade participation of SMEs reflects a number of obstacles they face, most notably difficulties in obtaining external finance from commercial banks due to insufficient credit information and a lack of collateral. These issues are analyzed in Jinjarak, Mutuc, and Wignaraja (2014). More generally, SMEs face difficulties in obtaining funds for investment in research and development, in upgrading technologies and undertaking export marketing activities. These obstacles are in addition to the policy-related barriers that exporters face, including tariffs, non-tariff barriers, volatile exchange rates, cumbersome bureaucratic procedures to set up and operate businesses, and gaps in infrastructure. This suggests that SMEs have the potential to make a substantially larger contribution to South Asian–Southeast Asian trade if these obstacles were addressed. Increased financial access of SMEs may have other benefits as well, such as contributing to financial stability (Morgan and Pontines 2014).

Policies for improving SME access to finance have two broad tracks: (i) reducing the information asymmetry with lenders; and (ii) expanding the types of financing available. The first track includes development of SME credit databases, development of loan guarantee programs, and expansion of the kinds of collateral that can be accepted for loans. The second track includes development of equity and bond markets and other special investment vehicles such as microfinance institutions and hometown investment trusts. Hometown investment trust funds were developed in Japan and are now being applied in emerging economies such as Cambodia. A comprehensive discussion of hometown investment trust funds is given in Yoshino and Kaji (2013).

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[3] Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam.

## Table 2.2: Importance of SMEs in Selected Southeast Asian and South Asian Economies

| Economy | SME Share of Total Employment | SME Contribution to GDP | SME Share of Total Exports | Year |
|---|---|---|---|---|
| Bangladesh | 40.0 | 20.3 | 11.3 | Employment 2006, GDP 2008, Exports 2006 |
| India | 40.0 | 17.0 | 40.0 | 2012 |
| Pakistan | 70.0 | 30.0 | 25.0 | 2011 |
| Sri Lanka | 35.0 | 52.0 | 20.0[a] | Employment 2007, GDP 2011, Exports 2012 |
| **South Asia Average** | **46.3** | **33.0** | **24.1** | |
| Indonesia | 97.2 | 57.8 | 15.8 | 2010 |
| Malaysia | 58.9 | 31.9 | 19.0 | Employment 2008, GDP 2010, Exports 2005 |
| Philippines | 61.0 | 35.7 | 20.0 | Employment, GDP 2011, Exports 2001 |
| Thailand | 77.9 | 38.7 | 29.5 | 2011 |
| Viet Nam | 77.0 | 40.0 | 20.0 | Employment, GDP 2011, Exports 2009 |
| **ASEAN 5 Average** | **74.4** | **40.8** | **20.9** | |

ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product; SMEs = small and medium-sized enterprises.

Note: [a] Only includes manufacturers' share of total exports.

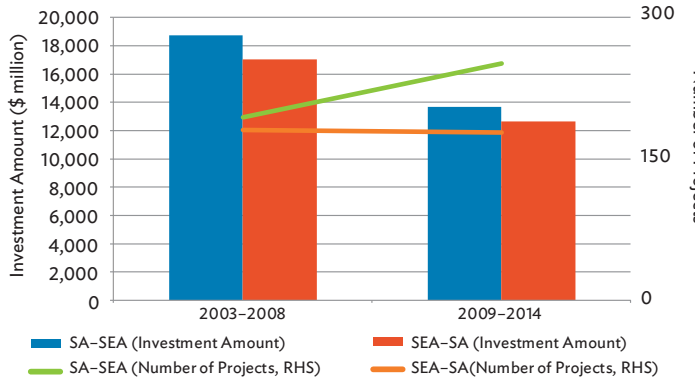
Sources:
Bangladesh: Bangladesh Bank. http://www.bangladesh-bank.org/pub/research/policypaper/pp0806.pdf and UNESCAP. http://artnet.unescap.org/pub/wp7609.pdf
India: Newspaper article http://articles.economictimes.indiatimes.com/2013-06-09/news/39834857_1_smes-workforce-small-and-medium-enterprises.
Indonesia, Malaysia, and Thailand: ASEAN SME Data and Statistics. http://www.asean.org/communities/asean-economic-community/category/data-and-statistics
Pakistan: IFC. http://www.sbp.org.pk/departments/smefd/15March/5-IFC-Global-regional-SME.pdf
Philippines: Department of Trade and Industry, Philippines. http://www.dti.gov.ph/dti/index.php?p=321
Sri Lanka: Ministry of Finance, International Financial Corporation but indirectly sourced from http://www.sundayobserver.lk/2012/11/25/fin13.asp; http://www.lbt.lk/news/economic/6659-smes-contribute-to-30-of-gdp-20-of-exports
Viet Nam: Business in Asia. http://www.business-in-asia.com/vietnam/sme_in_vietnam.html and UNESCAP. http://www.unescap.org/tid/publication/aptir2596_chap7.pdf

## 2.4 Foreign Direct Investment

FDI has been an important part of the successful development experience in Southeast Asia. Inflows of FDI bring stable new capital flows, foreign exchange, easy access to foreign markets, and technology transfer. They also tend to strengthen institutions within developing countries, including those in the financial sector, and create a more stable environment of policy competition for more business-friendly policies.[4] In doing so, they establish an attractive business environment within which multinationals can easily profit from a vertical division of labor and facilitate the emergence of regional production chains.

South Asia has typically received less FDI than Southeast Asia. A recent study (Athukorala 2014) provides some insights about South Asian FDI inflows. First, horizontal (market-seeking) FDI has continued to dominate South Asian intra-regional FDI, with an important shift toward the services sectors. Second, vertical (efficiency-seeking) FDI in South Asia is limited to a handful of sectors like garments and natural resources. Third, in industries that are engaged in global production network trade such as electronics and electrical goods, there is little sign of foreign investor interest in South Asia. Traditionally, FDI flows have been North–South, but South–South FDI has become increasingly prominent. Since 2003, greenfield FDI from South Asia—particularly India—to Southeast Asia has been greater than Southeast Asian FDI in South Asia (Figure 2.4),

**Figure 2.4: South Asian and Southeast Asian Cross-Regional Greenfield Foreign Direct Investment, 2003–2008 and 2009–2014**

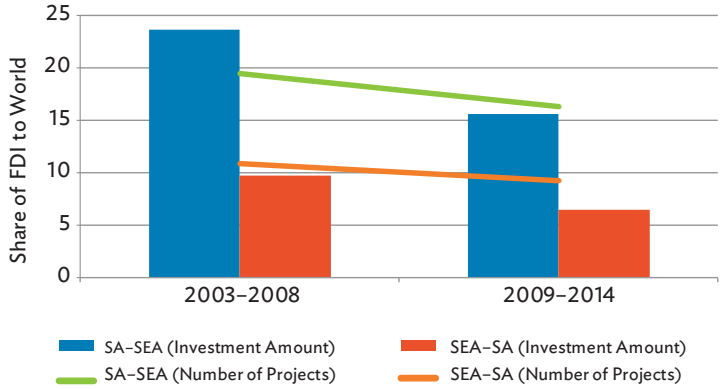



SA = South Asia; SEA = Southeast Asia.
Source: fDi Markets database. http://www.fdimarkets.com/ (accessed May 2014).

[4] See for example, Kose et al. (2006).

but in both cases the aggregate flows are relatively small: Southeast Asia accounted for only 15% of total South Asian FDI outflows during 2009–2014, and South Asia received only 9% of Southeast Asian FDI. In both cases, these shares are down from those in 2003–2008 (Figure 2.5).

**Figure 2.5: Share of South Asian and Southeast Asian Cross-Regional Greenfield Foreign Direct Investment to World Total, 2003–2008 and 2009–2014** *(%)*

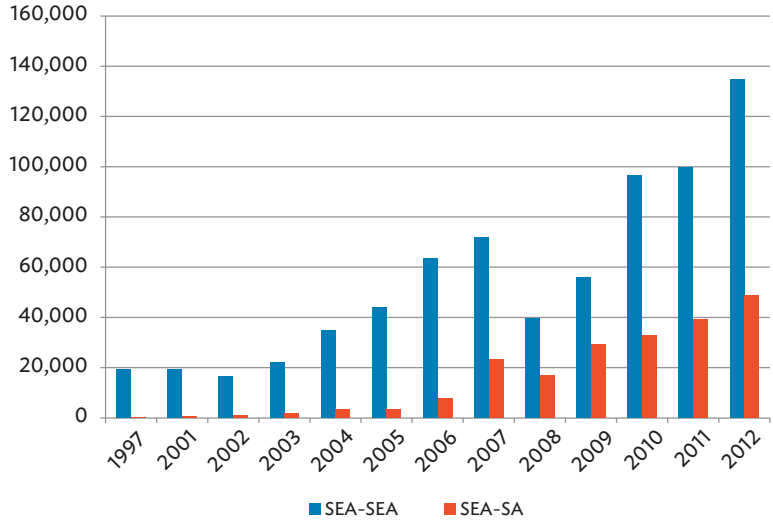



FDI = foreign direct investment; SA = South Asia; SEA = Southeast Asia.
Source: fDi Markets database. http://www.fdimarkets.com/ (accessed May 2014).

## 2.5 Financial Flows

Cross-regional portfolio investment remains limited. The International Monetary Fund's (IMF) Coordinated Portfolio Investment Survey shows that Southeast Asia invested $50 billion in South Asia in 2012 (Figure 2.6), about 15% of total inward portfolio investment in the region, but almost all of this came from Singapore, presumably most of which was funds originating from firms outside the region with regional offices in Singapore. Excluding Singapore, outstanding portfolio investment from Southeast Asia to South Asia in 2012 was small, at about $775 million. Outstanding portfolio investment from South Asia to Southeast Asia in 2012 totaled only $127 million—a small fraction of total investment into Southeast Asia—although representing about 9% of South Asian outward investment (Figure 2.7). There are also limits to cross-border bank loans and bank entry into foreign markets in many cases, as well as onerous restrictions on foreign exchange transactions.

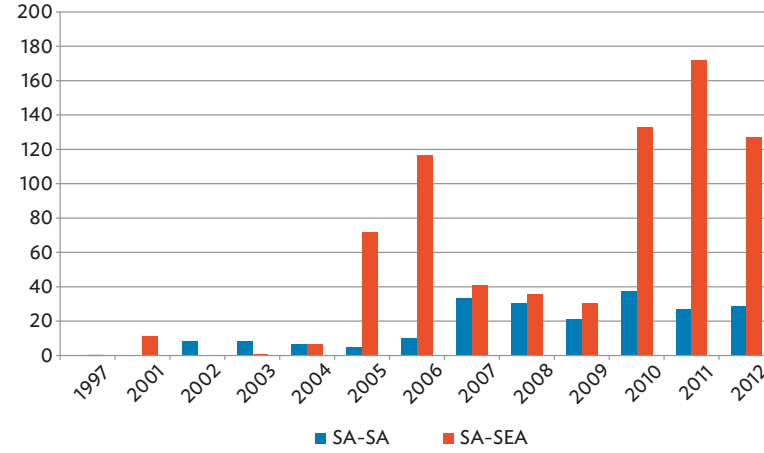
**Figure 2.6: Southeast Asian Intra- and Cross-Regional Portfolio Investment Total Assets, 1997–2012** ($ million)




SA = South Asia; SEA = Southeast Asia.

Source: IMF Coordinated Portfolio Investment Survey. http://cpis.imf.org/ (accessed December 2013).

**Figure 2.7: South Asian Intra- and Cross-Regional Portfolio Investment Total Assets, 1997–2012** ($ million)




SA = South Asia; SEA = Southeast Asia.

Source: IMF Coordinated Portfolio Investment Survey. http://cpis.imf.org/ (accessed December 2013).

## 2.6 Summary

### Trends Are Positive, But Much Potential Remains Unexploited

The patterns of cross-regional trade, foreign direct investment, and portfolio investment described in this chapter show that economic interaction between the two regions is on the rise, but the South Asian and Southeast Asian economic partnership continues to be small relative to their relationships with the rest of the world (and for Southeast Asia, relative to its own intra-regional economic integration). Much more can be accomplished via regional cooperation. The following chapters of this study describe in more detail the ways that closer economic and financial integration can be achieved, followed by analysis of benefits and costs of such integration.

#### Box 2.1: Myanmar's Role as a Bridge

Myanmar can play a crucial and strategic role in connecting South Asia and Southeast Asia, as it provides the only land bridge between the two regions. It shares a total of 5,858 kilometers (km) of international borders with five nations—Bangladesh, the People's Republic of China (PRC), India, the Lao People's Democratic Republic (Lao PDR), and Thailand. Moreover, its coastline stretches 2,800 km from the Bay of Bengal to the Andaman Sea, near major Indian Ocean shipping lanes. The recent opening up of Myanmar provides substantial new opportunities to strengthen connectivity between the two regions.

Myanmar has a land area of 676,577 square kilometers, the largest in Southeast Asia after Indonesia. As of 2013, it had a population of 61.6 million with annual population growth of 1% (ADB 2014). Myanmar is endowed with rich natural resources, including petroleum, timber, tin, antimony, zinc, copper, tungsten, lead, coal, marble, limestone, precious stones, natural gas, and hydropower. In 2013, natural gas, wood products, pulses, beans, fish, rice, clothing, and precious stones were its largest export commodities. Its top export destinations in 2013 were Thailand, India, and the PRC, while its top import sources were the PRC, Thailand, and Singapore (ADB 2014).

Despite its natural resource endowments, Myanmar is one of the poorest countries in Asia. It has the lowest gross domestic product (GDP) per capita among Association of Southeast Asian Nations (ASEAN)

*continued on next page*

*Box 2.1 continued*

members, at $1,114 in 2013[a] (based on current prices). Decades of inward-oriented economic policies, economic sanctions, and weak foreign investment resulted in economic stagnation. However, the recent efforts of the government to open up the economy are changing the economic landscape of Myanmar and point to improved prospects for the country.

Like many developing economies, Myanmar is experiencing extensive structural transformation. In 2013, the services sector share in GDP was 37.5%—higher than that of the agriculture sector share (30.5%), which has been falling steadily over the past decade, and the industry sector share (32.0%). Under President U Thein Sein, the government undertook sweeping political and economic reforms such as lifting media censorship, releasing political prisoners, and adopting market-oriented reforms focusing on the real and financial sectors and improving the business climate for foreign investment (IMF 2013). The government also embarked on ceasefire agreements and peace talks with rebel ethnic groups. Myanmar's international relations improved under the new president's leadership, as shown by Myanmar's openness to dialogue with the United States and its appointment as ASEAN chair in 2014.

In 2012, the government drafted its Framework for Economic and Social Reforms. The document sets out an ambitious program, identifying the policy agenda and priorities from 2012 to 2015, while aiming for the longer term goal of "...identifying parameters and processes to develop Myanmar into a modern, developed and democratic nation by 2030" (Government of the Union of Myanmar 2012:1). The reform measures include macroeconomic policies to promote inclusive growth, stability, and poverty reduction; sectoral reforms to develop industry; other policies to promote social, cultural, and environmental aspects of development, as well as social harmony and regional development; governance reforms; and strategies to improve the international reputation of Myanmar through its engagement with ASEAN, the Greater Mekong Subregion, and the rest of the world. The document identifies plans for reforms in government finance and taxation, monetary and financial sector policies, trade and investment liberalization programs, education, governance and transparency, improvements in telecommunications, infrastructure development, and improved government efficiency.

The government is embarking on programs to raise agricultural productivity and encourage the development of manufacturing, energy, and mining. It is also pursuing priority infrastructure projects that will

[a] International Monetary Fund. World Economic Outlook Database. http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/weoselgr.aspx (accessed 18 Dec 2014).

*continued on next page*

*Box 2.1 continued*

support upgrading of the agriculture and industry sectors and enhance the country's connectivity to the region. Major reforms being implemented include land reform programs to grant titles to farmers, improving access to finance, and development of rural infrastructure. The government also revised the law governing FDI to reduce restrictions on foreign investment, and plans to improve the 2011 Special Economic Zone Law to reduce restrictive policies on domestic firms (IMF 2013). The government is also developing a comprehensive tourism strategy that will improve tourism infrastructure and support sustainable tourism in the country.

Economic and political reforms have resulted in a booming economy. Total trade in 2013 was $23.4 million—a 27% increase from the previous year's figure. Total exports for 2013 were $11.4 million—an increase of 22% from the previous year (ASEAN 2014). FDI inflows also increased by 93% (Table B2.1). GDP growth in 2014 and 2015 is projected at 7.8% (ADB 2014) to 9.1% (IMF 2014), making Myanmar the fastest growing economy in the ASEAN region and one of the fastest in Asia.

While the economic projections are favorable, Myanmar is still facing many challenges to sustain momentum for growth. Weak infrastructure has been cited as one factor that undermines Myanmar's economic potential. Poor transport infrastructure, lack of modern telecommunications, and power shortages are among the major growth impediments (ADB 2014). A comparison with other ASEAN countries shows that Myanmar lags in various infrastructure and connectivity indicators (Table B2.1).

Internet subscriptions and cellular phone density are the lowest among ASEAN members. While Myanmar has expanded its road network, only 39% is paved, with most of these roads in bad condition. Rail networks are also poorly maintained and in bad condition.

Myanmar has 30 local airports and 3 international airports (Yangon, Mandalay, and Nay Pyi Taw). Compared to other ASEAN countries, air traffic is still low, although this may change with the influx of tourists and investors in the country. Airport facilities need to be upgraded to meet the rising number of passengers. The same is also needed with water transport facilities. Seaports need to be upgraded and rehabilitated. Moreover, cross-border road connectivity is poor, and there is no cross-border connectivity at all for railways. The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) has identified about 1,063 km of missing links in Myanmar for the Asian Highways 1 and 2 routes (UNESCAP 2010). (See discussion in Chapter 3.)

*continued on next page*

*Box 2.1 continued*

**Table B2.1: Myanmar Comparison Indicators**

| Country | Total FDI Inflows ($ million) | % Change in FDI Inflows | Tourist Arrivals ('000) | Change in Tourist Arrivals (%) | Internet Subscriber per 1,000 Persons | Cellular Phone Density per 1,000 Persons | Road Length (km) | Paved Network (km) | Vehicles per 1,000 Population | Railway Passengers (million) | International Air Passengers Traffic ('000) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Myanmar | 2,621 | 93.5 | 1059 | 29.7 | 10 | 52 | 151,298 | 32,535 | 57 | 55 | 2,035 |
| **Other ASEAN Countries** | | | | | | | | | | | |
| Brunei Darussalam | 908 | 5.0 | 209 | -13.6 | 131 | 1,175 | 2,909 | 2,707 | 49 | NA | 2,017 |
| Cambodia | 1,275 | –18.1 | 3,584 | 24.4 | 49 | 1,320 | 12,232 | 5,469 | 18 | NA | 3,997 |
| Indonesia | 18,444 | –3.6 | 8,044 | 5.2 | 154 | 1,152 | 496,607 | 283,102 | 378 | 147,000 | 9,938 |
| Lao PDR | 427 | 44.9 | 3,330 | 22.7 | 108 | 1,019 | 43,600 | 6,496 | 202 | NA | 372 |
| Malaysia | 12,297 | 30.8 | 25,033 | 1.29 | 217 | 1,430 | 182,699 | 143,012 | 771 | 39 | 32,765 |
| Philippines | 3,860 | 38.0 | 4,273 | 9.1 | 64 | 1,045 | 31,598 | 25,443 | 78 | 431 | 16,421 |
| Singapore | 60,645 | 1.4 | 14,491 | 10.2 | 1,518 | 3,430 | 3,426 | 3,426 | 179 | 3 | 49,910 |
| Thailand | 13,000 | 21.5 | 22,354 | 17.5 | 27 | 1,237 | 115,679 | 114,290 | 488 | 44 | 46,324 |
| Viet Nam | 8,900 | 6.4 | 6,648 | 13.9 | 54 | 1,561 | 325,000 | 216,000 | 18 | 12 | 13,203 |

ASEAN = Association of Southeast Asian Nations; FDI = foreign direct investment; Lao PDR = Lao People's Democratic Republic; NA = not available.

Notes:
Total FDI Inflows data from ASEAN Statistics (http://www.asean.org/news/item/external-trade-statistics-3, accessed 22 Oct 2014).
Tourist Arrivals data are based on latest country figures from 2012.
Others from ASEAN Statistics Leaflet: Selected Key Indicators 2013 (http://www.asean.org/images/resources/2014/May/2, accessed 30 Sep 2014)

Sources: Based on Athukorala (2014); ASEAN Secretariat (2013); ADB (2014); McKinsey Global Institute (2013); Government of Myanmar (2012); IMF (2013, 2014).

*continued on next page*

*Box 2.1 continued*

To improve and modernize its infrastructure, Myanmar will need an estimated investment of as much as $80 billion between 2014 and 2030 (ADB 2014). The McKinsey Global Institute (2013) estimates a much larger amount of $320 billion for 2010–2030, although this estimate includes about 40% for real estate construction, which would leave about $192 billion for a roughly equivalent definition of infrastructure spending. For the transport sector alone, increasing the road network would require $9.4 billion–$14.0 billion in investment, and to upgrade and maintain the existing railway stock, $2.0 billion–$2.9 billion is needed (ADB 2014). Meeting the financial challenge of its infrastructure needs is crucial for realizing Myanmar's economic potential.

Myanmar's growth potential will increase as Asian regional cooperation and integration deepen. However, the extent of this will depend on the government's commitment to reforms and other factors such as strengthening of institutions, macroeconomic and financial stability, and human capital improvements (IMF 2014).

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CHAPTER 3

# Cross-Border Transport Infrastructure

## 3.1 Introduction

The link between improved transport infrastructure and greater potential for trade and investment between South Asia and Southeast Asia is clear. Despite progress, road and rail links between Bangladesh, India, Myanmar, and Thailand are patchy, with many sections below standard and with many missing links. In the case of rail transport, this is compounded by differences in gauges and rolling stock, among others. Interior areas such as northeast India have limited or long access to borders or major seaports. Many seaports in the Bay of Bengal suffer from deficiencies of draft, capacity, operational efficiency, and road and rail access. Improving the quality of cross-border transport infrastructure, and adding it where it does not exist, will lower unit transport costs, reduce shipment times, and increase throughput, all of which can lead to increased trade and greater benefits.

Developing efficient physical connectivity between South Asia and Southeast Asia requires a regional perspective to identify and prioritize transport infrastructure projects. The diverse geography and range of transport modes underscore the need for multimodal planning in constructing roads, railways, seaports, inland waterways, and airports[1] that satisfy the needs of users, including transport service providers. Any approach to strengthening physical connectivity must address missing links and bottlenecks in the transportation networks.

This chapter analyzes improvements in cross-border transport infrastructure that can contribute to increased cross-regional trade and investment. Section 3.2 describes the scope of the study and transport-related concepts. Section 3.3 identifies possible corridors, missing links, and projects for highway connectivity between South Asia and Southeast Asia, while Section 3.4 does the same for railroads and Section 3.5 for ports.

[1] Air transportation is not included in this study.

Section 3.6 summarizes the priority projects and their estimated costs. Section 3.7 analyzes the potential benefits for those projects. Section 3.8 describes obstacles and constraints, and Section 3.9 concludes with recommendations.

## 3.2 Scope of Study and Concepts

The basic characteristics of transport modes determine the relative importance of each mode to international or domestic transport service providers in South Asia and Southeast Asia, which must balance the impact of the various factors affecting cost, speed, and reliability in the movement of passenger or freight traffic. The characteristics include:

- Road transport is fast and reliable; its ability to provide door-to-door services can offset higher costs in relation to maritime or rail modes. However, the poor quality of some major connecting roads in the regions, coupled with lengthy transshipment and border procedures and the lack of transit agreements, have reduced these advantages.
- Rail transport is underutilized in Southeast Asia because of limitations in the rail network, although networks are more developed in South Asia. Myanmar has no international railway connections and no rail network is operational in the Lao People's Democratic Republic (Lao PDR). Creating a regional network will require extensive construction to eliminate missing links that would be expensive, particularly in view of the difficult terrain. In addition, there are problems related to differences in gauges, braking equipment, rolling stock, and inadequate maintenance of tracks and rolling stock.
- Maritime transport is the dominant mode for the movement of international trade, except in landlocked countries. Better economies of scale in maritime transport can be achieved by conveying goods in large volumes over long distances in comparison to road and rail transport.
- Air transport provides fast and reliable services and is important for the tourism industry. Although expensive, the proliferation of low-cost carriers has widened the passenger market for air travel.
- Inland water transport, an important mode particularly in Southeast Asia, is cheap, but also slower and not always reliable.

This chapter analyzes road, railway, and sea transport. It focuses on those countries in the two regions that are physically closest to the other region. For South Asia, this means Bangladesh, Bhutan, India, Nepal, and Sri Lanka. For Southeast Asia, this includes the Greater Mekong region (GMS) countries—Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam. The People's Republic of China (PRC) (specifically Yunnan Province and Guangxi Zhuang Autonomous Region) is also a member of the GMS, and is considered in this study to the extent that it contributes to connectivity between South Asia and Southeast Asia. The study of ports focuses on those in the Bay of Bengal, since they are high cost but have potential to contribute to the development of supply chain networks connecting the two regions.

## Transport Corridors

Land transport corridors, like the GMS or South Asia Subregional Economic Cooperation (SASEC) corridors, are regional road or rail links, usually connecting two gateway seaports. The regional corridors pass through adjacent countries and hence are cross-border transportation links. Multimodal corridors are corridors that combine different transport modes (land, canal, sea, or air).

The concept of corridors suggests the potential for large streams of end-to-end traffic similar to the expressway systems in the United States and Europe. However, such a vision is remote in South Asia and Southeast Asia given the obstacles to through traffic including long distances, low incomes, difficult terrain and climatic conditions, poor road conditions, time-consuming border crossing procedures, and lack of transit agreements. Improving land transit corridors would have a positive effect on trade. However, it would primarily reduce transport costs and increase domestic traffic. Evidence from the GMS transport corridors confirms that after improvement, growth in domestic traffic was higher than growth in international traffic (Gautrin 2014). Indeed, road improvements along corridors contribute to increases in intra-subregional trade even if they have little impact on trade and connectivity between South Asia and Southeast Asia. For example, improved border links in India, Myanmar, and Thailand may also benefit bilateral trade among neighboring countries, although there is scope for through trade from India to Thailand (ADB 2008).

ADB (2012) argues that, regarding the role of corridor development in developing international trade, it is better to focus on ports as "gateways" to such corridors. It follows that, since border crossing points are far from ports, their traffic would benefit least from corridor development. Therefore, the gateway approach to analyzing corridors

would focus on the feeder network to the port within an individual country and the sea trade emanating from that port rather than land-based international trade. This is reasonable in view of the fact that the bulk of cross-regional trade (and indeed all trade) is by sea. The key problem is to strike the right balance between sea trade and land trade when prioritizing projects. As described below, the priority corridors identified in this study link with major ports along the way, so they are consistent with either approach.

## Economic Corridors

The economic corridor concept relates to a holistic strategy that improves and enhances investments in transport, energy, and telecommunications in a coordinated way to enhance logistical efficiency. The aim is to develop an efficient transport system enabling goods and people to move around without excessive cost or delay. Such improvements can promote further economic growth and regional development, thus contributing to poverty reduction. In particular, it can aid the development of production networks. One example of a possible land–sea corridor is the Mekong–India Economic Corridor (MIEC), where the sea link is between Kolkata or Chennai in India and Dawei in Myanmar. However, this is notional, since ships can travel between any port. An economic corridor has the following characteristics:

- Covers a smaller, defined geographic space, straddling a central transport artery such as a road, rail line, or canal.
- Highlights physical planning of the corridor and its surrounding area to concentrate infrastructure development and achieve the greatest benefits (ADB 2013a).

The GMS initiated its economic corridor program in 1998 and identified three corridors: the East–West Economic Corridor (EWEC), the North–South Economic Corridor (NSEC), and the Southern Economic Corridor (SEC), although the latter two consist of multiple subcorridors (Figure 3.1). All six participating countries agreed to prioritize the EWEC connecting the Lao PDR, Myanmar, Thailand, and Viet Nam along a 1,600-kilometer (km) route. The program's aim is to strengthen the transport systems and logistics necessary to increase GMS cooperation and to improve economic links with other countries and regions. The GMS program has since developed a transport sector strategy covering 2006–2015 that identifies nine economic corridors along with priority transport infrastructure investments. ADB (2012) most recently reviewed this program. Notably, the Western Corridor and

the Northern Corridor extend to Tamu at the Myanmar–India border, making them candidates for land-based cross-regional connectivity. Figure 3.1 shows the current system of GMS corridors. The South Asian Association for Regional Cooperation (SAARC) does not yet have an economic corridor system, although De and Raychaudhuri (2013) studied the impacts of developing one along the SAARC Corridor 1.

**Figure 3.1: GMS Economic Corridors**


GMS = Greater Mekong Subregion.
Source: ADB (2012).

## 3.3 Highways

### Identifying Cross-Border Routes and Corridors

The development of highway corridors in the two regions is complex, given the number of institutions involved, including the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the Association of Southeast Asian Nations (ASEAN), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), the GMS, SAARC, SASEC, and others.[2]

**UNESCAP:** The Asian Land Transport Infrastructure Development Project, established by UNESCAP in 1992, is foremost among the existing pan-Asian infrastructure initiatives. Its highway pillar is the Asian Highway (AH). The AH network follows frameworks for internationally agreed routes and infrastructure standards.

The Asian Highway concept was formally proposed in 1959 as a network of 65,000 km in 15 member countries to promote the development of international road transport in Asia. Over the years, the Asian Highway network has become a set of existing national highway links connecting major cities to promote regional integration. The concept requires that the Asian Highway routes be upgraded and/or maintained to meet uniform standards. An intergovernmental agreement adopted in 2003 to finalize the formalization of the Asian Highway came into force in 2005.

Four primary Asian Highway routes cross east to west connecting South Asia and Southeast Asia, and hence are most relevant for this study: AH1 and AH2 linking India and Bangladesh with Myanmar and the rest of Southeast Asia; and AH15 and AH16 linking Thailand, the Lao PDR, and Viet Nam. These routes pass through Myanmar, the only land bridge between the two regions (UNESCAP 2010).

In South Asia, AH1 passes from Kolkata in India through Dhaka in Bangladesh and back into northeast India at Dawki and continuing to the border point with Myanmar at Moreh. AH2 takes a more northerly route through Nepal, then re-enters the "Chicken's Neck" area of northeast India passing through Siliguri, then turns south through Bangladesh to Dhaka, where it meets with AH1, and then follows the same route as AH1 back to northeastern India and ending at Moreh. The main disadvantage of these routes is that there is no transit agreement between India and Bangladesh, so the prospects for through traffic remain limited until the transit issue is resolved. This requires consideration of

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[2] See Chapter 8 for a detailed discussion of these institutions and their relationships.

an alternate route through the Chicken's Neck that avoids Bangladesh, for example, Kolkata–Siliguri–Guwahati–Shillong–Silchar–Imphal–Moreh. This route is longer than the AH1 route from Kolkata (1,558 km versus 1,102 km).

In Myanmar, AH1 passes from the Myanmar border through Tamu–Mandalay–Meiktila–Payagyi (Yangon)–Myawaddy (1,665 km) at the Thai border; and AH2 follows the same route through Mandalay, and then passes on a more northerly route through Meiktila–Kyaington–Tachilek at the Thai border. Subsequent pan-Asian infrastructure programs have identified networks that overlap significantly with the Asian Highway.

In Thailand, AH1 heads south from Mae Sot through Tak and Bangkok, then east to Cambodia. AH2 enters Thailand further north at Mae Sai, but then heads south to Tak to join up with AH1. AH16 heads east from Tak through Khon Kaen to the border at Mukdahan. AH1 then passes east through Phnom Penh and enters Viet Nam, running north along the coast to Ha Noi, and then into the PRC. AH2 passes through the Lao PDR and Viet Nam, terminating at Dong Ha in Viet Nam, where it intersects with AH1.

**ASEAN:** ASEAN member states adopted the Master Plan for ASEAN Connectivity in 2010. The flagship road transport infrastructure project within ASEAN is the ASEAN Highway Network (AHN), consisting of 23 designated routes and totaling about 38,400 km. The AHN aims to create a denser network of intra-regional highways through the expansion of the Asian Highway network within ASEAN member states. The AHN uses the same design standards as the Asian Highway network. The ASEAN Highway routes overlapping with the Asian Highway routes have the same route numbers as the Asian Highway routes. ASEAN has identified transit transport routes in the AHN to facilitate the transportation of goods in transit and to further integrate Asia's economies (ASEAN 2010).

**GMS:** The GMS program has established nine road corridor projects (ADB 2012). The two corridors most relevant for South Asian connectivity are the Southern Corridor originating from Ho Chi Minh City and Vung Tau in Viet Nam leading to Dawei Port in Myanmar, and the EWEC originating from Da Nang (Viet Nam) to Mawlamyine (Myanmar) leading to Yangon. This last corridor when connected to the GMS Western Corridor in Myanmar provides land access to South Asia through the Tamu/Moreh border crossing point.

The Southern Corridor follows AH1 between Bangkok and Ho Chi Minh City, and only the westward link to Dawei in Myanmar is different. Similarly, the EWEC tracks AH16 between Dong Ha and Tak, and AH1 between Tak and Tamu, except that it bypasses Mandalay. This

deficiency has been recognized (ADB 2012) and may be remedied in future revisions of the corridor plans. This would also connect it with the Northern Corridor at Mandalay that leads to Kunming in the PRC.

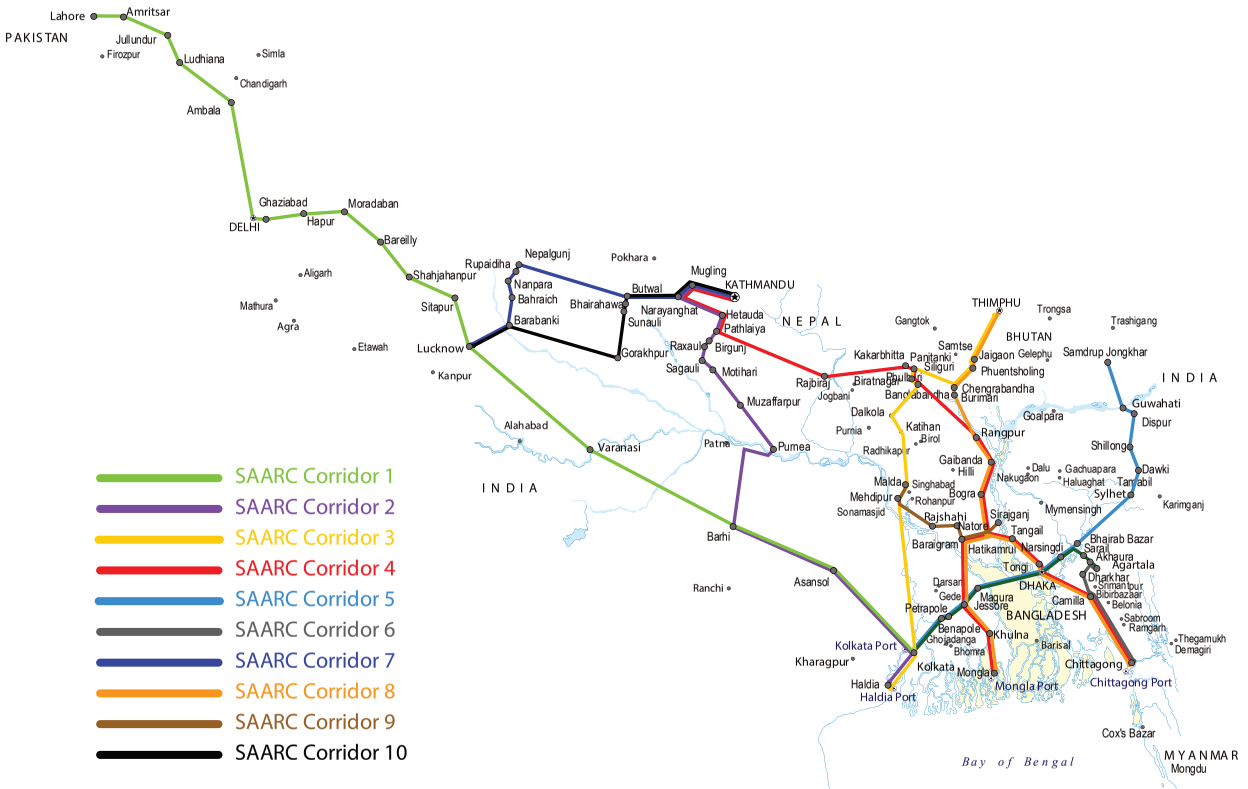
A new proposed GMS Corridor is the Myanmar–Lao PDR–Viet Nam Trilateral East–West Corridor. In Myanmar, it would extend 1,340 km from Kyaukpyu to Kyainglat and overlap with the AH2. It would then extend 372 km in the Lao PDR from the border bridge to Tai Chan, and another 561 km in Viet Nam from the border to Hai Phong. The Lao PDR–Myanmar Friendship Bridge will connect Xieng Kok in the Lao PDR to Kyaing Lap in Myanmar over the Mekong River.

**SAARC:** The SAARC multimodal transport strategy report identifies 10 road transport corridors connecting Bangladesh, Bhutan, India, Nepal, and Pakistan (SAARC Secretariat 2006). However, since the report only focuses on intra-regional connectivity, the corridors do not include routes to the border with Myanmar. Corridor 5, passing from Kolkata through Bangladesh into northeast India (Kolkata–Petrapole/Benapole–Dhaka–Akhaura–Shillong–Guwahati), is most relevant for this study. This follows the AH1 route. Corridor 2 connects Nepal with Kolkata and corridor 3 connects Bhutan with Kolkata. Corridor 4 connects Nepal with Chittagong and corridor 5 connects Bhutan with Chittagong. Corridors 1, 4, and 8 face the obstacle of the lack of a fully-fledged transit agreement between India and Bangladesh. Figure 3.2 shows the current SAARC corridors that also correspond to those of SASEC.

**SASEC:** SASEC also follows the SAARC corridor definitions. SASEC is implementing hard and soft projects along these corridors, particularly corridors 4 and 8. For example, SASEC initiatives link Nepal to Bangladesh and Bhutan by strengthening road networks in those three countries, as well as to northeastern India. SASEC also supports an Indian government initiative to upgrade old roads and build new ones in the northeast, improving connectivity in this part of India, where movement is hindered by hilly terrain and heavy rains (ADB 2013b).

**BIMSTEC:** The above-mentioned projects also tie in with those identified in the BIMSTEC Transport Infrastructure and Logistics Study (ADB 2008) that forms the core of transport planning in BIMSTEC and was endorsed by the BIMSTEC ministers in 2009. The BIMSTEC program has identified 14 road corridors, some of which overlap with the Asian Highway routes, especially AH1 and AH2. BIMSTEC is unique among regional institutions in that it includes countries in both South Asia and Southeast Asia. As a result, BIMSTEC explicitly promotes the development of border link roads among member countries, especially those bordering Myanmar.

## Figure 3.2: SAARC Transport Corridors




SAARC = South Asian Association for Regional Cooperation.
Source: ADB (2013b).

Under BIMSTEC, the India–Myanmar–Thailand Trilateral Highway (IMTTH) project was conceptualized in 2002 to provide a 1,360 km road linking northeast India and Southeast Asia. The road will connect Moreh on the Indian side in Manipur with Mae Sot in Thailand, passing through Bagan in central Myanmar. (Like the Western Corridor, it bypasses Mandalay, although some maps show an alternate route through Mandalay.) The alignment of the IMTTH falls within the AH1 (De 2011).

The development of the IMTTH has been slow due to human resources, technology, advisory service, and funding constraints. India and Thailand have upgraded some of the road links but much work, particularly in the border regions of Myanmar, is incomplete.

A deepwater port at Dawei and the Dawei–Kanchanaburi road link are also to be developed in one package together with the trilateral highway project. The project, initially launched under the Mekong–Ganga Cooperation program, was later incorporated into the transport sector of BIMSTEC but it has not yet been executed (Htun et al. 2011).

**Kaladan Multimodal Transit Transport Project:** The Indian sponsored multimodal Kaladan project provides access to northeast India via Sittwe Port in western Myanmar, an inland waterway development between Sittwe and Kaletwa in Myanmar along the Kaladan river, and a new highway (129 km) from Kaletwa to the India–Myanmar border at Lawngtlai in Mizoram (De and Ray 2013). The project is not included in existing corridor programs, but is based on a bilateral agreement between India and Myanmar. However, it does relatively little to promote connectivity between South Asia and Southeast Asia, since it passes through a relatively isolated part of Myanmar.

**Mekong–India Economic Corridor:** One major proposal for cross-regional economic corridors, developed under the auspices of the East Asia Summit, is the MIEC (proposed in ERIA 2009). Its objective is to strengthen the manufacturing base in Myanmar, Thailand, Cambodia, and Viet Nam, and to expand these countries' trade with the rest of the world, including India. The MIEC would link Chennai with Ho Chi Minh City, and two important key missing links are a deepwater port in Dawei, Myanmar, and a highway from Dawei to the Thai border. The new route would cut travel distances from India to Mekong countries from 700 km to 2,000 km. It would also require special economic zones and supporting utilities to help establish a new sea route to India, the Middle East, and Europe. This proposal was extensively analyzed in Kimura, Kudo, and Umezaki (2011). ASEAN leaders agreed to promote the completion of MIEC in the Master Plan on ASEAN Connectivity (ASEAN 2010).

## Routes Considered in the Report

### South Asia

Taking the above into consideration, there are three possible road corridors that could be suggested for the South Asia side: the Kolkata–Bangladesh Corridor and the Kolkata–Chicken's Neck Corridor (via Moreh or Mobu). Table 3.1 shows the possible corridors.[3]

**Table 3.1: South Asian Possible Road Corridors**

| Origin | Destination | Length (km) | Road |
|---|---|---|---|
| **Kolkata–Chicken's Neck Corridor Manipur** | | | |
| Kolkata | Siliguri (West Bengal) | 560 | NH34, NH31 |
| Siliguri | Guwahati (Assam) | 485 | NH31 |
| Guwahati | Nagaon | 128 | NH37 |
| Nagaon | Silchar (Assam) | 285 | NH54 |
| Silchar | Imphal (Manipur) | 160 | NH137 |
| Imphal | Moreh BCP (Manipur) | 95 | NH39, AH2 |
| **Total** | | **1,713** | |
| **Kolkata–Bangladesh Corridor** | | | |
| Kolkata | Benapole (Bangladesh) | 80 | NH34, NH35 |
| Benapole | Dhaka | 355 | N706, N7, N5 |
| Dhaka | Agartala (Tripura) | 155 | N1, N102 |
| Agartala | Silchar (Assam) | 267 | NH44 |
| Silchar | Imphal (Manipur) | 160 | NH137 |
| Imphal | Moreh BCP (Manipur) | 95 | NH39, AH2 |
| **Total** | | **1,112** | |
| **Kolkata–Chicken's Neck Corridor Mizoram** | | | |
| Kolkata | Siliguri (West Bengal) | 560 | NH34, NH31 |
| Siliguri | Guwahati (Assam) | 485 | NH31 |
| Guwahati | Nagaon | 128 | NH37 |
| Nagaon | Silchar (Assam) | 285 | NH54 |
| Silchar | Aizwal (Mizoram) | 140 | NH54 |
| Aizwal | Lawngtlai (Mizoram) | 150 | NH54 |
| Lawngtlai | Mobu BCP (Myanmar) | 117 | New road |
| **Total** | | **1,865** | |

BCP = border crossing point; km = kilometer.
Source: Adapted from Gautrin (2014).

[3] Gautrin (2014) discusses additional candidate corridors and the considerations that led to them being eliminated from consideration.

The Bangladesh Corridor has the advantage of providing a passage for Bangladesh trade with Southeast Asia as well as being shorter (450 km less) than the Chicken's Neck Corridor. It follows the AH1 route, except that it re-enters northeast India at Agartala rather than Dawki. The second and third routes do not correspond to any major existing corridor definitions, but provide alternatives to crossing Bangladesh, thereby avoiding the transit problem. They also provide through connections for the Chicken's Neck region.

The road link between Chittagong and Dhaka cannot be considered as a main corridor but could qualify as a feeder corridor, which would be useful if a Bangladesh–India transit agreement is made. Bangladesh has not confirmed transit facilities to northeast Indian goods and there are no reasons to expect significant trade volumes between Chittagong Port and Myanmar and the rest of Southeast Asia.

## Southeast Asia

Road corridors leading to South Asia from Southeast Asia are assumed to be combinations of GMS corridors. The two obvious GMS corridors for South Asian connectivity are the Southern Corridor (SC) originating from Ho Chi Minh City and Vung Tau leading to Dawei Port in Myanmar and the EWEC originating from Da Nang (Viet Nam) to Mawlamyine (Myanmar) leading to Yangon. The EWEC, when connected to the GMS Western Corridor in Myanmar, provides land access to South Asia through the Tamu/Moreh border crossing point (BCP). We refer to this extended corridor as the India–EWEC. Myanmar authorities would like the corridor to pass through Mandalay. This adjustment is warranted as Mandalay, besides being the second largest city, is also a strategic transportation node with the PRC and Thailand. This would place the India–EWEC on AH1 between Tamu in Myanmar and Tak in Thailand, and on AH16 between Tak and Dong Ha in Viet Nam. This corresponds to Corridor 1 in Table 3.2.

An interesting corridor consists of combining the GMS SC and EWEC corridors to give a route from Ho Chi Minh City to Myawaddy/Mae Sot BCP passing through Bangkok and Tak and then connecting through Myanmar (Ho Chi Minh City–India Corridor in Table 3.2). This route has more economic potential than the EWEC even if the distance is longer by about 200 km.

There are two possible routes to connect Ho Chi Minh City to Dawei in Myanmar. The first and more common is the GMS Southern Corridor through Phnom Penh and Bangkok and the second one is through the Mekong delta along the GMS South Coastal Corridor. The first alternative follows the AH1 route from Ho Chi Minh City to Bangkok. Of course, this corridor can be linked with the India–EWEC

## Table 3.2: Southeast Asian Possible Road Corridors

| Origin | Destination | Length (km) | Road |
|---|---|---|---|
| **1. EWEC–India Corridor** | | | |
| Da Nang (Viet Nam) | Dong Ha | 170 | V1 |
| Dong Ha (Viet Nam) | Lao Bao (BCP) | 80 | V9 |
| Dansavan (Lao PDR) | Savannakhet (Lao PDR) | 253 | RN 9 |
| Savannakhet | Khon Kaen (Thailand) | 210 | T2042, T213 |
| Khon Kaen | Phitsanulok (Thailand) | 280 | T12 |
| Phitsanulok | Mae Sot (BCP) | 215 | T12, T105 |
| Myawaddy (BCP) | Kawkareik (Myanmar) | 60 | NH85 |
| Kawkareik | Eindu | 70 | NH85 |
| Eindu | Tathon | 60 | NH85 |
| Tathon | Bago | 150 | NH85 |
| Bago | Nay Pyi Taw | 270 | NH1 |
| Nay Pyi Taw | Mandalay | 252 | NH1 |
| Mandalay | Monywa | 99 | 71 |
| Monywa | Yagyi | 62 | 71 |
| Yagyi | Kalewa | 92 | 71 |
| Kalewa | Tamu (BCP) | 211 | NH 39 |
| **Total** | | **2,534** | |
| **2. Ho Chi Minh City–India Corridor** | | | |
| Ho Chi Minh City/ Vung Tau | Moc Bai (BCP) | 80 | N1, NH22 |
| Bavet (BCP) | Phnom Penh (Cambodia) | 158 | RN1 |
| Phnom Penh | Poipet (BCP) | 365 | RN5 |
| Aranyaprathet (BCP) | Bangkok (Thailand) | 324 | NH33, NH314, N 7,4 |
| Bangkok | Tak | 423 | EHWY13 and 1 |
| Tak | Mae Sot (BCP) | 78 | NH105 |
| Myawaddy (BCP) | Kawkareik (Myanmar) | 60 | NH85 |
| Kawkareik | Eindu | 70 | NH85 |
| Eindu | Tathon | 60 | NH85 |
| Tathon | Bago | 150 | NH85 |
| Bago | Nay Pyi Taw | 270 | NH1 |
| Nay Pyi Taw | Mandalay | 252 | NH1 |
| Mandalay | Monywa | 99 | 71 |
| Monywa | Yagyi | 62 | 71 |
| Yagyi | Kalewa | 92 | 71 |
| Kalewa | Tamu (BCP) | 211 | NH39 |
| **Total** | | **2,754** | |

*continued on next page*

*Table 3.2 continued*

| Origin | Destination | Length (km) | Road |
|---|---|---|---|
| **3. Ho Chi Minh City (Southern Corridor)–Dawei Port Corridor** | | | |
| Ho Chi Minh City/ Vung Tau | Moc Bai (BCP) | 80 | N1, NH22 |
| Bavet (BCP) | Phnom Penh (Cambodia) | 158 | RN1 |
| Phnom Penh | Poipet (BCP) | 365 | RN5 |
| Aranyaprathet (BCP) | Bangkok (Thailand) | 324 | NH33, NH314, N 7,4 |
| Bangkok | Bank Yai | 10 | Urban roads |
| Bank Yai | Kanchanaburi | 95 | Expressway |
| Kanchanaburi | Phu Nam Ron (BCP) | 80 | Planned new road |
| Phu Nam Ron | Dawei (Myanmar) | 132 | Planned new road |
| **Total** | | **1,244** | |
| **4. Ho Chi Minh City (South Coastal Corridor)–Dawei Port Corridor** | | | |
| Ho Chi Minh City | Rach Gia (Viet Nam) | 192 | N1,NH63,61, NH80 |
| Rach Gia | Ha Tien (BCP) | 105 | NH80 |
| Preak Chak (BCP) | Kampot (Cambodia) | 39 | NH 33 |
| Kampot | Cham Yeam (BCP) | 210 | RN3, RN4, NH48 |
| Hat Lek (BCP) | Chantaburi (Thailand) | 154 | N3 |
| Chantaburi | Bangkok | 218 | N3 |
| Ban Yai (Bangkok) | Kanchanaburi | 95 | Expressway |
| Kanchanaburi | Phu Nam Ron (BCP) | 80 | Planned new road |
| Phu Nam Ron | Dawei (Myanmar) | 132 | Planned new road |
| **Total** | | **1,225** | |
| **5. Kaladan Corridor to India** | | | |
| Sittwe Port (Myanmar) | Paletwa | 158 | By inland waterway or road |
| Paletwa | Kaletwa (BCP) | 129 | New road |
| **Total** | | **287** | |

BCP = border crossing point; EWEC = East–West Economic Corridor.
Source: Adapted from Gautrin (2014).

corridor via the North–South Corridor (Bangkok–Tak), also on AH1. These correspond to Corridors 3 and 4 in Table 3.2.

The Indian-sponsored multimodal Kaladan project provides access to northeast India via Sittwe Port in western Myanmar, inland waterway development between Sittwe and Kaletwa in Myanmar along the Kaladan river, and a highway (129 km) from Kaletwa to the India–Myanmar border in Mizoram (De and Ray 2013) (Table 3.2).

It should be noted that Corridors 1 and 2 do not pass through Yangon. However, Bago is very close to Yangon, so the routes would

effectively include Yangon. Therefore, these corridor definitions are not inconsistent with putting substantial emphasis on improved connectivity with Yangon Port.

India and Myanmar have mentioned a Ha Noi/Hai Phong–India Corridor. Two options could be considered, through Luang Prabang and Vinh or through Dien Bien Phu. Both routes would be convoluted and major road rehabilitation and construction of missing links would be needed, especially in the Lao PDR. The GMS administration prefers the option through Dien Bien Phu. However, these routes are not considered further here due to the difficulties involved (Gautrin 2014).

## Status of Road Networks

AH1 and AH2 are the principal Asian Highway routes connecting South Asia and Southeast Asia, and correspond to the corridors selected for this study. These routes pass through Myanmar, the only land bridge between the two regions. UNESCAP (2010) identified the following bottlenecks:

- In India, out of the total of 431 km that are class III or below on the Asian Highway, 57% (245 km) is on AH1 and 43% (186 km) is on AH2.[4]
- In Bangladesh, out of the total of 88 km that are class III or below on the Asian Highway, 36% (32 km) is on AH1 while 63% (56 km) is on AH2.
- In Myanmar, a total of 1,064 km are class III or below on the Asian Highway—50% (536 km) on AH1 and 50% (528 km) on AH2. The total for Myanmar represents 51% of the total length of the Asian Highway in South Asia and Southeast Asia that is class III or below, indicating scope for improving its road network.

UNESCAP has identified road links that are class III or below (Table 3.3). Myanmar accounts for about two-thirds of the total length that are class III or below.

According to Kimura, Kudo, and Umezaki (2011), the following routes are critical to enhancing connectivity between Myanmar and northeast India:

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[4] Class III roads are defined as having two lanes, a width of 3–3.25 meters and double bituminous treatment, which is regarded as the minimum acceptable standard. The bottleneck segments are those classified as class III or below, which have some segments of class III and the rest below standard, or below class III (UNESCAP 2006, 2010).

## Table 3.3: Bottlenecks on Asian Highways 1 and 2 Connecting South Asia and Southeast Asia

| Country | Asian Highway Route No. | Asian Highway Design Standard | Province/ State | City/Town at Start Point | City/Town at End Point | Section Length (km) |
|---|---|---|---|---|---|---|
| India | AH1 | III, below III | Assam | Dimapur | Nagaon | 162 |
| | AH1 | III, below III | Meghalaya | Shillong | Dawki (border with Bangladesh) | 83 |
| | AH2 | below III | West Bengal | Border with Bangladesh (Phulbari) | Phulbari | 2 |
| | AH2 | III, below III | West Bengal | Siliguri | Kankarvita (border with Nepal) | 47 |
| | AH2 | III, below III | Northeast India | Banbasa (border with Nepal) | Rampur | 137 |
| | | | | | **Subtotal** | **431** |
| Bangladesh | AH1 | below III | Dhaka Division | Mawa | Charjanajat | 5 |
| | AH1 | below III | Dhaka Divisions | Bhatiapara | Kalna Ferru Ghat | 3 |
| | AH1 | III, below III | Dhaka/ Khulna Divisions | Kalna Ferru Ghat | Narail | 24 |
| | AH2 | III, below III | Rajshahi Division | Panchagarh | Banglabandha (border with India) | 56 |
| | | | | | **Subtotal** | **88** |
| Myanmar | AH1 | III, below III | Kayin | Myawaddy (border with Thailand) | Kawkareik | 62 |
| | AH1 | below III | Kayin | Kawkareik | Paan | 95 |
| | AH1 | III, below III | Sagaing | Chaung-U | Pale | 84 |
| | AH1 | below III | Sagaing/ Magway | Pale | Gangaw | 135 |
| | AH1 | below III | Magway/ Sagaing | Gangaw | Kalemyo | 160 |
| | AH2 | below III | Shan | Kyainton | Takaw | 190 |
| | AH2 | below III | Shan | Takaw | Loilem | 177 |
| | AH2 | III, below III | Shan | Loilem | Taunggyi | 91 |
| | AH2 | III, below III | Shan | Taunggyi | Kalaw | 70 |
| | | | | | **Subtotal** | **1,064** |
| **Grand Total** | | | | | | **1,583** |

km = kilometer.

Source: UNESCAP. Asian Highway Database 2010: AH Network in Member Countries. http://www.unescap.org/ttdw/common/tis/ah/Member%20countries.asp (accessed December 2012).

- Moreh/Tamu: This is the main route for border trade between India and Myanmar and overlaps with AH1 and AH2. The section from Palel to Moreh (60 km) on the Indian side is single-lane and mostly mountainous. The surface is paved but long sections between Palel and Moreh are in disrepair.
- Zolkawtar/Rhee: This route could be the shortest land route connecting Myanmar and Kolkata through northeast India and Bangladesh if the section from Aizawl to Agartala is improved and transit trade through Bangladesh is realized. However, it is lower priority than Moreh/Tamu in view of the low level of traffic and the lack of a transit agreement through Bangladesh.
- Nampong/Pangsu (Stilwell Road): Starting from Ledo in India, the road weaves through upper Myanmar to end in Yunnan Province, PRC. Currently, the border is not yet opened for official border trade. Therefore, it can be regarded as not being a priority.

## Priority Highway Corridors and Projects

Based on the current conditions of the land corridors and ports described above, this section evaluates potential highway corridors and projects that could contribute to improving connectivity between South Asia and Southeast Asia. Some projects are more realistic than others and have a better chance of being economically justifiable. Most cost estimates came from Asian Development Bank documents. When information was missing, Gautrin (2014) provided cost estimates based on data from comparable projects.

This study used a two-stage approach to identify priority highway projects. First, the study selected priority "port-to-port" corridors based on a set of scoring criteria, including total distance from gateway port to gateway port, number of border crossing points, overall quality of road infrastructure, level of security, resettlement and land acquisition problems, and road improvements costs. Second, the study identified candidate projects on each priority corridor from existing pipelines and scored them on connectivity rationale, traffic and trade intensity, project recognition and acceptance, and project preparedness, socio-environmental problems, and extent of benefit sharing among participating countries (Gautrin 2014).

The three highest scoring corridors were (in order): the Kolkata–Ho Chi Minh City corridor through the Chicken's Neck, the Chennai–Dawei–Ho Chi Minh City corridor and the Chittagong–Ho Chi Minh

City corridor.[5] The Chennai–Dawei–Ho Chi Minh City corridor does not compete with the other corridors and meets different connectivity objectives. The Kolkata–Ho Chi Minh City corridor for the most part follows the Asian Highway AH1 route from Guwahati in India to Ho Chi Minh City. However, the Kolkata–Guwahati section follows the Chicken's Neck route through northeast India rather than the AH1, which cuts through Bangladesh, because of the absence of a transit agreement between India and Bangladesh. The AH network is also part of the ASEAN Master Plan for connectivity (ASEAN 2010), so this proposed corridor helps to achieve the objectives of that plan as well. The Chennai–Dawei–Ho Chi Minh City corridor follows the Mekong–India Economic Corridor (MIEC), which is also part of the ASEAN Plan for connectivity (ASEAN 2010).

Within the GMS, the Kolkata–Ho Chi Minh City corridor follows the GMS Western Corridor in Myanmar from Tamu at the Indian border to Mawlamyine in the east, except that it diverts through Mandalay in central Myanmar. It then picks up the EWEC from to Tak in Thailand, follows the North–South Corridor from Tak to Bangkok, and then follows the southern branch of the Southern Corridor to Ho Chi Minh City. This route also follows the northerly branch of the India–Myanmar Trilateral Highway from Tamu in the West to the Thai border in the East. The alternative route from Tak to Da Nang continues on the EWEC.

For the Kolkata–Ho Chi Minh City corridor through the Chicken's Neck, the full cost of rehabilitating the northeast Indian corridor at $1.9 billion accounts alone for two-thirds of the total corridor project cost. Most of the contracts along this route have already been allocated but less than 20% has been completed and it is expected that only 50% will be completed by 2017. If that cost was removed, arguing that rehabilitation is already ongoing, the net cost for the Kolkata–Ho Chi Minh City corridor would be only $1.1 billion for an overall distance of 4,430 km. Total project costs on all corridors are of the same order of magnitude; an exception is the Kolkata–Ho Chi Minh City through Bangladesh corridor since no road improvement in Bangladesh is included.

Table 3.4 shows the top highway projects based on the analysis of Gautrin (2014). These projects and the priority highway corridors identified in this report are also shown in Figure 3.3.

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[5] ADB (2014) also identifies the Kolkata–Bangkok–Laem Chabang corridor via the Chicken's Neck as the most dominant prospective trade route for connecting the two regions.

**Figure 3.3: Priority Highway Corridors and Projects**


Source: Compiled by the Asian Development Bank.

**Table 3.4: Priority Road Investment Projects**

| Country | Road Project | Distance (km) | Cost ($ million) |
|---|---|---|---|
| India | Imphal–Moreh | 95 | 160 |
| | Chennai Port elevated expressway | NA | NA |
| Myanmar | Eindu–Kawkareik | 70 | 150 |
| | Kawkareik–Myawaddy | 46 | 37 |
| | Yagyi–Kalewa | 186 | 110 |
| | Kalewa–Tamu | 160 | 245 |
| | Thilawa–East Dagon | 33 | 41 |
| | East Dagon–NR1 Road | 31 | 58 |
| Thailand | Myawaddy–Mae Sot | 17 | 55 |
| | Mae Sot–Tak | 78 | 90 |
| Cambodia | Aranyaprathet–Poipet | 10 | 40 |
| **Total** | | **726** | **986** |

km = kilometer; NA = not available.
Sources: Gautrin (2014); ADB (2013c, 2014).

All the priority projects (except those related to Thilawa Port in Myanmar) are either roads connecting to the BCPs or improvements at the BCP itself, and all are on the Kolkata–Ho Chi Minh City corridor. The rationale for implementing such projects is simple. Roads leading to BCPs have been neglected and are not maintained properly. In India, the Imphal–Moreh road is below standard and in poor condition. The same applies to the roads in Myanmar. For example, on the Tamu–Kalewa road, financed and built by India 10 years ago, bridges were not included in the contract. The road has deteriorated and full rehabilitation is now needed but security concerns could delay implementation. Another set of projects relate to improving the link between Myanmar and Thailand. In Myanmar, poor maintenance and bridge reconstruction make improvements necessary. In Thailand, road projects along the corridor are intended to ensure a seamless four-lane road network.

## 3.4 Railroads

### Railroad Networks and Corridors

The situation for rail corridors is different from that of roads. Whereas road links mostly exist and mainly need upgrading, many rail links are

missing. There is currently no rail connectivity between South Asia and Southeast Asia and there is no adequate connectivity within the GMS or within South Asia. There are, however, plans to construct the missing links within the GMS and South Asia (SASEC) and also to connect the two regions. The rail corridors described below are based on these plans. It should be noted that providing full rail connectivity will be costly and no reliable time schedule for implementation is available.

**UNESCAP:** The Trans-Asian Railway (TAR) is UNESCAP's counterpart to the Asian Highway in the rail transport subsector. Like the Asian Highway, the TAR networks follow frameworks for internationally agreed routes and infrastructure standards. UNESCAP initiated the TAR network in the 1960s with the objective of providing a continuous 14,000 km rail link between Singapore and Istanbul. The TAR program promotes railways as an energy-efficient transport mode to enhance the operational efficiency, economic relevance, and commercial utilization of Asia's rail transport infrastructure. The TAR is envisioned to alleviate the geographic isolation of the landlocked TAR members by offering them an advanced land transportation system linked to sea routes using the ports of other member countries.

The Intergovernmental Agreement on the Trans-Asian Railway Network that came into force in 2009, sets forth a framework for the coordinated development of rail routes of international importance and their efficient operationalization. The signatories of the agreement identified the network links based on potential to serve immediate transport needs, and to support international trade within the UNESCAP region as well as between Asia and Europe.

The main routes of significance for connectivity between South Asia and Southeast Asia are TAR-S1 and TAR-S2. From the west, TAR-S1 follows the route Kolkata–Dhaka–Mahishasan (northeast India)–Tamu–Mandalay–Ruili (PRC)–Kunming. However, TAR-S1 faces the problem of transit across Bangladesh. TAR-S2 runs Mandalay–Bago (Yangon)–Mawlamyine–Nam Tok–Bangkok. Although TAR-S2 terminates in Bangkok, UNESCAP maps show an extension through Phnom Penh and Ho Chi Minh City. The TAR system recognizes an alternative subregional route passing through the Chicken's Neck of Mughalsarai–Siliguri–Lumding–Tamu (UNESCAP 1999).

**ASEAN:** The ASEAN flagship railway transport infrastructure project is the Singapore–Kunming Rail Link (SKRL). The project was proposed at the Fifth ASEAN Summit in December 1995 and targeted for completion by 2015. It covers several routes through Singapore–Malaysia–Thailand–Cambodia–Viet Nam–PRC (Kunming), and Thailand–Myanmar and Thailand–Lao PDR spur lines (ASEAN 2010). The Mandalay–Bangkok

segment lies on TAR-S2, while the Mandalay–Lashio segment lies on TAR-S1.

**GMS:** The GMS gives less emphasis to railways than to roads. The latest GMS railway strategy document however, focuses primarily on analyzing options for connecting Bangkok, Vientiane, Ho Chi Minh City, Ha Noi, Kunming, and Nanning (ADB 2011). Although it mentions possible projects for connecting Thailand and Myanmar via the Three Pagodas Pass, they are not included in the analysis. The GMS reports do not specify rail corridors, but follow the Master Plan on ASEAN Connectivity that focuses on the SKRL (ASEAN 2010). Its investment projects also align with the major economic corridors, especially the Southern Corridor and the East–West Economic Corridor, including its extension to the Western Corridor in Myanmar. The Mandalay–Bangkok segment lies on TAR-S2, and the extension of this through to Ho Chi Minh City corresponds to the extension on UNESCAP maps.

**SAARC:** SAARC has identified five rail corridors (SAARC 2006). The ones most relevant for South Asia–Southeast Asia connectivity are Corridor 1, Lahore–Delhi–Kolkata–Dhaka–Mahishasan-Imphal, and Corridor 3, Birgunj (Nepal)–Raxaul–Kolkata/Haldia. Corridor 1 corresponds to TAR-S1 and passes through Bangladesh, raising the issue of transit rights.

**SASEC:** SASEC rail corridors follow the SAARC definitions. SASEC investments in rail—currently worth more than $670 million—are working to ensure compatibility in railway gauges, streamlined customs procedures for quicker border crossings, and other measures to improve cross-border movement of people and goods (ADB 2013b).

**BIMSTEC:** The BIMSTEC Transport Infrastructure and Logistics Study (ADB 2008) forms the core of transport planning in the BIMSTEC area and was endorsed by the BIMSTEC ministers in 2009. The BIMSTEC program has identified four rail corridors, some of which overlap with the TAR routes.

**Delhi–Ha Noi Railway Link:** This link is a major project in promoting ASEAN–India economic integration. The project aims to:

- link Manipur with India's main railway corridor;
- link Imphal with Kale in Myanmar (about 212 km);
- link Thanbyuzayat with the Three Pagodas Pass in Thailand (110 km); and
- re-establish and renovate railway networks in Myanmar.

India is planning a New Delhi–Ha Noi rail link with two possible routes. Route I will connect Ha Noi via Myanmar, Thailand, and Cambodia. In Route II, the link is diverted to Bangkok via Ye and a newly constructed portion between Ye and Dawei in Myanmar, then to Ha Noi through Thailand and the Lao PDR. In both routes, the proposed link from Silchar (India) to Thanbyuzayat is common. A preliminary study was done in 2006 but details of both routes are not available due to lack of data on railway systems in different countries.

## South Asian Rail Corridors

Similar to that for roads, the approach of this study is to identify through "port-to-port" railroad corridors that connect the two regions. Table 3.5 shows possible South Asian rail corridors to connect with Southeast Asia. As noted, some of the links are not yet constructed. The right column shows the diversity of gauges within the region, which complicates the task of promoting connectivity.

The first two corridors start in Siliguri and pass through the Chicken's Neck to avoid transit through Bangladesh. Since the distance from Kolkata to Siliguri is 698 km, Kolkata–Moreh by rail through the Chicken's Neck is 1,626 km, almost twice as long as transiting through Bangladesh (898 km). Chittagong is well placed to serve the northeast Indian states and even part of Myanmar as shown by Corridor 4 in the table with Chittagong–Myanmar being only 625 km.

**Table 3.5: South Asian Possible Rail Corridors**

| Origin | Destination | Length (km) | Railway |
|---|---|---|---|
| **1. Assam–Manipur Corridor** | | | |
| Kolkata | Siliguri | 575 | West Bengal Railway |
| Siliguri (West Bengal, India) | Kokrajhar (Assam) | 220 | Northeastern Frontier Railway (NFR broad gauge) |
| Kokrajhar | Dispur (Guwahati) | 200 | NFR (broad gauge) |
| Dispur | Lumding | 180 | NFR (broad gauge) |
| Lumding | Katigara (Silchar) | 140 | NFR (meter gauge) |
| Katigara | Jiripam (Imphal, Manipur) | 70 | NFR (meter gauge) |
| Jiripam | Moreh (BCP–Myanmar) | 118 | New line |
| **Total** | | **1,503** | |

*continued on next page*

*Table 3.5 continued*

| Origin | Destination | Length (km) | Railway |
|---|---|---|---|
| **2. Assam–Mizoram Corridor** | | | |
| Kolkata | Siliguri | 575 | West Bengal Railway |
| Siliguri (West Bengal, India) | Kolkajhar (Assam) | 220 | Northeastern Frontier Railway (NFR broad gauge) |
| Kokrajhar | Dispur (Guwahati) | 200 | NFR (broad gauge) |
| Dispur | Lumding | 180 | NFR (broad gauge) |
| Lumding | Katigara (Silchar) | 140 | NFR (meter gauge) |
| Katigara | Kolashib (Mizoram) | 90 | NFR (meter gauge) |
| Kolashib | Darlong (BCP–Myanmar) | 148 | New line |
| **Total** | | **1,553** | |
| **3. Kolkata–Dhaka–Myanmar** | | | |
| Kolkata | Darshana (BCP Bangladesh) | 114 | IR (broad gauge) |
| Darshana | Dhaka | 245 | BR (broad gauge) |
| Dhaka | Akhaura | 124 | BR (meter gauge) |
| Akhaura | Agartala (Tripura, India) | 15 | New line |
| Agartala | Manu | 82 | NFR (meter gauge) |
| Manu | Katigara (Assam) | 130 | NFR (meter gauge) |
| Katigara | Jiripam (Manipur) | 70 | NFR (meter gauge) |
| Jiripam | Moreh (BCP–Myanmar) | 118 | New line |
| **Total** | | **898** | |
| **4. Chittagong Rail Corridor** | | | |
| Chittagong | Akhaura | 210 | BR (meter gauge) |
| Akhaura | Agartala | 15 | BR (meter gauge) |
| Agartala | Manu | 82 | NFR (meter gauge) |
| Manu | Katigara (Assam) | 130 | NFR (meter gauge) |
| Katigara | Jiripam (Imphal, Manipur) | 70 | NFR (meter gauge) |
| Jiripam | Moreh (BCP–Myanmar) | 118 | New line |
| **Total** | | **625** | |

BCP = border crossing point; BR = Bangladesh Railways; IR = Indian Railways; NFR = Northeastern Frontier Railway.

Source: Adapted from Gautrin (2014).

## Southeast Asian Rail Corridors

As mentioned above, rail corridors are not yet properly functioning in Southeast Asia since all the national railways operate in a disjointed way. Railway integration has long been an objective of ASEAN under the SKRL. The rail connection between South Asia and Southeast Asia would require first that Southeast Asian rail networks be connected. Constructing missing rail lines through mountainous terrain will be expensive. For these reasons only a few rail corridors are likely to be feasible to constitute a link between South Asia and Southeast Asia through Myanmar. The only logical rail corridors would be either with Thailand through the Three Pagodas Pass or through Yunnan Province.

Possible rail corridors offering links with South Asia are outlined in Table 3.6. Corridor 1 corresponds to TAR-S1 between Kolkata and Mandalay and TAR-S2 between Mandalay and Ho Chi Minh City. Corridor 2 corresponds to TAR-S1. Corridor 3 follows TAR-S2 to Bangkok, then diverges to Dawei in Myanmar. Gautrin (2014) also discusses two possible rail corridors between Ha Noi and Tamu passing through the Lao PDR, but argues they are too costly to merit early consideration.

**Table 3.6: Southeast Asian Possible Rail Corridors**

| Origin | Destination | Length (km) | Railway |
|---|---|---|---|
| **1. Ho Chi Minh City–India Corridor** | | | |
| Ho Chi Minh City (Viet Nam) | Loc Ninh | 129 | New line |
| Loc Ninh (Viet Nam) | Phnom Penh (Cambodia) | 254 | New line |
| Phnom Penh | Poipet (BCP) | 386 | Cambodia North line |
| Aranyaprathet (BCP) | Bangkok | 260 | |
| Bangkok | Nak Tok (Thailand) | 208 | |
| Nak Tok | BCP Myanmar (Three Pagodas Pass) | 153 | New line |
| BCP (Myanmar) | Thanbyuzayat | 110 | New line |
| Thanbyuzayat | Mawlamyine | 170 | |
| Mawlamyine | Bago | 215 | |
| Bago | Mandalay | 615 | |
| Mandalay | Kale | 539 | |
| Kale | Tamu | 127 | New line |
| **Total** | | **3,166** | |

*continued on next page*

*Table 3.6 continued*

| Origin | Destination | Length (km) | Railway |
|---|---|---|---|
| **2. Ha Noi–India (through Yunnan Province) Corridor** | | | |
| Hai Phong | Ha Noi | 102 | |
| Ha Noi | Lao Cai (BCP Yunnan Province) | 260 | |
| Lao Cai | Kunming | 480 | |
| Kunming | Dali | 359 | |
| Dali | Ruili (BCP Myanmar) | 350 | Under construction |
| Muse (BCP) | Lashio | 142 | New line |
| Lashio | Mandalay | 262 | |
| Mandalay | Kale | 539 | |
| Kale | Tamu | 127 | New line |
| **Total** | | **2,621** | |
| **3. Ho Chi Minh City to Dawei** | | | |
| Ho Chi Minh City (Viet Nam) | Loc Ninh | 129 | New line |
| Loc Ninh (Viet Nam) | Phnom Penh (Cambodia) | 254 | New line |
| Phnom Penh | Poipet (BCP) | 386 | Cambodia North line |
| Aranyaprathet (BCP) | Bangkok | 260 | |
| Bangkok | Nak Tok (Thailand) | 208 | |
| Nam Tok | BCP Thailand/ Myanmar | 30 | New line |
| BCP (Myanmar) | Dawei Port | 130 | |
| **Total** | | **1,397** | |

BCP = border crossing point; km = kilometer.
Source: Adapted from Gautrin (2014).

## Status of Railway Networks

As noted above, rail network connectivity between the two regions is poor. In particular, Myanmar has no cross-border rail links. Moreover, the incompatibility of gauges in India, Bangladesh, Thailand, and Myanmar means that transshipment will be required even after rail links are developed. This increases costs, lowers service levels, and makes rail less competitive (ADB 2008).

## Trans-Asian Railway

Currently, the TAR network comprises 117,000 km of rail routes, including about 10,500 km of missing links that need to be constructed to provide an unbroken network. Gaps or missing links occur along the network in sections where no physical link exists between the railway networks of neighboring countries or where there is an absence of continuous railway links within the countries. Table 3.7 indicates possible future links in the TAR network that could enhance connectivity between South Asia and Southeast Asia. These represent about 25% of the missing links in the entire network. The most relevant ones for cross-regional connectivity are Jiripam–Kale, Thanbyuzayat–Nam Tok, Aranyaprathet–Sisophon, and Bat Deng–Loc Ninh. However, the length of the Jiripam–Kale and Thanbyuzayat–Nam Tok links suggests it will be difficult to prioritize their construction.

**India and Myanmar:** One important missing link lies between northern Myanmar and northeastern India. This potential rail link of about 346 km (219 km in India and 127 km in Myanmar) could fill the gap between Kale in Sagaing State of Myanmar and Jiripam in Manipur State of India, via the official border post of Tamu in Myanmar. There is already

**Table 3.7: Missing Links of the Trans-Asian Railway Connecting South Asia and Southeast Asia**

| From | To | To | Missing Railway Link | Length (km) |
|---|---|---|---|---|
| India | Myanmar | | Jiripam (India)–Kale (Myanmar) | 346 |
| Myanmar | Thailand | | Thanbyuzayat (Myanmar)–Nam Tok (Thailand) | 263 |
| Thailand | Cambodia | | Aranyaprathet (Thailand)–Sisophon (Cambodia) | 54 |
| Thailand | Lao PDR | | Savannakhet (Thailand)–Bua Yai (Lao PDR) | 287 |
| Thailand | Lao PDR | Viet Nam | Ubonratchatani (Thailand)–Pakse (Lao PDR)–Savannakhet (Thailand)–Devsavanh (Lao PDR)–Dong Ha (Viet Nam) | 589 |
| Lao PDR | Viet Nam | | Vientiane (Lao PDR)–Mu Gia (Viet Nam)–Vung An | 569 |
| Cambodia | Viet Nam | | Bat Deng (Cambodia)–Loc Ninh (Viet Nam)–Ho Chi Minh City | 385 |
| **Total** | | | | **2,493** |

km = kilometer, Lao PDR = Lao People's Democratic Republic.
Source: UNESCAP (2011).

a railway connection between Kale and Mandalay. The missing length from Moreh on the Indian border to Kale is about 132 km. A railway line is needed from Kale to Tamu (127 km), Tamu to Moreh (5km), and then continuing to Imphal (80 km), the capital of Manipur.

**Myanmar and Bangladesh:** All existing railheads in Myanmar are a long distance from the border with Bangladesh. Bangladesh has done some planning with a view to connecting its rail infrastructure to that of Myanmar in future. This would be through a link from Chittagong to Dohazari and Cox's Bazaar and on to the border with Myanmar.

**Thailand and Myanmar:** As part of the Singapore–Kunming Rail Link (SKRL) project, a feasibility study was completed in 2007 on the 263 km section between Nam Tok in Thailand and Thanbyuzayat in Myanmar. The missing section on the Thai side is 153 km between Nam Tok and the border at Three Pagodas Pass and 110 km from there to Thanbyuzayat on the Myanmar side.

**Cambodia and Thailand:** This involves reconnecting the rail networks of Cambodia and Thailand by restoring the 48 km missing link between Sisophon and Poipet in Cambodia that was closed to traffic in 1980 and the 6 km section between Aranyaprathet and Poipet on the Thai side of the border.

**Cambodia and Viet Nam:** A railway line would connect Cambodia and Viet Nam, from Bat Deng, 31.5 km northwest of Phnom Penh, to Ho Chi Minh City. The length is 386 km, comprising 257 km in Cambodia and 129 km in Viet Nam. Feasibility studies have been completed for both sections.

**Thailand–Lao PDR–Viet Nam:** Under the SKRL project, two rail routes are being considered to connect Thailand and Viet Nam via the Lao PDR. One option consists of a 582 km line from Bua Yai on the Bangkok–Nongkhai main line, to Dong Ha on the Ho Chi Minh City–Ha Noi main line.

## Greater Mekong Subregion Railway

The ADB-funded GMS Railway Strategy Study assessed alternative routes for linking the unconnected railways in the GMS to strengthen the connectivity of the nodes and enhance the efficiency of the subregion's railway network (ADB 2011). The highest priority was given to the Bangkok–Phnom Penh–Ho Chi Minh City–Ha Noi–Kunming–Nanjing route because it offers the following advantages:

- largest potential traffic volume based on projections of freight and passenger demand;
- connects all the GMS countries except Myanmar;
- lowest construction cost;
- highest projected economic internal rate of return; and
- attractive to investors and operators in the private sector

## Priority Railroad Corridors and Projects

Similar to the case of highways, the approach in this study is first to identify priority rail corridors, and then priority projects along those corridors. Rail corridors are not as attractive as road corridors, in view of the large gaps and required large investment amounts. Based on an analysis similar to that for highways, Gautrin (2014) finds that the two most attractive corridors are Kolkata–Ho Chi Minh City through the Chicken's Neck and Dawei–Ho Chi Minh City with branching to Laem Chabang.[6]

However, the total cost of projects for Kolkata–Ho Chi Minh City is $4.1 billion, much higher than the amount required for roads (Gautrin 2014). There are too many missing links to make the Kolkata–Hai Phong corridor through the Lao PDR economically justifiable. The best way to reach Hai Phong from South Asia is through Yunnan Province since rail facilities are in place in the PRC. Along that corridor, projects in Myanmar and Viet Nam are most attractive. The priority railroad routes and projects are shown in Figure 3.4. Rail projects by corridors are also summarized in Tables 3.8–3.10.

The Kolkata–Ho Chi Minh City and Kolkata–Hai Phong corridors meet the wish of the Indian government to connect Delhi to Viet Nam by rail. By the same token they would also complete the western branch of the Kunming to Singapore route (SKRL), a key element of the ASEAN Master Plan on connectivity (ASEAN 2010).

There have been doubts expressed on the viability of building a rail line through the Three Pagodas Pass, but an alternative exists. A rail line from Nam Tok in Thailand to Dawei in Myanmar may be technically and economically more feasible. Nevertheless, if feasibility studies were carried out now, all projects would likely fail to be economically justifiable because of the poor performance of the different national railways. It is only when the national railways become profitable and have increased their share of freight transport that constructing missing links for regional purposes could be seriously envisaged.

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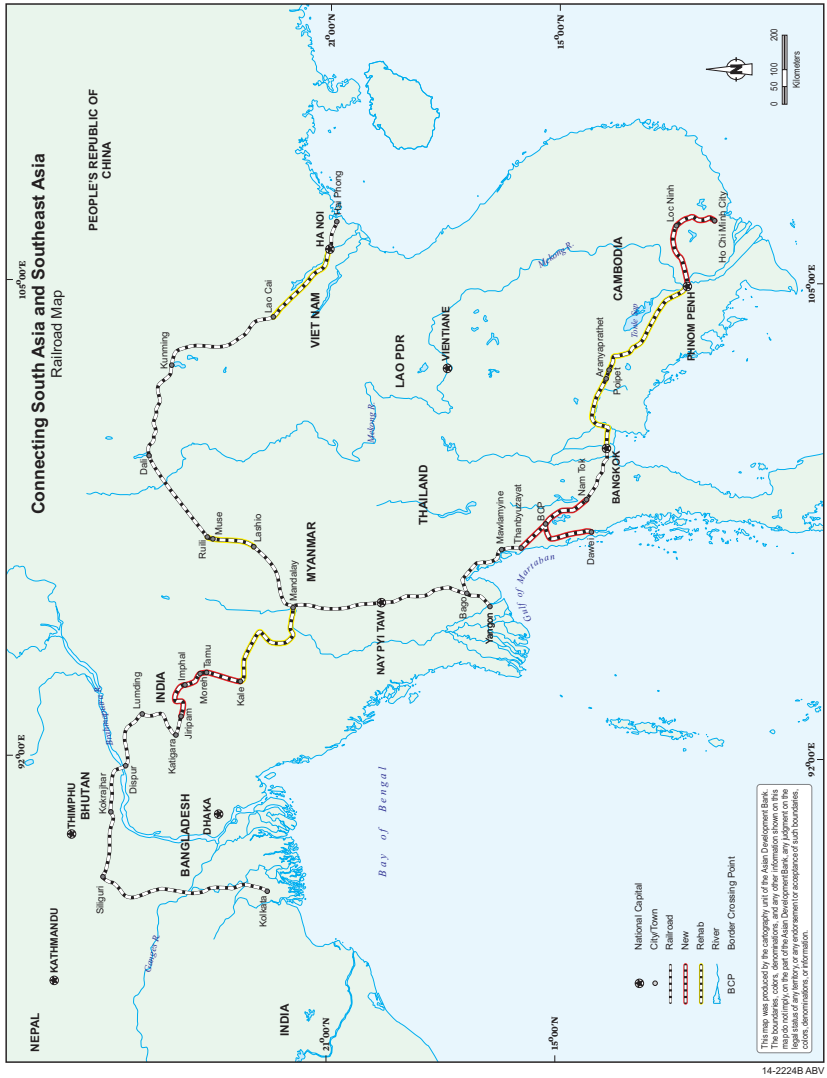
[6] See the analysis in Gautrin (2014). Bangkok–Laem Chabang by road is 132 km and by rail 140 km. The branching to the rail corridor will only involve the distance between Chachoengsao and Laem Chabang (80 km).

## Figure 3.4: Priority Railroad Corridors and Projects




Source: Compiled by the Asian Development Bank.

## Table 3.8: Kolkata–Ho Chi Minh City Priority Rail Projects

| Segment | Length (km) | Cost | | Score | Project Type |
|---|---|---|---|---|---|
| | | ($ million) | ($ million per km) | | |
| Jiripam–Imphal | 125 | 520 | 4.16 | 11.5 | New rail line |
| Imphal–Moreh | 95 | 400 | 4.21 | 11 | New rail line |
| Tamu–Kale | 127 | 98 | 0.77 | 10 | New rail line |
| Kale–Mandalay | 539 | 162 | 0.3 | 9 | Rehabilitation |
| Three Pagodas Pass (Myanmar) | 110 | 250 | 2.27 | 13 | New rail line |
| Three Pagodas Pass (Thailand) | 153 | 490 | 3.2 | 12 | New rail line |
| Bangkok–Aranyaprathet | 260 | 15 | 0.06 | 13.5 | Rehabilitation |
| Poipet–Phnom Penh | 386 | 175 | 0.45 | 14.5 | Rehabilitation* |
| Phnom Penh–Loc Ninh | 254 | 1,100 | 4.33 | 10 | New rail line |
| Loc Ninh–Ho Chi Minh City | 129 | 900 | 6.98 | 10 | New rail line |
| **Total** | **2,178** | **4,110** | **1.89** | **11.4** | |

km = kilometer.

Note: * includes 46 km of missing link construction between Cambodia and Thailand.

Source: Gautrin (2014).

## Table 3.9: Kolkata–Hai Phong (via Yunnan Province) Priority Rail Projects

| Segment | Length (km) | Cost | | Score | Project Type |
|---|---|---|---|---|---|
| | | ($ million) | ($ million per km) | | |
| Jiripam–Imphal | 125 | 520 | 4.16 | 11.5 | New rail line |
| Imphal–Moreh | 95 | 400 | 4.21 | 11 | New rail line |
| Tamu–Kale | 127 | 98 | 0.77 | 10 | New rail line |
| Kale–Mandalay | 539 | 162 | 0.3 | 9 | Rehabilitation |
| Lashio–Ruili (Yunnan Province) | 142 | 480 | 3.38 | 17 | New rail line |
| Ha Noi–Lao Cai (BCP) | 260 | 149 | 0.57 | 18.5 | Rehabilitation |
| **Total** | **1,288** | **1,809** | **1.4** | **12.3** | |

BCP = border crossing point; km = kilometer.

Source: Gautrin (2014).

**Table 3.10: Dawei–Ho Chi Minh City Priority Rail Projects**

| Segment | Length | Cost | | Score | Project Type |
|---|---|---|---|---|---|
| | | ($ million) | ($ million per km) | | |
| Dawei–BCP Myanmar | 130 | 325 | 2.5 | 12 | New rail line |
| BCP–Nam Tok | 30 | 75 | 2.5 | 13 | New rail line |
| Bangkok–Aranyaprathet | 260 | 15 | 0.06 | 13.5 | Rehabilitation |
| Poipet–Phnom Penh | 386 | 175 | 0.45 | 14.5 | Rehabilitation* |
| Phnom Penh–Loc Ninh | 254 | 1,100 | 4.33 | 10 | New rail line |
| Loc Ninh–Ho Chi Minh City | 129 | 900 | 6.98 | 10 | New rail line |
| **Total** | **1,189** | **2,590** | **2.18** | **12.5** | |

BCP = border crossing point; km= kilometer.
Note: * includes 46 km of missing link construction between Cambodia and Thailand.
Source: Gautrin (2014).

## 3.5 Seaports

Improving ports and port access has the greatest potential to improve connectivity between South Asia and Southeast Asia. First, sea trade makes up the bulk of international trade in the two regions in value terms, and the share in volume terms is even higher, since lower value-added items tend to move by sea.[7] Second, as noted earlier, transport corridors are normally anchored by ports at each end, and it is likely that the greatest benefits of increased connectivity will accrue to the catchment areas of those ports. Certainly, such improvements will benefit all trade in and out of a given port, and cannot easily be associated with growth of trade between South Asia and Southeast Asia specifically. In general, one can only assume a proportionate increase in trade with all regions. Third, sea trade is closely associated with supply chain networks, especially container trade. In comparison, the benefits from increased land connectivity via remote border crossings are likely to be much smaller.[8]

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[7] Globally, maritime trade accounts for about 70% of total trade in value terms and 80% in volume terms (UN 2012).

[8] This section is based on Wignall and Wignall (2014).

As mentioned earlier, ADB (2012) argues that, in relation to the concept of corridor development and international trade, it is desirable to focus on ports as gateways to such corridors. For example, many GMS corridors have a port at one end, and, more importantly, the amount of trade moving along those corridors invariably is highest on those sections closest to such gateway ports.

The study focuses mainly on ports in the Bay of Bengal, including Colombo, Chennai/Ennore, Kolkata/Haldia, Chittagong, Sittwe, Kyaukpyu, Yangon/Thilawa, and Dawei. This is because these ports are most directly connected with South Asian–Southeast Asian trade, and suffer from bottlenecks, including shallow draft, antiquated facilities, inadequate road/rail access, and low operational efficiency. Aside from Yangon/Thilawa, the ports in Myanmar are at early stages of development, and are associated with other specific connectivity projects, such as the Southern Corridor and the MIEC in the case of Dawei.

## Characteristics of Sea Trade

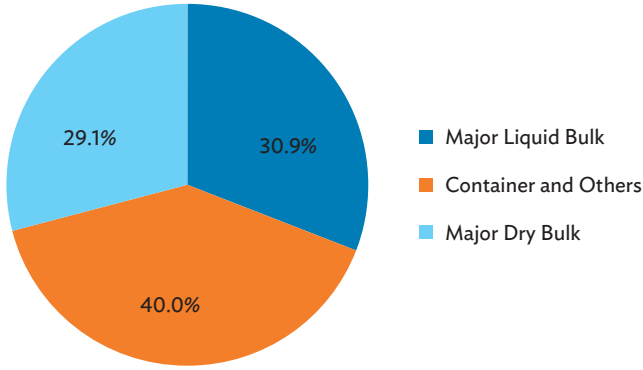
The three primary cargo types that represent the majority of seaborne trade are:

- containers (primarily for merchandise goods transport);
- liquid bulk (the main volume being crude oil and petroleum products); and
- dry bulk (the main volume being coal, iron ore, grains, bauxite, and fertilizer).

Two other categories exist because they have specialist handling requirements: roll on-roll off (RORO) and general cargo. However, this study does not discuss these categories as they represent less than 5% of total trade volume; small volumes compared to the others already mentioned.

Figure 3.5 shows the breakdown of Asian trade by type of seaborne cargo. If the average weight of a container is taken as 15 tonnes per twenty-foot equivalent unit (TEU) this suggests that over 95% of trade in Asia is container, liquid bulk, or dry bulk. In terms of growth rates, this varies by port, country, and nature of seaborne cargo. Overall in the last 5 years, container trade has grown about 5% per year, liquid bulk trade about 10% per year, and dry bulk trade about 30% per year. Regulatory factors have had an important influence on these growth rates, for example bans on iron ore exports from some states in India.

**Figure 3.5: Share of Asian Seaborne Trade by Cargo Type, 2012**




Source: UNCTAD (2013).

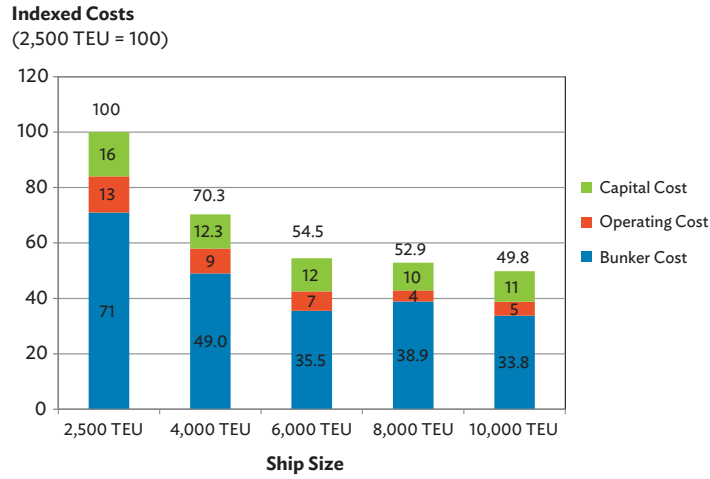
## Importance of Container Trade

Two primary drivers have allowed the container revolution to usher in spectacular growth in global trade over the last 50 years. The first is unitization that has a substantial impact on handling and transport costs; so long as a port has an effective container terminal, unitization is possible. The second is scale and the benefits of scale in terms of unit cost. Put simply, there is a strong relationship between the size of the container ship and the cost per TEU of operating container ships. Figure 3.6 indicates the nature of that relationship; this is based on old technology in terms of ship hull forms and engines. Advances in technology over the last 10 years have strengthened the relationship.

At present the container trade is seeing three major trends:

- The introduction of new "mega" ships carrying 12,500 to 18,000 TEU.
- A shift of older mega ships carrying 6,000 to 9,000 TEU to minor shipping routes well before their useful life has expired.
- A large number of underused container ships carrying 3,000 to 6,000 TEU.

**Figure 3.6: Relationship between Container Ship Size and Operating Costs**




TEU = twenty-foot equivalent unit.
Source: A.T. Kearney (2012).

Large container ships need to maintain high levels of utilization to ensure they achieve the cost advantage they are built to exploit. This is increasing the market size that justifies a ship call.

The impact of these trends on container trade in the Bay of Bengal will be to increase pressure for container shipping lines to use larger ships to carry the volume of containers from the region. This translates into pressure on ports and container terminals to be ready to accept larger ships or see volume move to those ports that can accept large ships. Unless ports can provide improved access, one of two things will happen:

- the ports have to remain or return to feeding containers to mega hubs for transshipment, or
- the hinterland of those ports that can accept the larger ships becomes larger, causing longer shipment of containers by road.

## Container Trade in the Bay of Bengal

Wignall and Wignall (2014), in a detailed analysis of port call data for Bay of Bengal ports, identified a number of issues. First, 100% of containers

from Yangon, Chittagong, and Kolkata are transshipped. From Chennai, at least 70% of the containers handled are carried on feeder ships to transshipment terminals, mainly to Colombo. All transshipped containers from these ports are subject to additional costs.

Second, with the exception of Chennai, there are no direct ship calls from any of the top 20 international shipping lines to ports in the Bay of Bengal. Rather, these lines have slot charters with common feeder operators. This represents a major reduction in competition for one element of container transit that pushes up costs. To understand the scale of RCL and Sea Consortium in respect of these routes, it is noteworthy that these two companies control 90% of container shipping capacity into Chittagong.

Third, although the ports in the ASEAN member states have a greater range of container services and trade route options, this cannot be fully explained by lower volumes. Penang is smaller than Chittagong and Chennai but has a far greater range of services that call at the port. Location is also a factor.

The size of container ships calling at ports around the Bay of Bengal is small, with ship sizes rarely exceeding 3,000 TEU compared to 6,500 to 12,000 TEU in comparable ASEAN ports; this increases costs for containers handled at ports in the Bay of Bengal.

Finally, the distance between significant container terminals around the Bay of Bengal is far greater than, for example, along the coast of the PRC. This observation takes into account the "gaps" in relative population density along the north coast of Myanmar. Also, the distance from the major container trade lanes may be a factor. The average distance from the major trade lanes for ports on the Bay of Bengal is about 1,250 km, compared with about 500 km for the major ports of ASEAN.

Three factors also suggest that South Asia has suppressed demand for container trade, which may be responsible for the slow growth of container trade:

- Container growth is related to population growth and South Asian population growth remains high.
- The level of containerization in South Asia is at least half that of the rest of the world suggesting that with appropriate facilities it could double in a short timeframe.
- As industrial expansion/export-oriented growth/trade develops there is a multiplier effect between growth and trade. This means container growth can be 2–3 times the rate of growth of GDP.

## Ports in Bay of Bengal

Figure 3.7 shows ports in the Bay of Bengal. Port capability around the Bay of Bengal can best be described in three areas that have similar characteristics:

- northern and eastern Bay of Bengal, dominated by their location on major river deltas, the Irrawaddy, the Ganges, and the Brahmaputra;
- the east coast of India, where there are deepwater port locations; and
- Sri Lanka, an island with some of the great harbors of the world.

Ports need to serve either:

- significant populations (with their associated economic activity);
- industrial areas and concentrations (often associated with significant population density);
- areas that produce and export primary resources such as coal, iron ore, and agribulk; or
- strategic transshipment or logistical opportunities.

### Bangladesh

Chittagong Port is the principal seaport of Bangladesh, handling over 90% of the country's external trade. It lies on the north bank of the Karnaphuli River, about 16 km upstream from the Bay of Bengal (ADB 2011). In 2011, the port handled about 43.1 million tons of cargo, 1.4 million TEUs, and 2,248 vessels.[9]

Because of the width, curvature, and draft of the Karnaphuli River, the size of vessels that are able to call at Chittagong Port is limited. For vessels entering the port, the maximum permissible draft is 9.2 meters (m) and the maximum length is 186 m.[10] There are also port capacity and operational constraints. Expansion of the port on the north bank of the river is restricted by the city. Land is available on the south bank, but is hampered by poor connectivity (ADB 2011).

Severe capacity bottlenecks hamper the rail and road traffic between Chittagong Port and Dhaka. The 327 km railway between the port and

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[9] Chittagong Port Authority. http://cpa.gov.bd/portal/ (accessed 13 Mar 2013).

[10] Chittagong Port Authority. http://cpa.gov.bd/portal/ (accessed 13 Mar 2013).

**Figure 3.7: Bay of Bengal Ports**


Source: Compiled by the Asian Development Bank.

Dhaka is partially single-track, limiting the number of daily trains. Moreover, because of the preference given to passenger traffic, only four or five container trains operate daily, carrying about 10% of containers between the two nodes. The 250 km highway between Chittagong Port and Dhaka is only two lanes and is bounded by load restrictions on bridges. Fully loaded containers cannot be transported to the capital by road and the loading and unloading of containers has to take place at the port (ADB 2011).

The Government of Bangladesh has plans to increase Chittagong Port's container handling capacity by fully operationalizing the New Mooring Container Terminal located west of the existing terminal. Railroad capacity between the port and Dhaka will also be increased in 3–5 years by converting single-track sections into double track. The highway will be widened from two to four lanes (ADB 2011).

## India

Chennai and Ennore are two of India's major ports and together rank second among India's ports in trade volume. Development at Chennai has been constrained by the city that surrounds it. Ennore was originally developed as a new port to which bulk iron ore and coal handled by Chennai could relocate to free development space in Chennai for general cargo and containers. This has not happened in practice with Chennai undergoing further development. Marine access to both ports is excellent. Container handling performance at Chennai has improved and is achieving world standard levels. Critically, Chennai is the only port on the Bay of Bengal that attracts call of vessels of the size of container "mother ships" of 6,000 TEU or greater (ADB 2013c). Chennai handled 55.7 million tons of cargo and container trade volume of 1.6 million TEU, the largest on the Bay of Bengal, while Ennore handled 14.9 million tons of cargo and only a small volume of containers (Wignall and Wignall 2014). In terms of shipping links with India's partner countries, Chennai has emerged as India's gateway port to ASEAN and East Asia, as it handled about 79% of import vessels in 2010 that originated from those economies (De 2011).

Kolkata Port is the gateway to eastern India, including landlocked Nepal and Bhutan. It is situated on the west bank of the Hoogly River, upstream from the Bay of Bengal. Kolkata Port has the longest navigational channel in India, longer than all of the major Indian ports combined. It has two dock systems—the Kolkata Dock System (KDS) and the Haldia Dock System (HDS) (Kamath 2009). In 2011, Kolkata Port handled about 43.2 million tons of cargo, 0.6 million TEUs of container traffic, and 3,186 vessels.[11] Similar to the other ports in the northern part of the Bay of Bengal, Kolkata Port suffers from draft restrictions (ADB 2008).

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[11] Kolkata Port Trust. http://www.kolkataporttrust.gov.in/(accessed 18 Mar 2013).

Although Kolkata Port's performance indicators are more favorable than those of Chittagong Port, Kolkata Port has not been operating efficiently. The HDS suffers from similar problems, but these are masked by lower cargo volumes (ADB 2008). Road connectivity for Kolkata Port is heavily congested. To address the draft restrictions, several new ports with deeper draft have been proposed, such as the Diamond Harbour Container Terminal, which is being developed south of the HDS.[12] To improve road connectivity, the Kolkata Port Trust and the National Highways Authority have been tasked to develop remedial measures in road infrastructure, traffic management measures, and expedited gate procedures (ADB 2008).

India's east coast is dotted with smaller ports, including Vizag, Krishnapatnam, Karaikal, Visakhapatnam, and Paradip. Trade volumes are smaller than those of the main ports, but some have good deepwater ports and sufficient catchment areas eventually to justify port calls by large container ships.

## Myanmar

Yangon is the principal port city of Myanmar. Yangon Port handles more than 90% of the country's imports and exports (JIFFA 2012). It is situated on the Yangon River, 30 km inland from the Gulf of Martaban. The port includes a new port area at Thilawa, about 20 km downstream of the Yangon River. In 2011, Myanmar handled about 20.4 million tons of cargo, 0.4 million TEUs, and 1,836 vessels.[13]

As a result of the meanderings and shallow draft of the Yangon River, Yangon Port is accessible only to vessels of maximum 9 m draft, 167 m length, and 15,000 deadweight tons (DWT). The port area of Thilawa offers a deeper draft and is accessible to larger vessels with maximum 9 m draft, 200 m length, and 20,000 DWT (Min and Kudo 2012). However, the road between the Thilawa port area and the bridge leading to Yangon is in poor condition. Moreover, because of much higher container transport charges, the Thilawa port area only has a 12% market share (Zaw and Kudo 2011). As Yangon Port is located close to the city center, it faces space constraints.

The facilities in Yangon Port are obsolete and lack sufficient generators. Port operations often halt when there is an electricity blackout. Yangon Port does not have sufficient cargo handling equipment,

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12 Kolkata Port Trust. http://www.kolkataporttrust.gov.in/ (accessed 18 Mar 2013).

13 Myanmar Port Authority. 2012. Development of Container Port and Intermodal Connections. http://www.unescap.org/ttdw/common/Meetings/TIS/IntegratedTx-2012/Presentations/4.3.Myanmar.pdf (accessed 18 Mar 2013).

resulting in a long waiting time for the loading and unloading of cargo (JIFFA 2012). As the general cargo berths are located in the city center, the port contributes to chronic road congestion, leading to long and unreliable transport times. As for railway transport, not all routes are electrified, and all routes except between Yangon and Mandalay are single-track. Moreover, freight trains can only begin running in the afternoon, causing difficulty in establishing freight train schedules (JIFFA 2012).

In accordance with the Yangon Port Development Plan 2010, dredging of the waterways of the Yangon River is ongoing. Upon completion, it would be deep enough for 35,000 DWT vessels with more than 9 m draft. The number of jetties would be tripled from 22 to 62, and port operations would be improved to handle the expected increase in cargo traffic. As for road transport, a new four-lane cargo road between the general cargo berths situated in the city center and Yangon River would be constructed, and some road sections linking to the main highways would be upgraded to six lanes. To ease the traffic problem in the city center, a new container yard terminal would be constructed in the outskirts of Yangon city (Zaw and Kudo 2011).

In the longer term, accommodating demands for larger vessels implies that the development of deepwater commercial ports will have to be implemented at suitable sites along the coast of Myanmar such as Kyaukpyu on the western coast and Kalegauk, Dawei, and Bokpyin on the eastern coast (Htun et al. 2011). Dawei Port has been proposed as a key link in the MIEC.

### Sri Lanka

Sri Lanka has several excellent deepwater ports that benefit from their proximity to major shipping lanes. Colombo is a major international hub port, and can accept the largest container ships afloat. Its handling capacity at present is in oversupply, and its operations meet international standards. It handles 30 million tons per annum and 4.3 million TEU of containers. The recently operational outer harbor development has provided the port with excess container capacity for the foreseeable future. Its location in the city of Colombo constrains development and causes road congestion and social impact issues.

Hambantota is a new port built by the PRC. Without substantial supporting industrial development it may only grow through cannibalizing traffic currently handled in Colombo. Trincomalee was formerly a major naval base and petroleum product storage base, but has been blighted by decades of civil war. It would be an excellent location for a bulk hub but has limited demand in its own hinterland. Neither of these ports has container facilities (Wignall and Wignall 2014).

## Port Projects

Several conclusions can be reached on how to improve merchandise trade around the Bay of Bengal and thereby the ability of South Asia and Southeast Asia to improve their level of economic integration and their manufacturing base. These guide the identification of priority projects discussed below.

First, the ports and container terminals around the Bay of Bengal need to attract direct calls from major container shipping lines that offer the potential to either avoid transshipment or promote a switch to in-line transshipment, and thus achieve a significant reduction in costs. In-line transshipment is where containers are moved from one very large container ship to another at some port of call along their mutual routes. This form of transshipment is different from hub-and-spoke feeder transshipment, and, in effect, provides the benefit of a much broader range of direct port-to-port container shipments to shippers with the cost being absorbed by the shipping line to improve their competitive position over other shipping lines. Wignall and Wignall (2014) estimate that direct calls can, over time, achieve cost savings of $100–$500 per TEU, which equate to between 20% and 50% of total container shipping costs into ports around the Bay of Bengal.

Many ports around the Bay of Bengal need to develop or expand deepwater container terminals. At a minimum, 6,500 TEU ships should be accommodated. Deeper and more capable terminals should be considered.

Reducing the distance between container terminals along the coast of the Bay of Bengal where that coastline is heavily populated would reduce the haul distance within the hinterlands and provide better access to trade opportunities for industry and thereby stimulate economic growth.

There is a need to improve competition and access to container feeder services for port and economies around the Bay of Bengal. These two may be in conflict at times. However, in Bangladesh in particular, attention should be paid to improving competition in respect of container feeder ships.

The port facilities provided around the Bay of Bengal are not likely to affect the evolution of liquid bulk trades. This does not mean that the provision of these facilities and the nature of this provision is not important, but that the nature of the trades will not fundamentally change. It is, however, important to ensure the trades are not stymied by a lack of capacity in berths and storage capacity and the storage of strategic reserves.

Similarly, with the exception of India where ports have evolved to handle specific dry bulk trades, dry bulk trade does not have significant implications for port development in the Bay of Bengal. This is not to say that provision for grains and agribulk are not required, but that these trades are not of sufficient scale to support major developments. Also the potential for these trades to be handled efficiently in containers could influence broader trade development around the Bay of Bengal.

Solutions to the issues facing ports with long and shallow approach channels need to be considered. These could include major new greenfield port developments close to the entrance of the river (in line with trends in Europe and ports such as Ho Chi Minh City) or floating terminals that offer mega ship to local barge transshipment. These could offer ways to eliminate road access issues and resolve access issues to mega container ships.

### Bangladesh

Two solutions to improve container handling in Chittagong Port could be: (i) a major new greenfield port development or (ii) a radical new solution using a floating transshipment terminals for containers. Neither of these would be easy to adopt. The government has been moving forward on the development of a new port at Sonadia Island. The technical and commercial feasibility of this port is a concern but it would be a critical item of infrastructure not just for Bangladesh but potentially for landlocked parts of India, Nepal, and Bhutan as well. Road and rail connectivity are also issues for Chittagong Port. The further development of Mongla Port for containers is impractical. Inland waterways are an important aspect of seaport connectivity in Bangladesh, including most importantly that between Chittagong and Dhaka. They also provide connectivity between Kolkata and Bangladesh (Egis International 2013).

### India

Chennai and Ennore need a coordinated development plan that optimizes port assets. The development of a dedicated container terminal in Ennore Port could be beneficial, but would be difficult in view of the overcapacity at present in Chennai Port and the plans for a third terminal in Chennai. Road connectivity to Chennai Port needs to be improved substantially; this is true to such an extent that the promotion of Ennore over Chennai may be more practical in view of hinterland connectivity, although this is politically impractical at present.

Vizag, Krishnapatnam, and Paradip are major industrial ports with substantial coal, iron ore, petroleum products, and chemicals capabilities. These all require deeper water than required for container ships. There is a clear case that the hinterlands of Krishnapatnam and

Paradip could generate 250,000 TEU per year and 350,000 TEU per year, respectively, thereby justifying dedicated container terminals. In respect of containers, they need improved management of the dedicated container terminal, further expansion of the dedicated container terminal to handle two regional container ships (6,500 TEU capacity) at the same time (for Vizag), substantial improvement to road connectivity, and adequate rail container handling capacity and connectivity.

For Kolkata and Haldia, there are several solutions to develop major new terminals in the region. Sagar Island is an option that would provide best access to deep water, but requires the construction of major hinterland road connections, including at least one major bridge. Terminals at Kulpi on the eastern bank of the estuary have been suggested as a partial solution; marine access at Kulpi has been substantially improved in respect of Kolkata or Haldia but remains far from ideal for containers. Other solutions include improved rail connections with Paradip (or a location on the coast in that area), the development of major new container terminals at Paradip, and the development of a floating terminal to feed container ships by barge across the estuary to smaller terminals.

## Myanmar

A key bridge link between Thilawa and Yangon cannot carry large volumes of container trucks. Further issues that impact container development in Yangon and Thilawa are a long channel and shallow water. A site for a major new greenfield port needs to be identified and basic infrastructure planned and developed to ensure that as Myanmar develops, Yangon does not evolve into a major feeder port as has happened to Chittagong. The development of inland waterways links from Yangon and Thilawa to Mandalay along the Irrawaddy River should provide access to a considerable hinterland over the next two or three decades if Myanmar develops.

As container ports, Kyaukpyu and Sittwe lack the basic economic activity in the hinterland to sustain significant container calls or justify the development of a dedicated container terminal. This situation will remain the same for several decades. Dawei Port has reasonable access to deep water but it is located some distance from existing population centers and economic activity. One suggested basic logic of the port is to attract westbound container traffic from Thailand, but this is difficult to justify on commercial or economic grounds when considering the broader market competition for that volume and the relative economics of sea and land transport. The development of adequate container volumes to attract a broad range of ship calls that would provide access to a substantial range of destinations without transshipment is impractical.

## Proposed Port Projects and Costs

Specific project suggestions based on this study come in three primary types: major port developments with substantial supporting infrastructure requirements, container terminal development, and supporting infrastructure development (Table 3.11). All suggestions require further assessment to ensure they provide appropriate economic and commercial benefits. With respect to the last category of projects, only illustrative projects are identified, not a comprehensive list of potential projects. Total project costs are estimated at $11.2 billion. Of these, priority projects are the new Sonadia deepwater port in Bangladesh, the Sagar Island deepwater port in India, and Thilawa Port road connections in Myanmar.

### Table 3.11: Identified Port Development Projects

| Country | Port | Project | Cost Estimate ($ million) |
|---|---|---|---|
| **Major Ports** | | | |
| Bangladesh | Chittagong | New Sonadia deepwater port | 1,000 |
| India | Kolkata/Haldia | Sagar Island deepwater port | 1,300 |
| Myanmar | Yangon/Thilawa | New deepwater port (or floating container transshipment terminal) | 1,500 |
| | Yangon/East Dagon | Port connectivity | 15 |
| | Dawei | Development of new port | 2,900 |
| | Kyaukpyu | Development of a deepwater port | 1,000 |
| | Sittwe | Kaladan River Project: development of links with northeast India | 245 |
| Sri Lanka | Colombo | South Harbor expansion | 1,200 |
| | Hambantota | Deepwater port Phase II expansion | 808 |
| **Container Terminals** | | | |
| Bangladesh | Karnaphuli (Chittagong) | New container terminal | 100 |

*continued on next page*

*Table 3.11 continued*

| Country | Port | Project | Cost Estimate ($ million) |
|---|---|---|---|
| Cambodia | Sihanoukville | Port connectivity | 90 |
| India | Kolkata/Haldia | New container port at Diamond Harbor | 250 |
| | Kolkata/Haldia | Development of Haldia II Dock complex | 280 |
| Thailand | Laem Chabang | Coastal Terminal Project | 59 |
| **Supporting Infrastructure** | | | |
| India | Chennai | Road connections | 250 |
| | Kolkata/Haldia | Road connections | 130 |
| Myanmar | Thilawa | Road connections | 99 |
| **Country Totals** | | | |
| Bangladesh | | | 1,100 |
| Cambodia | | | 90 |
| India | | | 2,210 |
| Myanmar | | | 5,759 |
| Sri Lanka | | | 2,008 |
| Thailand | | | 59 |
| **Total** | | | **11,226** |

Sources: Wignall and Wignall (2014); ADB (2013c, 2014).

## 3.6 Summary of Priority Projects

Table 3.12 summarizes the priority projects identified in the previous three sections. Total costs are $8.4 billion, of which $986 million are for roads, $5.1 billion for railroads, and $2.4 billion for ports. The contrast between the costs for road and rail projects is stark, and suggests that road projects should be given priority in the early phase, given their much lower costs. Port costs are high, but should receive priority attention, particularly in light of the fact that the bulk of trade still goes by sea. The largest investment figures are for Bangladesh, India, and Myanmar.

Table 3.13 gives cost estimates of all road, rail, and port-related projects related to connecting South Asia and Southeast Asia. The total is $62.6 billion, including $17.8 billion for roads, $33.7 billion for railways, and $11.1 billion for ports. The total represents about one-quarter of the estimated total costs of $214 billion for cross-border infrastructure costs

## Table 3.12: Priority Projects

| Country | Project | Length (km) | Cost ($ million) |
|---|---|---|---|
| **Road Projects** | | | |
| India | Imphal–Moreh | 95 | 160 |
| Myanmar | Eindu–Kawkareik | 70 | 150 |
| | Kawkareik–Myawaddy | 46 | 37 |
| | Yagyi–Kalewa | 186 | 110 |
| | Kalewa–Tamu | 160 | 245 |
| | Thilawa–East Dagon | 33 | 41 |
| | East Dagon–NR1 Road | 31 | 58 |
| Thailand | Myawaddy–Mae Sot | 17 | 55 |
| | Mae Sot–Tak | 78 | 90 |
| Cambodia | Aranyaprathet–Poipet | 10 | 40 |
| **Subtotal** | | **726** | **986** |
| **Railway Projects** | | | |
| India | Jiripam–Imphal | 125 | 520 |
| | Imphal–Moreh | 95 | 400 |
| Myanmar | Tamu–Kale | 127 | 98 |
| | Kale–Mandalay | 539 | 162 |
| | Three Pagodas Pass (Myanmar) | 110 | 250 |
| | Lashio–Ruili (Yunnan Province) | 142 | 480 |
| | Dawei–BCP Myanmar | 130 | 325 |
| Thailand | Three Pagodas Pass (Thailand) | 153 | 490 |
| | Bangkok–Aranyaprathet | 260 | 15 |
| | BCP–Nam Tok | 30 | 75 |
| Cambodia | Poipet–Phnom Penh | 386 | 175 |
| | Phnom Penh-Loc Ninh | 254 | 1,100 |
| Viet Nam | Loc Ninh–Ho Chi Minh City | 129 | 900 |
| | Ha Noi–Lao Cai (BCP) | 260 | 149 |
| **Subtotal** | | **2,740** | **5,139** |
| **Port Projects** | | | |
| Bangladesh | New Sonadia deepwater port | -- | 1,000 |
| India | Sagar Island deepwater port (Kolkata) | -- | 1,300 |
| **Subtotal** | | | **2,300** |

*continued on next page*

*Table 3.12 continued*

| Country | Project | Length (km) | Cost ($ million) |
|---|---|---|---|
| **Country Totals** | | | |
| Bangladesh | | | 1,000 |
| Cambodia | | | 1,315 |
| India | | | 2,380 |
| Myanmar | | | 1,956 |
| Thailand | | | 725 |
| Viet Nam | | | 1,049 |
| **Grand Total** | | | **8,425** |

BCP = border crossing point; km = kilometer.

Source: Gautrin (2014); Wignall and Wignall (2014); ADB (2013c, 2014).

## Table 3.13: Summary of Connectivity-Related Road, Rail, and Port Infrastructure Projects

| Countries | Road Projects (km) | Road Projects ($ million) | Rail Projects (km) | Rail Projects[a] ($ million) | Port Projects ($ million) | Total ($ million) |
|---|---|---|---|---|---|---|
| **South Asia** | **2,271** | **12,634** | **772** | **3,700** | **5,318** | **21,652** |
| Bangladesh | 648 | 11,064 | 261 | 1,604 | 1,100 | 13,768 |
| India | 1,623 | 1,570 | 511 | 2,096 | 2,210 | 5,876 |
| Sri Lanka | 0 | 0 | 0 | 0 | 2,008 | 2,008 |
| **Southeast Asia** | **3,429** | **5,112** | **7,021** | **30,040** | **5,809** | **40,961** |
| Cambodia | 45 | 85 | 696 | 1,276 | 90 | 1,451 |
| Lao PDR | 1,042 | 780 | 1,125 | 11,465[b] | 0 | 12,245 |
| Myanmar | 1,593 | 1,587 | 4,247 | 7,860 | 5,660 | 15,107 |
| Thailand | 569 | 2,250 | 824 | 1,539 | 59 | 3,848 |
| Viet Nam | 180 | 410 | 129 | 7,900 | 0 | 8,310 |
| **Grand Total** | **5,700** | **17,746** | **7,793** | **33,740** | **11,127** | **62,613** |

km = kilometer; Lao PDR = Lao People's Democratic Republic.

Notes: [a] Only new rail projects; [b] Lao PDR rail costs include $4.2 trillion for Savannakhet–Lao Bao build-own-operate-transfer (BOOT) project.

Sources: Gautrin (2014); Wignall and Wignall (2014); ADB (2013c, 2014); authors' estimates.

related to programs covering the two regions given in Bhattacharyay (2012). The reason for the discrepancy is that Bhattacharyay (2012) includes all projects related to cross-border connectivity, either within regions or across regions, while this report focuses only on projects relevant for cross-regional connectivity. Also, some of the projects included in Bhattacharyay (2012) extend outside the region, including the Asian Highway and Trans-Asian Railway. The figures in the table are total, and should not be regarded as representing all priority projects.

## 3.7 Benefits

Measuring benefits of these projects is difficult, given the paucity of data for border crossings between South Asia and Southeast Asia. This is particularly difficult for railways, where there is no existing connectivity from either side with Myanmar, which is the land link between the two regions. For seaports, the key question is the extent to which the projects proposed could reduce shipment costs. As mentioned above, it is estimated that they could lower container shipment costs by as much as 20%–50%, so the impact of this on trade and growth can be handled in our CGE modeling framework via a reduction in trade costs, as discussed in Chapter 9.

### Highways

Improving land transit corridors would have a positive effect on trade, both by increasing the volume of traffic and lowering time-related costs. But, it would primarily reduce transport costs and increase domestic traffic. The key road-based developments examined in this report are the improved links between India, Myanmar, and Thailand.

Egis International (2013) provides some basic parameters on road transport cost savings resulting from reduced travel time. For India, the estimated cost savings for passenger vehicles and trucks are shown in Table 3.14. Egis International (2013) assumes that a road improvement project could lead to increased average speed of 25 km/hour along the improved route.

India–Myanmar border trade mainly flows through Moreh in Manipur State, and, as described above, Moreh is the border crossing targeted for our recommended route between the two countries. Moreh handles about $3.6 million of India–Myanmar merchandise trade, of which exports contribute 41% and imports contribute 59% (De 2011). In the last decade, northeast India's average annual exports to Myanmar

**Table 3.14: Road Transport Benefits from Time Saving in India** (2011 prices)

| Vehicle Type | Vehicle Occupancy (person) | Value per Vehicle ($ per hour) | Distribution (%) |
|---|---|---|---|
| **Passenger Vehicles** | | | |
| 2-wheeler | 1.5 | 2.5 | 20 |
| 3-wheeler | 3 | 3.2 | 10 |
| Car | 3 | 6.4 | 25 |
| Bus | 35 | 45.7 | 45 |
| Average benefit per passenger | -- | 1.6 | 100 |
| Average benefit per vehicle | 17.1 | 23.0 | 100 |
| **Trucks** | | | |
| Light goods vehicle | -- | 4.2 | 40 |
| Heavy goods vehicle | -- | 8.3 | 60 |
| **Average** | **--** | **6.7** | **100** |

-- = not applicable.

Source: Adapted from Egis International (2013).

were about $2.4 million and its average annual imports from Myanmar were $1.9 million, thus it contributed a tiny 2.1% and 0.5% of India's total exports to and imports from Myanmar, respectively. Moreover, the level of northeast India–Myanmar trade has stagnated over the last decade. Therefore, border trade potential between India and Myanmar is yet to be realized.

The Imphal–Moreh route (Table 3.4), which is 95 km long, is taken as an example. If the average speed is raised from 40 km/hour to 65 km/hour,[14] this would result in a time saving of about 1 hour over the route. If we assume a 50–50 mix of passenger vehicles and trucks with the vehicle compositions given in Table 3.14, the average benefit per vehicle is $14.80 for the trip or $29.60 for a round trip. The annual benefit would be about $10,800 per vehicle for a round trip. If 3,000 vehicles per day use the route for a round trip, total annual benefits are about $32.5 million, which is about 20% of the investment cost of $160.0 million, a reasonable first-year return. However, given that Moreh's annual trade value is only $3.6 million, this suggests that the current number of vehicles making

[14] Egis International (2013) assumed an average speed of 40 km/hour in India for unsurveyed roads.

the crossing is much lower, although most of the vehicles using the route may not be involved in cross-border trade. ADB (2012) estimates traffic of only 60 trucks per day from India using the Tamu border crossing. This is similar to the estimate of Padeco (2006), which finds 136 vehicles per day, including 67 trucks, on the Kalemyo–Tamu segment in Myanmar. These crude estimates suggest that a substantial increase in traffic would be needed to justify the investment costs. Traffic conditions are even worse on other priority segments, as Padeco (2006) finds only 88 vehicles per day on the Myawaddy–Kawkareik and Kawkareik–Eindu segments. This implies that, for the time being, this project can only be justified on non-economic grounds, and that the bulk of the benefits will accrue to domestic rather than cross-border traffic.

The main crossing for Myanmar–Thailand considered in our project list is Myawaddy–Mae Sot. If we consider the Myawaddy–Mae Sot and Mae Sot–Tak segments together, the parameters are very similar to those of Imphal–Moreh, that is, length of 95 km, investment cost of $145 million, and saving in travel time of about 1 hour. So roughly the same conclusion would apply, that is, daily traffic of about 3,000 vehicles would be needed to justify the project. In contrast, ADB (2012) estimates cross-border traffic at Mae Sot of only 50 trucks per day. However, Padeco (2006) estimates much higher traffic of 4,616 vehicles per day (excluding motorcycles) on the Tak–Mae Sot segment and 10,000 vehicles per day, and these figures are likely to have grown considerably since then.

Similarly, between Thailand and Cambodia, ADB (2012) finds traffic of 775 trucks between Aranyaprathet and the Cambodian border, and 175 trucks between the border and Poipet. However, Padeco (2006) finds 10,000 vehicles between Aranyaprathet and the Cambodian border, and 800 vehicles on the Cambodian side. This also supports the view that the domestic traffic will be the main beneficiary. Moreover, if we assume higher time values for Thai travelers, this would reduce the required number of vehicles proportionately. Thus, it would appear that the Myanmar–Thailand and Thailand–Cambodia links are more economically feasible than those for India–Myanmar at this stage.

## Ports

Improving port facilities should lower transport costs. As mentioned above, if port-related investments lead to a shift from feeder line transshipment to in-line transshipment in the Bay of Bengal, this could reduce container shipping costs for those ports by 20%–50%, a dramatic saving. These results are included in the CGE modeling exercise described in Chapter 9.

## 3.8 Obstacles and Constraints

This section describes the obstacles and constraints to cross-border investments in transport infrastructure in South Asia and Southeast Asia.

### High Cost of Land Transport Infrastructure and Low Traffic

Most trade between South Asia and Southeast Asia is by sea with little transiting by land through Myanmar. Minimal road connectivity exists. Building seamless road corridors between India and Viet Nam requires road rehabilitation and widening. The total cost of such programs is in the billions of dollars. Such investments would benefit the individual countries and domestic trade. However, with the current traffic situation, the regional economic benefits are low and economic justification is going to be a problem. It could be argued that regional freight traffic is low because roads are in poor condition and border crossing time delays and procedures are a serious hindrance. Eliminating border crossing obstacles and providing good road infrastructure would cause regional trade to increase tremendously. Trade would increase, but would it increase enough to justify the high costs of new cross-border infrastructure?

There is also a lack of demand for land transit freight traffic through Myanmar. Northeast India has little capacity to generate export goods for Myanmar and the rest of Southeast Asia. Most of the export goods would come from Kolkata, located more than 1,500 km away. This explains the little traffic recorded at the Moreh/Tamu border. But this is not the only reason why recorded traffic is low at the border. There is a large volume of goods coming from Yunnan Province that is smuggled into the country. In the short to medium term, for Myanmar prospects of increasing trade with Thailand and the PRC (Yunnan Province) are better than with India.

### Cross-Regional Connectivity versus Regional and National Connectivity

For South Asian and Southeast Asian governments, national connectivity and regional connectivity come first. In India, connectivity by road and rail with the northeast is still not adequate. In 1991, India launched the Look East policy but concrete realizations only started in 2002–2003. This translated into efforts to finance roads in Myanmar to establish corridors and reach Southeast Asia by land. Despite such moves, strengthening corridors with and through Bangladesh remains the

main concern for India. Bangladesh is making efforts to strengthen its road and rail network, thereby increasing its overall transport capacity. For Bangladesh, connectivity with Southeast Asia is not a first priority; connecting with the PRC is a more pressing issue.

Within the GMS, the situation varies by country. Thailand has a paved road network with important corridors having four-lane highways. Viet Nam has a complete paved road network but congestion prevails on the main corridors. It is putting in place a program of expressways to relieve congestion. Implementation, however, is slow. Much progress has been realized to complete the road network in Cambodia and the Lao PDR. However, from a regional perspective, there is a need to develop transit corridors connecting Thailand to northern Viet Nam.

Despite long periods of instability and ethnic wars, Myanmar has been able to achieve a paved road network with connections to major cities. The story of connecting with India and Thailand is not so successful. The Trilateral Highway linking India to Thailand through Myanmar has been on the agenda for more than 15 years with only 160 km built from Tamu to Kalewa. Myanmar is currently facing pressure to improve its domestic transport infrastructure to support economic growth, and connecting with India is not its first priority. Better connectivity with Thailand, however, remains a strong policy objective.

## Road Corridors and Border Crossing Procedures

Building effective road corridors between South Asia and Southeast Asia will increase trade volume only if border crossing facilities and procedures are improved. Chapter 6 discusses this issue and covers customs facilities and harmonization as well as the signing of multilateral transport agreements. An important step would be the ratification of transit agreements between India, Myanmar, and Thailand.

## The Challenge of Connecting Disjointed Railway Networks

Connecting disjointed railway networks from South Asia to Southeast Asia is a formidable and expensive challenge. Firstly, rail connectivity is far from being complete in the SASEC and GMS regions. In the GMS, rail connectivity discussions have centered on the ASEAN objective of building a rail connection between Kunming and Singapore. Progress, however, has been slow, with no agreement among ASEAN partners on the best route. Whatever the final route selected, there are many missing links and the cost of building new lines in mountainous terrain is high, at $5 million and above per kilometer.

Furthermore, before thinking of regional connectivity, countries such as Cambodia, Thailand, and Viet Nam need to modernize and strengthen their national railway operations. In all cases, freight traffic has been declining. Poor track infrastructure and old rolling stock have affected the competitiveness of rail operations compared to road freight services. Railways are public enterprises mostly carrying people at discounted prices and running operational deficits year after year. The situation is not very different in Myanmar. Tables 3.8–3.10 show how expensive building rail corridors can be. In that context, it is hard to see how rail connectivity with South Asia can receive priority in the medium term.

There is better rail connectivity in South Asia, and in particular in SASEC because of the history of railway development in India. However, problems remain. Rail connectivity between India and Bangladesh is far from adequate. There are few entry points, many missing links, and transshipment problems. Many of India's northeastern states are not yet connected by rail. In the northeast, the rail gauge was traditionally the meter type and India has decided to convert them to broad gauge, representing a burden on the budget. In that context, despite good intentions, rail connectivity with Myanmar is second priority.

## 3.9 Summary and Recommendations

Critical gaps in land transportation connectivity between South Asia and Southeast Asia exist mainly in Myanmar, the only land bridge between these regions. Some additional gaps have been identified in Bangladesh, Cambodia, India, the Lao PDR, and Thailand. In some cases, there are no links of any sort, particularly in the rail sector. For the road sector, gaps are usually poor quality roads that cannot accommodate reliable all-weather travel. The main cross-regional highway links are the Asian Highway 1 and 2 connecting India and Bangladesh with Myanmar and the rest of Southeast Asia, and three significant gaps have been identified in crossings to Myanmar.

Regarding railways, the TAR competes in some cases with the GMS program and the Singapore–Kunming Rail Link network. Key missing links have been identified for India–Myanmar and Myanmar–Thailand. The Bangkok–Phnom Penh–Ho Chi Minh City–Ha Noi route has the greatest potential to foster South Asian–Southeast Asian connectivity, although this would require 263 km of links across Myanmar and Thailand.

Some of the major ports closest to connecting the two regions—Kolkata, Chittagong, and Yangon—suffer from capacity limitations,

including shallow channels, operational inefficiencies, and restrictions on road and rail access. In contrast, Chennai and Ennore ports are in good condition. However, the Bay of Bengal ports collectively face a systemic problem in that they are largely shackled to the hub-and-spoke feeder system that significantly raises transport costs. If major port investments can substantially increase direct calls or in-line transshipment of large-scale container ships, this could dramatically lower costs, which could significantly increase the attractiveness of manufacturing activity in the region, especially that related to supply chains.

Addressing the issue of physical connectivity between South Asia and Southeast Asia requires a multimodal perspective. This includes an assessment of non-land transport modes such as air and maritime transport. As noted earlier, shipping faces the systemic problem of the hub-and-spoke feeder system, so port-related investments need to be considered jointly, not separately. The implications of gas and oil shipments—which can be transacted through pipes, ships, rail, and, in some cases, roads—also need to be considered.

Total costs of cross-border transport infrastructure projects to foster better connectivity between South Asia and Southeast Asia are estimated to be $62.6 billion, including $17.8 billion for roads, $33.7 billion for railways, and $11.1 billion for ports. Of these, the total costs for priority investment projects are estimated at $8.4 billion, including $986 million for roads, $5.1 billion for railroads and $2.3 billion for ports.

This study evaluated road corridor options to connect South Asia to Southeast Asia; the best option being the Kolkata–Ho Chi Minh City corridor through the Chicken's Neck. This corridor is 4,430 km long and will require a total investment of $3 billion to offer adequate road connectivity between South Asia and Southeast Asia. Of the $3 billion, $1.9 billion comes from the road program that India is implementing for the northeastern states independently from the objective of connecting with Southeast Asia. The amount for priority investment projects is smaller at $532 billion. A shorter distance, with less required investment, would be a road corridor through Bangladesh, but it faces obstacles, including the lack of a transit agreement between India and Bangladesh. The road corridor from Kolkata to Hai Phong has many missing links, making it expensive and with fewer economic prospects.

The study also evaluated rail connectivity between South Asia and Southeast Asia, with the Kolkata–Ho Chi Minh City corridor and connections through Yunnan Province being the preferred options. However, the attractiveness of connecting national rail systems at this stage is less than for highways in view of gaps and incompatibilities between systems. Therefore, implementation should come after the national railways have realized substantial modernization reforms. The

Kolkata–Ho Chi Minh City corridor with a distance of 4,770 km will require investments of $4.1 billion even without accounting for gauge conversion and rehabilitation costs in India from Kolkata to Jiripam. The rail connection through Yunnan Province, Ha Noi, and Hai Phong Port offers substantial savings with a total cost of $1.8 billion and a distance of 4,225 km.

Almost all trade between South Asia and Southeast Asia is by sea. Trade between the two regions, while growing, is limited and accounts for only a small fraction of the international throughput of the ports involved. The basic approach of this study has been to analyze what investments could contribute most to reducing transport costs at major ports on the Bay of Bengal, including Chennai/Ennore, Kolkata/Haldia, Chittagong, and Yangon/Thilawa. The expectation would be that such improvements would benefit trade of those ports with all regions, but that trade between South Asia and Southeast Asia would probably gain at least proportionately, due partly to the increased capacity of South Asia to participate in supply chain networks.

A key conclusion is that container trade is closely linked with manufacturing goods trade. If South Asian countries want to further develop their manufacturing exports and participate more in supply chain networks, they must undertake investments to reduce the high costs of container shipping. These costs stem from the reliance on the hub-and-spoke feeder system that requires transshipment between the smaller ships that access the Bay of Bengal ports and the larger ships that ply the main trade routes, stopping at hub ports such as Colombo and Singapore. To encourage direct port calls by large container ships in the Bay of Bengal, deepwater port facilities need to be provided, container terminals expanded, road and rail links with ports improved, and more smaller ports developed. If direct calls and in-line transshipment can be attracted in sufficient scale, it is estimated that this could lower the costs of container shipment by 20%–50%.

Linking trade and transport is one of the main elements behind the design of transport corridors. However, the social benefits associated with greater connectivity are often overlooked. One of the first impacts of improved corridors is the increase in passenger and tourist movements across borders. An evaluation of the GMS transport corridors has revealed that one of the immediate benefits of cross-border road improvements was the significant increase in passenger/tourist movements, some by car but mostly by bus. Increased cross-border passenger movements have positive effects on economic growth but they also contribute to develop social bonding among populations.

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CHAPTER 4

# Energy Infrastructure and Trading

## 4.1 Introduction

This chapter discusses the potential for increased energy trading between South Asia and Southeast Asia, including prospective benefits and costs, and identification of specific candidate projects. Section 4.2 describes the rationale for increased energy trading and the scope of the study. Section 4.3 explains the current situation of energy demand, supply, and trading in the two regions, including programs and institutional arrangements, barriers for trading, opportunities for energy trading, and new institutional arrangements. Section 4.4 identifies potential projects, while Section 4.5 discusses the results of modeling scenarios for energy demand, supply, and trading. Section 4.6 concludes with recommendations.

## 4.2 Rationale for Energy Trading and Scope of Study

### Rationale for Energy Trading

Energy trading can be motivated by factors including (i) differences in energy resource endowments relative to demand, (ii) differences in the timing of peak loads, (iii) locational factors that favor cross-border connectivity, (iv) economies of scale and operation from building regional power plants or other facilities and linking electric power grids, (v) improved energy security and reliability via diversification of supply, and (vi) reduced environmental damage through increased access to clean sources such as hydropower and more efficient power

generation. These factors should lead to lower energy costs and more reliable energy supplies that will provide benefits to the economy and society in terms of higher growth and productivity, and better access to energy (energy security). Much of South Asia faces energy shortages, while some Southeast Asian economies have surplus energy resources that could be exported.

Integrating energy systems could help to stabilize prices and make demand more elastic so that economies can react promptly to external shocks. An integrated energy market could increase output and foreign direct investment (FDI), especially through tariff cuts, subsidy reductions, and more infrastructure investment. Also, income disparities across economies may be reduced and poorer economies could catch up in economic development through investment and knowledge transfers in an integrated market (Sheng and Shi 2011).

Energy market integration (EMI) will lead to more choices of energy supply. Access to better technology can also reduce distribution losses, freeing up additional capacity. EMI will also attract more investment due to bigger markets and relieving pressure on peak demand. Sharing energy sources can drive down the price of electricity, as participating economies are able to buy from the least-cost energy source. Socially, an integrated market could also positively affect the poor and address energy poverty issues on the micro-level (Navarro, Sambodo, and Todoc 2013). Lower prices make electricity more affordable for low-income households, and electrification rates may increase due to more infrastructure investment in poorer areas. This could consequently replace traditional biomass for cooking with newer methods that are cleaner, more hygienic, and more efficient (Chirathivat and Cheewatrakoolpong, forthcoming).

For example, Castalia Strategic Advisors (2008) show that regional cooperation on energy in the Greater Mekong Subregion (GMS) could reduce energy costs by nearly 20%, for a savings of $200 billion over 2005–2025. The benefits come in view of the expected strong growth in energy demand and the ability to reduce energy costs in any given country by accessing energy resources in neighboring economies (Rahman et al. 2011). Similarly, the integration of energy markets in South Asia can also yield substantial benefits, with estimated potential revenue from energy trade amounting to $12 billion–$15 billion annually (World Bank 2010).

The need to rebalance energy supply and demand is evidenced by the stark energy shortages, particularly electricity, across South Asia. Electricity shortages discourage investment and hobble growth. They impose large costs, often ignored or underestimated. A study by the United States Agency for International Development (USAID 2004)

estimated that planned outages in Sri Lanka and Bangladesh cost their economies the equivalent of half a percentage point of GDP.

Cross-border infrastructure development can also ease the burden of energy infrastructure investment by spreading costs over a larger market area. If the costs and benefits of the projects can be shared, such cooperation can reduce financing burdens, smooth cash flows, and lower project risks for individual economies. Given the combination of big and small economies and different income levels in the two regions, some economies can invest more in regional energy infrastructure, easing the burden on less developed, smaller economies. Cross-border electricity distribution can be a cost-effective way to bring poor border areas within a reliable distribution grid (Rahman et al. 2011).

## Scope of Study

The main energy products considered in this chapter are electricity and natural gas. Electricity transmission requires a direct grid connection, while natural gas liquefaction and regasification require large investments in specialized facilities. Myanmar, in particular, has excess resources in natural gas and hydropower, the latter of which could be harnessed for electricity production for export to India and Bangladesh. The chapter does not focus on trade in petroleum products and coal, because these are already well established, and it is not considered that any substantial policy interventions are needed to deal with trade in those products. However, the projection model results described below also have implications for trade in these products.

This study focuses on the member economies of the GMS[1] and the South Asia Subregional Economic Cooperation (SASEC) group,[2] since these economies have the most potential to establish direct physical links that are most relevant for electricity trading. However, trade in natural gas can potentially involve a greater number of economies. Indonesia, in particular, is a major producer of natural gas, and increased investments in natural gas liquefaction and regasification plants and terminals could enable greater cross-regional trade in gas.

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[1] Cambodia, Yunnan Province and Guangxi Zhuang Autonomous Region of the People's Republic of China, the Lao People's Democratic Republic, Myanmar, Thailand, and Viet Nam.

[2] Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka.

## 4.3 Current Situation of Energy Demand, Supply, and Trading

Significant intra-regional energy trading already takes place within South Asia and Southeast Asia, and the latter is more advanced with respect to both volume and institutional infrastructure. Currently, there is no energy trading between the two regions, other than shipments of coal and petroleum products.

### Natural Gas Demand and Supply

Natural gas is playing an increasingly important role as an alternative to the world's declining oil supply. Liquefied natural gas (LNG) has been a key aspect of this evolution. The global trade of LNG is expected to increase by over 2% per year for the next 20 years, and total trade is expected to reach 427 billion cubic meters (bcm) by 2017, with over 300 bcm going to Asian markets (IEA 2013a).

Southeast Asia has far larger reserves than does South Asia. India and Bangladesh together have only 40 years of reserves compared to more than 200 years of reserves in all the Southeast Asian economies. As a result, natural gas trade is expected to take place between South Asia and Southeast Asia. Table 4.1 shows that, except for Indonesia,

**Table 4.1: Export and Import Status of Natural Gas in South Asia and Southeast Asia, 2005–2012** (billion cubic meters)

| Country | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|
| **South Asia** | | | | | | | | |
| Bangladesh | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| India | 6.04 | 7.99 | 9.98 | 10.79 | 11.76 | 11.04 | 14.99 | 14.35 |
| Pakistan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Southeast Asia** | | | | | | | | |
| Indonesia | –37.9 | –37.1 | –36.3 | –36.4 | –34.6 | –41.7 | –38.6 | –35.3 |
| Malaysia | –29.7 | –29.6 | –31.2 | –30.9 | –30.4 | –30.7 | –33.3 | –31.9 |
| Myanmar | –12.2 | –12.6 | –13.5 | –12.4 | –11.6 | –12.4 | –12.8 | –12.7 |
| Philippines | 3.28 | 2.74 | 3.29 | 3.44 | 3.48 | 3.26 | 3.56 | 3.41 |
| Singapore | 6.84 | 7.05 | 8.62 | 8.24 | 8.06 | 8.40 | 8.77 | 8.31 |
| Thailand | 8.86 | 8.98 | 9.36 | 8.58 | 8.31 | 8.82 | 9.59 | 9.85 |
| Viet Nam | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Negative values indicate net exports.
Source: Compiled from BP (2013).

Malaysia, and Myanmar, the other economies in the two regions are net gas importers or have no natural gas trade.

The volume of natural gas trade in the region is much less than LNG trade. Only 34 bcm of natural gas were traded in 2012 through cross-border pipelines. Table 4.2 shows intra-Asian trade of natural gas in volume and by exporting and importing economies.

**Table 4.2: Natural Gas Trade in Asia via Cross-Border Pipelines, 2012** (billion cubic meters)

| To | From | | | |
|---|---|---|---|---|
| | | Indonesia | Myanmar | Other Asia and the Pacific |
| | Australia | 0.0 | 0.0 | 11.0 |
| | PRC | 0.0 | 0.0 | 2.8 |
| | Malaysia | 2.3 | 0.0 | 0.0 |
| | Singapore | 7.9 | 0.0 | 1.7 |
| | Thailand | 0.0 | 8.5 | 0.0 |

PRC = People's Republic of China.
Source: Data from BP (2013).

LNG trade volume in Asia is much larger. Total regional imports of LNG in 2012 were around 210 bcm, out of which around 86 bcm were traded between South Asia and Southeast Asia. Table 4.3 shows the volume of LNG imports by the major economies in the study region with exporting economies across the world.

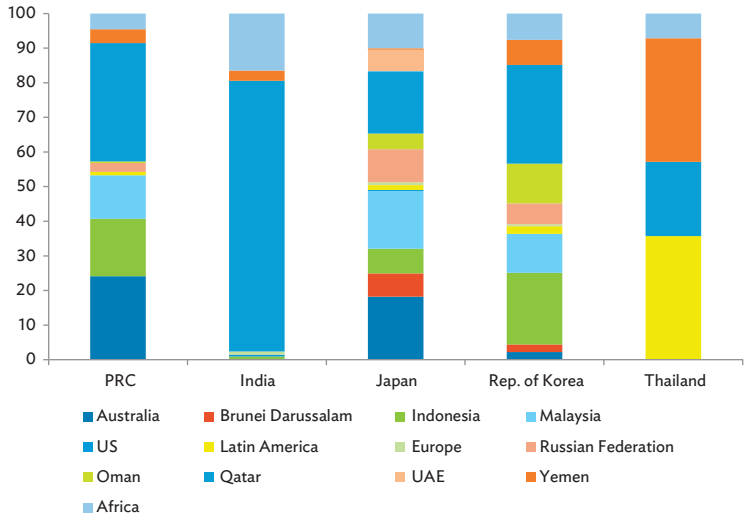
**Table 4.3: LNG Trade in South Asia, Southeast Asia, and Rest of the World, 2012** (billion cubic meters)

| To | From | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Australia | Brunei Darussalam | Indonesia | Malaysia | US | Latin America | Europe | Russian Federation | Oman | Qatar | UAE | Yemen | Africa |
| | PRC | 4.8 | 0.0 | 3.3 | 2.5 | 0.0 | 0.2 | 0.0 | 0.5 | 0.1 | 6.8 | 0.0 | 0.8 | 0.9 |
| | India | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 16.1 | 0.0 | 0.6 | 3.4 |
| | Japan | 21.6 | 8.0 | 8.4 | 19.8 | 0.4 | 1.6 | 1.0 | 11.3 | 5.4 | 21.3 | 7.5 | 0.4 | 11.9 |
| | Rep. of Korea | 1.1 | 1.1 | 10.3 | 5.6 | 0.0 | 1.1 | 0.3 | 3.0 | 5.7 | 14.2 | 0.0 | 3.6 | 3.8 |
| | Thailand | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.5 | 0.1 |

LNG = liquefied natural gas; PRC = People's Republic of China; UAE = United Arab Emirates; US = United States.
Source: Data from BP (2013).

Figure 4.1 shows the current status of LNG imports by some of the major economies in Asia and their supplier economies. India's LNG supply portfolio has low diversity. In contrast, Japan has a high diversity ratio in terms of its LNG suppliers.

**Figure 4.1: LNG Import Portfolio of Major Economies in Asia, 2012** (%)




LNG = liquefied natural gas; PRC = People's Republic of China; UAE = United Arab Emirates; US = United States.

Source: IGU (2011).

The main bottlenecks in South Asia and Southeast Asia in terms of LNG trade are the lack of regasification capacity and in-land LNG transport facilities. In many cases port capacity is also a hurdle for bulk import of LNG. Due to the lack of regasification and storage capacity, South Asia and Southeast Asia face constraints in their ability to import LNG to meet demand. However, there are almost 40 planned new regasification plants in the region, including 14 in Indonesia and 5 in India (Table 4.4).

A common issue in South Asia is the shortage of natural gas, which is a major challenge to growth in Bangladesh, India, and Pakistan. Bangladesh is currently experiencing a natural gas deficit of 300 million standard

**Table 4.4: Actual and Planned Importing Capacity of LNG by Economies in South Asia and Southeast Asia**

| Country | No. of Existing Terminals | No. of Proposed Terminals | Existing Capacity in 2011 (MTPA) | Capacity under Construction (MTPA) | First Year of LNG Import |
|---|---|---|---|---|---|
| Thailand | 1 | 0 | 4.9 | 4.9 | 2011 |
| Indonesia | 1 | 14 | 0.0 | 18.7 | 2012 |
| Malaysia | 0 | 6 | 0.0 | 9.7 | 2012 |
| Pakistan | 0 | 4 | 0.0 | 21.7 | 2012 |
| Bangladesh | 0 | 1 | 0.0 | 3.7 | 2013 |
| Philippines | 0 | 3 | 0.0 | 4.5 | 2013 |
| Singapore | 0 | 1 | 0.0 | 6.0 | 2013 |
| Viet Nam | 0 | 2 | 0.0 | 3.0 | 2015 |
| India | 0 | 5 | 0.0 | 12.0 | 2015 |

LNG =liquefied natural gas; MTPA = million tonne per annum.
Source: Authors' estimates using data from IGU (2011).

cubic feet per day relative to a demand of 2 billion standard cubic feet per day, and consequently a power shortage of 1,500 megawatts (MW) in meeting a peak demand of 5,500 MW.

Natural gas production in Southeast Asia has more than doubled over the last two decades. Table 4.5 shows historic and projected gas production in the Southeast Asian economies that are major producers of natural gas. Indonesia and Myanmar, followed by Malaysia, are the main sources of increases in Southeast Asian gas production from now to 2035. Thailand's gas production is likely to fall by 75%. Total gas production in the region is forecast to grow by 30%, from 203 bcm in 2011 to about 260 bcm in 2035 (IEA 2013b).

All member states of the South Asian Association for Regional Cooperation (SAARC) region faced electricity supply shortages, ranging from approximately 9% in Nepal to 28% in Bangladesh in 2006. Crude oil refining capacity in the region, except in India, is outdated and inadequate, and therefore constraining the domestic supply of petroleum products. Bangladesh, India, and Pakistan are currently deficient in natural gas (Rahman et al. 2011).

**Table 4.5: Gas Production by Economy in Southeast Asia**
(billion cubic meters)

| Country | 1990 | 2011 | 2020F | 2025F | 2030F | 2035F | 2011–2035F Compound Growth Rate |
|---|---|---|---|---|---|---|---|
| Brunei Darussalam | 9 | 13 | 16 | 15 | 15 | 14 | 0.5% |
| Indonesia | 48 | 81 | 108 | 118 | 129 | 139 | 2.3% |
| Malaysia | 17 | 56 | 71 | 68 | 67 | 65 | 0.6% |
| Philippines | 0 | 4 | 5 | 5 | 4 | 4 | 0.2% |
| Thailand | 6 | 28 | 19 | 15 | 11 | 7 | –5.5% |
| Viet Nam | 0 | 9 | 13 | 12 | 12 | 12 | 1.3% |
| **Share of World Production** | **4.0%** | **6.0%** | **6.3%** | **5.8%** | **5.6%** | **5.3%** | **NA** |

F = forecast; NA = not available.
Source: BP (2013).

## Existing Energy Trading Programs

This section describes existing energy trading programs in the region.

### Greater Mekong Subregion

In Southeast Asia, energy cooperation in the GMS is most relevant for cross-regional energy trading, due to the proximity of its member economies to South Asia. However, other connectivity programs with Southeast Asia can also be relevant.

Energy cooperation in the GMS began as part of the GMS Economic Cooperation Program launched in 1992. The program aims at fostering regional cooperation to contribute to growth and poverty reduction and to address the provision of regional public goods. The Asian Development Bank (ADB) has provided support to the GMS since the program's founding, acting as its secretariat and providing coordination, financing, and technical expertise for all sectors covered in the program, including energy.

Recent estimates of the energy resources in the GMS include about 229 gigawatts (GW) of annual hydropower potential, as well as proven reserves of about 1.2 billion cubic meters of natural gas, 0.82 billion tons of oil, and 28.0 billion tons of coal. While the subregion is well endowed with energy resources, they are unevenly distributed. The Lao People's Democratic Republic (Lao PDR), Myanmar, Viet Nam, and the two PRC regions in the GMS account for about 94% of the hydropower resources in

the subregion. The hydropower potential of the Lao PDR and Myanmar is substantial compared with their population size and expected power needs. Myanmar, Thailand, and Viet Nam possess natural gas deposits; Viet Nam has the most oil reserves; and Yunnan Province holds the main coal deposits. Cambodia, Thailand, and the two PRC regions have been net energy importers, while the Lao PDR, Myanmar, and Viet Nam are net energy exporters to other GMS economies and the rest of the world. Similarly, for electric power, the Lao PDR and Myanmar have been generating electricity for export beyond the supply requirements of their domestic consumers (ADB 2012). Table 4.6 shows the level of energy trading in the GMS.

**Table 4.6: Greater Mekong Subregion Power Trade and Net Imports, 2010** (GWh)

| Country | Imports | Exports | Total Trade | Net Imports |
|---|---|---|---|---|
| Cambodia | 1,546 | 0 | 1,546 | 1,546 |
| Lao PDR | 1,265 | 6,944 | 8,210 | –5,679 |
| Myanmar | 0 | 1,720 | 1,720 | –1,720 |
| Thailand | 6,938 | 1,427 | 8,366 | 5,511 |
| Viet Nam | 5,599 | 1,318 | 6,917 | 4,281 |
| PRC | 1,720 | 5,659 | 7,379 | –3,939 |
| **Total** | **17,069** | **17,069** | **34,139** | **0** |

GWh = gigawatt-hour; Lao PDR = Lao People's Democratic Republic; PRC = People's Republic of China.

Notes: The table refers to trade in the Greater Mekong Subregion only and does not consider power flows from Guangxi Zhuang Autonomous Region and Yunnan Province to the rest of the PRC or Thailand's power imports from Malaysia. Totals may not add up due to rounding.

Source: ADB (2012).

As mentioned, regional integration in the GMS energy sector is estimated to save about 19% of total energy costs or about $200 billion. The savings resulting from expanding the interconnection of GMS power systems alone are estimated at $14.3 billion, resulting mainly from the substitution of fossil fuel generation with hydropower. Integration of power systems is also expected to result in slower growth of carbon emissions compared with business as usual (ADB 2012).

In the GMS, the Electric Power Forum, established in 1995, adopted a two-pronged approach to developing the GMS power market, focusing on (i) the policy and institutional framework for promoting power trade, and (ii) physical interconnections to facilitate cross-border power dispatch. A decade after the GMS program commenced, an

intergovernmental agreement on regional power trade in the GMS was signed in November 2002, confirming member countries' commitment to advance power trade and harmonize the development of their power systems based on the principles of cooperation, gradualism, and environmental sustainability. The intergovernmental agreement established a Regional Power Trade Coordination Committee that meets annually or semiannually, and is responsible for setting the rules governing power trade. A Regional Power Trade Operating Agreement was soon created, anchored on four development stages, from bilateral cross-border connections to multiple seller–buyer regulatory frameworks and a wholly competitive regional market.

The Vientiane Plan of Action for GMS Development for 2008–2012 was concluded at the end of 2012. It comprised 73 activities in energy designed around four strategic thrusts, concerned mainly with building the capacity for regional power trade. A GMS Regional Investment Framework and pipeline of projects under the new GMS Strategic Framework (2012–2022) are underway to replace the Vientiane Plan of Action. Presently, the GMS is broadening its focus from regional power trade to include sustainable energy development comprising renewable energy deployment, energy efficiency promotion, and increased energy access. The benefits from regionally integrating the energy sector across the GMS include $200 billion or 19% savings from total energy costs over two decades. A 5.5% reduction in import dependence is likewise anticipated. Moreover, slower carbon emissions growth is expected, for instance, in displacing fossil fuel generation with traded hydropower sources (ADB 2012).

Major institutional milestones for future regional power trade have been taking place. In November 2013, prior to the 19th GMS Ministerial Conference, all six members signed the Memorandum of Understanding for the Establishment of the Regional Power Coordination Center (ADB 2013). The center will be an independent, neutral organization with a legal personality that will oversee the efforts to harmonize power programs, system operations, and regulatory frameworks in the GMS toward a well-coordinated regional power market. Simultaneously, the 19th GMS Ministerial Conference endorsed the pipeline of regional energy cooperation projects for implementation under the new GMS Strategic Framework. It includes national grid investments in Cambodia, the Lao PDR, and Myanmar serving as building blocks for the regional grid while enhancing modern energy access to remote areas. Finally, two working groups—the Working Group on Performance Standards and Grid Code and the Working Group on Regulatory Issues—will continue as agreed in previous Regional Power Trade Coordination Committee meetings.

## Association of Southeast Asian Nations

The Association of Southeast Asian Nations (ASEAN) has developed the ASEAN Plan of Action for Energy Cooperation 2010–2015 that covers the energy component of the ASEAN Economic Community Blueprint 2015. Its aim is to ensure a secure and reliable energy supply for the region through, among others, collaborative partnerships in the ASEAN Power Grid and Trans-ASEAN Gas Pipeline (TAGP), the promotion of cleaner coal use, energy efficiency and conservation, and renewable energy, including biofuels as well as nuclear energy as an option, to support and sustain economic and industrial activities (OGE Asia 2011).

The heads of ASEAN power utilities and authorities conducted the ASEAN Interconnection Master Plan Study (AIMS). The first study, AIMS I, was completed and adopted in 2003 and the second study, AIMS II, was completed in 2010. AIMS proposed a comprehensive plan of regional transmission network that links ASEAN power systems, first on cross-border bilateral terms, then gradually expanding to a sub-regional basis and, finally to an integrated Southeast Asian or ASEAN power grid system. One proposed project is electricity connection between Myanmar and Thailand (Ibrahim 2014).

Coordinated by the ASEAN Council on Petroleum (ASCOPE), TAGP aims to develop a regional gas grid by 2020, by linking the existing and planned gas pipeline networks of the ASEAN members. The updated ASCOPE–TAGP Master Plan 2000 involves the construction of 4,500 kilometers (km) of pipeline mainly undersea, worth $7 billion. The gas pipeline infrastructure had grown from 815 km in 2000 to 2,300 km of cross-border gas pipelines in 2008; consisting of eight bilateral gas pipeline interconnection projects. These pipelines form part of the TAGP, but all are bilateral in nature (Suryadi 2011).

## South Asia Subregional Economic Cooperation

In South Asia, the South Asia Subregional Economic Cooperation (SASEC) programs are most relevant for cross-regional connectivity, in view of the proximity of the member economies to Southeast Asia.

Energy trading agreements within SASEC and with bordering economies include electric power, petroleum products, and coal (Table 4.7). The main trade in electricity is hydropower exported from Bhutan to India, with India also importing smaller amounts of hydropower from Nepal. Trade in fuel and coal via rail or truck is a much simpler matter than electricity trading.

The SASEC Energy Working Group initially met in 2011 to discuss the progress of energy cooperation initiatives and determine priority investment needs and technical assistance requirements, as well as directions for strengthening SASEC cooperation in the energy sector.

## Table 4.7: Major South Asian Energy Trading Bilateral Agreements

| Countries | Areas of Cooperation | Volume of Energy |
|---|---|---|
| India–Bhutan (power) | The Government of India has agreed to import a minimum of 10,000 MW by 2020. This will require increased transmission capacity. | 5,620 GWh |
| India–Nepal (power) | Annual import from India | 100–150 MW |
| India–Bangladesh (diesel) | Import from India | 100,000 tons (2008) |
| India–Nepal and India–Bhutan (petroleum products) | Nepal and Bhutan import from India | 1.2 million tons imported by Nepal (20% annual increase)<br><br>63,875 million tons imported by Bhutan |
| India–Bangladesh (coal) | Coal import from India | 3–4 million tons |
| Myanmar–India–Bangladesh gas pipeline project (proposed) | 900 km ($1 billion) pipeline from the Shwe field off the Bay of Bengal through the Rakhine State in southern Myanmar, from where it would turn east to enter the Indian state of Tripura. The pipeline would then enter Bangladesh at Brahmanbaria and traverse the country to exit at Jessore and terminate at the Indian state of West Bengal. | 5 billion cubic meters of gas |
| Bangladesh–India (memorandum of understanding) | Exchange of power through grid connectivity between the two countries (interconnection between Bheramara in Bangladesh and Baharampur in India)<br><br>Joint venture investment in power generation<br><br>Capacity development of Bangladesh Power Development Board | Scope of the project included a 400 kV, 30 km double circuit line from Bheramara to Baharampur and the establishment of a 500 MW 400/230 kV back-to-back high voltage direct current substation at Bheramara |
| Bangladesh–Myanmar | Negotiation for power trading under process that includes hydropower trade by 2017 from Myanmar | 500 MW |
| Bangladesh–India | Establishment of coal-based power plant at Rampal | 1,320 MW |

GWh = gigawatt-hour; km = kilometer; kV = kilovolt; MW = megawatt.
Sources: BPDB (2013); Gippner (2010).

In 2013, the working group established the SASEC Electricity Transmission Utility Forum to serve as the vehicle for coordinating the development of cross-border power transmission infrastructure and exchanging knowledge and experience. The forum's broad priority areas include development coordination and update of cross-border transmission plans, prioritization of regional grid interconnections, sharing best practices, and capacity development. Its current work plan focuses on providing critical support and technical inputs to the development of the South Asia Transmission Plan. The Bangladesh–India interconnection project is a notable result of this effort (SASEC 2013).

Regarding cross-regional trade, the largest venture is the proposed gas pipeline between Bangladesh, India, and Myanmar that will carry 5 billion cubic meters of gas. Electricity trading between Bangladesh and Myanmar is also being considered.

## Opportunities for Cross-Regional Energy Trading

Energy resource endowments in the two regions are unevenly distributed among the regional economies, making cross-border energy projects more viable. India and Pakistan have considerable hydropower sources, but compared with future demand they would fall short. On the other hand, Bhutan and Nepal have limited energy demand in the foreseeable future compared to their hydropower potential (around 100,000 MW), which is the largest in this region. Bangladesh possesses a large amount of natural gas (around 22.2 trillion cubic feet [tcf], of which 9.2 tcf is proven and 14.4 tcf is probable) that could easily supply gas to India and Pakistan. However, in spite of the availability of such resources in the region, the existing level of cross-border energy trading is limited due to political, fiscal, and infrastructure drawbacks.

With oil reserves of 3.2 billion barrels (bbl) and annual production of 7.3 million bbl, confirmed gas reserves of 18 tcf, probable gas reserves of 89.7 tcf, and hydropower capacity of 39,669 MW, Myanmar is rich in energy resources, and hence the most likely candidate for cross-regional trade (Rahman et al. 2011).[3] It has substantial potential to export electricity from hydropower and natural gas, given that domestic demand levels are still low. Major oil and gas pipelines connecting to gas fields located off Sittwe in the Gulf of Bengal have been developed to provide energy supplies largely to Thailand and the PRC. Natural gas is Myanmar's most important source of export earnings. However, one of the limiting factors for electricity imports by South Asia is that

[3] British Petroleum's estimates of proven natural gas reserves in Myanmar are lower at 7.8 trillion cubic feet (BP 2013).

several of the hydropower projects are being developed as joint venture projects with foreign partners, which will probably want to reserve the electricity production from such projects for their own economies, such as the PRC and Thailand. Also, the Myanmar government may give priority to expanding domestic electricity supply.

Two major offshore gas fields in Myanmar—Yadana and Yetagun—discovered in the 1990s, have been supplying natural gas to Thailand since 2000. In 2004, the discovery of the Shwe gas field off the coast of Sittwe was announced. Production from the Shwe field commenced in 2013 for export to the PRC through an overland pipeline. For Myanmar, in addition to foreign exchange earnings, the project offers possible upstream activities and helps diversify exports of energy resources beyond Thailand, which currently accounts for 75% of Myanmar's gas output. The project will also bring Myanmar benefits in taxation, investment bonuses, transit fees, training, and capital for social aid, as well as job opportunities (Florento and Corpuz 2014).

## Opportunities for Institutional Development

Myanmar has indicated that it will play an important role in the ASEAN Plan of Action for Energy Cooperation 2010–15. The key energy components of the ASEAN Plan of Action are the ASEAN power grid and the ASEAN gas pipeline, both of which seek to connect all 10 ASEAN countries through infrastructure. Progress in meeting targets to establish the soft and hard infrastructure has been slow. A fundamental issue is that economies are more concerned with energy security at a national level and ignore possible benefits from regional energy trading. To address this issue, Myanmar can help promote the concept of collective energy security to take advantage of the region's diverse energy resources, provide reliable economical energy supply, and reduce overall energy dependence on the rest of the world (Florento and Corpuz 2014).

SAARC members can cooperate in developing projects under the Clean Development Mechanism (CDM). By 2010, India was one of the leading CDM destinations, and CDM activity in India is second only to that of the PRC. India's carbon baseline is such that prospective hydropower projects in the neighboring economies can become viable by supplying power to India to replace some of its thermal base generation and help in greenhouse gas mitigation. Bhutan and India are already cooperating in this respect. This is, again, an example of a regional (if not global) public good that requires cooperative, government initiatives to achieve the goal of slowing climate change due to greenhouse gas emissions. In this case, the CDM provides some

short-term incentives, but still requires efforts by the governments of participating economies in any specific project (Rahman et al. 2011).

ADB has indicated support for development of joint projects (for example, in Bhutan) through partnerships of SAARC countries. SAARC countries could also learn from international good practices such as the ASEAN Power Grid (Rahman et al. 2014).

## Obstacles to Energy Trading

Numerous barriers confront energy trading, including technical, political, and environmental ones. Technical barriers are extensive, ranging from grid synchronization and grid codes to electric power and natural gas pipeline technology. There tends to be political resistance to energy trade within South Asia. Negotiations for trading agreements are affected by unequal starting positions and differing security concerns. Political instability can also hinder such negotiations.

Regulatory barriers, distorted energy pricing, and subsidy regimes in South Asia discourage energy trading on commercial terms, as the entities that are selling energy at subsidized rates will have to pay for the energy at cost, with negative financial consequences. Infrastructure and financial barriers are also formidable. Finally, hydropower generation and the construction of multipurpose projects can have significant environmental repercussions. The construction of multipurpose projects, including large reservoirs, means a disruption of riverine fauna, and displacement of human settlements and agriculture (Gippner 2010).

There are constraints on trading large amounts of electricity. The amount of future investment in electricity capacity will depend on the parties' willingness to participate. The willingness of the local people to allow large-scale hydropower plants to be built depends on the costs and benefits for them. New power plants may reduce their income and harm the environment; therefore, environmental and social issues need to be addressed. Also, strong interest groups that receive subsidies in the form of lower energy prices may not be willing to export energy and consequently pay a higher price for their consumption (Chirathivat and Cheewatrakoolpong, forthcoming).

Energy markets in the SAARC economies are governed by individual legal, regulatory, and policy frameworks, and there is wide diversity among them. In some SAARC economies, energy falls under the purview of a single ministry, while in others, multiple ministries handle energy-related and energy subsector issues. These differences add complexities to regional energy trade, as it is difficult to draw one-to-one relationships across economies.

Differences also exist in the structure and mandate of the regulators. Their roles range from multisector regulation and overall energy sector regulation to energy subsector regulation. India and Pakistan have separate regulators for each energy sector, while Bangladesh has one energy regulator. In Sri Lanka, the role of the Public Utilities Commission is not restricted to the energy sector. Such divergences in the mandates of regulators across the region can impede the development of energy trade. As a first step, these regulators need to work together to develop a road map for harmonizing the relevant regulations (Rahman et al. 2011).

## 4.4 Identification of Energy Trading Projects and Costs

As mentioned earlier, electric power transmission from hydropower projects and shipments of natural gas via pipeline or tanker are the most obvious ways for Myanmar to develop energy trading with India and Bangladesh. India is developing the Tamanti multipurpose project, close to the India–Myanmar border, with an installed hydropower capacity of 1,200 MW in the first stage, 400 MW in the second stage, and 700 MW in the third stage. Most of the electricity generated from this project is meant for export to northeast India, and a transmission line will be constructed to the Indian border as part of the project (SAARC Secretariat 2010; World Bank 2008). It is located in northern Myanmar, close to the Indian border and will have substantial irrigation, navigation, and flood control benefits for Myanmar.

Myanmar has invited substantial FDI for the exploration and development of oil and gas fields. Investors from Australia, Canada, the PRC, Indonesia, India, the Republic of Korea, Malaysia, Thailand, and the United Kingdom are engaged in Myanmar's oil and gas sector (World Bank 2008). Indian energy companies from both the public and private sectors have taken equity stakes for the development of gas and oil fields in Myanmar (SAARC Secretariat 2010). However, it should be noted that the GMS Regional Investment Framework pipeline of potential projects for 2013–2022 (GMS Secretariat 2013) does not contain any cross-border projects directly involving energy trade between Myanmar and South Asia.

To transport gas to West Bengal, India held negotiations with Bangladesh to provide the transit facilities. In January 2005, Bangladesh agreed to allow the 895 km pipeline to pass through its territory. However, as the Bangladesh government continues to press for wide-ranging trade concessions in return, which have not yet been finalized, companies in

Myanmar and India have begun considering alternative options such as (i) an overland route to India bypassing Bangladesh, (ii) an undersea pipeline to India, and (iii) LNG shipments. As negotiations with Bangladesh continue, the prospects for a pipeline through Bangladesh are uncertain. A pipeline bypassing Bangladesh would be much longer at 1,573 km and would cost $3 billion (World Bank 2008). In the end, Myanmar decided to transport gas from some of the fields to the PRC instead (SAARC 2010).

Bangladesh has also expressed willingness to import energy from Myanmar. This could be done under a separate agreement for energy trade among regional economies (Ministry of Power, Energy, and Mineral Resources 2004; Obaidullah 2010). Existing complementarities and synergies of energy production and consumption in South Asia have induced the economies to adopt measures for exploring and utilizing potential unexplored energy sources within the region (Singh 2009). The National Energy Policy of Bangladesh 2004 also provides incentives to attract foreign companies to invest in its energy sector (Rahman et al. 2014).

## 4.5 Model Projections

This study conducted a model projection analysis for enhanced energy trade between the two regions. Two scenarios were considered. In the first, business-as-usual (BAU) scenario, primary energy consumption and production in Southeast Asia is assumed to be in line with current government policy implementation in a mid- to long-term time frame. The second scenario, enhanced energy trade (EET), takes account of trade in natural gas potential between the two regions. In this scenario, it is assumed that Southeast Asia will strengthen its LNG exporting capacity from 2020 to 2050 to take advantage of opportunities for export to South Asia and elsewhere.

The results suggest that, if Southeast Asia uses its natural gas potential, substantial trade between South Asia and Southeast Asia is likely to occur. By 2050, Southeast Asia will become a net gas exporter, but a net importer of other forms of energy resources. (This report focuses on the results up to 2030.) Investment in Southeast Asia is required mostly in augmented LNG liquefaction capacity and for new exploration. Chang and Li (2013), in their study of projections of cross-border energy trade within ASEAN up to 2030, also identify natural gas as the energy sector with the most growth potential.

Table 4.8 shows the total investment needs for the two regions under the two scenarios. Total energy investment demand will be around

**Table 4.8: Comparison of Energy Sector Investments in BAU and EET Scenarios in South Asia and Southeast Asia** (2005 $ billion)

| | 2010–2020 | | 2020–2030 | | 2010–2020 | 2020–2030 |
|---|---|---|---|---|---|---|
| | BAU | EET | BAU | EET | Net Change | |
| **South Asia** | | | | | | |
| Coal | 3.8 | 3.8 | 5.9 | 5.9 | –0.1 | –0.1 |
| Oil | 2.9 | 2.9 | 4.1 | 4.1 | 0.0 | –0.1 |
| Gas | 4.9 | 4.9 | 11.2 | 10.7 | 0.1 | –0.5 |
| Renewable | 2.5 | 2.5 | 13.3 | 12.9 | 0.0 | –0.4 |
| Electricity | 36.2 | 36.2 | 68.5 | 68.4 | 0.0 | 0.0 |
| **Total** | **50.3** | **50.3** | **103.0** | **102.0** | **0.0** | **–1.1** |
| **Southeast Asia** | | | | | | |
| Coal | 0.9 | 0.9 | 0.9 | 0.9 | 0.1 | 0.0 |
| Oil | 8.0 | 8.9 | 7.1 | 7.9 | 0.9 | 0.8 |
| Gas | 7.5 | 8.8 | 10.0 | 10.5 | 1.4 | 0.5 |
| Renewable | 2.3 | 2.3 | 4.0 | 4.0 | 0.0 | 0.0 |
| Electricity | 30.1 | 30.0 | 28.2 | 28.5 | –0.1 | 0.3 |
| **Total** | **48.7** | **50.9** | **50.2** | **51.8** | **2.3** | **1.6** |

BAU = business as usual; EET = enhanced energy trade.

Note: Investment figures are cumulative for each 10-year period. Net change = EET – BAU.

Source: Authors' estimates.

$10 billion per year in the current decade, rising to about $15 billion per year in 2020–2030, mainly reflecting strong investment growth in South Asia. In both regions, the electricity sector has the largest demand for investment. In Southeast Asia, about $3 billion per year is needed in the electricity sector, while in South Asia the figure rises from about $3.6 billion per year in 2010–2020 to about $6.9 billion per year in 2020–2030. Energy trade is also expected to lead to some fuel shifting due to variations in the marginal price of electricity. In Southeast Asia, oil will become more dominant for power generation, whereas in South Asia, it will be gas.

Under the EET scenario, Southeast Asia will see increased investment costs of about $4 billion over the two decades, about half of which—$1.9 billion—will be in the natural gas sector and most of the remainder in the oil sector. In contrast, South Asia will see no change in investment in 2010–2020 and a slight drop in investment in 2020–2030 due to its increased ability to import energy from Southeast Asia.

Although investment costs will rise in Southeast Asia, they will be covered by revenues from increased exports to South Asia.

The model does not identify specific individual investments since the simulation model can only provide aggregated investment demand at the regional level. Tables 4.9 and 4.10 show suggested sectoral investment priorities in Southeast Asia and South Asia, respectively, under the enhanced energy trade scenario, including the time frame of enhanced investment in the corresponding sectors. The development of LNG terminals and liquefaction units in Indonesia, Malaysia, and Myanmar is a key priority in both decades. The coal mining and extraction and coal transportation sectors in Southeast Asia also need an enhanced level of investment during 2010–2020 to achieve the benefits of enhanced regional energy trade. Projects related to these sectors should therefore have priority in Southeast Asia during 2010–2020. Similarly, the oil refinery sector should be consistently deemed an investment priority to cope with the steadily rising demand for oil and petroleum products in the region. Hydropower development in Myanmar is also a priority.

South Asia needs investment mainly in natural gas exploration and electricity generation. The simulation results suggest that joint venture projects such as those between South Asia and Myanmar for offshore gas field projects can be of great benefit (Table 4.9). Although

**Table 4.9: Energy Sector Investment Priority Mapping with Examples for Southeast Asia**

| Sector | 2010–2020 | 2020–2030 |
|---|---|---|
| **Coal** | | |
| Coal mining and extraction | Greenfield coal mine projects in Indonesia with CBM | |
| Coal shipping and distribution | Develop coal export ports in Viet Nam | |
| **Oil** | | |
| Oil extraction | New oil field exploration in Viet Nam and Indonesia | |
| Refining | Develop integrated advanced refineries in Indonesia, Thailand, Viet Nam, and Myanmar<br><br>Refinery throughput improvement projects in Thailand and Indonesia | |

*continued on next page*

*Table 4.9 continued*

| Sector | 2010–2020 | 2020–2030 |
|---|---|---|
| **Natural Gas** | | |
| Gas extraction | Greenfield gas exploration in Myanmar<br><br>Gas exploration efficiency improvement in Myanmar | |
| Gas shipping and distribution | Develop LNG terminals / Floating LNG terminals<br><br>Develop liquefaction units in Indonesia, Malaysia, and Myanmar<br><br>Develop regasification plants<br><br>Implement ASEAN gas pipeline network | |
| **Electricity** | | |
| Generation | | Critical thermal power projects in Indonesia and Viet Nam |
| | | Combined cycle gas power plants in Myanmar |
| | | Hydropower plants in Myanmar |
| Transmission and distribution | Implement ASEAN power grid plan | |

ASEAN = Association of Southeast Asian Nations; CBM = coal bed methane; LNG = liquefied natural gas.
Source: Authors' estimates using simulation results.

the simulation model does not produce country-specific trade flow estimates, the overall results of the model in terms of the direction of energy trade flows, coupled with the abundance of offshore gas resources in Myanmar and its strategic location between South Asia and Southeast Asia, implies that such joint venture projects are likely to be beneficial for both regions and individual economies.

Table 4.11 lists potential priority energy infrastructure projects in South Asia and Southeast Asia. They were selected based on the investment requirements in the given time frame described above derived from the energy systems simulation under the enhanced

## Table 4.10: Energy Sector Investment Priority Mapping with Examples for South Asia

| Sector | 2010–2030 |
|---|---|
| **Natural Gas** | |
| Gas extraction | Exploration of new gas fields in India<br><br>Efficiency improvement of gas extraction<br><br>Joint venture projects with Myanmar for offshore gas field development |
| **Electricity** | |
| Generation | Develop thermal power projects with SC/USC in India<br><br>Stabilize coal and gas supply for power generation in India |
| Transmission | Transmission lines from Myanmar to India |

SC/USC = supercritical/ultra-supercritical technology.
Source: Authors' estimates using simulation results.

## Table 4.11: Priority Energy Projects

| Energy Sector | Project | Estimated Project Cost ($ billion) |
|---|---|---|
| **Southeast Asia** | | |
| Coal | Coal sector reform in Indonesia along with development of successful PPP model | NA |
| | Coal bed methane extraction and energy generation in mines in Indonesia and Viet Nam. Barito and Central Sumatra Basin project with 100 tcf gas | 6[a] |
| Natural gas | Myanmar offshore Shwe gas field development with more than 15 tcf reserve | 3–5[b] |
| | LNG exporting facility development including liquefaction plant and LNG terminals in Indonesia and Malaysia | 10–12[c] |
| Hydroelectric power | Tamanti hydroelectric plant in Myanmar | NA |
| **South Asia** | | |
| Natural gas | Myanmar–Bangladesh–India gas pipeline project (900 km) | 1–1.5[b] |
| | LNG import terminals and port facility development in India | 3–4[c] |
| **Total** | | **23–28.5** |

km = kilometer; LNG = liquefied natural gas; NA = not available; PPP = public–private partnership; tcf = trillion cubic feet.

Sources:
[a] Estimated using data from http://www.cbmasia.ca/uploads/file/CBMA_PRESENTATION_June_2013.pdf
[b] Estimated using data from http://www.thedailystar.net/higher-gas-prices-key-to-woo-iocs-35326
[c] Estimated using data from http://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/02/NG-83.pdf

energy trade scenario, together with qualitative assessments of other non-financial aspects such as ongoing bilateral government initiatives, results of project feasibility studies, and presence of strong political will to promote certain projects.

Total estimated investment costs of the priority projects range from $23 billion to $28.5 billion. Projects related to natural gas development make up about three quarters of the total, including $19 billion–$23 billion in Southeast Asia and $4 billion–$5.5 billion in South Asia.

## 4.6 Summary and Recommendations

The main opportunities for energy trading between South Asia and Southeast Asia (aside from conventional shipments of coal or petroleum products via sea or rail) lie in the areas of electric power (mainly hydropower) and natural gas pipelines. Given its substantial reserves of hydropower capacity and natural gas, plus its critical position as a pipeline location, Myanmar has the potential to play a key role in exploiting such opportunities. Moreover, Myanmar can benefit substantially from opening up and becoming a bridge between South Asia and Southeast Asia.

The modeling results suggest that if Southeast Asia uses its natural gas potential, substantial trade in natural gas between the two regions is likely to occur. Investment in Southeast Asia is required mostly in added LNG liquefaction capacity and for new exploration. Total investment needs will be around $10.0 billion per year. In both regions, the electricity sector is the most important area in need of investment. In Southeast Asia, as much as $3.0 billion per year is needed in the electricity sector, while in South Asia the figure is higher, ranging from $3.6 billion in 2010–2020 to $6.8 billion in 2020–2030. Energy trade is also expected to lead to some fuel shifting due to variations in the marginal price of electricity. In Southeast Asia, oil will become more dominant for power generation, whereas in South Asia, gas will become dominant.

The study has identified priority investment projects with costs ranging from $23 billion to $28.5 billion. Projects related to natural gas development make about three quarters of the total, including $19 billion–$23 billion in Southeast Asia and $4 billion–$5.5 billion in South Asia. Development of the Myanmar–Bangladesh–India gas pipeline project would be an important component of this.

Despite these opportunities, energy trading is still low between South Asia and Southeast Asia, and there is no electricity trading at all.

A number of hindrances have been identified that inhibit cross-regional energy trade, including:

- technical barriers, in particular grid synchronization and grid codes to electric power and natural gas pipeline technology;
- potential difficulties in negotiations for trading arrangements resulting from varying levels of economic development, resource endowments, and different security concerns;
- infrastructure and financial barriers, including lack of development of domestic energy infrastructure;
- regulatory barriers and distorted energy pricing and subsidy regimes;
- environmental issues involving construction of multipurpose projects; and
- political issues, including resistance to energy trade in some economies.

Removing these barriers could have a strong positive effect on cross-regional trade and could generate substantial welfare gains to both regions. The extent of the gains depends on how the South Asian and Southeast Asian economies formulate their policies. The key challenges will be to develop both the physical and institutional infrastructure that can enable such trading to take place. For example, linking the GMS and SASEC electric power grids to deepen power pooling and interconnection arrangements could obtain further advantages.

The following areas require attention:

- **Developing a policy and institutional framework:** Lack of institutional development and appropriate policies is a major factor behind the absence of energy trade between the two regions. The GMS provides a good example of how cooperation and gradualism can help move forward energy and power trading. A clear goal is needed to connect the two regions' energy sectors that should be supported by national governments as well as subregional, regional, and international institutions.
- **Mobilizing investment in regional energy infrastructure projects:** Regional energy projects face difficulties in attracting financing due to their inherent problems, including risk factors and lengthy time duration for recouping the investment, even though they may reduce regional energy production and supply costs.
- **Identifying bankable projects:** The ASEAN Interconnection Master Plan Study I and II have identified several intra-regional projects. Similarly, cross-regional bankable projects

should be identified on a priority basis. Myanmar, due to its energy resources potential and its strategic location, offers an opportunity to be the energy hub between the two regions.

- **Engaging regional and international development institutions:** ADB, the World Bank, and other multilateral institutions can play important roles in developing cross-regional infrastructure, including energy (Kuroda, Kawai, and Nangia 2008). They can work as financiers while at the same time mitigating risks; providing technical know-how, particularly country-specific information; helping in capacity development; and most importantly working as a catalytic factor for promoting cross-border projects (ADB and ADBI 2009).

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CHAPTER 5

# Infrastructure Finance and Financial Sector Development

## 5.1 Introduction

Financing infrastructure projects presents challenges, particularly for regional and cross-border projects[1] where spillover benefits can be substantial and unequal, and some countries involved are more constrained than others in financial capacity, institutional infrastructure, and governance levels. Countries with less developed financial markets face funding gaps in the size of potential savings and the maturity and currency of investment flows. Although savings in the region are more than adequate to finance needed infrastructure investment, there are disparities in the distribution of savings and financial development across countries that require cooperative measures and institutional development to attract needed funds for projects.

Public funds can only cover a fraction of infrastructure projects, and the contributions from bilateral donors and multilateral institutions are limited, pointing to the need for substantial private sector investment. However, in many cases institutional infrastructure to support public–private partnership (PPP) arrangements is also inadequate. Such constraints are important in most South Asian countries, as well as Cambodia, the Lao People's Democratic Republic (Lao PDR), Myanmar, and Viet Nam in Southeast Asia. Regional projects will have to be split between those that must be financed by public investment and those whose economic prospects would make them attractive to private investment. In this environment, multilateral development banks (MDBs)

[1] Regional infrastructure projects are defined as projects that involve physical construction and coordinated policy actions in more than one country or national projects with significant cross-border impacts.

such as the Asian Development Bank (ADB) will need to play multiple facilitating roles. PPP projects should be viewed more as a top-up to more conventional funding methods than a panacea.

The countries that are critical to land-based connectivity between South Asia and Southeast Asia are Bangladesh, India, Myanmar, and Thailand. These countries, with the possible exception of Myanmar,[2] allow domestic private investment and foreign direct investment (FDI) in infrastructure. Their PPP frameworks are evolving, with India, for example, having a large structured PPP program for private sector investment in infrastructure. However, challenges lie in the development of bankable infrastructure projects with appropriate risk sharing to attract the right kind of capital, and the financial sector's ability to provide long-term infrastructure finance.

The rest of the chapter is organized as follows. Section 5.2 provides the rationale for improved infrastructure-related finance between South Asia and Southeast Asia. Section 5.3 assesses regional financial sectors and financial markets from the standpoint of their capacity for infrastructure funding. Section 5.4 assesses funding options for infrastructure finance. Section 5.5 identifies major regulatory and institutional constraints. Section 5.6 proposes some frameworks for infrastructure financing and Section 5.7 presents some financing solutions for regional projects. Section 5.8 concludes.

## 5.2 Rationale for Greater Financial Integration

Asia's infrastructure financing needs are huge. Bhattacharyay (2012) estimates that South Asia and Southeast Asia need at least $3.6 trillion over this decade in domestic infrastructure investment if they are to meet the needs of their growing populations and rising incomes (Table 5.1). However, the underlying issue is not a shortage of money: gross national savings in the two regions totaled $1.36 trillion in 2011 alone, and there are plenty of funds in East Asian and other financial markets looking for reliable long-term returns to meet a significant part of this financing requirement.

In addition, it is estimated that costs of cross-border infrastructure projects in the two regions total $214 billion (Table 5.2). This total includes any projects connecting countries within the two regions, as well as connections with countries in other regions. Railway-related projects account for over half of the total, followed by airports and

[2] Myanmar has started inviting private sector investment in some infrastructure sectors, and clarity on its investment laws is expected to improve.

### Table 5.1: South Asian and Southeast Asian Domestic Infrastructure Financing Needs, 2010–2020

| Country | Investment Requirement, 2010–2020 | | Annual Gross Savings, 2011 |
|---|---|---|---|
| | ($ billion) | (% of GDP) | ($ billion) |
| **South Asia** | **2,549.1** | **10.8** | **729.8** |
| Bangladesh | 144.9 | 11.6 | 30.9 |
| Bhutan | 0.9 | 4.1 | NA |
| India | 2,172.5 | 11.1 | 641.4 |
| Nepal | 14.3 | 8.5 | NA |
| Pakistan | 178.6 | 8.3 | 44.5 |
| Sri Lanka | 38.0 | 6.9 | 13.0 |
| **Southeast Asia** | **1,094.6** | **6.2** | **629.9** |
| Cambodia | 13.4 | 5.4 | 1.3 |
| Indonesia | 450.3 | 6.2 | 288.0 |
| Lao PDR | 11.4 | 13.6 | NA |
| Malaysia | 188.1 | 6.7 | 99.6 |
| Myanmar | 21.7 | 6.0 | NA |
| Philippines | 127.1 | 6.0 | 99.7 |
| Thailand | 172.9 | 4.9 | 102.7 |
| Viet Nam | 109.8 | 8.1 | 38.5 |
| **Total (South Asia + Southeast Asia)** | **3,643.8** | **8.8** | **1,359.8** |

GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; NA = not available.

Sources: Adapted from Bhattacharyay (2012); ADB SDBS Database. https://sdbs.adb.org/sdbs/index.jsp (accessed 5 Jun 2014); CEIC Data. http://www.ceicdata.com/en (accessed 15 Jun 2014).

ports. As described in Chapters 3 and 4, projects specifically related to connecting South Asia and Southeast Asia are estimated at $73.1 billion, about a third of the total, of which $8.4 billion are for priority projects. (This subtotal excludes airports and logistics projects.)

The main problem is the gaps in the distribution of those funds, and the fact that the frameworks and instruments needed to bridge these gaps are in their infancy. As shown in Table 5.1, India alone accounts for about 60% of total infrastructure investment needs, and South Asia overall for 70%, but their shares of total savings in the two regions are much smaller—47% and 54%, respectively. Southeast Asia (and East Asia), on the other hand, is more well endowed with savings. This points to the potential for encouraging cross-regional capital flows.

**Table 5.2: South Asian and Southeast Asian Cross-Border Infrastructure Investment Needs, 2010–2020** ($ million)

| Regional/ Subregional Program | Energy | Transport | | | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | | Airport/ Port | Rail | Road | TF/ Logistics | Total | |
| Asian Highway | NA | NA | NA | 17,425 | NA | 17,425 | 17,425 |
| Trans-Asian Railway | NA | NA | 107,469 | NA | NA | 107,469 | 107,469 |
| Asian Container Ports | NA | 51,466 | NA | NA | NA | 51,466 | 51,466 |
| GMS | 2,604 | 200 | 1,523 | 3,972 | 163 | 5,858 | 8,462 |
| ASEAN | 11,583 | NA | 16,800 | NA | NA | 16,800 | 28,383 |
| SASEC | 133 | NA | NA | NA | 203 | 203 | 336 |
| **Total** | **14,320** | **51,666** | **125,792** | **21,397** | **366** | **199,221** | **213,541** |

ASEAN = Association of Southeast Asian Nations; GMS = Greater Mekong Subregion; NA = not available; SASEC = South Asia Subregional Economic Cooperation; TF = trade facilitation.

Source: Adapted from Bhattacharyay (2012).

Moreover, traditional sources of funding are under pressure. Governments, the key providers of funds for essential public infrastructure, are facing increasing budget pressures, making private funding crucial for development funding and financing of infrastructure projects. Bank finance, the traditional source of funding in the two regions, is also becoming scarcer and more expensive. Private infrastructure funding in the region was traditionally dominated by large European and American banks, but, after the global financial crisis of 2007–2009, these sources started to dry up due to financial problems in the United States and Europe as well as tighter capital adequacy standards under Basel III regulations. The potential impacts of tighter regulations on Asian economies and financial markets are described in Morgan and Pontines (2013).

A third factor is the immaturity of the domestic capital markets in the two regions. Bond market investors—especially in times of turmoil—tend to prefer "plain vanilla" investments, preferably with solid ratings. As the market is not sophisticated and contract performance risks are not appropriately defined, traditional project financing structures invariably receive sub-investment grade ratings, particularly when seeking financing on a non-recourse basis. Additionally, the illiquidity of regional bond markets, lack of market making, lack of a reliable yield curve and related benchmarks, and mistrust in financial reporting

by corporations, keep institutional and retail investors away from corporate bonds that could finance developers' equity in projects. Instead these savings traditionally get channeled to more attractive investment options in physical assets like gold and real estate, or into dollar assets.

Improvements in regional capital markets are occurring, but unevenly, with Southeast Asia seeing the most progress. Some more mature regional banking networks, for example those of Singapore, have a demonstrated appetite for longer-term infrastructure financing products across the region. The available amount of liquidity for longer-term financing for local infrastructure projects has increased in countries like Thailand and Philippines, with local banks providing more funding to long-term projects, especially in local currencies. Malaysia has shown the way for tapping local and regional capital markets to refinance projects once they have been built or risks have been mitigated, thereby freeing up bank funding for new projects. In response to these developments, ADB has put together a credit enhancement scheme in India for market-listed debt securities, together with the state-owned India Infrastructure Finance Company Limited, offering a credit default guarantee of up to 40% to domestic infrastructure projects which have completed 3 years of operations.

A fourth factor is the low level of regional financial integration, suggesting that there is untapped potential for interregional capital flows. For example, as described in Chapter 2, cross-regional portfolio investment remains limited. Therefore, the challenge is to promote both the development of local capital markets and greater inter-regional financial integration to facilitate the channeling of Asia's ample savings to worthwhile infrastructure investments. New institutions and markets would be needed to tap any intermediate savings within the region. This requires a multipronged approach, including reforms of banking and capital markets, liberalization of cross-border capital flows, further development of domestic bond markets, expansion of domestic infrastructure funds and facility structures, promotion of PPP, greater participation of regional financial institutions and regional infrastructure funds, regulatory changes to permit investments in infrastructure by social security, insurance companies and pension funds, development of private equity funds, and development of credit guarantee and credit enhancement institutions and mechanisms.

## 5.3 Financial Sector and Market Assessment

This section reviews the capacity of domestic financial sectors in the two regions to finance infrastructure investment, including bank lending to

the private sector, stock markets, and public and private bond markets. It also examines the current status of infrastructure project finance in the region.

## Financial Sector Capacity

Table 5.3 shows the overall share of financing capacity in individual countries relative to gross domestic product (GDP), including bank lending to the private sector and outstanding levels of equity and bond markets for countries in the two regions. The table highlights the large variation in overall financing capacity by country and the gaps in the availability of specific markets, especially in South Asia. The last column of the table shows total financing capacity relative to GDP, which ranges from 362.6% of GDP for Malaysia to only 8.2% for Myanmar and 6.8% for Afghanistan. Average total funding in South Asia relative to GDP is substantially less than in Southeast Asia. Overall, only Malaysia, Singapore, and Thailand have domestic financial capacity comparable with that of Northeast Asia.

Fiscal deficits predominate in the region, limiting the scope for public finance of infrastructure. Table 5.4 shows fiscal balances of South Asian and Southeast Asian economies as a percentage of GDP. Fiscal deficits are particularly large in India, the Maldives, Pakistan, and Sri Lanka in South Asia, and in Malaysia, Myanmar, Cambodia, and Viet Nam in Southeast Asia.

The banking sector dominates commercial credit but is often unsuitable for the long-term lending required by commercial infrastructure projects. In 2011, the banking sector still made up more than half of total financing in South Asia except in India, Pakistan, and Sri Lanka, and in Southeast Asia except for Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Equity markets are well developed in some economies, including India, Sri Lanka, and the higher income Southeast Asian countries. However, equity markets in lower-income countries are less developed, and Afghanistan, Brunei Darussalam, and Myanmar still lack equity markets.

Bond markets in both regions typically have narrow investor bases and low liquidity in secondary markets, and the usual strategy is that of buy and hold with limited retail participation. In South Asia, only India has a private bond market, while in Southeast Asia, Brunei Darussalam, Cambodia, and the Lao PDR lack both public and private bond markets.[3] Even among countries that have private bond markets,

[3] Myanmar has a government bond market, but no data are available.

## Table 5.3: South Asian and Southeast Asian Sources of Financing (% of GDP)

| | Private Credit by Deposit Money Banks and Other Financial Institutions | | | Stock Market Capitalization | | | Outstanding Domestic Public Debt Securities | | | Outstanding Domestic Private Debt Securities | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 |
| **South Asia** | | | | | | | | | | | | | | | |
| Afghanistan | NA | 5.0[j] | 6.8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 5.0 | 6.8 |
| Bangladesh | 15.1[c] | 22.7 | 44.6 | 2.1[c] | 2.1 | 17.3 | NA | NA | 13.3[k] | NA | NA | NA | NA | NA | 75.2 |
| Bhutan | 0.7 | 1.4 | 45.0 | 10.8[e] | 12.0 | 17.8 | NA | NA | 0.8 | NA | NA | NA | 11.5 | 13.3 | 63.6 |
| India | 24.1 | 26.5 | 47.1 | 9.7 | 34.3 | 69.7 | 18.1 | 21.8 | 29.6 | 0.3 | 0.4 | 4.9 | 52.1 | 83.1 | 151.4 |
| Maldives | NA | 42.6[i] | 81.0 | NA | 8.3 | 6.5[k] | NA | NA | NA | NA | NA | NA | NA | 50.9 | 87.5 |
| Nepal | 11.7 | 27.7 | 50.0 | 5.8[d] | 10.5 | 25.3 | NA | NA | 12.0[k] | NA | NA | NA | NA | NA | 87.2 |
| Pakistan | 23.3 | 21.0 | 18.0 | 6.3 | 8.7 | 16.9 | 27.4 | 34.4 | 30.7 | NA | NA | NA | 57.0 | 64.1 | 65.6 |
| Sri Lanka | 17.7 | 27.0 | 26.7 | 7.9 | 7.8 | 33.8 | 41.6 | 53.8 | 42.9 | NA | NA | NA | 67.2 | 88.6 | 103.4 |
| **Southeast Asia** | | | | | | | | | | | | | | | |
| Brunei Darussalam | NA | 53.7[g] | 32.8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 53.7 | 32.8 |
| Cambodia | 3.1[d] | 5.9 | 26.8 | NA | NA | 0.3 | NA | NA | NA | NA | NA | NA | 3.1 | 5.9 | 27.1 |
| Indonesia | 38.0 | 17.6 | 28.2 | 4.4 | 26.5 | 45.1 | 0.7[f] | 28.5 | 10.8 | 1.6[f] | 1.3 | 1.4 | 44.6 | 74.0 | 85.5 |
| Lao PDR | 0.5 | 6.7 | 19.9[k] | NA | NA | 7.4 | NA | NA | NA | NA | NA | NA | 0.5 | 6.7 | 27.3 |
| Malaysia | 77.0 | 122.8 | 106.4 | 100.0 | 139.6 | 144.1 | 54.8 | 28.2 | 54.0 | 18.2 | 32.8 | 58.1 | 250.0 | 323.4 | 362.6 |
| Myanmar | 3.3 | 8.2 | 8.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.3 | 8.2 | 8.2 |
| Philippines | 19.5 | 39.0 | 29.8 | 18.9 | 38.1 | 73.9 | 23.8 | 24.6 | 29.1 | 0.2[e] | 0.2 | 1.0 | 62.4 | 101.9 | 133.7 |
| Singapore | 86.3 | 104.8 | 106.9 | 98.9 | 182.2 | 148.1 | 12.5 | 23.9 | 45.4 | 16.0 | 16.5 | 10.0 | 213.7 | 327.4 | 310.5 |
| Thailand | 72.4 | 116.6 | 130.9 | 29.3 | 34.6 | 81.7 | 3.3 | 13.7 | 49.8 | 6.6 | 11.5 | 12.7 | 111.6 | 176.3 | 275.1 |
| Viet Nam | 17.2[e] | 30.4 | 107.7 | NA | 0.4[h] | 15.4 | NA | 0.3 | 12.7 | NA | 0.0 | 1.7 | NA | 30.7 | 122.1 |

*continued on next page*

*Table 5.3 continued*

| | Private Credit by Deposit Money Banks and Other Financial Institutions | | | Stock Market Capitalization | | | Outstanding Domestic Public Debt Securities | | | Outstanding Domestic Private Debt Securities | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 | 1990 | 2000 | 2011 |
| **Northeast Asia** | | | | | | | | | | | | | | | |
| China, People's Rep. of | 75.3 | 107.2 | 121.5 | 2.3[b] | 38.3 | 58.8 | 2.5 | 8.1 | 22.4 | 3.3 | 7.1 | 23.1 | 83.4 | 160.7 | 225.8 |
| Hong Kong, China | 140.1[a] | 147.8 | 186.2 | 105.3 | 356.9 | 396.8 | 1.3 | 8.7 | 36.0 | 0.2 | 17.1 | 15.3 | 246.9 | 530.5 | 634.4 |
| Japan | 183.4 | 222.3 | 174.9 | 115.2 | 84.1 | 68.8 | 43.5 | 79.2 | 218.9 | 38.5 | 48.1 | 37.2 | 380.6 | 433.7 | 499.7 |
| Korea, Rep. of | 55.6 | 79.0 | 98.4 | 47.5 | 55.5 | 96.2 | 15.8 | 20.7 | 44.8 | 27.9 | 50.7 | 59.3 | 146.8 | 206.0 | 298.7 |

GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; NA = not available.

Notes:

1 Data point used: [a] means 1994; [b] means 1995; [c] means 1996; [d] means 1997; [e] means 2001; [f] means 2004; [g] means 2006; [h] means 2007; [i] means 2010; and [j] means 2012.
2 Afghanistan, Brunei Darussalam, and Myanmar do not have stock exchanges during the measured periods; Cambodia and the Lao PDR did not have stock exchanges in 1990 and 2000.
3 Afghanistan is financed through donor aid and transitioning to self-government.
4 Bhutan did not have domestically financed public debt in 1990 and 2000.
5 The Maldives' public debt may all be externally financed.
6 Brunei Darussalam, Cambodia, and the Lao PDR did not have domestic bond markets during the measured periods.
7 Myanmar's bond market is active, but it is unclear if participants are domestic or international.
8 Sri Lanka's domestic private bond markets are inactive.
9 Pakistan's corporate bond market participation might be negligible according to data from the Bank for International Settlements (BIS).
10 Nepal's bond market is underdeveloped and dominated by government.
11 Bangladesh's bond market is dominated by the government (only one company listed in 2008).

Sources: Unless otherwise stated, all figures from World Bank Global Financial Development Database. http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=global-financial-development (accessed 7 Jul 2014); Viet Nam debt securities figures obtained from Asian Bonds Online. http://asianbondsonline.adb.org/ (accessed 15 Jul 2014); Bangladesh and Nepal 2011 debt securities figures approximated using September 2010 figures obtained from BIS Quarterly Review March 2011 (Sri Lanka's 2010 figures are also available, but used CEIC database 2000–2012 figures for consistency. http://www.ceicdata.com/en (accessed 17 Jul 2014); Maldives stock market capitalization figures obtained from Maldives Capital Market Development Authority Annual Report 2007 and 2010; Bhutan stock market capitalization and outstanding private debt securities (proxied using outstanding corporate bonds) figures obtained from Royal Securities Exchange of Bhutan Annual Report, 2005–2012; outstanding public debt securities (proxied using internally financed debt) obtained from Bhutan Ministry of Finance National Budget Report, 2006–2012; Sri Lanka outstanding domestic public securities (proxied using domestically financed sovereign debt) figures obtained from CEIC database; Cambodia stock market capitalization 2011 obtained from market value of the only listed stock; and the Lao PDR stock market capitalization 2011 obtained from CEIC Database. http://www.ceicdata.com/en (accessed 17 Jul 2014).

**Table 5.4: Fiscal Balances in South Asia and Southeast Asia**
(% of GDP)

| Country | 2010 | 2011 | 2012 | Average |
|---|---|---|---|---|
| **South Asia** | | | | |
| Afghanistan | 0.4 | 1.8 | NA | 1.1 |
| Bangladesh | –3.2 | NA | NA | –3.2 |
| India | –4.8 | –5.7 | –5.2 | –5.2 |
| Maldives | –15.6 | –9.7 | –12.6 | –12.7 |
| Nepal | –3.4 | –3.7 | –1.5 | –2.8 |
| Pakistan | –5.9 | –6.3 | –6.6 | –6.3 |
| Sri Lanka | –8.0 | –6.9 | –6.4 | –7.1 |
| **Southeast Asia** | | | | |
| Brunei Darussalam | 8.5 | 28.4 | 17.5 | 18.2 |
| Cambodia | –3.1 | –4.3 | –2.3 | –3.3 |
| Indonesia | –0.7 | –1.1 | –1.8 | –1.2 |
| Lao PDR | –2.2 | –1.8 | –1.4 | –1.8 |
| Malaysia | –5.4 | –4.8 | –4.5 | –4.9 |
| Myanmar | –4.6 | –3.8 | –3.2 | –3.8 |
| Philippines | –3.5 | –2.0 | –2.3 | –2.6 |
| Singapore | 7.7 | 9.5 | NA | 8.6 |
| Thailand | –2.4 | –1.6 | –2.3 | –2.1 |
| Viet Nam | –2.1 | –3.0 | –4.0 | –3.0 |

GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; NA = not available.
Source: Data from ADB Statistical Database System. https://sdbs.adb.org/sdbs/index.jsp (accessed August 2014).

only those of Malaysia and Thailand have achieved substantial scale. Longer-term institutional savings in pensions, provident funds, and insurance have regulatory constraints that prevent them from investing in infrastructure assets and cash-flow backed bonds (securitized) from infrastructure projects.

## Status of Infrastructure Project Financing

Given the status of financial market development in the two regions, many infrastructure projects are financed with a mix of instruments, in some cases including both public and private participation. There are no overall data showing the amount of infrastructure investment and

the breakdown by type of financing in the two regions, but the World Bank does track infrastructure projects that include some private sector involvement. As shown in Table 5.5, according to the World Bank (2013a, 2013b), in 2012, 128 new infrastructure projects with private sector participation achieved financial closure in South Asia and 29 in Southeast Asia. These included 90 energy sector projects and 65 transportation sector projects. The total investment commitment during the year was $37.2 billion, out of which $16.1 billion was invested in energy projects and $20.9 billion in transportation. South Asia accounted for 79% of the total value of projects.

India has historically witnessed the largest volume of private capital flow to privately developed infrastructure projects, even though most of these private developers have been dependent on state-owned banks for project financing loans. In 2012, India accounted for 106 out of 128 projects in South Asia, mostly road projects, indicating a high capacity for public–private investment. However, because of high leverage structures and a combination of market forces and policy uncertainties, the sector has become highly indebted and several projects have been under stress to meet their debt servicing obligations. With worsening credit quality and peaked exposure limits, most banks are showing reluctance to participate in further credit expansion in the sector. Additionally, with the depreciation of the Indian rupee since 2013, foreign debt service obligations have come under stress.

In view of the decline in bank credit in India, other sources of finance will be needed to drive the expansion of infrastructure investments. Under the Twelfth Five-Year Plan (2012–2017), the government estimates an investment need of $1 trillion, of which 47% is expected to come from private sources, which is 9 percentage points higher than in the previous plan period. The reduction in bank loans will need to be offset by increased export credit agency (ECA) financing, project bond solutions, and infrastructure debt funds, as well as improvements to the enabling environment, and an increasing role by the development banks.

The expectation is that the state-owned infrastructure investment vehicle, India Infrastructure Finance Company (IIFCL), would play a central role, as there are over 300 projects in the pipeline with a total value of $90 billion. It is anticipated that the IIFCL's infrastructure project pipeline will increase by more than 40 projects every year between 2014 and 2019 (World Bank 2013a). In order to facilitate direct project lending, ADB is planning to lend $700 million to IIFCL. An additional $750 million is under discussion with a consortium of the European Investment Bank, the Japan International Cooperation Agency (JICA), and the French Development Agency. Together with IIFCL, ADB has also built an enabling structure for infrastructure bonds. ADB and IIFCL

## Table 5.5: Infrastructure Investment Projects with Private Sector Participation, 2012

| | Energy | | Transport | | Water | | Total | |
|---|---|---|---|---|---|---|---|---|
| | ($ million) | (no. of projects) | ($ million) | (no. of projects) | ($ million) | (no. of projects) | ($ million) | (no. of projects) |
| **South Asia** | **10,402** | **67** | **18,911** | **60** | **116** | **1** | **29,429** | **128** |
| Bangladesh | 1,423 | 7 | NA | NA | NA | NA | 1,423 | 7 |
| India | 7,441 | 45 | 18,911 | 60 | 116 | 1 | 26,468 | 106 |
| Nepal | 263 | 1 | NA | NA | NA | NA | 263 | 1 |
| Pakistan | 1,211 | 9 | NA | NA | NA | NA | 1,211 | 9 |
| Sri Lanka | 64 | 5 | NA | NA | NA | NA | 64 | 5 |
| **Southeast Asia** | **5,697** | **23** | **2,038** | **5** | **15** | **1** | **7,750** | **29** |
| Indonesia | 288 | 3 | 1,989 | 4 | 15 | 1 | 2,292 | 8 |
| Lao PDR | 501 | 2 | NA | NA | NA | NA | 501 | 2 |
| Malaysia | 2,264 | 3 | NA | NA | NA | NA | 2,264 | 3 |
| Philippines | 953 | 3 | 50 | 1 | NA | NA | 1,003 | 4 |
| Thailand | 1,525 | 9 | NA | NA | NA | NA | 1,525 | 9 |
| Viet Nam | 165 | 3 | NA | NA | NA | NA | 165 | 3 |
| **Total** | **16,099** | **90** | **20,949** | **65** | **131** | **2** | **37,179** | **157** |

Lao PDR = Lao People's Democratic Republic; NA = not available.

Note: Projects reaching financial or contractual closure.

Source: World Bank (2013a, 2013b).

have jointly structured a partial credit default cover for projects having a minimum of 3 years of operation since commissioning. Furthermore, the government has authorized IIFCL to issue $2 billion in tax-free bonds. Investment priorities include roads, power production, and boosting transportation in an increasingly urbanized environment (World Bank 2013b).

In the other countries of the region, the local financial market, including the banking system, is shallow compared to their infrastructure financing needs. Bangladesh is seeking financial assistance for projects in power generation, water, sanitation, and transportation services that are mostly being supported by the Asian ECAs, JICA, ADB, and the International Finance Corporation (IFC). Given the limited options in public financing and lack of depth in local financial markets, Pakistan has to turn to the private sector for financing its vast infrastructure-funding gap. The IFC is working with the government to help make the financing market attractive for private participation. Nepal is addressing the wide-ranging international perception of local political risks and seeking to develop enabling legislation and contractual provisions to attract debt financing for its large number of hydropower projects in various stages of development. In Sri Lanka, the government plans to invite international developers to participate in its wind power potential. Financing for this is expected to come largely from ECAs and local banks. Transportation and thermal power projects being built in Sri Lanka are seeking financing mostly under bilateral arrangements.

In Southeast Asia, Indonesia and Thailand had the highest number of projects with private sector participation in 2012 (Table 5.5). Indonesia had a number of transport sector projects, while projects in other countries were concentrated in the energy sector. The predominance of energy projects reflects the ease of involving the private sector given their well-defined revenue streams. The lack of involvement in transport projects suggests that the capacity for PPP is lacking in these countries.

## 5.4 Investment Finance Funding Methods: Assessment of Options

Traditional methods of government financing of infrastructure have limitations, and most infrastructure investment is financed by commercial banks, leading to serious asset–liability mismatches. Connectivity-related infrastructure investment projects would need to be broken down to individual projects—national and cross-border—and classified as public, private, and PPPs depending on the extent to which commercialization is possible. Subject to available fiscal space, non-commercial infrastructure would need to be developed as public

**Table 5.6: Infrastructure Financing Options**

| Type | Domestic Sources | External Sources |
|---|---|---|
| **Equity** | Domestic investors | Foreign investors |
| | Public utility | Equipment suppliers (in collaboration with domestic and international developers) |
| | Dedicated government funds | Dedicated infrastructure funds |
| | Institutional investors | Other international equity investors |
| **Debt** | Domestic commercial banks | International commercial banks |
| | Domestic term lending Institutions | Export credit agencies |
| | Domestic bond markets | International bond markets |
| | Specialized infrastructure financing options such as infrastructure debt funds | Multilateral development banks and agencies (financing with development perspectives and in long tenors) |

Source: Compiled by authors.

investments, and private or PPP projects would have to be suitably structured to attract private investment, and appropriate risk sharing allocated to ensure bankability from a commercial lending perspective. A range of public and private investment financing options is described in this section and summarized in Table 5.6.

## Public Sector Financing Options

The public sector remains the first stop for infrastructure financing, either by direct financing or government guarantees. This reflects the fact that infrastructure projects have high costs, long gestation periods, and significant issues related to land acquisition, rehabilitation and resettlement, environmental approval, and infrastructure connectivity. Additionally, many projects have commercial and non-commercial components, making it unattractive for the private sector to invest in a bundled transaction. In such cases, the non-commercial components need to be unbundled for government funding through budgetary allocation, and supported and supplemented by financing from development finance institutions (DFIs) or MDBs and under government-to-government programs.

**Bond issuance:** Governments can finance infrastructure projects directly by issuing general obligation bonds or project bonds. General obligation bonds are more readily ratable by credit rating agencies, but

project bonds may attract institutional investors looking for long-term projects with relatively high returns.

Project finance is seen as one of the riskiest bond investment classes. A major reason for the slow uptake of infrastructure project bonds is the lack of clarity among project sponsors regarding the feasibility of bond finance relative to the proven, traditional route of bank debt financing, multilateral and/or ECA finance, and capital contributions. However, refinance bond structures of the type created by ADB and IIFCL in India have stimulated interest among several infrastructure companies to explore the publicly-listed bond market. Another traditional impediment—construction risk—is increasingly being mitigated by targeted credit enhancements, either by being priced in or by being covered under robust engineering, procurement, and construction (EPC) contracts with strong balance sheet support. In addition, construction risk may be more acceptable for investors if the project sponsor has a proven track record of project implementation.

However, no dominant infrastructure project bond model has yet emerged. Financing sources for infrastructure are likely to increasingly shift from bank debt to institutional investors. A logical model for infrastructure project debt would use short-term bank debt for construction finance (which can be in the form of a suppliers' credit with a take-out finance underwriting) and then refinancing the same in the long-term institutional market, as seen increasingly in the case of regulated infrastructure utilities and leveraged infrastructure acquisition domain. The key risks for this model are refinancing risk that arises in terms of the project's operations, regulation, interest and exchange rate, and who is the ultimate bearer of such risk. Such project-specific risks can be mitigated in the securitized debt market, where banks can package a bundle of project finance loans and sell them as securitized debt in the institutional markets, thus obviating the need for institutions to invest in the projects themselves.

In order for the institutional markets to have a sustained interest in long term, single-asset cash-flow backed bonds, they need to have:

(i) capital outside the banking system;
(ii) sufficient governance and transparency in financial reporting;
(iii) balanced tax and commercial policies; and
(iv) project-specific credit support and credit enhancements.

**Postal savings:** Development of postal savings systems could substantially expand the pool of potential funds for infrastructure investment in countries where such systems do not currently exist.

The attraction of postal savings systems is that post offices are widely distributed in most countries, often more than bank branches. Also, people who mistrust banks as a place to put their savings may be more willing to make deposits in the postal savings system. Japan's postal savings system played an important role as a source of funds in Japan's economic development, and provides a potential model for the region.

## International Financing Options

**Multilateral development banks:** The role of government institutions and parastatals in infrastructure financing needs to be supplemented by that of MDBs, such as the World Bank and ADB.[4] MDBs play an important role in narrowing the funding gap in national and cross-border infrastructure projects, as well as in influencing the policy environment, impacting procurement processes and providing risk covers to private sector developers. MDB support can augment or supplement national budgets through sovereign lending, leverage private sector participation through guarantees covering political and credit risks, finance feasibility studies through technical assistance, and provide project-structuring support. In an increasingly complex financing and political-risk environment, MDBs are also expected to play a critical role in improving the regulatory environment, supporting transfer and diffusion of technology, and improving business and governance practices, particularly in emerging economies. Finally, as honest brokers, MDBs can play the key role of being a coordinator among multiple stakeholders for regional integration.

**Sovereign wealth funds:** Some sovereign wealth funds, both in and outside the region, are allowed to invest in foreign assets that offer reasonable returns under central bank investment guidelines. Sovereign wealth funds can play an important role in funding projects spanning multiple countries where it is difficult to establish how much each country is benefiting and how much they should contribute.

**Export credit agencies:** Lastly, ECAs are expected to play a crucial role in coming years, financing a large number of projects in the region, driven largely by their sovereign mandates to provide financing to support their respective countries' productivity-boosting equipment investment and

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[4] The establishment of the Asian Infrastructure Investment Bank, with an expected initial capital of $50 billion, in the People's Republic of China in 2014 represents an important new development for infrastructure finance in Asia, although its implications are difficult to judge at this early stage.

exports. In the current regime of a slowdown in developed country demand, governments around the world are now targeting energy and infrastructure projects as vital conduits for exporting high value machinery, labor, expertise, and technology packaged as project EPC; ECAs are proving a vital tool for supporting these investment policies. Global ECA lending activity in commercial project finance transactions has increased threefold from less than $10 billion in 2009 to more than $30 billion in 2013. Liquidity-rich Asian ECAs are closing the largest number of ECA-backed deals, with the Japan Bank for International Cooperation (JBIC) emerging as the global leader over last 5 years, having financed 56 projects for $35.9 billion, followed by the Export–Import Bank of the United States (27 projects, $18.5 billion), the Export–Import Bank of Korea (37 projects, $11.6 billion), and the Export–Import Bank of China (18 projects, $8.4 billion).[5]

## Private Sector Financing Options

As described above, bank lending has been a workhorse of infrastructure finance, but, for various reasons, its capacity to fund new infrastructure projects is becoming increasingly limited. Moreover, short-term lending is inherently unsuitable for long-term infrastructure projects, which have a long lifespan. Bank loans are normally financed by deposits, which tend to be short term and whose holders prefer low interest rates with a high degree of safety.

On the other hand, institutional investors such as life insurance companies and pension funds, have much longer-term investment horizons and are willing to accept greater risk in turn for greater potential return. As discussed above, Asia has a huge stock of available savings. To channel these savings into bankable infrastructure investments and attract private institutional investors, there is a need to develop domestic financial markets, in particular strong bond markets, along with appropriate financial instruments, government guarantees, and credit rating services.

## Public–Private Partnerships

PPP has emerged as an often-preferred tool to complement sovereign efforts in developing infrastructure and providing related services in the region. India has emerged as the world's largest PPP market and the Indian government has used the PPP model with reasonable success in transportation and electricity transmission sectors, as shown in Table 5.4.

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[5] See Infrastructure Journal Database. http://www.ijonline.com/data (accessed 7 May 2014).

However, parallel to the success stories are several disappointing experiences arising from inadequate pre-investment work, insufficient project planning, absence of proper feasibility studies, flawed project evaluations, absence of competitive tendering, poor contract design, complexities in land acquisition, and inaccurate estimation of demand. Lack of transparent governance mechanisms has further complicated project situations, leading to conflicts of interest in the regulatory structure, arbitrary and populist government interference, lack of judicial independence, and lack of a strong legal framework defining the rights and obligations of private investors. A failed PPP not only hurts the economy and the people by not creating the infrastructure that was envisaged—or creating a substandard one—but also by having to fund large government bail-outs of failed projects through taxes.

In the current financial environment, and in light of such experiences, the PPP development model is undergoing changes. Private sector participants are becoming particular about minimizing development and execution risks, asking governments to present better structured, readily financeable, and ready-to-construct project propositions for competitive bidding. Developers and financiers have come to understand the risks that the private sector can manage. As a result, there is increasing emphasis from developers and financiers to being awarded permitted pre-construction projects, instead of concessions with unsettled issues related to land acquisition, permits, resource linkage, and environmental clearance. There is also an emphasis on unbundling operational risks and allocating external risks to project entities, internal risks to project sponsors, and residual risks to government shareholders.

In order for the PPP model to have a better success rate, four specific improvements are imperative:

(i) Adopt global best practices to ensure transparency and accountability. To achieve this goal, the bid criteria need to be fully disclosed and easily available for public scrutiny.
(ii) Develop PPP units in the region based on international best practice, such that those units facilitate the PPP procurement and delivery process before contracts are signed; enable all linkages, permits, and approvals; and have a transparent interface with the authorities which approve or deny projects.
(iii) Create an independent, regulatory, environment without conflicts of interest, which is capable of monitoring project progress, commissioning, and operation, as well as implementing a reward and penalty structure through market mechanisms.
(iv) Invest in human resources for PPP to improve skills and knowledge across a broad spectrum of specialties, from institutional to technical to finance, by way of partnering with experienced countries.

Box 5.1 describes one major cross-border energy project in the region with PPP financing.

### Box 5.1: Nepal–India Electricity Transmission and Trade Project

The Nepal–India Electricity Transmission and Trade Project, conceived bilaterally and financed by the International Development Agency and MDBs, envisages a 130-kilometer (km) transmission corridor of 400 kilovolt (kV) double circuit line, connecting Dhalkebar in Nepal with Muzaffarpur in India. The broad objectives of the project are (i) to establish cross-border transmission capacity between India and Nepal of about 1,000 megawatts (MW) to facilitate electricity trade between the two countries, and (ii) increase the supply of electricity in Nepal by the sustainable import of at least 100 MW.

The project has three components:

(i) Design, construct, and operate two connecting 400 kV double circuit transmission corridors across the border with 90 km of transmission line on the Indian side between Muzaffarpur and Sursand on the Indian border; and 40 km of transmission line on the Nepal side between Dhalkebar and Bhittamod on the Nepal border.

(ii) Construct the Hetauda–Dhalkebar–Duhabi transmission line and install properly tuned power system stabilizers in the major power generating stations in Nepal to synchronize its power system with that of India.

(iii) Provide technical advisory services to the Nepal Electricity Authority (NEA) for the preparation of a transmission system master plan for future transmission system development in Nepal and for development of additional cross-border interconnections.

On the Nepal side, the NEA will implement the project with International Development Agency assistance of $99 million. On the Indian side, the project will be implemented by a joint venture special purpose vehicle formed by Infrastructure Leasing & Financial Services Limited of India, Energy Development Company, Power Grid Corporation of India, and SJVN Limited, India. The total project cost is $182.3 million. The project, which has already attained financial closure, is currently in the implementation stage. It was originally scheduled for commissioning on 31 December 2016 and is currently running a delay of 7 months.

Source: World Bank. 2015. Nepal–India Electricity Transmission and Trade Project. Washington, DC: World Bank. http://www.worldbank.org/projects/P115767/nepal-india-electricity-transmission-trade-project?lang=en.

## International Infrastructure Funds

Regional and cross-border projects are larger and more complex than national projects and do not lend themselves easily to PPPs. Cross-border infrastructure projects require investments and coordination in at least two countries and broader regional projects require agreements between more than two countries, which are difficult to reach without a third-party honest broker like ADB. Regional projects are likely to involve building infrastructure in less developed and sparsely populated border regions that are usually difficult to develop and implement as PPPs. Financing is complicated further since costs and benefits are not evenly distributed between countries participating in cross-border projects. Given the reduced economic and financial viability of such projects, support from international infrastructure funds is an additional option.

In many cases the infrastructure will be needed alongside the development it supports, but the funding streams (public and private) that will contribute to the cost will not flow until after the development is completed. Regional development funds can help fund early-stage development and project construction involving multiple countries, especially where there is economic disparity among the participating countries. It is especially helpful where it is difficult to ascertain benefits to the countries and hence allocate responsibilities.

A regional infrastructure fund (RIF) is created primarily to facilitate timely availability of capital for regional infrastructure projects that deliver benefits to the social and economic growth of the region. An RIF can be an efficient vehicle to deliver funds for large regional infrastructure projects that cannot be adequately funded through traditional means of private or public funding. RIFs need to be tailored to the specific requirements and priorities of the region in which it operates.

An RIF adds value to infrastructure financing in the following ways:

(i) being a flexible forward-funding mechanism designed specifically for addressing the timely provision of critical infrastructure to support growth;
(ii) making best use of existing public resources to address regional priorities;
(iii) leveraging additional private sector funding for infrastructure development and financing;
(iv) adopting a business-planning approach to infrastructure delivery at the regional, subregional, and local levels;

(v) providing an incentive for regional and cross-boundary collaboration for infrastructure planning and delivery;
(vi) transferring public sector risk and the associated economies of scale from individual localities to the regional level; and
(vii) maximizing the impact of regional infrastructure funding resulting from the introduction of sovereign support, interim tariff arrangements, and any future user charging schemes.

RIFs can add substantial value if they can become vehicles for attracting private resources into such projects. However, for this to be possible, RIFs need to reduce project and counterparty risks to acceptable levels. The same can be achieved by a diversified portfolio of projects, sovereign support against first loss liability, and other such measures. This could help attract funding from DFIs, MDBs, and utilities and direct financing institutions. Box 5.2 describes some important Asian infrastructure funds.

### Box 5.2: Asian Infrastructure Funds

**ASEAN Infrastructure Fund:** The Association of Southeast Asian Nations (ASEAN) Infrastructure Fund was established in 2012 to finance the critical infrastructure needs of the region (ASEAN 2011). The Asian Development Bank (ADB) has estimated that ASEAN members will need to invest about $60 billion per year in infrastructure to address current deficiencies. Large-scale expenditure will be needed in numerous sectors including roads, railways, ports, energy, water, and sanitation to allow ASEAN members to reduce the infrastructure deficit, support growth, and promote regional economic integration.

The fund seeks to address these issues by recycling some of the $700 billion of foreign exchange reserves in the region. The initial equity of the fund will be $485 million, of which $335 million is funded by the ASEAN members and the remaining $150 million is funded by ADB. The fund will finance about six projects a year, with a $75 million lending cap per project. Criteria for investments include their potential to cut poverty, increase trade, and bolster investment. The fund's total lending commitment up to 2020 is anticipated to be about $4 billion, which with cofinancing by ADB and other financiers, could be leveraged to more than $13 billion.

**Asian Infrastructure Fund/AIF Capital:** This is a fund domiciled in Hong Kong, China with $750 million, launched in 1994 with a fund life of 10 years. Current assets under management exceed $2 billion. It invests in infrastructure projects engaged in power generation, transmission,

*continued on next page*

*Box 5.2 continued*

and distribution; gas production and distribution; transportation; telecommunications; water supply; and waste management across Asia. It is co-sponsored by the Frank Russell Company with initial investors from ADB, International Finance Corporation, and Asian Infrastructure Development. Early investments in project finance included the first independent power producer (IPP) in India, IPP business in Taipei,China and the People's Republic of China, fixed line telecommunications in the Philippines, and container terminals and warehousing in Hong Kong, China (AIF Capital 2014).

**InfraCo Asia:** The Asian fund was raised in 2010 under the InfraCo Group with support from the Private Infrastructure Development Group, members of which include the development agencies of Australia, Austria, Ireland, the Netherlands, Sweden, Switzerland, and the United Kingdom, as well as KfW of Germany and the World Bank Group. It supports viable infrastructure investments in Asia that balance interests of host governments, the private sector, and debt providers. It acts as principal by participating in the early stage of project development and brings development expertise. Current investments include gas power in Bangladesh, hydropower in Nepal and Viet Nam, storage facilities in India, wind power in Pakistan, and waste to energy in Sri Lanka (InfraCo 2014).

A local infrastructure investment trust (LIIT) is another instrument for cross-border equity financing, investing in long-term equity positions in local utility corporations and raising resources through equity, quasi-equity, and debt issues on the domestic and international markets. An LIIT would buy equity positions in, for example, local utility companies from first-round investors, including infrastructure private equity funds, and would sell its shares and issue bonds to institutional investors, insurance companies, and pension funds. Such a vehicle can provide benefits of guarantees to projects in the absence of formal project guarantee mechanisms and project insurance.

## Credit Guarantee Mechanisms

Credit guarantees are necessary for infrastructure projects, particularly those with high execution, payment, and perceived political risks. While construction and operational risks can be largely covered through guarantees from relevant project stakeholders, sovereign entity performance impacting project execution, revenue and related *force majeure* events need credit default backstops. Even if some host country

governments are willing to offer sovereign guarantees, their financial capacity to deliver on such commitments may be doubtful. Additionally, there is a strong demand for guarantees against breach of contract by subsovereign authorities. While ADB and the Multilateral Investment Guarantee Agency largely perform this function in Asia through their partial risk-guarantee programs, the need for a specialized guarantee institution is widely seen in the region.

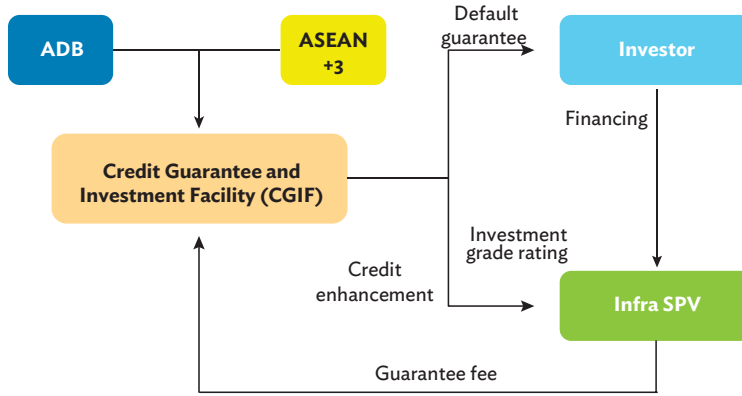
GuarantCo, a guarantee fund promoted by donor agencies of a number of governments (Australia, Austria, Germany, Ireland, Netherlands, Sweden, Switzerland, and the United Kingdom), has been active in the Asian markets offering guarantees against credit default risks (full or partial) and political risks to infrastructure projects in lower income countries. GuarantCo has a total committed equity of $300 million, with sponsor support for callable equity, and can extend guarantees in excess $1.5 billion (GuarantCo 2007).

However, GuarantCo only guarantees local currency loans and bonds. This makes the effective cost of borrowing in the guaranteed structure high as the best price that local debt markets can offer will be their local cost of funds, even if the rating of the structured obligation is superior to the sovereign rating of most host countries. Because Asian interest rates are higher than in Europe, the effective cost to the borrower, after including the guarantee premium, becomes much higher relative to the project's internal rate of return. Also, a number of domestic debt markets and banks in the two regions do not have the depth to accommodate large single obligor limits, making local currency borrowing very difficult in spite of the GuarantCo guarantee.

Asia needs to have its own version of GuarantCo with the difference that the guarantee should be applicable to foreign currency borrowing as well. In order for such an entity to be bankable, the sponsor profile will be crucial as—unlike in the case of GuarantCo—there are no potential AAA sovereign sponsors in the two regions, which may necessitate not only high capitalization for obtaining an investment-grade rating, but also incorporation of backstop mechanisms through a larger reinsurance entity, as callable capital from shareholders may not be dependable. ADB would have to play a crucial role in anchoring this entity and bringing in other multilaterals active in the region (JICA, Proparco, IFC, CDC Climat, and the Netherlands' Development Finance Company) together with well-rated sovereign wealth funds like those of Malaysia, Singapore, and the People's Republic of China (PRC). The credit default guarantee structure can be bundled with the Foreign Exchange Liquidity Facility, which aims to separate currency from operational risk guarantee.

The Credit Guarantee and Investment Facility (CGIF) is a similar facility established in November 2010 with initial capital of $700 million

**Figure 5.1: Credit Guarantee and Investment Facility**




ADB = Asian Development Bank; ASEAN = Association of Southeast Asian Nations; ASEAN+3 = ASEAN members plus the People's Republic of China, Japan, and the Republic of Korea; SPV = special purpose vehicle.

Source: CGIF (2014).

from ADB and ASEAN plus the PRC, Japan, and the Republic of Korea (ASEAN+3) as part of the Asian Bond Markets Initiative (ABMI) (Figure 5.1). CGIF seeks to support the issuance of corporate bonds in ASEAN+3 by providing credit enhancement to allow eligible issuers to access local currency bond markets (CGIF 2014).

## 5.5 Regulatory and Institutional Constraints

This section identifies regulatory and institutional constraints that inhibit finance of infrastructure projects, especially cross-border projects. Institutional constraints include inappropriate credit ratings frameworks, inadequately developed markets for derivatives and other related products, illiquid foreign currency markets, shortfalls in contract enforcement and other governance issues, and inadequate credit enhancements.

### Regulatory and Statutory Issues

The regulatory environment of the region with respect to investment in infrastructure, especially cross-border investment, is vastly divergent,

promoting differential incentive structures even while the countries in the region compete to attract foreign capital. However, the major challenges can be identified and classified in a few broad categories.

First, some financial institutions such as insurance companies and pension funds face restrictions in investing in infrastructure projects. Second, an enabling fiscal environment is a prerequisite for attracting private sector players to inherently high-risk ventures. The incentives need to be transparent, covered under change-in-law immunities, and uniformly applicable, not only at the time of the inflow of investment, but also with respect to capital and profit repatriation. Third is the reluctance of governments to rationalize user charges to allow cost recovery. Instead, host governments often use the existing regulatory framework to impose their agenda and thus create a regulatory environment with conflicts of interest that deters private sector investment. Last, there is a substantial disconnect between policy and implementation in many countries, forcing the private investor to pursue multiple, tedious, and time-consuming approval processes even when the policy framework promises single-window clearances and an automatic route for investment.

The key areas of regulatory concern or ineffective interface creating impediments to private sector participation and FDI in infrastructure in the region include:

- Commercial banks are impaired by asset–liability mismatch, exposure caps, and stringent provisioning norms, restricting expansion of bank lending for infrastructure projects.
- Long-term savings in insurance and pension funds are subject to stringent guidelines with respect of the credit rating of the instrument they invest in.
- FDI limitations in some countries and the inability of the developer to exit in fully developed projects in favor of more conservative and deep-pocket, utility-scale private investors, constrain project capitalization for construction financing.
- Pricing of user charges by a regulator is often governed by political motives, without taking into consideration the real cost of infrastructure service and the market pricing of the associated risks.
- In the typical high risk–low private return infrastructure investment model, the host country regulations need to permit combinations of tax preferences and revenue subsidies to supplement user charges and bankable credit enhancement for lowering risk pricing—which are absent in the regulatory frameworks of most countries.
- In certain countries, lack of depth in the foreign exchange market constrains procurement of foreign currency not only

for repatriation of capital and profits, but also for payments for overseas EPC costs, creating investor frustration and project delays.
- In some cases, central banks exercise powers beyond existing regulations, by using discretion in approving foreign exchange remittances for costs, fees repayment, and repatriation, even when the sectoral regulations do not require such approvals.
- For bankability of cross-border projects, it is crucial to have a multiparty project implementation agreement with participation of all host countries in identifying the roles, responsibilities, obligations, and liabilities of each host country, but a suitable framework for this still has not been developed.
- Several countries have different forms of tariff and non-tariff barriers, discouraging private investment, either imposing price restrictions on export of resources or localization requirements for EPC and services.
- In some immature regulatory frameworks for PPP projects where the government's role is not pinned to specific non-performance liabilities, the regulatory redress mechanism is often in conflict, and government parastatals do not have the ability to inject enough equity commensurate with their role in the project.
- The provision of termination payment in the event of counterparty default or a political *force majeure* is non-existent or inadequate in the few situations where they exist.

Also, equity markets may not be favorable for financing projects because of existing regulatory requirements and market conditions limiting exit options that hinder equity injections, especially private equity. Therefore, it is crucial for the countries in the region to create a more liberal enabling environment for FDI and open their doors to FDI from all credible sources. Unfortunately, most of the countries in the two regions lag in allowing private sector participation in infrastructure, both in terms of domestic and international participation.

As shown in Table 5.7, some Asian countries do not allow equity investment by foreign companies in certain infrastructure sectors. As a result, the local private sector, with its much smaller balance sheets and pre-existing high leverage, is constrained from optimally participating in investment opportunities, thus creating a situation of low capital availability. Also, in certain situations, policies and regulations relating to FDI and investment incentives are affected by the host country's central bank's imperatives in striking a balance between the country's fiscal and monetary policies.

**Table 5.7: Sectorwise Private Sector Participation [and Foreign Direct Investment] Restrictions in Highest Investment Markets in Asia (%)**

| Sector | India | Indonesia | Viet Nam | Thailand | Philippines |
|---|---|---|---|---|---|
| Power | 100 [100] | 100 [95] | 100 [100] | 100 [100] | 100 [100] |
| Airports | 100 [74] | 100 [49] | 0 [0] | 100 [100] | 100 [40] |
| Ports | 100 [100] | 100 [49] | 100 [49] | 100 [100] | 100 [40] |
| Roads | 100 [100] | 100 [95] | 100 [49] | 100 [100] | 100 [100] |
| Railways | 100 [100][a] | 100 [55] | 100 [49] | 100 [100] | 100 [100][c] |
| Telecom | 100 [74] | 100 [49][b] | 49 [49] | 100 [100] | 100 [40] |
| Water | 0 [0] | 100 [95] | 49 [0] | 100 [100] | 100 [100] |

Notes: [a] Only in railway infrastructure; [b] In fixed line telephony; 65% in mobile telephony; [c] 100% in greenfield projects only; 40% in brownfield projects.

Figures in [ ] are for foreign direct investment.

Source: Tahilyani, Tamhane, and Tan (2011).

## Institutional Constraints

Public insurance and pension fund companies are inherently risk averse. The safest way for these institutions to participate in the creation of new infrastructure capacity could be through take-out financing, that is, where the institution buys an existing infrastructure loan from the current lender. The regulatory authorities could support the enabling environment for this by permitting insurance companies and pension funds to subscribe to post-commissioning projects after 2 or 3 years of commercial operations, having appropriate credit enhancements against credit default (for example, the structure conceived by IIFCL and ADB in India), and an investment grade credit rating in the local market. This would free up project finance debt raised from banks and DFIs and thereby make them available for new greenfield projects.

The low level of stand-alone ratings achieved by infrastructure projects restricts the flow of foreign non-bank financing in the debt of these entities. Introducing a separate format for the infrastructure rating framework could ease this constraint. The current rating framework is broadly in line with that of corporate finance, which essentially rates an entity and the underlying asset class based on its historical cash flow. In an infrastructure project seeking to raise finance on a non-recourse basis, there is neither an existing cash flow stream to refer to nor a sponsor cash flow to underpin the risk. In such a situation, the asset class will always have a sub-investment grade rating under the current rating framework,

irrespective of the contractual arrangement securing the projected cash flows from the project. An infrastructure rating essentially needs to assess contract provisions, enforceability, adequacy, and bankability to determine the predictability of project cash flows and accordingly rate the underlying financial product on an infrastructure rating scale.

The slow pace of reform and evolution of the commercial debt market has also been an impediment for infrastructure companies selling structured solutions in the credit derivatives market. There is an urgent need to add depth and liquidity in the debt markets by introducing deep pocket, balance-sheet backed market making that can provide cost-effective exits to investors in debt instruments and derivatives before the full term of the underlying asset. This, together with an objective credit rating, will go a long way to attract institutional and retail savings in these financial products. One way to facilitate debt market investment by such investors could be to offer fiscal incentives for such investments in the form of tax rebates or tax credits, as has been done in India. These incentives have improved project finance institutions' track record in attracting substantial retail investments in their tax-free bonds, which often offer rates almost comparable to or slightly higher than time deposit interest rates of commercial banks. Additionally, a lot of these infrastructure bonds have defined repurchase options, which provide investors with a visible early exit, rather than having to wait for the full term of the bond.

This also relates to the need for designing structured financial products for the market, which is largely an investment-banking role. With Asian banks being focused mostly on fund-based businesses, investment banks have conflicts of interest in their attempt to sell their own credit products, with very little effort at exploring possibilities to create market-friendly credit solutions for project finance.

Another area that requires strong institutional intervention is the creation of hedging solutions against interest- and currency-related risks. Foreign exchange hedging is not available for long periods, especially over 8 years, and, even if available, requires high premiums. Likewise, the inherent asset–liability mismatch of banks arising out of long-term deployment of funds creates interest-rate risk for projects borrowing using floating rates. Unless there is a fiscal provision to backstop such foreign-exchange and interest-rate risks, or a provision of pass-through in user charges, long-gestation infrastructure projects may become unviable in situations of high volatility in interest and currency markets.

The Reserve Bank of India has taken steps in this regard through discussions with JBIC and JICA to provide currency hedges to Japanese banks willing to lend to Indian PPP projects, facilitating project-level procurement of long-term foreign currency loans at a small mark-up over official Japanese interest rates.

PPP agreements in this area are sometimes poorly structured due to a lack of skills or experience in government departments. Additionally, investors need to guard against the possibility of political, legal, and regulatory uncertainty with respect to foreign ownership restrictions, capital controls, and partnership terms. Following the 1997–1998 Asian financial crisis, for example, several countries suddenly imposed capital controls that in some cases were only lifted years later. Global investors need to innovate and find ways to participate in capital markets that lack sophisticated financial instruments and depth for minimizing risks. For example, for many South Asian and Southeast Asian currencies, the foreign exchange markets might not be liquid enough, exposing the investors to currency risk. Offshore products or structures domiciled in financial centers like Singapore and Hong Kong, China could be a solution when local currencies are illiquid.

One area of concern for foreign investors seeking opportunities in Asia relates to the high risk in some countries in the area of contract enforcement. In the World Bank's Doing Business ranking of 189 economies for 2014, several countries in the region rank in the bottom fifth percentile with respect of contract enforcement risk (Table 5.8). This makes it crucial to implement judicial reforms, thereby bringing transparency into litigation processes, enabling fast-track resolution of conflicts, and providing reliable enforcement of contracts under local laws.

Finally, an area of institutional reform that requires direct sovereign-level support relates to the provisioning of credit enhancement. Most governments in the two regions do not accept that infrastructure projects need sovereign support in the form of default guarantees, even while partially recognizing the requirement for fiscal incentives. Countries like India do not even permit multilateral institutions like the Multilateral Investment Guarantee Agency to provide political risk cover, in their conviction that the local political risk is bankable on a stand-alone basis, and does not require any risk mitigation. Changes in laws are a crucial component of political risk and, with many local governments being inclined to take politically motivated, populist decisions during their regime, which often have very little long-term economic merit, it is important for project developers to have recourse under sovereign guarantee to terminate a project and exit by recovering a termination payment if such changes become untenable for project ownership, construction, and/or operation. Also, since several state-owned entities are credit-deficient and liquidity-constrained to execute a bankable counterparty contract with project companies, they need to reform these counterparties and provide contract default guarantees at the sovereign level to enable those parastatals to achieve independent contractual bankability.

**Table 5.8: Doing Business Rankings**

| | Doing Business Rank | Construction Permitting Rank | Contract Enforcement Rank |
|---|---|---|---|
| **South Asia** | | | |
| Bangladesh | 130 | 93 | 185 |
| Bhutan | 141 | 132 | 37 |
| India | 134 | 182 | 186 |
| Pakistan | 110 | 109 | 158 |
| Sri Lanka | 85 | 108 | 135 |
| Nepal | 105 | 105 | 139 |
| **Southeast Asia** | | | |
| Cambodia | 137 | 161 | 162 |
| Indonesia | 120 | 88 | 147 |
| Lao PDR | 159 | 96 | 104 |
| Malaysia | 6 | 43 | 30 |
| Myanmar | 182 | 150 | 188 |
| Thailand | 18 | 14 | 22 |
| Philippines | 108 | 99 | 114 |
| Viet Nam | 99 | 29 | 46 |

Lao PDR = Lao People's Democratic Republic.

Source: World Bank. 2014. Doing Business Economy Rankings. http://www.doingbusiness.org/rankings

## 5.6 Infrastructure Financing Framework: Policy Proposals to Ease Constraints

Based on the above discussion of market potential, financing options, and regulatory and institutional constraints, this section proposes policies to promote financing of cross-border infrastructure investment and ease the above-mentioned constraints. They can be divided into the following categories: (i) promote domestic financial market development; (ii) promote cross-border financing, including greater participation of international infrastructure funds; (iii) ease regulatory restrictions related to financing of infrastructure investments; (iv) raise the credit-worthiness of infrastructure financing instruments; (v) improve the policy environment for PPP projects, including fiscal enhancements and credit guarantees; (vi) support regional cooperation mechanisms for cross-border infrastructure projects; and (vii) promote the role of MDBs in facilitating such investments.

## Promote Domestic Financial Sector Development

Countries in the two regions differ widely in income level and development level of financial markets, leading to different priorities and needs for financial sector development. Policies for promoting financial development and financial inclusion, while maintaining financial stability include:

(i) supporting the development of public debt markets in emerging economies, strengthening central bank policy effectiveness, and establishing basic infrastructure to aid in building public confidence in the financial system;
(ii) promoting enhanced financial access for traditionally underserved households and small and medium-sized enterprise sectors;
(iii) developing capital markets and an institutional investor base that generate long-term finances and risk capital, including subnational debt markets and enhancement of access to long-term finance;
(iv) promoting and supporting improvement of macro- and micro-prudential regulation and supervision of financial institutions and markets with a view to enhancing accountability and transparency; and
(v) promoting development of bond market infrastructure, including market making in debt securities.

As part of an effort to develop and strengthen the domestic financial sector, multilateral institutions may also participate in the capital structure of local DFIs by making contributions to their tier 2 capital and investing in long-term, subordinated infrastructure bonds that can form part of the core capital of these institutions for leveraging their balance sheet and overcoming single borrower or sectoral caps while financing large domestic and regional infrastructure projects.

## Promote Cross-Border Capital Flows

Regional initiatives to liberalize capital accounts and FDI in the financial sector can facilitate integration of the region's financial sector, making it easier to channel savings from savings surplus to savings deficit economies. The financial integration measures of the ASEAN Economic Community are the most advanced in the region, and can provide a model that could be extended to a wider geographic area encompassing both regions. Certainly, more open capital markets also create risks of

greater capital flow volatility, which can destabilize economies and financial markets. However, the kinds of funds needed for infrastructure financing are likely to be relatively stable and long-term, so they can be among the categories of capital flows liberalized early.

While the ASEAN Infrastructure Fund is a useful source in financing profitable regional infrastructure projects, the fund is not big enough to address all the infrastructure needs of the two regions. One way to address this is to enlarge the fund into a pan-Asian infrastructure fund. This could be done if the +3 countries (the PRC, Japan, and the Republic of Korea) and India participate in this process. Options also need to be explored for fiscally incentivized domestic funds, where host country governments may need to adopt some policy changes. There could be a solution for tax-free mezzanine debt funds that provide equity type support to projects, but have a self-liquidating structure for investment exit. Options also need to be explored for establishing foreign exchange-denominated local sovereign funds created by leveraging a first-loss sovereign liability carved out of the host country's foreign exchange reserves.

## Ease Regulatory and Institutional Restrictions on Infrastructure Investment

As discussed above, regulatory restrictions apply mainly to investor classes that are permitted to invest in infrastructure-related financial instruments, while institutional constraints include the availability of credit enhancements such as guarantees to increase political and other risks to reduce the risk to investors. Policy proposals include:

(i) reduce investment restrictions and create policy incentives for insurance companies and pension funds to lend in debt refinancing of post-construction infrastructure projects;
(ii) liberalize FDI limits in non-strategic infrastructure businesses to create a larger investment pool;
(iii) facilitate the policy environment for bank financing of promoter buyout of financial investors in profitable operational projects; and
(iv) lift restrictions on sovereign credit guarantees or other protections against change-of-law and other political risks.

## Raise Creditworthiness of Infrastructure Financing Instruments

Measures to improve the credit worthiness of infrastructure-related financing instruments include:

(i) consider project specific sovereign support toward credit enhancement, including provisions of termination payment on account of default by a state entity or in a situation of political *force majeure*; and
(ii) encourage rating institutions to create a separate framework for rating infrastructure projects, thereby enabling well-structured projects with bankable contracts to access funds in debt capital markets.

## Improve Policy Environment for Public–Private Partnership Projects

Measures to improve the policy environment for PPP projects include:

(i) undertake sectoral reforms to levy market-determined user charges, and implement indexation and pass-through provisions that are not driven by political motives;
(ii) provide well-directed fiscal and revenue subsidies to reduce project payback and attract investment;
(iii) promote an environment of transparent documentation, project allocation, and contract enforcement to instill confidence in private participants;
(iv) promote transparent policies for cross-border and international trade in capital equipment and services by lowering non-tariff barriers;
(v) implement judicial reforms for better contract enforcement and faster settlement of legal disputes; and
(vi) develop a mature regulatory framework for PPP projects, identifying the roles, responsibilities, and accountability of government counterparts.

## Support Regional Cooperation Mechanisms for Cross-Border Infrastructure Projects

Developing regional infrastructure is a long-term process that requires a strong coordination mechanism. It is critical to align regional connectivity

initiatives with national projects to facilitate resource mobilization. Usually, regional projects are given less priority than national projects by domestic policymakers resulting in lower budgetary support. There is a need to educate all stakeholders that regional infrastructure development has a positive impact on national infrastructure networks and vice versa. Governments should be encouraged to support needed cross-border projects. MDBs need to play a crucial role by budgeting more resources for technical assistance to generate adequate pre-development documentation that can create a threshold level of interest in alignment of government objectives.

Furthermore, for infrastructure projects in areas with less economic activity and fewer advocacy groups, governments may be better placed to make arrangements for concessional financing from external sources. Also, for such projects, implementing agencies need to focus on making the project attractive to the private sector. Often, an implementing agency is found to secure the initial contractual arrangement for project implementation (for example, land and concession agreements), but subsequently fails to develop an appropriate project counterparty structure that can attract optimum financing, driven largely by its own conflicts of interest in project execution. This may delay the fund-raising process as well as involve higher transaction and restructuring costs. One way to overcome this is to prepare quality documentation (like feasibility studies and financial models) before awarding the project and allocate reasonably developed projects through an auction system or by way of bidding on user charges or entry fees.

## Promote Facilitating Role of Multilateral Development Banks

MDBs such as ADB and the World Bank need to play multiple roles to support infrastructure finance, including providing loans and guarantees; catalyzing private sector participation; providing policy and technical advice; providing a progress evaluator; building capacity for legal, regulatory, policy, and procedural components; and acting as an honest broker by coordinating with multiple stakeholders.

Even in normal times, private financing for social sector investments is difficult without official sector involvement. The reluctance of the private sector can be due to market failures or perceptions driven by lack of investor experience with particular types of investments, economic activities, or countries. Attracting private finance requires using public resources complemented by legislative and institutional improvements to incentivize private financing. MDBs can play a role by helping to share risk with private investors and provide funds when

private finance is insufficient. MDBs and bilateral organizations can thus help address financing gaps by mobilizing long-term funds through capital markets, cofinancing, and stimulating market activities through issuance of prime credit papers and local currency bonds.

MDBs can also help their clients attract additional financing from the private sector as a result of their strong financial position, preferred creditor status, technical expertise, prudent risk management policies, understanding of standards in project design, execution, and corporate governance. MDBs can also contribute funding in the early stage of the project, either by capital contribution or technical assistance, and help build the confidence needed to attract commercial funding through financing and mobilization instruments.

In the context of cross-border connectivity and regional infrastructure projects, MDBs can facilitate regional cooperation for the provision of regional public goods, promote greater transparency and information dissemination, and contribute to policy dialogue. They can also play a catalytic role in financial market reforms and assist in enhancing the flow of private savings and capital into infrastructure investments through: (i) developing bankable projects; (ii) designing suitable innovative financial instruments; (iii) assisting countries to improve their knowledge and technical capacity; (iv) improving the depth, efficiency, and liquidity of financial markets and adhering to international and regional best practices; and (v) fostering further financial integration within the two regions.

They can play a crucial role, through early-stage project participation, in improving the investment climate of the region and remain an involved counterparty with the host government in creating project development framework. They can also help eliminate currency and maturity risks by providing long-term local currency loans and strengthening local currency infrastructure bond markets by issuing local currency bonds with long-term maturities.

The capital support of the MDBs could also enable smaller institutions with greater reach to support financing of small and local infrastructure and connectivity projects (for example, in Nepal, Bangladesh, Sri Lanka, Myanmar, Viet Nam, and Cambodia) in power generation, transmission, water, and transportation sectors, which could not have been directly taken up for financing by the MDBs. The MDBs can play a significant role by catalyzing complex capital market solutions and other innovative approaches to financing challenges, including the emerging structured finance and securitization market.

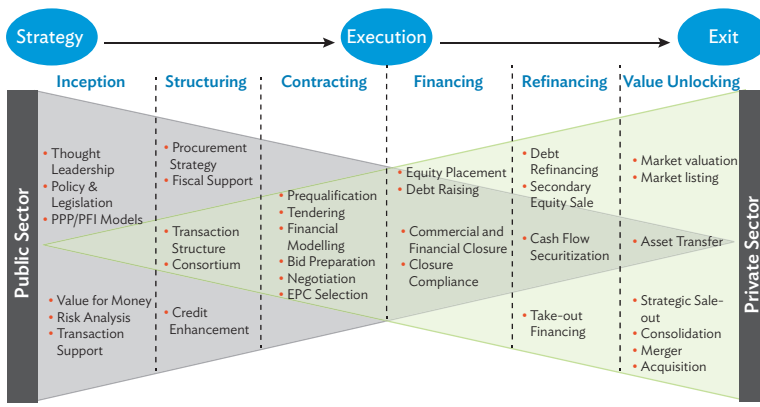
## 5.7 Financing Solutions for Regional Projects

An infrastructure project goes through multiple financing cycles, starting with development stage finance, and maturing to financing of investor exit through promoter buyback, merger and acquisition, or public listing (Figure 5.2). At each stage of the project lifecycle, its financing needs will likely be fulfilled by a provider of credit whose appetite for risk is appropriate for the risk profile of that stage of the project.

The most difficult stages for a project to raise market financing are its development and pre-construction phases that lead to financial closure of the project. Depending on the business environment, the nature of government involvement and backstops, and risk mitigation solutions procured in counterparty contracts, a project will need to be structured in a manner that encourages investor and lender confidence for making financing commitments without the comfort of a balance sheet fallback.

Figure 5.3 shows a representative project participation structure for financing port projects. The biggest advantage of a port project lies in the large degree of user exclusivity that a port project has, with no direct cross-border revenue-bearing component. The project-specific special purpose company (SPC) is the eventual carrier of all rights and duties in connection with the project and its financing. The SPC's credit standing depends on the bankability of the project. This can be a classical scenario for project recourse financing, with the project risks being structured

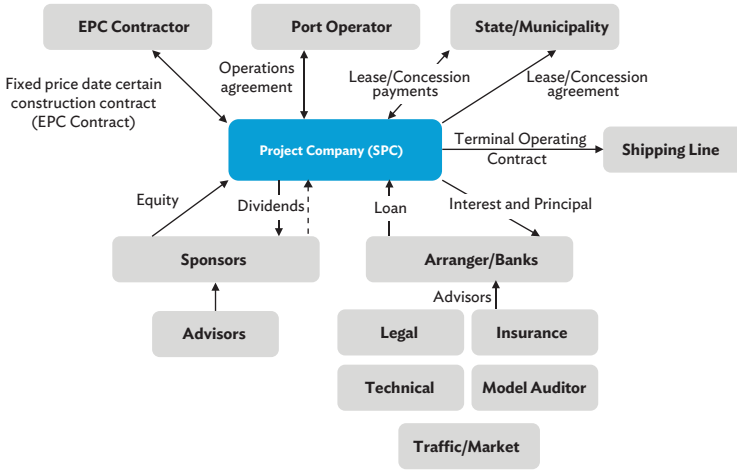
**Figure 5.2: Infrastructure Project Stages**




EPC = engineering, procurement, and construction; PFI = private finance initiative; PPP = public–private partnership.

Source: Finnacle Capital Research.

**Figure 5.3: Financing Structure for Port Projects**




EPC = engineering, procurement, and construction; SPC = special purpose company.
Source: Finnacle Capital Research.

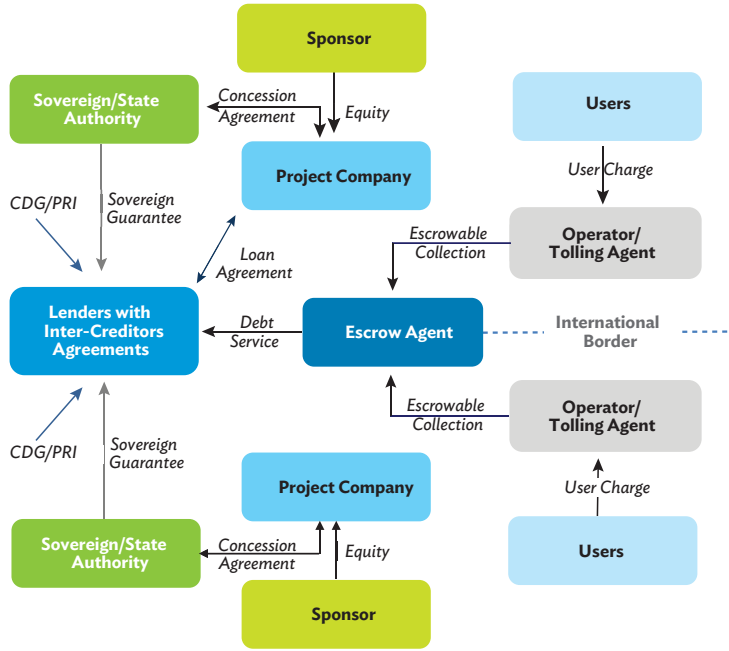
to be allocated among the involved parties with the best capability to mitigate or absorb those risks.

Regarding project development, since land acquisition and environmental clearance are crucial, it may be appropriate to allocate a project through an on-market auction of a fully permitted, development-risk-mitigated, construction-ready opportunity. Credit guarantees and political risk insurance are necessary for operating phase risk coverage mainly with respect to changes in law.

Figure 5.4 shows a representative project participation structure for financing cross-border road and railroad projects. Typically, these projects are more appropriate to be structured as a combination of several concessions to reduce financing, sponsor, and operator risk. Each concession can be an SPC, complying with local regulations, funded at the local level and providing for tolling in local stretches. Financing can be project recourse if development risk is mitigated through the auction of fully permitted SPCs. However, coordinated project development and adherence to milestones across borders will be crucial to fulfill link objectives.

Structural solutions may also need to be developed for common currency revenue reporting, depending on the project capital structure

**Figure 5.4: Financing Structure for Road or Railroad Projects**

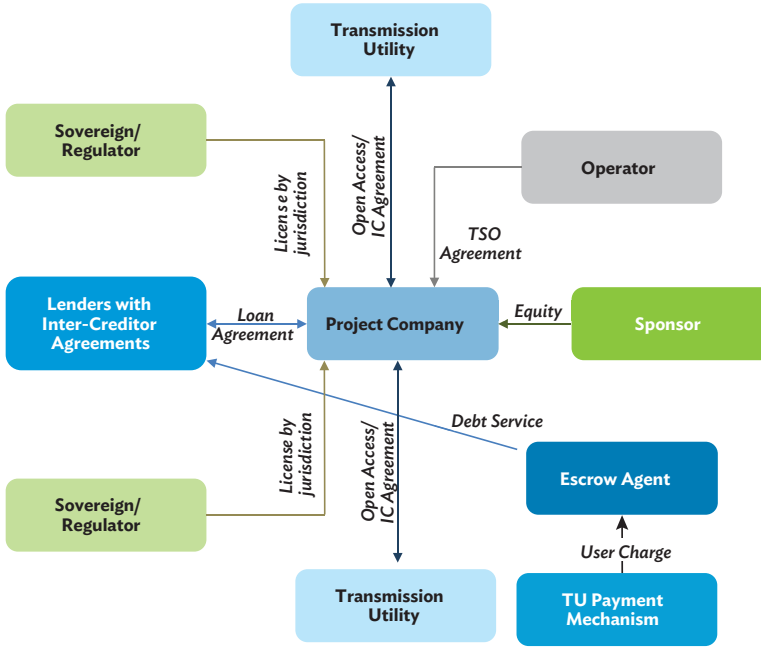



CDG/PRI = credit guarantees and/or political risk insurance.
Source: Finnacle Capital Research.

and means of finance. The feasibility of each concession will be key to the success of the entire project and timely completion of construction of the entire stretch. Credit guarantees and political risk insurance may be necessary for operating phase risk coverage, including a minimum revenue guarantee in case of tolling shortfall below threshold level.

For project participation in the case of cross-border transmission lines, as shown in Figure 5.5, the underlying contracting documentation is both more evolved and more bankable, with the projects having a high degree of user exclusivity. Setting tariffs is crucial and needs to be determined through bilateral discussions between the governments of the two (or more) host countries. The tariff could be on a regulated basis for bilaterally allocated transmission, in which case the project will evolve more as an annuity without any business risk but with lower returns. On the other hand, a project can be developed through a

**Figure 5.5: Financing Structure for Utility Projects**




IC = inter-creditor; TSO = transmission system operator; TU = transmission utility.
Source: Finnacle Capital Research.

commercial joint venture between private or subnational counterparties, selling capacities to regional generation projects under a negotiated transmission agreement on merchant basis.

## 5.8 Conclusions

Total infrastructure demand in the two regions during 2010–2020 is estimated at $3.6 trillion, and cross-border projects are estimated to total $214 billion. Projects related specifically to South Asian–Southeast Asian connectivity are estimated at $73.1 billion, of which $8.4 billion are for priority projects. While public sector finance should play a major role in financing connectivity-related infrastructure investments, it alone will not be enough. Moreover, increased fiscal burdens in some countries point to increasing constraints on this source of funding. Public funding for regional projects needs to be supplemented by

finance from multilateral institutions and the private sector. However, the traditional source of private sector financing in Asia—bank loans—is becoming scarcer as well. Following the global financial crisis of 2007–2009, and the consequent strengthening of banking regulations and credit shrinkage, conventional commercial banks have been steadily reducing their exposure to project finance.

Therefore, the options for financing cross-border connectivity (and other) infrastructure need to be expanded to adequately support the demand for such investment. The problem is not a shortage of savings overall, as Asia has abundant savings, but rather that they are distributed across Asia unevenly. South Asia typically has lower savings resources relative to demand than does Southeast Asia, and there are many missing markets. The challenge is to develop attractive financial instruments and promote the size, depth, and integration of Asian financial markets so that needed funds can be channeled to worthwhile investments. Options should include:

- **Public finance.** Public investments for non-commercial infrastructure financed by loans, bonds, or grants from multilateral institutions.
- **Off-budget financing.** Use existing public sector corporations as platforms for investment in national infrastructure projects specific for connectivity between the regions.
- **Public–private partnerships.** Identify, develop, and procure PPP projects wherever commercially feasible and bankable.
- **Financial intermediary lending.** Enable long-term infrastructure financing by extending the tenure of loans through lines of credit to national financial institutions (and banks).
- **Bond markets.** Focus on developing local and regional bond markets, enhancing the integration of Asian capital markets to mobilize resources for infrastructure projects, including the use of credit enhancement structures and guarantees.
- **Regional infrastructure funds and facilities.** Develop and expand regional financial institutions or funds directed toward developing and financing cross-border infrastructure and mobilize regional savings with sovereign contributions.

The emerging finance gap must be filled by a multipronged effort to strengthen and integrate Asian financial markets and to develop an enabling environment that makes infrastructure investment more attractive to the private sector. This chapter has identified various credit market interventions and credit enhancement mechanisms that

are likely to promote the channeling of contractual institutional and retail savings into infrastructure financial assets. Infrastructure funds, both domestic and international, can play a role, especially if the ASEAN Infrastructure Fund is extended to a pan-Asian infrastructure fund. Measures to integrate regional financial markets and ease restrictions on international capital flows can also contribute.

India's experience has shown that the PPP model can be implemented on a large scale for infrastructure projects, not only for energy, but for transport as well, including highways. Nonetheless, such projects are complex, and to avoid failure requires positive aspects, including: (i) mechanisms to ensure transparency and accountability of bidding processes; (ii) develop PPP units and transparent processes to facilitate PPP approval, procurement, and delivery processes; enable all linkages, permits, and approvals; and have a transparent interface with the authorities which approve or deny projects; (iii) create an independent regulatory environment without conflicts of interest that is capable of monitoring project progress, commissioning, and operation; and (iv) invest in human resources for PPP to improve skills and knowledge across specialties.

The chapter has identified regulatory and institutional constraints on private infrastructure investment finance. Regulatory constraints include restrictions on the assets that institutional investors, such as insurance companies and pension funds, can purchase and restrictions on private and foreign ownership of infrastructure. Institutional constraints include lack of market infrastructure and insurance mechanisms that reduce risk for private investors, immature regulatory frameworks, volatile and non-transparent political environments, and legal and regulatory changes that can affect returns to investors, thereby discouraging participation in PPP projects.

Governments must play a key role in creating enabling policy environments and financial infrastructure to ensure larger private participation in cross-border integration projects, as there are clear externalities that will otherwise not be reaped. These include easing regulatory restrictions on infrastructure investment by institutional institutions, and ownership restrictions on private and foreign investors. Improving the transparency, regulatory framework, and governance of PPP projects, together with the addition of political risk guarantees, can increase the attractiveness of this asset class. In the case of cross-border projects, international coordination is critical for success. The chapter also suggests structured finance solutions to some of the envisaged project situations and identifies the critical issues influencing the success of those projects.

Multilateral development banks like ADB need to play multiple roles in a project's financial lifecycle, starting as a provider of development support to the host country by participating in development equity and allocating funds toward technical assistance for project development and documentation. As a project progresses, this role will evolve to that of a policy influencer, technical advisor, and honest broker in ensuring efficient and transparent project allocation and effective private sector participation. Subsequently, at financial closure, the MDBs will be expected to commit capital and debt to the project and leverage their network among other MDBs to take the project to financial closure. Finally, as the project gets commissioned and attains a track record of successful operation, the MDBs should provide credit enhancement through partial credit and political risk guarantees to enable the project to seek cheaper refinancing in the commercial debt capital market. Simultaneously with this exercise, the MDBs will also need to play a role in influencing capital market reforms, promoting policy initiatives, and introducing effective risk management tools for deepening the regional financial markets and ensuring larger private sector participation in financing of domestic and regional infrastructure projects.

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CHAPTER 6

# Trade Facilitation

## 6.1 Introduction

Awareness levels regarding the importance of trade facilitation have increased dramatically over the last decade in both South Asia and Southeast Asia, with national governments and the major international financial institutions (IFIs) like the Asian Development Bank (ADB) becoming more active in formulating initiatives to help eliminate many of the non-tariff barriers (NTB) related to the physical movement of trade. The finalization of the Trade Facilitation Agreement at the Bali Ministerial Conference in December 2013 also focused attention on resolving many of these issues. Indeed, the development of trade facilitation in general has become "in vogue" in a manner not previously seen. To an extent, this reflects a clearer understanding of the interrelationship between trade growth and trade facilitation. It has been estimated that expansion in trade due to enhanced trade facilitation could lead to increases in per capita gross domestic product (GDP) in Asia and the Pacific countries by about 2.5% (Dollar and Kraay 2001; Duval and Utoktham 2009). Similarly, it has been estimated that decreasing direct and indirect trade transaction costs by 1% can result in an average 0.25%–0.40% increase in GDP (Hayashikawa 2010). Thus, it is evident that improvements in trade facilitation can potentially generate more trade and hence raise national welfare. Consequently, both institutions and governments have focused on trade facilitation as one approach in helping to raise national GDP levels, especially in the developing countries, with myriad economic and social benefits including for poverty alleviation.

The South Asian and Southeast Asian economies have grown in isolation and in most cases international trade has been concentrated on connectivity with more distant markets, rather than between neighboring countries or regions. There are many reasons for this situation, including that the main demand for export products is from developed countries, export products are often homogeneous, and neighboring countries are competitors rather than customers and that their import demand is not for the type of products exported by close

neighbors. While the major exporting countries like India, Malaysia, Singapore, Thailand, and Viet Nam trade with each other and with other countries in South Asia and Southeast Asia, this represents only a small percentage of their overall trading activity (see Chapter 2).

Proactive measures that facilitate the movement of trade in the South Asian and Southeast Asian countries will be critical in ensuring that export goods are competitive and that import transaction costs are minimized. While trade orientation may remain focused on distant markets, there is latent demand for trade within and between the regions that could be realized within a more progressive trade facilitation environment. The development of physical connectivity between the regions discussed in Chapter 3 will need to be supported by corresponding improvements in trade facilitation to realize the goal of more intra-regional trade.

This chapter provides a profile of the trade facilitation environment in South Asia and Southeast Asia, highlighting the key related issues and constraints as well as existing and potential developments needed to address existing NTBs. Section 6.2 clarifies the scope of trade facilitation in the context of this study, followed by an overview of the situation in both regions in Section 6.3. The specific key issues and bottlenecks are described in Section 6.4, and regional initiatives designed to address them in Section 6.5. Sections 6.6 and 6.7 contain conclusions with recommendations on strategies that will potentially enhance the trade facilitation situation and promote trade between the two regions.

## 6.2 Scope of Trade Facilitation

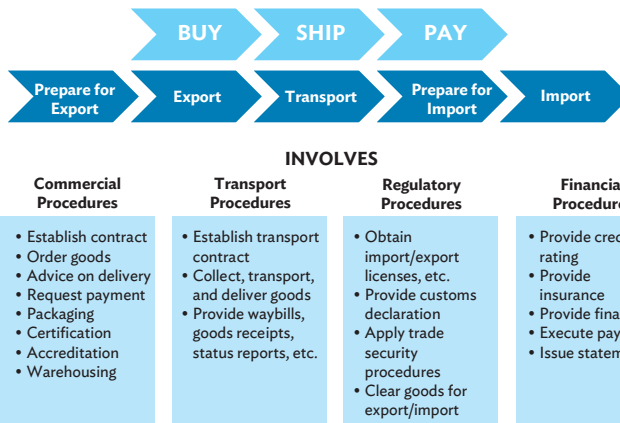
One of the initial difficulties in addressing trade facilitation has been the plethora of different definitions of trade facilitation, such that there is no common interpretation used institutionally. While trade facilitation is about making trading easier, international organizations have each developed their own individual interpretations. The Economic Commission for Europe (ECE) defines it as "to simplify the process and minimize transaction costs in international trade, while maintaining effective levels of government control" (UNECE 2002:2). The World Trade Organization (WTO) states it is "the simplification and harmonization of international trade procedures" and the World Customs Organization (WCO) as the "avoidance of unnecessary trade restrictiveness." The Asia-Pacific Economic Cooperation (APEC) forum (APEC 2007:2) suggests it is "the simplification and rationalization of customs and other administrative procedures which delay and increase

the cost of moving goods across international borders." The common themes in these definitions are simplification, rationalization, or harmonization of procedures, though some like the ECE link these with the need to balance such facilitation with appropriate controls.

ADB and UNESCAP (2009:2) suggest "trade facilitation is defined to include policies and processes which reduce the cost, time and uncertainty associated with engaging in international trade, but excludes traditional trade instruments such as tariffs, import quotas and other non-tariff barriers." This approach suggests emphasizing facilitation of trading processes in general, rather than those specifically incurred at the borders. More importantly, it directly links with service standards used in transport and logistics—the complex blend of cost, speed, and reliability.

The changes in international trade logistics, where the service package can cover the total movement from export source through to importer's warehouse or even to the point of sale, suggests trade facilitation is more than merely the border transaction. Though problems with trade facilitation often manifest themselves most visibly in the form of physical delays at the borders, the basis for those constraints often relates to behind-the-border issues. The UN/CEFACT model, referred to as the Buy–Ship–Pay Model (Figure 6.1), indicates a total transaction approach to trade facilitation in line with modern trade logistics, with a wide range of activities coming under the umbrella of trade facilitation. In practice, existing donor facilitation programs tend to focus more on

**Figure 6.1: Buy–Ship–Pay Model**




Source: United Nations Economic Commission for Europe (2008).

the activities in the center—the transport and regulatory procedures—particularly the latter.

In the context of this book, trade facilitation is considered to be the resolution of the processes that adversely impact on the free flow of international trade in the various countries in South Asia and Southeast Asia, excluding trade policy matters. As indicated, these constraints manifest themselves most clearly at the borders between countries, for example, at road borders, rail borders, seaports, or airports. While customs activity has the most visible impact on increasing the time and cost of trade moving through borders, this can mask the adverse effect of other agencies and operators in raising border transaction costs. As underscored in Chapter 3, most trade between South Asia and Southeast Asia will continue to move by sea, thus port facilitation covering the processes between a ship's arrival and the goods physically leaving the port, and vice versa in the case of exports, should be encompassed within the scope of trade facilitation. Similarly, the means of transport across and through the land border, often referred to as transport facilitation, should be included.

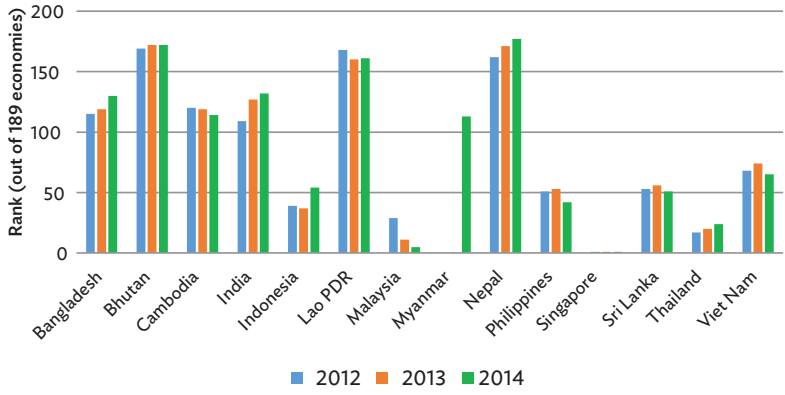
## 6.3 Overview of Trade Facilitation

In examining trade facilitation in South Asia and Southeast Asia, it is important to recognize that not only are the two regions dissimilar, but they also differ significantly within their respective regions. This is not surprising given that their economies and overall development differ. A key issue sometimes forgotten is that most trade facilitation procedures are governed by national, not international legislation. Thus, the various border control agencies undertake their tasks in compliance with national legislation or instructions issued by the relevant ministries.

International organizations and conventions promote the standards to which these agencies should aspire in terms of establishing benchmarks, but compliance with such standards is dependent on national actions. Consequently, while there may be a similarity between constraints in the member countries, their relative impact may differ significantly. These differences in trade facilitation environments present significant problems for donor agencies in developing regional or even subregional initiatives because of this lack of commonality.

These variations in the trade facilitation environments in South Asia and Southeast Asia are shown in the World Bank's Doing Business survey, which is used as an international benchmark comparing the relative performance of countries in making business easier by providing quantitative indicators across 189 economies over time. The survey

**Figure 6.2: World Bank Doing Business: Trading across Borders Rankings, 2012–2014**




Lao PDR = Lao People's Democratic Republic.
Note: Data for Myanmar for 2012 and 2013 not available.
Source: World Bank. Doing Business 2012–14. http://www.doingbusiness.org/rankings.

covers aspects including starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, enforcing contracts and resolving insolvency, as well as a trading across borders. Figure 6.2 shows the 2012, 2013, and 2014 trading across border rankings that are relevant to trade facilitation.

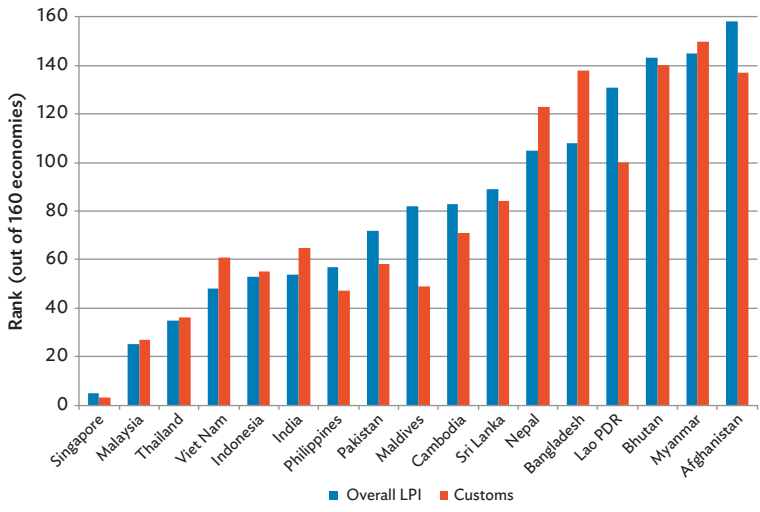
Given that the index is often perception-based, the specific rankings relative to each country are less important than the overall trends in consistency of results. First, they show quantum differences between the more developed and less developed countries in the two regions. Second, they suggest that in the countries located geographically in the center—Singapore, Malaysia, and Thailand—the trade facilitation situation is better with fewer constraints, and based on rankings in previous years indicate a stable pattern of excellence. However, as one extends either east or west from this central north–south core, the rankings suggest the trade facilitation environment becomes more problematic with much lower rankings. It is no coincidence that the three most developed countries in the center of the region, which have some of the best-rated customs organizations, have the best trade facilitation environment. Third, the survey suggests that to the east and west there are potentially

equal constraints in both the Greater Mekong Subregion (GMS) and the South Asia Subregional Economic Cooperation (SASEC) region. Fourth, the rankings suggest that improvements are slow to materialize and in some countries the situation may be becoming more, not less difficult.

The World Bank also publishes a Logistics Performance Index (LPI) measuring how efficiently trade is being moved. It is based on a worldwide perceptions-based survey of operators (global freight forwarders and express carriers) in 160 economies and provides feedback on the logistics "friendliness" of the countries in which they operate and those with whom they trade. Figure 6.3 shows the survey results. The theme that emerges is the same as the one described in Figure 6.2, with Singapore, Malaysia, and Thailand leading the way in terms of efficiency.

Trade between the two regions is expected to remain predominantly by sea, but with an increase in intra-regional trade by surface transport over time, provided the infrastructure is significantly enhanced (ADB 2014). However, trade facilitation is non-modal-specific in that the procedures applied by the relevant agencies tend to be common to each mode. While airports have some expedited processes and ports include additional port procedures, the practices of customs and other

**Figure 6.3: World Bank Logistics Performance Rankings, 2013**




Lao PDR = Lao People's Democratic Republic, LPI = Logistics Performance Index.
Source: World Bank. Doing Business 2014. http://www.doingbusiness.org/rankings.

government agencies are virtually identical. Similarly, the procedures apply to all import or export movements, irrespective of country of origin or destination. There may be some variations in the case of bilateral trade between neighboring countries, particularly if there are free trade agreements (FTAs) in place, but most of the documentary and physical compliance checks are similar. Thus, trade facilitation in most countries should be considered in relation to overall trade in general, rather than to or from another region in isolation.

Another feature is that with the exception of the landlocked countries of Bhutan, the Lao People's Democratic Republic (Lao PDR), and Nepal, the other countries are highly dependent on maritime trade. In practice, their trade facilitation environment is highly orientated toward facilitation through their seaports, rather than through their land borders. For example, in most cases the spread of automated customs processing commenced at the airports and seaports and only much later spread to the key land borders. It is noteworthy that the three highest-ranked countries in the two regions have the best performing seaports. Consequently, it will be important to examine trade facilitation in an overall context irrespective of mode, rather than focusing on specific transport corridors, such as that between India and Thailand that will potentially act as the key link between the two regions.

## 6.4 Issues and Bottlenecks

Identifying specific issues in an area the size of South Asia and Southeast Asia, consisting of 17 countries each with their individual trade facilitation environment, is difficult. Consequently, the focus is on identifying a number of key issues present in many of the countries. In practice, these constraints, or NTBs, tend to be most prevalent in those countries with the lower rankings (Figures 6.2 and 6.3). The high number of NTBs highlighted in the following reflects the complexity of the issues and the number of countries involved, but should not necessarily be interpreted as indicating that problems abound. While there is recognition that both regions have trade facilitation issues, this situation should not obscure the gradual improvements being achieved in many countries. These issues merely reflect that further progress is needed to keep pace with changes in an increasingly competitive global trade environment, whereas countries such as Singapore and Malaysia are setting the standards that the other regional countries should follow.

As indicated, many of these trade facilitation constraints are found throughout both regions, but their specific impact may vary nationally due to differences in legislation, the presence of bilateral or free trade

agreements, and types of product being traded, among others. The main constraints are concentrated in relation to import and transit traffic, because this is where the control aspects are most prevalent. Given the absence of duties and other charges, the processing of exports should increasingly become more of an administrative exercise, thus rarely incurring delays, with relatively low transaction costs. The issues discussed below are not in order of their adverse impact on regional connectivity or priority in being resolved, because their importance varies country by country. It is also recognized that, given the number of countries and their different trade facilitation environments, it is only possible to highlight a small number of the key issues.

## Excessive Documentation

Documentation is predominantly required by the customs–immigration–quarantine–security (CIQS) organizations for clearance and processing purposes. Importers and exporters have to provide predefined documentation to confirm that the shipment complies with appropriate import, export, or transit regulations. It is recognized that customs usually acts as the lead agency at the border for the processing of freight traffic, but at most borders there are at least four to five other public service agencies with a clearance role requiring the production of documentation.

There have been improvements in both regions in relation to documentation, particularly in terms of standardization and harmonization of their formats, mainly driven by the automation process, especially within the customs environment. Most automated customs systems are based on a variant of the Single Administrative Document, the standardized customs declaration developed in the European Union. Unfortunately, such standardization has not been adopted by the other agencies covering areas such as sanitary, phytosanitary, veterinary, and standards certification, where there is still a reliance on individual national certification systems. The degree of standardization of documentation and certificates in the non-customs environment is significantly lower than within customs.

However, ADB (2003b) identified that the core problem is the volume of documentation required to achieve a clearance, rather than its particular format. The more documents required, the longer a clearance takes and the higher the border transaction costs. Delays are related more to the size of the document pack, rather than the actual physical processing times at the frontiers. Interviews with clearing and forwarding agents cite the collecting of all the necessary paperwork at one physical location to lodge a clearance entry was their major problem.

Table 6.1 shows the numbers of different document types required and the time taken to undertake an import or export clearance in South Asian and Southeast Asian countries. This indicates there is a correlation between the numbers of documents required and the time taken for a transaction—the more documents needed causes extended dwell times. The more developed countries in the center (Singapore, Malaysia, and Thailand) between the two regions require fewer documents than those countries to the east and west.

Table 6.1 also suggests that, while the larger export economies have fewer documentary requirements, this is not necessarily true for imports. The problems of landlocked countries tend to be overemphasized due to the additional documentary requirements to cover the transit movement between the port of entry or exit and their territory. However, it is interesting to note that in most cases the documentary requirements in these cases are still greater than for some landlocked countries in Africa.

**Table 6.1: Numbers of Documents and Time Taken for Export and Import Transactions, 2014**

| Country | Documents to Export (number) | Time to Export (days) | Documents to Import (number) | Time to Import (days) |
|---|---|---|---|---|
| Singapore | 3 | 6 | 3 | 4 |
| Indonesia | 4 | 17 | 8 | 26 |
| Malaysia | 4 | 11 | 4 | 8 |
| Brunei Darussalam | 5 | 19 | 5 | 15 |
| Thailand | 5 | 14 | 5 | 13 |
| Viet Nam | 5 | 21 | 8 | 21 |
| Bangladesh | 6 | 28 | 9 | 34 |
| Philippines | 6 | 15 | 7 | 15 |
| India | 7 | 17 | 10 | 21 |
| Maldives | 7 | 21 | 9 | 22 |
| Sri Lanka | 7 | 16 | 7 | 13 |
| Cambodia | 8 | 22 | 9 | 24 |
| Myanmar | 8 | 20 | 8 | 22 |
| Pakistan | 8 | 21 | 8 | 18 |
| Bhutan | 9 | 38 | 11 | 37 |
| Afghanistan | 10 | 86 | 10 | 91 |
| Lao PDR | 10 | 23 | 10 | 26 |
| Nepal | 11 | 40 | 11 | 39 |

Lao PDR = Lao People's Democratic Republic.

Source: World Bank. Doing Business 2014. http://www.doingbusiness.org/rankings (accessed 15 Feb 2015).

In the context of trade connectivity between the two regions the data highlight why countries prefer to export to distant countries that have low documentary requirements and transaction times than to closer countries. Second, it indicates the extra documentation and time for transit movements to the landlocked countries. This raises a concern when considering the potential for longer distance transit movements between the two regions using surface transport, such as for example, from India to Thailand transiting through Myanmar.

Unfortunately, the above is only part of the issue. In parallel is the number of copies required to accompany the originals when the declaration is physically lodged with the authorities. Many countries require the Customs Declaration to have 6–7 copies and 3–4 copies of each of the other documents. The automation process in most cases has not appreciably reduced the numbers of forms and copies required. For example, in an audit on the India–Bangladesh border, an import entry from India into Bangladesh required 55 separate forms and copies to be submitted, though 20–30 is more common (Commonwealth Secretariat 2012). Clearly, to make intra-regional trade more attractive, there is an urgent need to find ways to reduce documentation and rely more on electronic processing and filing.

## Inadequate Implementation of Modern Customs Procedures

The pressure on customs to facilitate trade has increased in recent years, where the traditional authoritarian control approach is being replaced by the need to keep trade flowing through the frontiers. Additional issues, such as reduced staffing levels relative to the increase in consignments needing to be processed, mean that new approaches are required to meet such challenges. The WCO's Revised Kyoto Convention (RKC) represents an international development "road map" for customs modernization and international best practice by providing time-based recommendations covering a wide spectrum of customs activities designed to enhance overall performance. The RKC is focused on the promotion of the trade facilitation role of customs in a global environment. In Southeast Asia only Malaysia, the Philippines, and Viet Nam, and in South Asia Bangladesh, India, and Sri Lanka are signatories. ADB is assisting Bhutan and Nepal to undertake the necessary legal and other actions required to lodge their applications. Singapore and Thailand are not signatories, though they both follow the recommendations contained in the RKC.

Key recommendations in the RKC include the introduction of modern customs approaches such as risk management, audit-based controls,

and advanced rulings. These techniques are designed to facilitate the movement of traffic passing through frontiers by significantly reducing inspection and examination levels. The inspection and/or examination process is the most time-consuming activity in a border clearance and is a prime source of delays at many frontiers. The current approach by customs authorities to enforcement and compliance in many countries is still based on a combination of physical and documentary control mechanisms, both of which potentially conflict with the trade facilitation role of a modern customs organization. The concepts promoted by the RKC are designed to reduce the level of examination, as interventions are based on exception rather than as a routine, as currently practiced by many GMS and SASEC countries. Customs throughout the subregions are familiar with these advanced concepts, with many international institutions and the WCO providing specialist training in such disciplines and arranging overseas tours to demonstrate their application. Unfortunately, this capacity building has rarely been translated into physical implementation, often due to legal constraints at a national level.

## Limitations in the Application of Information and Communication Technology

The use of information and communication technology (ICT) systems in the trade facilitation environment is most pronounced in customs operations and this is an area where international agencies like ADB and the World Bank have provided assistance to some of the less developed countries. Customs declarations are now generally submitted across both regions in electronic format. Unfortunately, the implementation of ICT within the customs environment has in many cases widened the gap between the most and least developed countries in the region. This situation has evolved partly as a result of differences in the application and funding of ICT and partly due to the ICT expertise available within particular customs organizations.

The first issue is that some of the countries have introduced bespoke or "off-the-shelf" ICT systems in a manner which means they act solely as a transaction recording system, being a database of submitted declarations, rather than an actual processing system. Disappointingly, a common complaint by cost and freight (C&F) agents and traders in South Asia and parts of Southeast Asia is that the introduction of ICT by customs has not necessarily resulted in any significant enhancement of clearance time frames or the need to submit less documentation. Another constraint has been the manner in which the software has been introduced. In some cases, the development process has been to automate the existing manual processes, thus in effect the existing

system is used as the design base, rather than the end goal of a being a fully automated paperless system. This approach leads toward the development of a short-term transaction-recording goal, and not the introduction of enhanced processing as promoted by the RKC.

The end result in many countries in both regions is that the automated and manual systems are being operated in parallel. In practice, the clearance is still undertaken as before using manual processes with approval stamping and signatures by various officers, but with these manual actions being also recorded in the ICT system. This duplication of processing is still common. Stakeholders even suggest automation has actually increased the workload of both agents and individual customs officers with no clear benefit for the major investment. Automation should make for faster processing with fewer staff, but this is often not being achieved.

Another common problem is that customs have either purchased or developed only part of the ICT system, with only the basic modules in operation. Thus, there is a comprehensive ICT system, but its capabilities are constrained because the transaction recording modules are the only ones being used. Major systems, such as Automated Systems for Customs Data (ASYCUDA) developed by UNCTAD, are capable of undertaking many customs operational processing functions prescribed under the RKC, but where the system is operating in Bangladesh, Cambodia, the Lao PDR, Nepal, the Philippines, and Sri Lanka these specialized processing modules have not yet been activated or installed.

In many countries, customs now provide service centers where C&F agents can enter and lodge their declarations electronically. This is seen as progress, as previously experienced customs officers spent time typing in entries, rather than being engaged in clearance activities. However, these service centers that are often contracted out to the private sector or companies linked to customs often result in workload peaking. In the countries with more developed systems, such as Singapore, Malaysia, and Thailand clearing agents submit their entries electronically from their own offices on a 24-hour basis using Direct Trader Input (DTI) connectivity which links them directly into the customs ICT system. This has the effect of providing customs with a more even workflow and avoids congestion in the service centers. Many GMS and SASEC countries still rely on service centers partly because their customs ICT systems are not web-based[1] and partly because there are a multitude of small C&F agents who do not want to invest in ICT. Conversely, in the more developed countries with faster clearance times the use of DTI is widespread.

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[1] ASYCUDA ++ is DOS-based, whereas the newer ASYCUDA World is web-based.

While there has been significant growth in the application of customs ICT systems in both regions, these advances have rarely been matched by parallel levels of automation in the other organizations involved in trade facilitation. There are various reasons for this situation. First, the requirements in each country differ and there is no "off-the-shelf" system like ASYCUDA that could easily be introduced. Second, the automation process is less complex and therefore less likely to be sufficiently large to justify loans from international development partners. Third, they may not be seen as having the same priority as customs, who generate substantial funds for the central government, whereas these other organizations generate only small recoveries for individual ministries. This suggests that the development of comprehensive Single Window systems discussed later will be more difficult in the less developed countries.

Countries with high rankings such as Singapore, Malaysia, and Thailand have the most advanced ICT systems, thus there is a correlation between ICT development and levels of good trade facilitation. While the reverse is not true that those countries with the poor rankings have the poorest ICT application, it is clear that good facilitation will be difficult to achieve without ICT systems that process and record shipments. In the more developed countries, the technical skills within the customs ICT departments are such that they manage and develop their systems, whereas in the less developed countries the ICT departments are small and fully occupied merely maintaining their system.

A concern in some countries is the appointment and retention of trained ICT personnel. The border agencies come under civil service pay scales, which are well below pay scales in the private sector. Some countries, like Bangladesh for example, are finding it increasingly difficult to attract ICT specialists to work within customs given these limitations, and with the growth in web-based applications the existing personnel become more marketable to the private sector and leave. In some of the landlocked countries like Bhutan and Nepal, it is also becoming difficult to find ICT specialists, as they either work in the private sector or have moved to other countries.

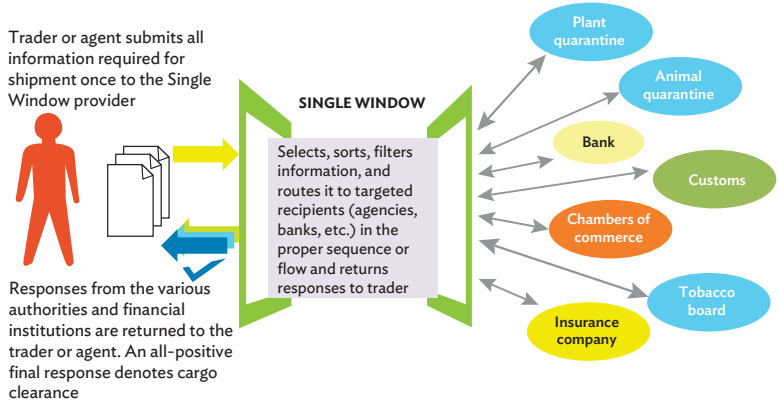
## Single Window

Linked with the development of ICT systems is the concept of national and regional Single Windows. UNECE (2002:8) defines Single Window as "a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once." The main value for having a Single Window is to

increase the efficiency through time and cost savings for traders in their dealings with government authorities for obtaining the clearances and permits for moving cargo across borders. In a traditional pre-Single Window environment, traders had to visit multiple government agencies at multiple locations to obtain the necessary papers, permits, and clearances to complete their import or export processes. Figure 6.4 illustrates an example of an implementation of a Single Window system within a country or economy.

The development of a regional Single Window by 2015, as promoted by the Association of Southeast Asian Nations (ASEAN), depends on all the member countries having National Single Windows (NSWs) that can be interfaced into a regional window. Again it is the "central" countries of Singapore, Malaysia, and Thailand leading the way with NSWs established, whereas further east NSWs are still in the planning phase, with the targeted 2015 appearing increasingly unlikely to be achieved and 2018 a more realistic implementation date. To the west, only India is currently engaged in the development of an NSW, and even this is merely linking customs and one other agency. Thus, it can be seen that the goal of NSWs replicates the overall ICT situation with those customs authorities with the more advanced application of automated systems moving even further ahead by being able to develop NSWs, whereas the less developed are still at the planning stage.

**Figure 6.4: Diagram of a Single Window System**




Source: Chaojirapant (2013).

## Lack of Transparency and Unclear Import–Export Requirements

Modern customs operations, and to a major extent trade facilitation, is about "informed compliance." Under this concept, traders who "comply" with the legislation and regulations on a regular basis should be entitled to a facilitated service, usually in the form of expedited clearances. In order to be compliant, it is essential to be aware of the import, export, and transit requirements. ADB (2003b) highlighted governance issues arising from a lack of transparency, but this problem often arises from inadequate publication of clear import–export requirements.

Non-compliance can either be deliberate, as in the case of smuggling, or accidental where a genuine error has been made because the rules were either not clear or were misinterpreted. The latter are by far the most common, especially in an environment where there are large numbers of one-off importers or small traders, as well as many small C&F agents with limited experience. While the most familiar documentation problems are simple typing errors in data entry or in the transposition process, there are many instances of the submission of incorrect supporting documents or non-submission of needed documents. The latter occurs principally because the relevant party has failed to comprehend what was required.

There appears to be an indirect relationship between access to trading requirements and levels of ICT use. Thus, for example those countries with complex Single Window operations tend to provide easy public access to their trading requirements, whereas in those countries with limited ICT or where ICT is used solely as a transaction database, the requirements are more difficult to find and follow. Access to the regulations applying to imports relating to the non-customs border organizations has often been cited as a problem, particularly as many of these organizations do not have their own websites and have low ICT accessibility. The lack of trade portals in many countries in both regions has been recognized by development partners, with both ADB and the World Bank helping to establish such portals in the GMS and South Asia Subregional Economic Cooperation (SASEC) countries.

## Legislative Constraints

Customs legislation normally consists of primary and secondary legislation. The primary legislation sets out the role and responsibilities of customs and the overarching principles in relation to how they undertake these functions. This is most often in the form of a Customs

Act or Customs Code and usually has to be approved by parliament. The secondary legislation addresses the details of how the primary legislation is applied and consists principally of regulations and instructions. These are normally written and approved by customs or their governing ministry. Developed countries tend to minimize the amount of primary legislation incorporating principles, thus leaving the implementation aspects to the regulations. This approach means the primary legislation is smaller and more static, only being changed occasionally. The main advantage of this approach is its flexibility in that changes can be made in regulations by customs themselves in response to operational needs without having to constantly revert to parliament.

In many developing countries in South Asia and Southeast Asia the primary legislation is often more comprehensive, incorporating much detail, including secondary legislative coverage. On the one hand, this means parliament has more control on implementation of an activity generating revenue for the national budget, but on the other hand the price of this centralized control is the legislation is less flexible in terms of making minor changes, because of the need for parliamentary approval. Legislators normally wait until there are a significant number of changes required before drafting and proposing its submission to parliament. The introduction of modern customs practices is not only being inhibited by the absence of supporting legislation, but that under the existing legislation many of these new concepts are often not permitted. The time frame for introducing new or amended primary legislation via parliament is considered to be approximately 3–5 years (ADB 2011).

## Compliance with National Technical Standards

One of the challenges facing the international trading system is the diverse conformity assessment practices and the use of individual standards and approaches persisting in different countries. Conformity assessment is the internationally recognized procedure for demonstrating that specified requirements relating to a product, process, system, person, or body are fulfilled, thus determining compliance. Activities include testing, inspection, certification, and accreditation. Mutual recognition of accreditation and certification activities facilitates access to international markets, thus providing the technical underpinning of international trade by promoting cross-border stakeholder confidence and the acceptance of accredited test data and certified results. This is made possible through a network of mutual recognition arrangements (MRAs) among international accreditation bodies. Unfortunately, the incidence of MRAs between countries within both regions is not high.

The root causes of problems relating to technical standards in both regions are that the technical regulations, standards, and conformity assessment procedures vary between countries. Having different standards, procedures, and regulations makes life difficult for producers and exporters alike, which is compounded by the lack of a common or harmonized approach to using the correct standard and conformity assessment procedure to ensure compliance. There are also wide differences in the levels of development and implementation of the national quality infrastructure and systems and the technical capabilities. These result in the need for constant product re-testing and re-certification. A recent survey for the South Asian Association for Regional Cooperation (SAARC) Committee of Experts showed that sanitary and phytosanitary technical barriers to trade are the most frequent NTB to trade, as far as the SAARC countries are concerned. Indications are that in the GMS, similar issues are commonplace in relation to certain products, such as rice and other food products (ADB 2012). To date the initiatives of the development agencies have concentrated on customs and it is only now that some assistance is being directed to this area.

A constant theme appears to be demands for more testing equipment at the borders in the form of "mini-laboratories," whereby approvals can be undertaken at the frontier and relevant certificates issued. However, the reality is that at most borders there are no staff with the appropriate technical qualifications to be able to undertake such complex testing. Site visits to borders where such facilities have been developed indicate they are underused, poorly maintained, and lack basic testing materials or that they are beyond their use-by date (ADB 2003b). The need is to make such testing facilities available near, rather than at the borders as they are often in remote locations where access to trained personnel is severely limited.

## Border Infrastructure

Poor border infrastructure is often cited as an important NTB. This manifests itself in long queues at border ports and resultant delays in transit. Where these problems arise they relate partly to the nature of that location or poor design. Many border crossings are congested because they are located in border towns, which were there originally or where the cross-border trading activity has resulted from communities developing around the border link. This is the situation at many of the SASEC and GMS road borders and congestion largely arises due to the mix of large volumes of pedestrian, non-motorized transport, and motorcycles, as well as freight traffic. In some GMS countries, the

borders are blocked by the construction of hotels and casinos, such as between Thailand and Cambodia and Viet Nam and Cambodia, and in SASEC constrained by roadside retail activities such as between India and Bangladesh.

A number of countries are responding positively in recognition of this adverse situation. The Indian government is investing in the development of large integrated check posts (ICPs) at its main land borders with Bangladesh, Bhutan, Myanmar, Nepal, and Pakistan to resolve this issue by moving the existing border operations outside the border towns and creating large border terminals connected by bypasses. Pedestrian traffic will continue to use the existing urban crossings, whereas the vehicle traffic will predominantly be diverted to the new facilities. Thailand is adopting a similar strategy by separating freight and passenger traffic, with freight bypassing the border towns to connect with new border terminals being constructed at the borders with Myanmar and Cambodia.

Another issue is that many borders have been poorly designed. Modern design techniques recognize that the border security zone is essentially a processing area, thus using an architectural approach referred to as "form follows function." Under this concept, the processing and ergonomics are mapped and the form (infrastructure) is then placed over these processes. This ensures that the layout is optimally focused on its operations. However, at many borders in both regions, form rather than function has become dominant, with image being seen as paramount. The result is that these facilities are more difficult to operate and the flow is suboptimal, thus making processing slower and sometimes more convoluted with users having to leave their vehicles to find where they have to submit documentation. The optimal materials flow is a direct line between the entrance and the exit, but in many cases an impressive administrative building blocks the line to the processing area (ADB 2012). In some cases, such as at the ICPs and Thai borders, the new border infrastructure has become so large that staffing and effective control are becoming issues for the relevant border authorities.

In developed countries, congestion is alleviated by inland clearance depots (ICD). This means that the final clearance takes place "inland" from the border, thus the border crossing acts only as a "checkpoint." This speeds up the processing, as it means only the driver and vehicle are checked rather than the cargo. In both South Asia and Southeast Asia the use of ICDs is limited. In countries like Bangladesh, India, and Thailand, the only ICDs tend to be rail connected with their seaports. This is because the state railways become the "custodians of the cargo" in transit between the port and the ICD and this is seen as more secure than road transport. While there is pressure to reduce the processing

delays at the border line by locating the ICD to an inland point, the typical response in both regions is to position an ICD, land port, or dry port close to or even within the border crossing rather than further inland. Basically, the reason for this approach is the absence of effective inland transit agreements, which means that all road traffic has to be cleared at or adjacent to the border. In most countries, the road carriers need to carry documentation when they leave the border areas to deliver their load showing that the goods have been cleared.

Despite the issues identified above, the primary cause of delayed freight movements through land borders is the physical processing, rather than the infrastructure at the border. Poor infrastructure merely compounds the situation and makes the problems more visible. Despite the investment in new facilities in recent years, the average transit times for freight vehicles passing through the borders have in many cases only changed marginally. For example the transit times through the India–Bangladesh, India–Nepal, and Myanmar–Thailand borders examined in 2013 are almost identical to audits undertaken in 2007 and 2010 even with improved facilities. Where lower transit times have been achieved this is due to improvements in the road infrastructure on routes to and from the border rather than of the actual border infrastructure.

## Port Facilitation

Ports are borders but the trade-facilitation-related border delays often appear masked within the overall port activities. Because the cargo is sitting in a container in the container yard, the delay is not as visible as if it were sitting on a truck at a land border. The reality is that probably the greatest trade facilitation constraints and/or delays occur within the ports, but somehow it is less of a priority in terms of resolution. The development partners, such as ADB and the World Bank, have concentrated their assistance on enhancement of trade through the land borders, generally in pursuit of promoting intra-regional trade, with only an occasional port facilitation initiative. The trade facilitation infrastructure initiatives under both the GMS and SASEC focus solely on border infrastructure and border processing and access, with only one port-related project (ADB 2003a). Given that most trade between South Asia and Southeast Asia will move by sea, irrespective of land links established between the two regions, increased focus will in future be required on port facilitation.

Most of the advanced ports in the world have port community systems. These are similar to Single Windows in that the various members of the port community, including customs, can link into a common system that has both processing and tracking and tracing mechanisms.

While most of the major Southeast Asian ports have such systems, many South Asian ports either do not have such systems or their capabilities are rudimentary. The result is that users have to interface separately with the different parties involved in a port clearance, including the port authorities, shipping agents, and transporters, as well as the standard government agencies. The interface with the port authorities relating to the payment of wharfage, storage, and handling charges often results in additional delays and the need to produce more documentation. It is no coincidence that the major ports with port community systems, such as Singapore, Port Klang, Tanjung Pelepas, Laem Chabang, and Colombo, have the lowest port dwell times. ADB has been assisting in developing such systems at Chittagong.

## Delays in Transit Traffic to Landlocked Countries

Table 6.1 shows the problems of the landlocked countries with Bhutan, the Lao PDR, and Nepal requiring the largest number of documents and the longest transaction times. The surveys are based on global trade activity rather than bilateral trade and therefore tend to over-emphasize the disadvantages in such landlocked countries that have much higher percentages of bilateral trade with neighbors. Bhutan and Nepal mainly trade with India and the Lao PDR with Thailand, thus only a small proportion of their goods, often classified as "third country trade," are subject to the international logistics chains with their high documentary requirements. Nonetheless, it is clear that while neither region has simple transit mechanisms, the responsibility for this situation is not solely with the transit country. For example, in Kolkata, documents have to be lodged with Nepalese or Bhutanese authorities in Kolkata, as well as with the Indian authorities, and problems in obtaining the required data from the landlocked countries to present the necessary documentation at the port have been cited as a common problem. It can be argued that in effect such traffic is subject to a "double clearance" routine.

The importance in terms of South Asian and Southeast Asian connectivity is that if the international land routes are to be developed, such as between India and Thailand through Myanmar, some form of long-distance transit system will need to be developed in areas where the development of simple effective transit systems has so far been elusive. It is evident that some countries in both regions do not regard transit traffic as a priority, partially as they perceive it as a benefit for others, rather than themselves. This may make it more difficult to agree on multicountry transit arrangements. Suggestions of extending the

International Road Transport (TIR) system used in Europe, Central Asia, and the Middle East demonstrate a lack of understanding about a system that is essentially European-based and has conditions that could not be achieved in the Asian environment. Nonetheless, some form of transit arrangement using the pillars on which TIR is based might be a potential solution.

## Transport Facilitation

Transit systems as discussed above relate to the movement of uncleared cargo between the port and/or border in one country to an inland point of clearance in the same country or through to another country or across the territory of one country to and from third countries—that is, it relates to the actual cargo. Transport facilitation relates to the means of undertaking bilateral or transit movements and is concerned with the vehicle rather than the contents. In both South Asia and Southeast Asia, the international transport industry is small because few vehicles from one country can transit across the border and ply the roads of another country, even neighbors. This is the same situation with cars, as it is rare to see cars with foreign registration plates in any of the countries in the two regions, except close to the borders where special conditions may apply. In relation to freight vehicles, India allows Nepalese and Bhutanese trucks on the roads and vice versa providing they are carrying international traffic.

The state of transport facilitation in Myanmar still poses numerous obstacles to Myanmar's potential role as a regional bridge. Foreign trucks are not permitted in Bangladesh or Myanmar. There are no transit agreements for Myanmar–Thailand or Myanmar–India. Vehicles cannot cross the borders of the two countries, and driver licenses are not mutually recognized. There are limitations on software as well. It is not possible to exit Myanmar through from Myawaddy to Mae Sot in Thailand, as the Myanmar immigration network is not connected.

In the GMS, freight vehicles can travel longer distances on neighboring countries roads, but usually only if they have a permit negotiated under the Cross-Border Transit Agreement (CBTA), sponsored by ADB. Vietnamese and Thai vehicles transit into both the Lao PDR and Cambodia and vice versa. However, in practice, most road traffic is transshipped at or near the border areas.

A feature of trade in both regions is major traffic imbalances with the smaller countries. For example, India is a much greater exporter to Bangladesh, Bhutan, and Nepal than it imports in return. Similarly, Thailand and Viet Nam export more to Cambodia and the Lao PDR

than they import. This situation will always favor the transporters in the major export countries because the routing control of the major shipments lies with the exporters who tend to predominantly use their national carriers. Thus, where through transport is allowed, such as between India and Bhutan and Nepal, Indian carriers dominate the transport. Similarly between Thailand and the Lao PDR and Cambodia, Thai transporters dominate international through movement where allowed, as do Vietnamese carriers of traffic from Viet Nam to Cambodia and the Lao PDR.

Negotiation of through transport arrangements has proved difficult within regions, let alone between regions. The main problems appear to be trust-related, related to the competence of drivers and their vehicles, particularly as through transport remains uncommon. However, there is also the problem of dominance of the international transport sector by the carriers from the major countries like India and Thailand and therefore pressure from the national road transport sectors in the smaller countries for protective measures. Transshipment at the border may cost more, but the national transporters can argue they obtain some income from this approach, whereas with through transport they would potentially get nothing. Given this situation, there is an understandable reticence to open up the market to even bilateral traffic rights. This is no different to the situation in Europe where permits were initially used to restrict the access of "foreign" transport, or restrictions on Mexican trucks into the United States. The problem in more rapid implementation of the CBTA demonstrates the difficulty in opening up the market (ADB 2012). This situation will potentially represent a significant NTB for long-distance road transport between the two regions, particularly as foreign vehicles are not allowed through Myanmar.

## Governance Issues

In numerous studies and projects in the Asian region, user cite "corruption" or "rent seeking" as a major problem at the borders, be it a land border, port, or even airport. Unfortunately, corruption during border operations is widespread, though there are significant variations in both its incidence and size, varying from minimal to endemic. However, governance problems within the various border agencies are often symptomatic of the general corruption levels within the country as a whole, rather than being specifically isolated to the border clearance activities. Transparency International is the world's leading non-government anti-corruption organization and publishes an annual Corruption Perceptions Index. Table 6.2 shows the index for some Asian countries for 2013.

The perceptions index reflects the views of the business community in the various countries and is not factually based. Collecting data on corruption is difficult, as parties do not wish to be identified due to possible repercussions. Nonetheless, it provides possible comparisons between countries on governance issues. It is a concern that, out of the 180 countries in the index, 36 Asian countries, or almost two-thirds of all Asian economies, are in the bottom half of the listed rankings, and almost one-third in the worst 20% of countries covered. The scoring system also suggests the differences between the best and worst are increasing and the perceptions on levels of corruption have not improved in many countries in recent years. The countries with the lowest rankings tend to be the least developed countries. In many cases these are the same countries with the highest documentation requirements and tend to have the most complex import or export clearance routines.

**Table 6.2: Corruption Perceptions Index, 2013**

| Country | Country Rank |
|---|---|
| Singapore | 5 |
| Bhutan | 31 |
| Brunei Darussalam | 38 |
| Malaysia | 53 |
| Sri Lanka | 91 |
| India | 94 |
| Philippines | 94 |
| Thailand | 102 |
| Indonesia | 114 |
| Nepal | 116 |
| Viet Nam | 116 |
| Pakistan | 127 |
| Bangladesh | 136 |
| Lao PDR | 140 |
| Myanmar | 157 |
| Cambodia | 160 |

Lao PDR = Lao People's Democratic Republic.

Source: Transparency International. Corruption Perceptions Index 2013. http://cpi.transparency.org/cpi2013/results

Corruption is most commonly cited within customs, but can equally apply to other border organizations even though there may be fewer opportunities for such illicit practices. The two main forms of governance fraud are—coercive and collusive. Coercive fraud is where payments are made to individual officers for services to which the stakeholder is either entitled to a free service or is forced to pay for a service that does not take place. The coercive element is the most common, consisting of money paid to allow the transaction to proceed, usually in the form of "speed" payments such as those paid to expedite processing of documents and signatures to achieve a faster clearance. However, it may also include the issuing of non-essential certificates, avoiding examination and inspection routines or fees collected for using the examination facilities when no examination actually takes place. These tend to be small amounts paid in cash to individuals and in some countries are perceived as an accepted element of the clearance routines.

The second form, collusive fraud, arises when an individual officer or office colludes with the importer or agent to defraud the government of legitimate duty and taxes. The most common form is the reclassification of a product in order that a lower duty rate is applied or even no duty is paid, for example, if it is declared as a government or a non-government-organization import. This type of fraud, though less common, is more of a problem as the potential amounts of revenue lost can be more significant and the possible benefits to individuals greater. It is also more difficult to address, as it often involves more senior officials. Localized cross-border trade that is common across many parts of Asia is particularly susceptible to this type of fraud.

The major concern is the widespread acceptance of such illicit practices in some countries whereby it has reached a stage that such activities are considered to be an expectation, rather than the exception. Given this situation, it appears that limited action is being taken in many countries to address the governance and integrity issues, despite corruption being seen by the public as the primary reason for their negative image of the border authorities. In some countries, such as Indonesia and the Philippines, some external assistance has been involved to help address such issues, but essentially any effective remedial action needs to be internally managed.

However, it is important to balance this adverse situation in the public sector with that of the private sector, as represented by importers, exporters, and their agents. For an illicit transaction to take place, it requires two parties. In collusive fraud the importer is a direct partner in the illicit transaction. While coercive fraud is difficult

to avoid at many borders in order to provide the customer with the optimum service level, there is anecdotal evidence to suggest C&F agents can actually generate profits from this adverse situation. Since the end-customer expects such payments to be made and there are no invoices to record amounts paid, agents can charge clients for more than was actually paid out. Interviews indicate agents are in some cases generating significant amounts of undeclared revenue from this practice. Given this situation, there may be limited pressure for change from some stakeholders, as they can benefit directly from this lack of transparency.

From a trade facilitation perspective, it is recognized that governance and corruption is a difficult area to address, partly because it is a more general reflection of the business environment in that specific country. A few countries have had well-publicized campaigns to address border-related irregularities with some success, but these are rare and difficult to enforce, particularly over a longer time frame. Low pay to government officials often working under difficult conditions is probably the most common cause and helps explain the higher incidence of governance problems in less developed countries where pay scales in the public sector are generally low. Indeed, in these countries, the potential to earn such supplementary payments is sometimes viewed as an incentive to attract staff.

Given that it is difficult to address corruption head-on, the most effective approach is to make it more difficult by reducing the opportunity for such practices. This is most effective by adopting strategies that minimize the direct interface between clearance officials and the importer or his agent and the numbers of forms to be checked or approved. It is no coincidence that those countries with the least number of documentation requirements and greatest use of ICT systems are ranked highest (Table 6.1) and have the lowest levels of illicit activities involved in their border clearances. This suggests trade facilitation initiatives aimed at reducing documentation and development of ICT systems from transaction recording to automated processing will probably be the most effective method in addressing poor governance in the border environment. Increased automation can reduce staffing and enable officers to be paid more while not increasing the overall costs. In general, developed countries pay their officers higher wages with resultant reduced temptation for complicity in illicit practices, combined with the higher the risks of discovery, thus resulting in lower governance risks.

## Lack of Effective Consultation Mechanisms

With regard to institutional cooperation, customs officials in the SASEC and GMS countries meet regularly as members of the WCO, in addition to their participation in initiatives promoted by the IFIs and regional organizations such as ASEAN, SAARC, and UNESCAP. However, such meetings tend to be high level and therefore contain a "political" dimension and rarely discuss issues related to bilateral enhancement of trade facilitation between their respective subregional countries. At the border level, the customs and immigration authorities tend to meet their counterparts relatively frequently to discuss operational problems, often on an ad-hoc basis. However, their authorization in terms of adjusting procedures is limited. To address the gap between these higher- and lower-level meetings, a common solution promoted by the IFIs has been to establish regional customs cooperation committees (CCCs) to focus on common regional aspects.

While the overall concept of forming CCCs is actively supported by both the WCO and the IFIs, its application often appears more problematical. The first key issue is identification of a practical program for the CCC that effectively bridges the gap between the high level and border operational functions, such that the CCC generates visible outputs. Existing CCCs tend to focus predominantly on confirming external capacity building training initiatives and presenting national situation reports, rather than enhancing cooperation between the individual members. The second issue is that, with the plethora of regional initiatives, as well as the WCO, the smaller countries have problems in making the necessary senior personnel available to attend all the meetings.

Effective consultation between trade facilitation stakeholders, consisting of the border agencies and the C&F agents, forwarders, and transporters, among others, is also missing in many of the countries. Unlike in the more developed countries, the border agencies in most of the GMS and SASEC countries are predominantly orientated toward the control and revenue collection functions as opposed to trade facilitation, thus the need to converse with the private sector is not seen as particularly important. The private sector operates in a commercial environment and attempts to minimize transaction costs, therefore they often have a strained relationship with the border agencies, particularly customs. The result is a limited degree of basic trust between the public and private parties that would enable the formation of an effective cooperation mechanism to the mutual benefit of both parties.

Where trade facilitation committees have been formed, they have often been established with the best of intentions, such as to offer a

forum whereby the two parties (public/private) can mutually discuss issues. Unfortunately, there are constraints on both sides that often appear to compromise this objective. On the one hand, customs tend to be on the defensive because the private sector uses it as a "complaints mechanism," and on the other hand, the private sector tends to raise specific issues affecting them as individual operators, rather than general issues in the interests of their overall membership. The net result is these committees that are designed to promote inclusivity in trade facilitation reform tend to gradually meet less often and the representation quality diminishes. Many trade and transport facilitation committees in developing countries have been formed with the help of IFIs, only to later become inactive as technical assistance projects come to an end.

The key common feature in both the CCCs and the trade facilitation committees is that both the sustainability and the attendance of senior personnel depends on the organization being perceived as relevant and able to demonstrate positive results from its activities. If the organization becomes merely a "talking shop," all inputs and no outputs, then the quality of the attendees falls and interest in the mechanism rapidly fails. In those countries where consultation mechanisms are effective, they have quality attendees, a practical agenda, and do not meet too often, unless there is a specific urgent issue to be resolved. The trade facilitation committees can be important as a public–private consultation forum in the development of the NSW, where the active involvement of the trade and transport sector is particularly important.

## Value of Time in Trade Facilitation

One driver of enhanced trade facilitation often cited is that it will reduce transaction costs by faster transit, particularly through the borders. To a major extent, this is based on the concept of "time costs money," which is predominantly a developed country philosophy. This concept is often used in feasibility studies relating to the development of road and border infrastructure. Unfortunately, the reality in both regions is that such time savings may not necessarily be reflected in lower costs.

In relation to inland transport costs, an example is that of road traffic from Kolkata to Nepal. Once the goods are cleared for transit, the forwarder applies for transport, the local cooperative assigns a truck, and the goods are loaded, normally in the same day. However, instead of the load moving directly to Nepal, the driver may divert to his home for 1–2 nights because he has already been queuing for up to a week outside the port to find a load. Only then does he proceed to Nepal. The charges to the importer are based on a fixed market price, irrespective of the time

taken and the importer is usually flexible as to the day when it arrives. If it comes a day earlier, that is good, but the cost is the same. The same situation also applies to shipments to Bhutan and sometimes to the Lao PDR via Thailand. Owner-drivers or small operators who quote on a fixed-cost basis, rather than basing their charges on fixed and variable costs, dominate the transport market in most countries in both regions.

A similar situation occurs at the land borders. At many SASEC and GMS borders, the average clearance times is cited as 2–4 hours, thus transit through the more efficient borders (both sides) takes half a day and a whole day at others (ADB 2008). Discussions with C&F agents indicate that their costs are predominantly based on a fixed fee with the client irrespective of the clearance time taken, unless there is a particular problem. Thus, a faster transit would not necessarily reduce border transaction costs.

A common factor between the two situations is that users are not exerting strong pressure for performance improvements, particularly at the land borders. There is a broad philosophical acceptance of "that's the time it takes" and most parties operate within that envelope. This may explain why external pressure for enhancements has been muted and that change has predominantly been driven by organizations such as customs for their benefit, rather than necessarily being a response to market pressures. The philosophy of making improvements to trade facilitation to save expenditure may not necessarily be valid throughout the subregions. However, it becomes increasingly relevant in the more developed member countries where issues such as inventory costs are higher and transport rates tend to have a time–distance-based relationship. Because both regions are developing, there should be increasing emphasis on improvements in efficiency generating savings in the future. In the case of port facilitation, this is already the case as higher dwell times within the port raise transaction costs due to quay rent and demurrage charges.

## 6.5 Regional Initiatives to Address Issues

The overall concept of most of the regional initiatives is to provide a framework for change on a regional basis, rather that solely being reliant on national initiatives that address only national NTBs. Unfortunately, the current scenario is that the most developed trade facilitation countries in Southeast Asia, such as Singapore, Malaysia, and Thailand, are advancing more rapidly than their less developed regional partners. In effect, the best are getting better and the gap between the best and

many of the poorer countries is widening, mainly due to the magnitude of the differences in resources, funding, and level of automation. Many of these regional initiatives are programmed to provide support to help close that gap by assisting the less developed countries in their efforts to improve their national trade facilitation environment through the adoption of structured common programs or initiatives.

The region has a plethora of institutions engaged in trade facilitation development. The major institution for Southeast Asia is ASEAN and in South Asia its equivalent is SAARC. Both are essentially political organizations and their main input into trade facilitation is the development of FTAs between their member countries and with external trading blocs. However, both have specific initiatives designed to address key aspects of trade facilitation. In the case of ASEAN, their most high-profile initiative is the ASEAN Single Window (ASW) initiative discussed above and with SAARC it is their initiatives on dealing with technical standards and development of mutual recognition agreements. Essentially, both organizations provide a cooperation framework between member countries designed to implement common standards throughout their respective regions.

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) was established as an interregional group in June 1997 to promote free trade within the region, increase cross-border investment and tourism, and to promote technical cooperation. While this organization has been dormant, the opening up of Myanmar means it is the only regional cooperation institution specifically linking the two regions. In recognition of this important role, ADB is providing technical assistance to BIMSTEC to assist in developing policies and strategies to enhance physical connectivity and to develop the subregion's trade facilitation environment.

The international funding institutions led by ADB and the World Bank are actively involved in trade facilitation initiatives, both at the national and subregional levels. ADB trade facilitation initiatives are predominantly subregion-based, coming under the auspices of the GMS and SASEC programs, whereas the World Bank's initiatives are mainly national in response to individual countries' requests for assistance. Both organizations' trade facilitation efforts have historically focused mainly on customs reform and modernization, though they also covered transport facilitation, development of trade portals and some other aspects of trade facilitation. ADB has to date tended to adopt different strategies for each region, with the focus in the GMS so far being mainly on transport facilitation, whereas within SASEC it is mainly on customs modernization.

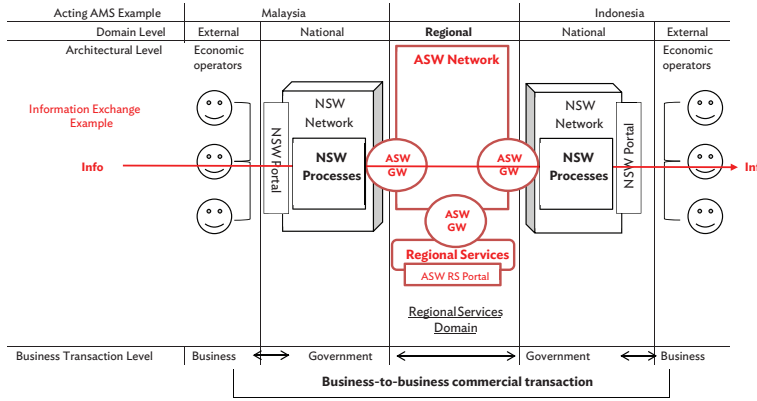
The following subsections highlight some of the key initiatives in terms of their objectives and identify some of the problems being encountered in their implementation. It is recognized that progress in enhancing trade facilitation is slow and difficult. This is due to a combination of latent internal resistance to change and problems in altering the legislation to support the introduction of modern practices and advanced technology. In some cases, there is an element of inertia to change at the national level and these regional initiatives are designed to provide momentum by providing a development framework that generates commitment by member countries to achieve certain common regional goals. Achieving these regional targets is more difficult than national goals and therefore many of these initiatives are long term and designed to help the less developed countries in pursuit of improvements in trade facilitation nationally, thus raising the standards of the region as a whole. The objective in many cases is to stimulate intra-regional trade by the elimination of national NTBs, but in doing so, improving the trade facilitation environment irrespective of trade between specific regional partner countries.

## ASEAN Single Window

The ASEAN Single Window (ASW) is a flagship regional initiative designed to connect and integrate the National Single Windows (NSWs) of member countries in Southeast Asia. The objective is to expedite cargo clearance within the context of increased economic integration within ASEAN. Its implementation should ensure compatibility of NSWs with international open communication standards, while also making certain that each member country can exchange data securely and reliably with any trading partners using international open standards. The goals of the initiative are simpler and faster processing times leading to more transparent ways of doing business.

The initiative sets an ambitious goal and is dependent on the establishment of NSWs in each member country and then linking them through common protocols. Figure 6.5 shows the exchange of information through the economic operator (shipper or agent) to the border authorities in Malaysia through their NSW. The data are passed to the ASW network to the Indonesia NSW and then accessed by the relevant authorities and the importer or his agent. The core difficulty is having all the NSWs in place early enough to be able to link them into the system. Establishing NSWs in some of the less developed member countries is proving more difficult than anticipated in the original program, thus the delayed implementation.

## Figure 6.5: ASEAN Single Window Architectural Design



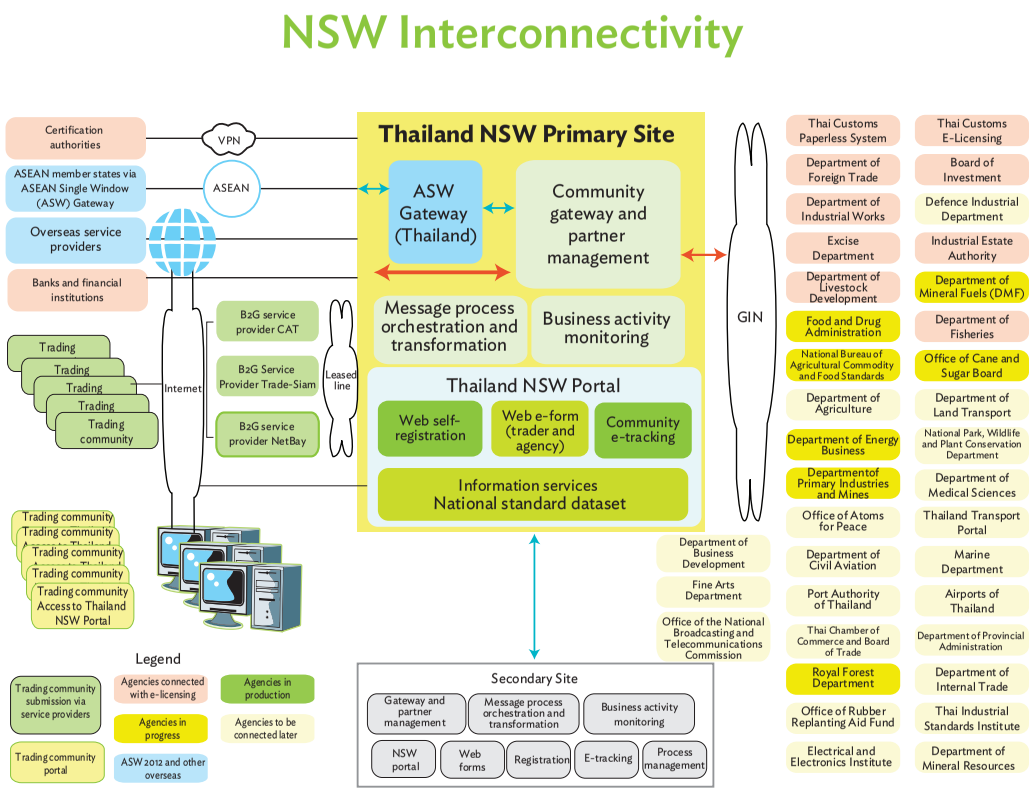

AMS = ASEAN member states; ASEAN = Association of Southeast Asian Nations; ASW = ASEAN Single Window; GW = gateway; NSW = National Single Window; RS = Regional Services.

Source: UNESCAP (2012).

The development of an NSW is a complex process. Feedback from those involved in Single Windows, including from ASEAN, highlight that the major constraints are institutional rather than technical. The development requires a strong lead agency, including change leaders and change agents, to coordinate and consult with relevant parties and requires high-level government support to gain the necessary level of commitment from the various agencies to be linked into the system. The keys to successful development appear to be carefully phased planning, proactive consultation with all parties, including the private sector, and avoiding using technology to drive the initiative. Figure 6.6 shows the architecture of the Thailand NSW and demonstrates the complexity of such systems and the high number of participants required to establish an effective Single Window.

However, the significance of the ASEAN Single Window initiative may not necessarily be in achievement of its ultimate goal of a linked regional system. Its primary benefits may be realized by the development of an NSW as part of the process toward an ASW, particularly in the countries to the east of the central Thailand–Malaysia–Singapore corridor. The ASEAN initiative provides the development framework and is driving those countries currently without an NSW to develop them, ideally by 2015. The achievement by that date is less important than the motivation it provides in ensuring the member countries are actively engaged in the NSW planning process and have a real level of

## Figure 6.6: Thailand National Single Window




ASW = ASEAN Single Window; GIN = Government Information Network; NSW = National Single Window.
Source: UNNExT (2012).

commitment to its achievement. It is noted that in South Asia, there is no similar regionally based equivalent under SAARC or any other party and prioritization of NSW development is less visible. Only India is actively engaged in the NSW planning process, though ADB plans to assist other SASEC countries in developing their NSWs with a regional system such as the ASW as an eventual goal.

## Cross-Border Transport Agreement

The Cross-Border Transport Agreement (CBTA) developed under the GMS program is the major focus of trade facilitation efforts in the GMS by ADB in recent years. It is an accord consolidating key non-physical measures for efficient cross-border land transport into a single legal instrument. It consists of three tiers: (i) a main agreement containing the principles of the system, (ii) a set of annexes and protocols containing technical details, and (iii) bilateral and trilateral memorandums of understanding that provide detailed arrangements to implement the CBTA in a subset of GMS countries.

The CBTA includes mechanisms that (i) enable vehicles, drivers, and goods to cross national borders through a GMS road transport permit system; (ii) avoids costly transshipment through a customs transit and temporary importation system, including a guarantee system for goods, vehicles, and containers; (iii) reduces time spent at borders, through single-window inspection, single-stop inspection, information and communication systems for information exchange, risk management, and advance information for clearance; and (iv) increases the number of border checkpoints implementing the CBTA to maximize its network effects and economies of scale.

The CBTA was initially a transport facilitation instrument, rather than a trade facilitation agreement. Indeed, one of its primary functions was to promote the development of through road transport, thus eliminating the need for time-consuming and costly delays in having to transship cargo at the border. In general, it is subordinate to specific international conventions such as the Revised Kyoto Convention and other CIQS conventions and to national legislation. Thus, CBTA implementation has to take into account the need for compliance with other agreements and international best practice.

Unfortunately, implementing the CBTA in the GMS has been much slower than originally expected. The main focus has been on the promotion of through transport arrangements by means of issuing permits, in line with its core function to support international road transport operations. With regard to this aspect there has been some tangible success, such as the issuing of permits for transit through the Lao PDR and Cambodian

borders with Thailand and Viet Nam. Unfortunately, indications are that many of these permits have been issued to tourist bus operators, rather than to freight carriers. In general, most access agreements have been achieved on a bilateral rather than multilateral basis. Both Myanmar and the PRC have recently signed the CBTA and many of its annexes, which represents a step forward, especially in terms of the long-term connectivity between the two regions.

## SASEC Trade Facilitation Program

In November 2012, SASEC initiated its Trade Facilitation Program, supported by ADB through a loan and grant of $47.67 million—$21.00 million for Bangladesh; $11.67 million for Bhutan; and $15.00 million for Nepal. The program's objective of enhancing the processing of cross-border trade is to be pursued by (i) the development of modern and effective customs administration that would focus on assisting the three beneficiary countries in acceding to, and complying with, the provisions of the RKC, as well as helping them in applying the WCO's Framework of Standards to Secure and Facilitate Global Trade (SAFE Framework); (ii) streamlined and transparent regulations and procedures involving the development and upgrading of automated customs management systems, including the establishment of National Single Windows; and (iii) improved services and information for traders and investors involving the development of trade portals and the establishment of trade facilitation committees in each country.

An overall SASEC Trade Facilitation Strategic Framework (2014–2018) builds on the gradual momentum of the past 3 years and harnesses the momentum of countries in forging ahead with many of the significant improvements needed to facilitate and increase trade in the subregion and with the rest of the world. The goal for 2014–2018 is to increase intra-regional trade through enhanced trade facilitation efficiency and a reduction of the time and cost to trade. The strategy is to elevate the processes of border clearance to international standards and international best practice, including through automation. While trade facilitation is now taking a high priority at the national level, regional cooperation will complement national action through the sharing of information and experience, and promoting joint and synchronized action.

The Trade Facilitation Strategic Framework focuses on five key priority areas to address trade facilitation issues in the SASEC region: (i) customs modernization and harmonization, (ii) standards and conformity assessment strengthening, (iii) cross-border facilities improvement, (iv) through transport facilitation, and (v) institution and capacity building. At this stage, the focus is on customs modernization

and harmonization through the implementation of the trade facilitation program, which is tranche-based with specific targets that trigger additional tranches. The initial emphasis is on all countries becoming signatories to the RKC and modernizing their customs ICT systems. The major concerns at this stage relate to the ICT upgrading, which is likely to take longer to implement than initially programmed, with potential additional repercussions on NSW development.

## Asian Cargo Highway

The Asian Cargo Highway concept evolved from an announcement at the APEC Ministerial Conference in November 2010 of a trade facilitation initiative focusing on customs modernization with the Government of Japan contributing up to $25 million to ADB for trade facilitation in Asia from 2011 to 2015. The goal of this initiative is to help create a seamless flow of goods in Asia through (i) development of an authorized economic operator (AEO) program in each country, (ii) conclusion of mutual recognition arrangements of the AEO programs, (iii) establishment of an NSW in each country, (iv) expansion of international interoperability between systems, and (v) other basic trade facilitation reforms that are necessary for modern customs administrations. This is essentially a customs capacity-building initiative involving ADB, the Japan International Cooperation Agency, and the WCO under the Japanese Customs and Tariff Bureau and is focused on Southeast Asia.

This is a rolling technical assistance program that commenced with the Trade Facilitation Support for ASEAN Economic Community Blueprint Implementation, approved in May 2012. Its objectives are to support the benchmarking of trade facilitation indicators, enhance and modernize border agency operations, improve the legal and regulatory framework, and strengthen trade facilitation institutions and capacities. Specific extra assistance has been provided to Myanmar under this component.

Additional approved components include a review of the regulatory frameworks and operations in the context of the RKC, including knowledge enhancements and the development of mechanisms to increase private sector support for the improvement of trade facilitation in the GMS. An additional component is focusing on capacity enhancement of sanitary and phytosanitary (SPS) services.

In general, initiatives that focus on customs reform are considered to be easier to implement than in other areas such as SPS. Previous work on CIQS has proved difficult to undertake and achieve sustainable change. The lack of a common reform goal, such as RKC, makes progress in these areas more complicated.

## World Customs Organization

The WCO has its regional base in Thailand covering South Asia and Southeast Asia. Its primary function is to encourage national customs organizations, which are members of the WCO, to comply with as many of its conventions and recommendations as possible. The major focus in recent years has been persuading countries to become signatories to the RKC in order to establish a customs modernization benchmark for the region as a whole. While there are still countries in South Asia and Southeast Asia who have not yet become signatories, the WCO is active in assisting in helping countries to be in a position to sign by undertaking gap analysis and identifying legislative changes required to become signatories.

There is now increased emphasis on implementation of the SAFE Framework of Standards as a mechanism to expedite the movement of traffic from AEOs. An AEO is a customs-approved company and therefore suitable for "green channel" clearances. The SAFE framework is closely allied to the concept of risk management and post auditing which form part of the recommendations of the RKC. The objective is to enable traffic for companies to move rapidly through the frontiers without delaying inspection and examination checks.

The main function of WCO activities in the development of regional trade facilitation is in setting international standards through their conventions and programs and in capacity building, particularly though the development and application of training programs. In some cases, ADB facilitates and funds the programs. Given that many of these regional initiatives are focused on raising the standards of the least-developed countries, these structured capacity building programs are critical to their implementation.

## World Trade Organization: Trade Facilitation Agreement

In December 2013, WTO members concluded negotiations on a Trade Facilitation Agreement (TFA) at the Bali Ministerial Conference. This agreement contains provisions for expediting the movement, release, and clearance of goods, including goods in transit. It also sets out measures for the cooperation between customs and other authorities on trade facilitation and customs compliance issues, as well as containing provisions for technical assistance and capacity building. The TFA will enter into force once two-thirds of members have completed their domestic ratification process.

The initial task following the dissolution of the Negotiating Group on Trade Facilitation was to conduct a legal review of the text, as under

the decision adopted in Bali, WTO members must draft a Protocol of Amendment to insert into Annex 1A of the WTO Agreement. This review was completed in July 2014. Work on the protocol has started but the WTO reports that members were unable to reach consensus on the adoption of the protocol. The WTO committee preparing work on implementing the trade facilitation deal was unable to agree on how to proceed at their meeting in September 2014. At the time of this writing, deadlock continues on adopting the instrument to trigger the process for the agreement's entry into force. The exchanges at the meeting indicated no movement on the circumstances that had prevented members from adopting the protocol at the end of July 2014. It is evident that the committee is not in a position to complete this task and members are not able to come to a common understanding on what should be given priority in terms of the next steps—and in which framework.

It is clear that while this agreement is politically important in providing an element of harmonization in approaches to the clearance and movement of transit goods, it is unlikely to have any significant impact on trade facilitation in the short to medium term. The current deadlock is symptomatic of the potential problems ahead, especially potential conflicts with existing national arrangements in and between member states. The TFA could be considered more as a longer-term strategic goal.

## 6.6 Conclusions

With two areas as diverse as South Asia and Southeast Asia, it is difficult to provide conclusions applicable to all countries and which specifically relate to enhancing connectivity between the two regions. It is evident that land links between the two regions, other than in relation to bilateral trade, are unlikely to handle appreciable levels of trade in the short to medium term. The distance, state of the infrastructure, and lack of heavy transport capacity make the land route between the two regions commercially unattractive at this stage. Nonetheless, such a link is seen as strategically important and should have more potential in the longer term. Therefore, action is required soon; especially as trade facilitation enhancement has a significant time lag between planning and implementation. The conclusions that follow indicate the primary issues when assessing trade facilitation in the context of connectivity between the two regions.

First, connectivity between South Asia and Southeast Asia is not necessarily adversely constrained by trade facilitation environments in either region. The low level of international trade between and within

each of the regions is predominantly due to other trading factors, such as similarity in export products and emphasis on trading with distant markets that are perceived as more remunerative. While trade within and between the two regions is expected to grow appreciably, this will be determined principally by changes in supply and demand patterns. Nonetheless, improvements in trade facilitation would make trading both easier and more stable, with potentially lower transaction costs, and should enable the realization of any latent trade between the regions which may not be moving due to the current NTBs. The case for overall enhancement of the trade facilitation environment is compelling in support of economic growth in both regions.

The development of trade facilitation is a national issue, rather than a regional matter. The national trade facilitation procedures are relatively common and do not discriminate between the origin and/or destination of the cargo being processed. While there may be minor variants due to the application of bilateral or regional free trade agreements, the processes and procedures and NTBs tend to be common for trade in general. For example, the automated customs system deals with all customs entries irrespective of mode or partner trading country. This situation suggests it may be difficult to isolate particular trade facilitation measures that will specifically enhance trade between South Asia and Southeast Asia, rather than improving the national trade facilitation environment as a whole. The main exceptions to this situation would be specific development of border infrastructure and the promotion of bilateral or multilateral transport agreements.

NTBs are predominantly due to constraints within a particular country, and therefore the resolution of these issues will need to be nationally focused. Given the major variations in the national trade facilitation environments within both regions, the reality is that the less developed countries have a higher incidence of NTBs than the more developed countries. This amplifies the need for national assistance, though possibly within a regional framework. The objective would be to raise the standards in the less developed countries, thus attempting to close the widening gap between them and the more developed countries.

It will be increasingly important to take a holistic view of trade facilitation development. There is little doubt automation has been the major driver for change over the last decade and that the development of national and regional Single Windows in both regions will be the most important feature in the next few years. However, users cite that while automation has made life easier for customs and improved their performance, these changes have not yet significantly improved their situation. In many cases, they still have to amass the same supporting documentation and undergo the same routines. The overall profile still

remains of crowded customs offices with agents carrying piles of papers from one processing window to another window. This suggests that reliance on a single strategy of ICT development, while useful, will need to be supported by other measures.

Potentially the most constraining NTB is the amount of paperwork required to undertake a clearance. C&F agents in South Asia in particular cite the major problem is not the time taken for customs to process and clear a shipment, but the time taken to collect and copy all the necessary documents to support an electronic declaration. Despite automation, document packages in many countries remain largely unchanged. Automation and paperless systems do not appear to be synonymous and there is a danger the NSW will similarly not achieve the reductions in paperwork, which is one of its publicized goals. More emphasis may be needed in rationalizing and reducing documentation as a specific issue, rather than an inherent reliance on increased automation in ensuring progress toward paperless systems.

Regional initiatives can be a useful mechanism to motivate change. While implementation of improvements in trade facilitation measures may be national, a regional dimension with being "part of a team or family" within a structured regional framework is considered beneficial. For the less developed countries, their more developed regional partners can provide assistance, experience, and advice in achieving a common goal of enhanced regional trade facilitation. This is a key objective of the initiatives involving the formation of customs cooperation committees or subgroups.

In initiating change, there is a need to have a more comprehensive understanding of "why things are the way they are," rather than relying on pushing the "end-goal" of compliance with international agreements or best practice. Both regions consist of a diversity of countries with their own individual circumstances and it is critical these factors are taken into consideration when promoting change. Examples are concerns regarding through transport and the potential dominance by other countries' carriers when attempting to negotiate cross-border transport agreements, shortages of ICT personnel in the less developed countries when developing sophisticated ICT solutions, and the current lack of transparency in the Myanmar trade facilitation environment after years of isolation. Such issues are legitimate national concerns; countries will need to adopt strategies that reflect these types of situations, rather than merely promoting the end goal.

Trade facilitation efforts supported by the international finance institutions should be more multimodal, as opposed to being focused on road transport borders. The overall promotion of transport and economic corridors may have led to an over-emphasis on the land corridors, rather

than activities at the terminals. While road borders are important for bilateral trade and the landlocked countries, maritime transport is the critical mode connecting the two regions, as well as with the rest of the world, both now and in the future. The trade facilitation interface between maritime transport and the national hinterland is much more than customs clearance and involves many agencies. Even as customs performance improves, it is clear that other NTBs will gradually become more visible. This suggests that port facilitation should become a more integral element within trade facilitation initiatives.

The development of NSWs is critical in both regions. It is no coincidence that the most advanced trade facilitation environments are in those countries that have already developed NSWs. The main barriers to the development of NSWs are institutional and not technical. In the less developed countries, the institutional finance institutions like ADB and the World Bank can have a key independent facilitating role in bringing the parties together and providing technical advice where appropriate. They can also assist in introducing automation to some of the other border agencies where current utilization of ICT is negligible.

Development of through transport should not be underestimated. In addition to the resistance to change, there is opposition by the smaller countries to open up their road network to foreign transport, as they feel they will be dominated particularly where trade imbalances exist. In South Asia, the CBTA may not be the appropriate mechanism to link India with Bangladesh or India and Bangladesh with Myanmar, though some of the principles within the CBTA such as annual permits may be useful tools. The use of new technologies, such as global positioning systems and electronic seals, as well as improvements in border processing, including transshipment performance, should result in reduced time and costs, and these could be comparable to improvements to be attained if CBTAs and other transit arrangement were implemented successfully.

Legal assessments could be an integral element in development initiatives. Both regions have a history of capacity building, training in advanced techniques, and development of automated systems, only to be thwarted in implementation by constraints in the existing legislation. To enhance the trade facilitation environment will require adjustments in legislation and these changes are expected to have appreciable lag times between submission of drafts and parliamentary approval. Thus, the legal aspects need to be addressed at the "front end" of initiatives, so that the results of the capacity building initiatives are capable of implementation when the external support program is completed.

While it is important to establish modernization benchmarks, such as all countries signing the RKC or the SAFE Framework, compliance is more important than a signature. For example, the RKC contains

recommended practices which signatories are supposed to implement within given time frames. There is no legal recourse if countries fail to comply and it is clear that while there are over 90 country signatories to the RKC, there is a significant variation in their application. Signing the RKC does not necessarily infer the relevant customs organization is compliant. Becoming signatories merely indicates a level of commitment to change, but does not necessarily ensure that change has or will take place. There is a strong case for some form of monitoring to ensure the goals of initiatives focused on signing up to such international agreements do result in improvements in service performance. This could be accomplished with techniques such as time-release studies and border performance indices.

The importance of border infrastructure may be overstated in terms of its impact on trade facilitation. In both regions the dwell times at the land borders are predominantly related to the processes and procedures, rather than any lack of physical infrastructure. Better infrastructure in terms of larger border processing zones merely moves the point of congestion from outside the zone to within. In both regions, the dominant cause of border congestion is the inability of the clearance processing speed to cope with the demand. Providing additional processing interfaces will only assist if additional resources are made available to operate those extra interfaces.

In both regions, there is a potential dichotomy between their approaches to the development of border infrastructure and the introduction of advanced clearance processing. The modern concept of advanced customs operations is to minimize the processing at the frontier, in favor of moving the goods inland or closer to the end-user for clearance. The development of inland clearance depots and dry ports and techniques such as post auditing, mean that borders should increasingly become merely checkpoints, as opposed to clearance points. However, in both regions, the size of the border crossing infrastructure is growing rapidly, in some cases driven by compliance to the CBTA and in others like India by the adoption of standard designs such as the integrated check posts. These major constructions suggest that border clearances are here to stay.

Transit is likely to become an increasingly important issue in connecting the two regions, both in terms of inland and international transit. On the one hand, it will be critical to move shipments from the frontier, be it a port or land border, to a point inland for clearance to eliminate congestion at the frontier, and on the other hand, move cargo through countries to serve landlocked nations, or ultimately undertake multicountry journeys such as from Thailand to India. In some countries, there are inland transit arrangements but not in others and where

arrangements do exist they are often suboptimal in expediting transits. For either region to cope with the predicted growth, it will be essential to develop mechanisms to facilitate the movement of uncleared cargo away from the immediate border interface. Responses will have to be case-specific, as there is no single formula for transit agreements.

## 6.7 Recommendations

The recommendations are based on the enhancement of trade facilitation in general, rather than specifically in relation to connectivity between the two regions. As indicated in the conclusions, trade facilitation is common irrespective of mode or origin/destination. Consequently, there is a demand to improve the trade facilitation environment in general, and more specifically in the less developed countries where NTBs are more prevalent. Countries in the two regions that have not signed the Revised Kyoto Convention should do so.

First, trade facilitation initiatives (other than infrastructure development) should be nationally or regionally based, rather than corridor-based. Except in relation to transport facilitation, it is unlikely that countries will adopt special procedures for a specific route or on a corridor basis, particularly as in most cases legislation does not allow for such exceptions. The concept of piloting on a corridor basis is unrealistic and potentially distorting.

Trade facilitation should encompass both port and transport facilitation, as they also represent NTBs. The majority of trade between the two regions will continue to be by sea, other than between immediate neighbors, and therefore ensuring the ease of movement between the surface and maritime interfaces should generate savings in transactions costs, as well as improve performance.

In the short term, the issue of excessive documentation is a priority in the less developed countries. Reliance on increased automation and NSW will not necessarily resolve this critical issue, thus it should be treated as a separate subject. Where business process analysis has been undertaken, as in parts of South Asia, there is a need to translate that data collection into practical recommendations on how to physically reduce the documentation requirements.

There is a need to consider development of a regional NSW initiative, similar to the ASEAN Single Window, but also covering the South Asian region (or possibly SASEC only). This could potentially be through BIMSTEC, or a combined SASEC–GMS dialogue platform. The objective is not necessarily to provide direct ICT interconnectivity,

but to provide a framework under which all the countries are actively engaged in the planning and development process of NSWs. In some cases, external assistance will be needed to facilitate the planning activities.

While CBTAs have been partially successful in Southeast Asia, they may not necessarily be the optimal concept for developing through transport in South Asia or between the two regions. A more logical approach would be to seek the application of bilateral arrangements, which later may evolve into a multilateral agreement. Such agreements should also focus on transport related-issues, rather than diversifying into customs and border infrastructure issues.

In order to pursue the goal of through land transport between the regions, Myanmar may require specific assistance. This is because its trade facilitation environment is not compatible with those of its trading partners to the east or west. As mentioned above, numerous issues need to be addressed, including the lack of transit agreements for Myanmar–Thailand and Myanmar–India, the inability of vehicles to cross the borders of the two countries, the lack of mutual recognition of driver licenses, and software limitations, such as the Myanmar immigration network not being connected at border crossings like Myawaddy.

In trade facilitation programs in both regions, the potential legal aspects need to be considered. This is because proposals for changes in procedures and capacity building initiatives have in the past been compromised by the inability to later implement change due to legal constraints.

When requests are made for funding of new border infrastructure, the functionality of the border crossing and its design should be assessed. Current methodologies are leading to excessive expenditure on border facilities without any tangible benefits to users.

There is a need for development of more effective internal transit systems to reduce congestion at the frontiers and to be able to provide surface transport links between the two regions.

The emphasis should gradually be shifted from customs reforms toward addressing the non-customs issues, such as sanitary, quarantine, phytosanitary, veterinary, and trading standards. This requires identifying a few key components to address, rather than attempting too wide a spread in such a broad subject. This could include the development of regionally based testing facilities to support national laboratories, such as that being proposed at Siliguri to cover the SASEC countries.

There needs to be a clear phased program for trade facilitation efforts to connect the two regions, based on a combination of national

or subregional developments, but within an interregional connectivity framework. Currently, the trade facilitation developments are diverse in both regions and there is a case to provide synergy between initiatives.

The WTO Trade Facilitation Agreement reflects the importance of trade facilitation in its key role of promoting global trade. While such agreements tend to be non-binding, they provide a focus on many of the issues discussed above and generate a collective emphasis on resolving such issues. Many developed countries and IFIs have already responded by promising support to the less developed countries in assisting them to comply with the tenets of the agreement. The agreement may be less relevant to connectivity between South Asia and Southeast Asia in that the two regions have some countries with advanced trade facilitation environments and others where relevant initiatives are underway; however, the agreement provides context to these developments within a global framework, though its implementation is likely to take a long time to achieve in light of the current deadlock in agreeing on the protocol.

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CHAPTER 7

# National and Regional Policy Reforms

## 7.1 Introduction

Trade barriers, including tariff and non-tariff ones, constrain the scope for trade and investment between South Asia and Southeast Asia. Policy reforms at national and regional levels, chiefly those related to trade, can provide enhanced price signals for private sector activity and promote improved resource allocation through the market mechanism. Unilateral trade liberalization in both regions is desirable to reduce these barriers and promote greater trade connectivity. Expanding free trade agreements (FTAs) between the two regions offers another means of trade liberalization between them. Exchange rate regimes, to the extent that they depart from economic fundamentals, can also have a distorting effect on trade, and more flexibility is desirable. Section 7.2 describes current trade barriers, while Section 7.3 describes recent and prospective developments in FTAs, including the potential for mega-regional trade agreements to link the two regions. Section 7.4 describes exchange rate regimes in the region. Section 7.5 concludes.

## 7.2 Trade Barriers

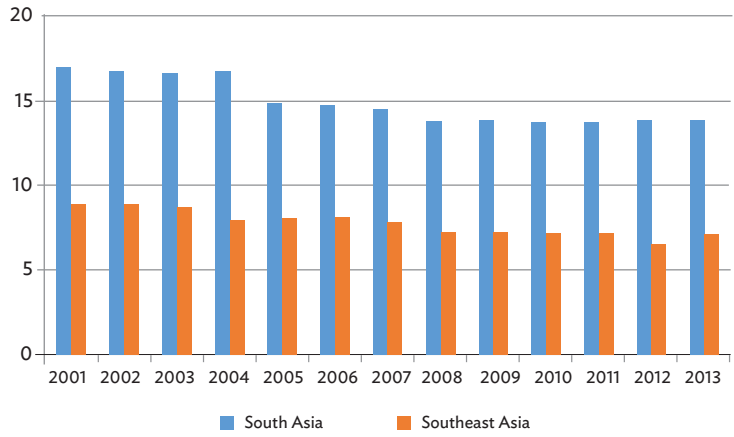
The reduction of trade barriers over recent decades, including both tariffs and non-tariff barriers (NTBs), has contributed substantially to the increased integration of South Asia and Southeast Asia with each other and the global economy. This section shows that there is still scope to reduce remaining tariffs and NTBs to help the two regions sustain this momentum and further benefit from greater cross-regional trade and investment.

## Tariff Barriers

Tariff barriers in the two regions have generally fallen, as the most favored nation (MFN) tariff rates exercised by both South Asia and Southeast Asia have declined in the past decade, especially in South Asia, falling by almost half. Between 2001 and 2013, the average MFN tariff rate applied by Southeast Asia fell from 8.7% to 7.1% (Figure 7.1), making it among the most liberal regions in the developing world and not far above most economies in the Organisation for Economic Co-operation and Development (OECD). In the same period, average MFN tariffs applied by South Asia fell from 17.0% to 13.9%. Despite progress, scope exists for further reduction, as the average MFN tariff applied by South Asia remains higher than the World Trade Organization (WTO) member average of 8.8%. Moreover, averages do not tell the whole story; for both South Asia and Southeast Asia, many tariff spikes exist at the product level, suggesting considerable room for further liberalization.

Effectively applied tariff rates (EATRs)[1] in both South Asia and Southeast Asia have also fallen in the last decade. Between 2000 and

**Figure 7.1: Average Most Favored Nation Tariff Rates on All Commodities** *(%)*




Note: For the most favored nation tariffs, where data are not available the most recent year within a 5-year window (on either side) is used.

Source: World Integrated Trade Solution. http://wits.worldbank.org/wits/ (accessed 9 Oct 2014).

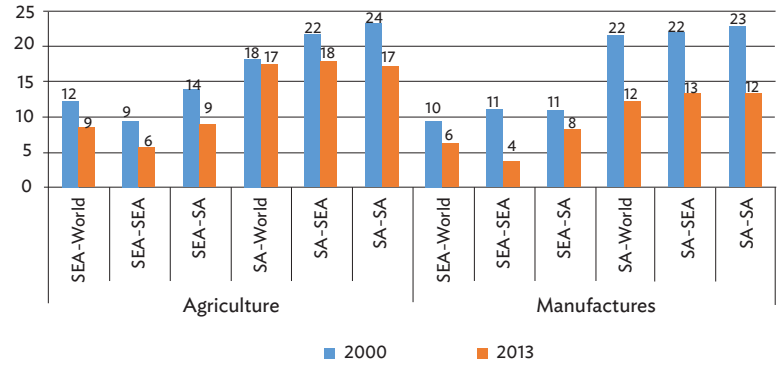
[1] The effectively applied rate is the minimum tariff granted by a reporter to a partner for the considered product. The effectively applied tariff is the MFN applied tariff unless there is a preferential tariff.

2013, the average EATR on total trade by Southeast Asia dipped from 12% to 9% (Figure 7.2), while the average EATR on total trade by South Asia decreased from 18% to 17%. Although the EATRs on cross-regional trade between South Asia and Southeast Asia were higher than those on total trade in the base year of 2000, the decrease in EATRs between the two regions over the past decade was steeper than that for total trade. From 2000 to 2013, Southeast Asia's average EATR on cross-regional trade with South Asia fell from 14% to 9%. In the same period, South Asia's EATR dipped from 22% to 13%.

These trends resulted in comparable EATRs for the two regions' respective cross-regional and total trade in 2011. For South Asia, the average EATR on cross-regional trade is only marginally higher (1 percentage point) than that on total trade, while for Southeast Asia the EATR for cross-regional trade and total trade are the same. However, South Asia's EATR on trade between the two regions remains double that applied by Southeast Asia. This points to room for further improvement in this area.

The EATRs on cross-regional trade by both regions are higher than MFN applied tariff rates. This indicates that the application of preferential tariff rates (which are typically lower than MFN tariff rates) between the two regions has not been significant. As closer economic integration between South Asia and Southeast Asia promises substantial welfare gains for both regions (see Chapter 9 for an assessment of the impacts of alternative policy scenarios), there is ample scope for reducing tariff barriers as a means of boosting growth. This could be

**Figure 7.2: Effectively Applied Tariffs, 2000 and 2013** *(%)*



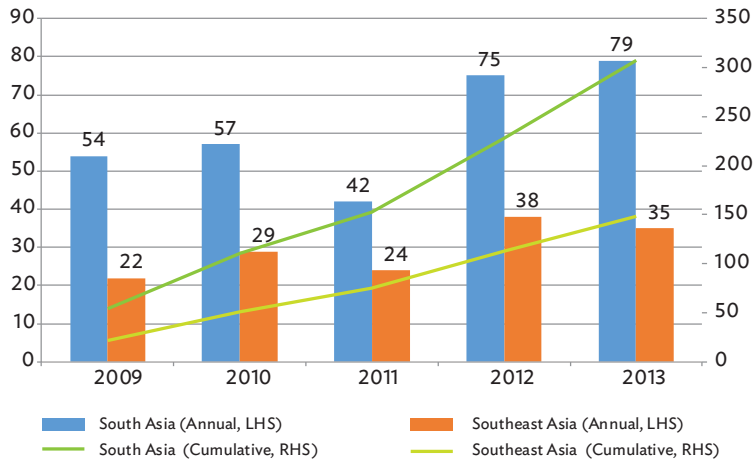

SA = South Asia; SEA = Southeast Asia.
Source: World Integrated Trade Solution. http://wits.worldbank.org/wits/ (accessed 4 Nov 2014).

accomplished by extending progressively deeper and broader coverage of preferential tariff rates on trade between the two regions through unilateral liberalization or FTAs.

## Non-Tariff Barriers

NTBs are always a problem, but during economic downturns, governments may be tempted to increase discriminatory measures against foreign commercial interests. These NTBs are generally less well regulated by multilateral trade rules and tend to be less transparent than tariffs. From 2009 through 2013, South Asian and Southeast Asian countries respectively introduced[2] 307 and 148 non-tariff measures[3] that discriminate against foreign commercial interests (Figure 7.3). Although the number of newly introduced non-tariff measures in both regions has fallen annually, about 75%–80% of these measures still remain in force, distorting trade and investment flows in costly and often non-transparent ways (Evenett 2012).

**Figure 7.3: Non-Tariff Measures Implemented, 2009–2013**



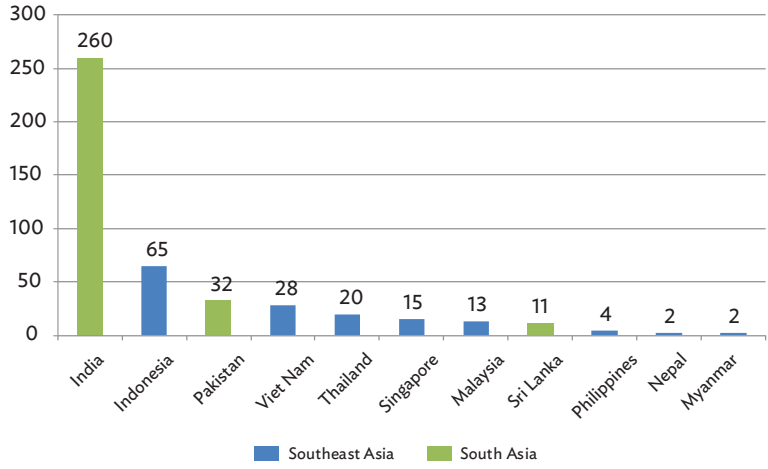

Source: Global Trade Alert Database. http://www.globaltradealert.org/site-statistics/table/12 (accessed 14 Oct 2014).

[2] "Introduce" is defined as the date of inception of measures as captured in the Global Trade Alert database.

[3] "Non-tariff measures" consist of measures that are color-coded red and amber in the Global Trade Alert database. Red refers to measures classified as "almost certainly discriminatory against foreign commercial interests" and amber refers to "likely discriminatory" measures.

The largest economies in both regions are more active in imposing NTBs. In South Asia, India was responsible for 260 of the introduced discriminatory non-tariff measures, Pakistan was second with 32 measures, and Sri Lanka was third with 11 measures (Figure 7.4). In Southeast Asia, Indonesia accounted for 65 of the measures, Viet Nam was second with 28 measures, and the other more developed ASEAN economies were responsible for the balance.[4]

**Figure 7.4: Top 10 Countries' Non-Tariff Measures Implemented, 2009–2013**




Source: Global Trade Alert Database. http://www.globaltradealert.org/site-statistics/table/12 (accessed 14 Oct 2014).

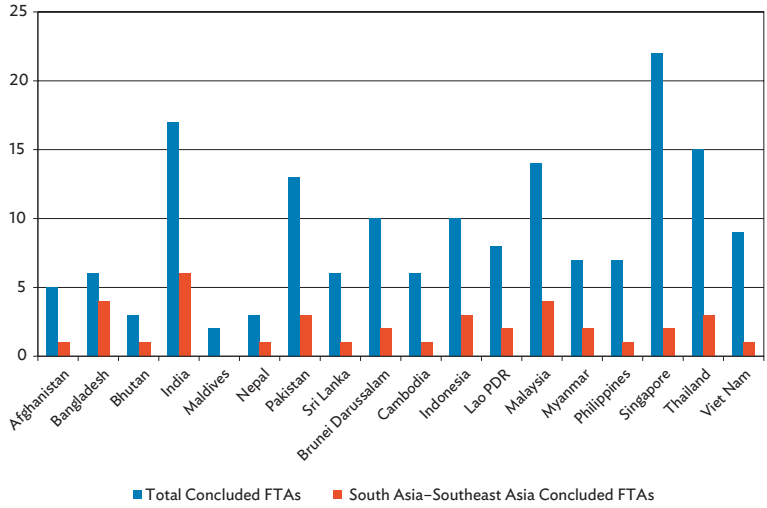
Particularly for Southeast Asia, whose economies are bound by a greater number of trade agreements, discriminatory measures have become "murkier" (that is, harder to detect). These include subsidies and public procurement regimes that are less well regulated by existing trade agreements as opposed to more traditional forms of measures like tariffs and trade defense instruments. Thus, they can be more inhibiting to trade and investment than tariff barriers. In South Asia, tariff and trade defense measures accounted for about 80% of newly introduced measures, while about 60% of Southeast Asia's introduced measures are of the more traditional variety.

[4] Further analysis of NTBs and other discriminatory measures in Southeast Asia can be found in Austria (2013).

## 7.3 Free Trade Agreements

The spread of FTAs since 2000 has accelerated Asian regional economic cooperation and integration (Kawai and Wignaraja 2013). The number of FTAs in Southeast Asia has increased tremendously over the last decade. Some South Asian countries, in particular India, Pakistan, and Sri Lanka, have also been promoting FTAs. However, as Figure 7.5 shows, the number of FTAs between South Asia and Southeast Asia is small relative to the total number of FTAs. Nonetheless, all South Asian and Southeast Asian countries are engaged in cross-regional FTAs. The concluded South Asian and Southeast Asian FTAs include those for India (6), Bangladesh (4), Malaysia (4), Indonesia (3), Thailand (3), and Pakistan (3) (Figure 7.5). Although the number of South Asian and Southeast Asian FTAs is limited, it is increasing. Prior to 2005, the Asia-Pacific Trade Agreement (concluded in 1976) was the only South Asian–Southeast Asian FTA. As of 2014, out of 170 signed by countries in South Asia and Southeast Asia, 46 are cross-regional FTAs. More South Asian–Southeast Asian FTAs are under negotiation or being proposed. Thus,

**Figure 7.5: South Asian and Southeast Asian Concluded Free Trade Agreements, 2014**




FTA = free trade agreement; Lao PDR = Lao People's Democratic Republic.

Note: *The figures include those that are signed and in effect as of 4 November 2014.

Source: Asian Development Bank. Asia Regional Integration Center Free Trade Agreements Database. www.aric.adb.org (accessed 4 Nov 2014).

South Asian–Southeast Asian regional integration and cooperation are expected to increase further given the continuous growth of cross-regional trade and the stalemate in the Doha Round negotiations.

## Connecting South Asia and Southeast Asia

Lagging the trend of Asia's FTA boom, South Asian countries did not actively enter into FTAs until late 2000. The agreements also were modest in depth and coverage. Prior to 2005, South Asian nations were selective with their FTA partners and tended to enter into trade agreements with their neighbors. Given the lack of progress at Doha and the economic malaise in the OECD, South Asia has increasingly turned toward Southeast Asia for market access. However, among South Asian countries, only India and Pakistan are active players. A preferential tariff arrangement exists between Bangladesh, Indonesia, Malaysia, and Pakistan, but it is not yet in force. Other South Asian countries have made no clear moves to integrate with Southeast Asia.

Among the FTAs concluded by South Asian and Southeast Asian countries, the scope and depth vary. As part of its Look East policy, India has signed FTAs with the Association of Southeast Asian Nations (ASEAN) as a whole and three ASEAN members—Singapore, Thailand, and Malaysia. The ASEAN–India FTAs are comprehensive in sectoral inclusion, covering trade in goods, services, and investment.[5] Following the implementation of the FTA in goods, total trade grew by 53% from 2010 to 2013. The FTAs in services and investment were implemented by the end of 2013, and are expected to boost trade to $100 billion from 2014 to 2015. At the same time, the FTAs were not very deep, as WTO-plus issues were not under negotiation.

In contrast to India's determination for deep integration with Southeast Asia, Pakistan has taken cautious steps. It first concluded a comprehensive economic partnership agreement with Indonesia by opening market access of trade in goods. It renegotiated with Indonesia and agreed on a preferential trade agreement that came into force in January 2013, eliminating tariffs on goods and expanding the market further (Swire 2012). The FTA with Malaysia is more comprehensive and includes liberalization of services and investment. However, none of these agreements include WTO-plus issues.

Among South Asian countries, India and Pakistan have more FTAs in the pipeline with Southeast Asian countries. In addition to Singapore,

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[5] India agreed on trade in goods with ASEAN member states in 2009, and a comprehensive pact on services and investment agreements was finalized in December 2012.

Thailand, and Malaysia, India has sought to negotiate an FTA with Indonesia. More importantly, India is also interested in integrating with Southeast Asia under other frameworks besides ASEAN, such as the Regional Comprehensive Economic Partnership (RCEP) being promoted by the PRC. Following approaches to individual ASEAN member states, such as the Philippines, Singapore, and Thailand, Pakistan proposed to negotiate an FTA with ASEAN as a whole in 2009; a feasibility study was undertaken but recommendations regarding an FTA were deferred. It shows the increasing attention that Pakistan is paying to facilitating economic cooperation with Southeast Asian nations. Sri Lanka and Singapore proposed to negotiate an FTA, but no substantial progress has been made.

## Way Forward: Mega-Regional Trade Agreements as an Opportunity for Connecting South Asia and Southeast Asia

Mega-regional trade deals are emerging as a key feature of the world trading system in the post-global financial crisis era. This trend is motivated by the need to reduce regulatory barriers to global supply chain trade, a loss of credibility in the negotiating function of the WTO and geopolitics (Baldwin 2012). From the perspective of this study, two mega-regional trade deals are useful to facilitate connections between South Asia and Southeast Asia.

In November 2012, ASEAN members and their FTA partners[6] formally launched negotiations for the RCEP, which would build up the world's largest trading bloc covering 29% of world trade.[7] According to the guiding principles, the core of the RCEP negotiating agenda is expected to cover trade in goods, services trade, investment, economic and technical cooperation, and dispute settlement (RCEP Ministers 2012). There is also an open accession clause to enable participation of any ASEAN FTA partner, as well as other external economic partners, at a future date. India is the only country from South Asia to join the negotiations so far. This will give India's businesses a greater opportunity to access markets in Southeast Asia and to integrate into production networks in this region. None of the other economies in South Asia has formally expressed willingness to join, though Bangladesh is considering

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[6] These are Australia, the People's Republic of China, India, Japan, the Republic of Korea, and New Zealand.

[7] Estimated from IMF Direction of Trade Statistics. http://elibrary-data.imf.org/FindDataReports.aspx?d=33061&e=170921

doing so. More may wish to sign up if they become concerned about the economic effects of being left out of the regional integration group.[8]

A parallel regional trade agreement in progress is the Trans-Pacific Partnership Agreement (TPP) between 12 economies in Asia and the Pacific.[9] These economies represent 26% of world trade.[10] The ambition is that the TPP would be a high quality, comprehensive 21st century agreement that addresses new and traditional issues, that is, it would go beyond border measures such as tariffs to "behind-the-border" issues including regulatory issues and other impediments.[11] At present, there are only four Southeast Asian economies in the TPP (Brunei Darussalam, Malaysia, Singapore, and Viet Nam) and no economies from South Asia. However, current TPP negotiating parties are committed to seeing membership expand to other economies in Asia and the Pacific. Final decisions on new membership will be decided by consensus of the current negotiating parties. Additionally, new participants will need to demonstrate a commitment to meeting the high standards to which current members are aiming.

At the time of writing, both RCEP and TPP negotiations were ongoing. A short time frame for the RCEP negotiations was planned at the outset. The first negotiations under the RCEP started on 9 May 2013 with the ambitious goal of finishing in 2015. Since March 2010, there have been 20 rounds of TPP negotiations, with the most recent round in Ottawa in July 2014. Studies using computable general equilibrium (CGE) models indicate that notable welfare gains will arise from the implementation of the RCEP and the TPP.[12]

## 7.4 Exchange Rate Regimes

Exchange rate regimes, to the extent that they allow exchange rates to diverge from economic fundamentals, can have a distorting effect on trade and investment. In particular, they can prevent needed adjustments in economic structure from taking place.

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8 See ADB (2013) and Wignaraja (2014) for evaluations of the RCEP.

9 These are Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Viet Nam.

10 Estimated from IMF Direction of Trade Statistics. http://elibrary-data.imf.org/FindDataReports.aspx?d=33061&e=170921

11 For evaluations of the TPP, see Lim, Elms, and Low (2012).

12 Petri, Plummer, and Zhai (2012) found the global gains from TPP to be the order of $295 billion by 2025. A more recent study by Petri and Abdul-Raheem (2014) found the global gains of RCEP to be $644 billion by 2025.

Table 7.1 shows the International Monetary Fund's classification of exchange rate regimes in the region. They range from wholly fixed (or no independent currency at all) to fully floating. We have assigned each regime a "flexibility score" ranging from 1 for "no separate legal tender" to 9 for "freely floating."[13] Interestingly, South Asian exchange rate regimes are relatively flexible, except for those of the Maldives and

**Table 7.1: Classification of Exchange Rate Regimes in South Asia and Southeast Asia**

| Country | Regimes | Flexibility Score |
|---|---|---|
| **South Asia** | | |
| Afghanistan | Floating | 8 |
| Bangladesh | Other managed arrangement | 10 |
| India | Floating | 8 |
| Maldives | Stabilized arrangement | 4 |
| Nepal | Conventional peg | 3 |
| Pakistan | Floating | 8 |
| Sri Lanka | Floating | 8 |
| **Southeast Asia** | | |
| Brunei Darussalam | Currency board | 2 |
| Cambodia | Stabilized arrangement | 4 |
| Indonesia | Crawl-like arrangement | 6 |
| Lao PDR | Stabilized arrangement | 4 |
| Malaysia | Other managed arrangement | 10 |
| Myanmar | Other managed arrangement | 10 |
| Philippines | Floating | 8 |
| Singapore | Crawl-like arrangement | 6 |
| Thailand | Floating | 8 |
| Viet Nam | Stabilized arrangement | 4 |

Lao PDR = Lao People's Democratic Republic.

Note: Flexibility score indicates the flexibility of exchange rate regimes according to International Monetary Fund classification. The higher the score, the more flexible, except "10" means other managed arrangement.

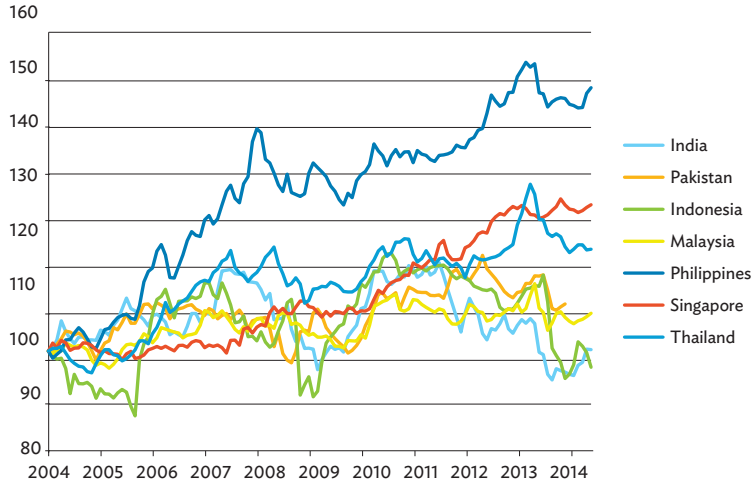
Source: International Monetary Fund (2013).

[13] "Other managed arrangement" is assigned a value of 10, but this should not be construed as indicating the degree of flexibility. Additional insights on exchange rate management in South Asian and Southeast Asian economies can be found in Rajan (2011) and Tang (2014).

Nepal, while those of Southeast Asia, except for the Philippines and Thailand, exhibit a greater degree of control.

Figure 7.6 shows the trend of the real effective exchange rates of major South Asian and Southeast Asian economies over the past decade. All the currencies have shown a degree of volatility, and there is no clear link between the exchange rate regime and the degree of appreciation or depreciation. The economies with the most flexible exchange rates in Southeast Asia were the Philippines and Thailand—first and third, respectively, in terms of overall appreciation over the period. However, India and Pakistan also had freely floating rates, but showed no appreciation trend. This suggests that economic fundamentals did on the whole drive the different trends of these currencies. Singapore showed a steady appreciation trend over the period, showing signs of greater control over its movement. The trends of the Indonesian rupiah and the Malaysian ringgit have been similar to those of the Indian and Pakistani currencies.

**Figure 7.6: Real Effective Exchange Rates of Selected South Asian and Southeast Asian Economies** (2004:1 = 100)




Sources: Data from the Bank for International Settlements. http://www.bis.org/statistics/eer/index.htm (accessed 17 Nov 2014), except data for Pakistan obtained from International Monetary Fund. International Financial Statistics (IFS) database. http://elibrary-data.imf.org/ (accessed 18 Nov 2014).

## 7.5 Conclusions

Trade barriers, including tariff and non-tariff ones, continue to constrain the scope for trade and investment between South Asia and Southeast Asia. This chapter has shown that there is ample scope to reduce remaining tariffs and NTBs to help the two regions sustain their improving trade momentum and further benefit from greater cross-regional trade and investment. The average MFN tariff applied by South Asia remains higher than the WTO member average of 8.8%. Moreover, averages do not tell the whole story; for both South Asia and Southeast Asia, many tariff spikes exist at the product level, suggesting considerable room for further liberalization. As closer economic integration between South Asia and Southeast Asia promises substantial welfare gains for both regions, there is scope for reducing tariff barriers between the two regions as a means of boosting growth. This could be accomplished by progressively extending deeper and broader coverage of preferential tariff rates on trade between the two regions through unilateral liberalization or FTAs.

Between 2009 and 2013, South Asian and Southeast Asian countries have respectively implemented 307 and 148 non-tariff measures that discriminate against foreign commercial interests, and about 75%–80% of these measures still remain in force, distorting trade and investment flows in costly and often non-transparent ways. India, Indonesia, and Viet Nam have implemented the most NTBs.

Among South Asian countries, only India and Pakistan are active players in establishing FTAs. Other South Asian countries have made no moves to integrate with Southeast Asia. India is the only South Asian country so far that has entered into negotiations on the RCEP, which would build up the world's largest trading bloc covering 40% of world trade. This will give its businesses a greater opportunity to access markets in Southeast Asia and to integrate into production networks in this region. None of the other economies in South Asia except Bangladesh has expressed willingness to join, but this may change if they become concerned about the economic effects of being left out of the group. Also, only four Southeast Asian economies have entered into negotiations on the TPP. It is possible that other regional economies may join the process in the future.

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CHAPTER 8

# Risks to Connectivity and Institutional Arrangements

## 8.1 Introduction

Constraints to deepening cross-regional integration can arise from "coordination gaps"—difficulties inherent in cooperative planning and implementation processes. Coordination across national ministries is challenging in virtually all countries but especially in developing ones. Forming agricultural policies and projects, for example, usually involves coordination across many ministries, including agriculture, environment, trade, health, and finance. Finding effective approaches to inter-ministerial coordination and implementation is an important part of the development planning process. Moreover, in many cases the private sector also needs to be involved.

If bridging coordination gaps is so difficult at the national level, problems increase geometrically when policies need to be developed across two or more countries. In addition to national coordination problems, divergent political and legal systems, economic institutions, levels of development, and even sociocultural traditions render joint policy formulation even more difficult. Moreover, intra- and cross-regional projects generate benefits that are not appropriated by a single country and often government bureaucracies are hesitant to mainstream projects for which they may only receive part of the gains. Further, in the national political discourse, the returns from cross-regional cooperation may not be—or at least may not be perceived to be—evenly shared, which complicates mainstreaming and implementation. The win–win nature of cross-regional cooperation is often lost in national dialogue. Regional connectivity needs to be reflected in national development strategies; otherwise it will not get traction. At the same time, institutional

connectivity is important; one of the lessons of the Greater Mekong Subregion (GMS) experience is that soft infrastructure coordination should not come after hard infrastructure is built.

Section 8.2 enumerates reasons for coordination between South Asia and Southeast Asia. Section 8.3 describes current regional coordination institutions and some of their major initiatives. Section 8.4 reviews barriers to regional cooperation. Section 8.5 proposes measures to aid cross-regional cooperation and provides concluding thoughts.

## 8.2 Reasons for Regional Coordination

While South Asian and Southeast Asian connectivity is different from the European context, there is a strong economic case to be made for building robust mechanisms for cross-regional cooperation. Planning South Asian and Southeast Asian infrastructure projects usually involves a subset of economies in the two regions; while it is only natural that they be planned and financed by the participating countries and the interested stakeholders involved, planning these projects with a larger scope and nesting them in a cross-regional context is beneficial to all countries. To do this, however, requires forward planning and close cooperation and coordination across countries and ministries.

With closer integration, there has been growing interest—on the part of the Association of Southeast Asian Nations (ASEAN) dialogue partners and within ASEAN itself—on the potential gains of connecting Southeast Asia with South Asia. India, through its Look East policy and its status as the only South Asian country that is a full dialogue partner of ASEAN, has sought to engage with the region through various channels and mechanisms. Myanmar's recent opening up, through wide-ranging political and economic reforms, offers a unique opportunity for the two regions to connect. Thailand, as Myanmar's immediate neighbor to the east and an active participant in other subregional initiatives, is also keen to serve as a conduit point for mainland Southeast Asia's connectivity. However, for this connectivity to occur and be sustainable, regional and bilateral initiatives need to be geared toward supporting connectivity as defined in the ASEAN context, that is, physical connectivity (rail and road infrastructure), institutional connectivity (coordination or harmonization of policies), and people-to-people connectivity (to support greater awareness of, and communication between different peoples and cultures in the region).

## 8.3 Regional Institutions for Connectivity

Connectivity in the two regions has been enhanced through several cooperation initiatives in the last few decades. Table 8.1 provides a list of the initiatives most relevant to promoting connectivity between South Asia and Southeast Asia and an overview of each program follows.

**Table 8.1: Relevant Subregional Cooperation Programs in South Asia and Southeast Asia**

| Year Established | Members | Objectives | Strategic Priorities |
|---|---|---|---|
| **Association of Southeast Asian Nations (ASEAN)** | | | |
| 1967 | Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam | ASEAN primarily aims to create a prosperous and peaceful community of Southeast Asian nations. To achieve this, it endeavors to accelerate the economic growth, social progress, and cultural development in the region. It also aims to promote regional peace and stability, active collaboration, and mutual assistance on matters of common interest in various fields. | Projects and activities are organized under the Economic Community, Political-Security Community, and Socio-Cultural Community. Economic Community projects include Economic Ministers' Meeting, the ASEAN Free Trade Area Council, and Finance Minister's Meeting. Political-Security Community includes the ASEAN Regional Forum, the Defence Ministers' Meeting, and the Ministerial Meeting on Transnational Crime. Socio-Cultural Community projects include the Ministerial Meeting on Disaster Management, the Educators' Meeting, the Labor Ministers' Meeting, and the Ministerial Meeting on Social Welfare and Development. Various other programs and projects have been launched to support ASEAN community building, for example, infrastructure development and trade and investment facilitation projects. |

*continued on next page*

*Table 8.1 continued*

| Year Established | Members | Objectives | Strategic Priorities |
|---|---|---|---|
| **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** | | | |
| 1997 | Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand | BIMSTEC aims to contribute to economic development of the subregion by promoting active collaboration and mutual assistance on matters of common interest. It also aims to improve cooperation of member countries on subregional projects by providing each other with technical assistance, cooperate in joint efforts that are supportive of, and complementary to, national development plans, and cooperate in projects that can be dealt with most productively on a subregional basis. | Strategic priorities include trade and investment, transport and communication, energy, tourism, information technology, and fisheries. Other areas of focus include agriculture, public health, poverty alleviation, counterterrorism and transnational crime, protection of biodiversity and environment, natural disaster management, and cultural exchanges. |
| **Greater Mekong Subregion (GMS)** | | | |
| 1992 | Cambodia, Lao People's Democratic Republic, Myanmar, Thailand, Viet Nam, plus Yunnan Province and Guangxi Zhuang Autonomous Region of the People's Republic of China | With the adoption of the new GMS Strategic Framework 2012–2022 in Nay Pyi Taw, Myanmar, the objectives of the GMS program is expanded from conventional infrastructure to multi-sector investments to foster economic corridor development, create stronger cross-sectoral links, and more local stakeholder involvement and participation. | Projects of high priority include transport, energy, telecommunications, environment, human resource development, tourism, trade, private sector investment, and agriculture. These subregional projects are implemented with support from the Asian Development Bank (ADB) and other donors. |

*continued on next page*

*Table 8.1 continued*

| Year Established | Members | Objectives | Strategic Priorities |
|---|---|---|---|
| **South Asian Association for Regional Cooperation (SAARC)** | | | |
| 1985 | Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka | SAARC's main objectives are to promote quality of life and economic growth in the region, strengthen collective self-reliance, encourage collaboration in economic, technical and related fields, and increase cooperation among members. | Regional development programs on health, agriculture and rural development, energy, education, disaster management, and other cooperation programs are pursued and implemented by several regional centers. |
| **South Asia Subregional Economic Cooperation (SASEC)** | | | |
| 2001 | Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka | The SASEC program is a project-based initiative to promote economic cooperation through the enhancement of cross-border connectivity and facilitation of trade among the member countries. | SASEC's three priority sectors are transport, trade facilitation, and energy. ADB has been a partner of SASEC in its information highway project, transport logistics, and trade facilitation and tourism projects. |
| **Mekong–Ganga Cooperation (MGC)** | | | |
| 2000 | India, Thailand, Myanmar, Cambodia, Lao People's Democratic Republic, and Viet Nam | The MGC took its name from the Ganga and Mekong, two large rivers in the region. It aims to enhance cooperation of the six member countries in the areas of culture, tourism, human resource development and education, and transport and communication. | In addition to the four areas of collaboration under the MGC, other priority sectors that were recently identified were health, micro, small and medium enterprise development, and food security. |

*continued on next page*

*Table 8.1 continued*

| Year Established | Members | Objectives | Strategic Priorities |
|---|---|---|---|
| **ASEAN–India Connectivity** | | | |
| 1992: Sectoral dialogue partners<br>1996: Full dialogue partners<br>ASEAN–India connectivity was the main theme of the second phase of the Comprehensive Asia Development Plan (CADP) proposed by ERIA | ASEAN and India | The main objective of this project is to enhance partnership of ASEAN and India by improving physical infrastructure links to support cooperation across a range of sectors such as trade, agriculture, new and renewable energy, and tourism, among others. | Multimodal transport covering land and sea routes. The land route will be along the Trilateral Highway or Asian Highway 1 (AH1) connecting Thailand, Myanmar, and India. The sea route will be the west link of the Mekong–India Economic Corridor (MIEC). |
| **Mekong–India Economic Corridor (MIEC)** | | | |
| 2008: ERIA released concept paper on MIEC | Myanmar, Thailand, Cambodia, Viet Nam, and India | MIEC aims to create an economic corridor that will enhance trade and investment flow among members, augment trade with India by reducing travel distance between India and the four Mekong countries, and remove supply side bottlenecks. | Multimodal transport links (road, railway, seaport, and airport), by creating new and/or upgrading old links. |

ERIA = Economic Research Institute for ASEAN and East Asia.

Sources: ADB (2010); ADB websites. www.adb.org/GMS/; www.adb.org/SASEC; ASEAN (2009); BIMSTEC website. www.bimstec.org; ERIA (2009a, 2009b); Kimura, Kudo, and Umezaki (2011); SAARC Secretariat (2009); SASEC website. www.sasec.asia.

Two complementary models of institutions are used to promote regional coordination in the area. The first model is functional corridor-led institutions for technical cooperation, including South Asia Subregional Economic Cooperation (SASEC) and GMS that are spearheaded by the Asian Development Bank (ADB). They focus on areas such as multimodal transport systems and trade facilitation agreements with loose coordination by a secretariat. The second model is subregional political cooperation, which is represented by ASEAN, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), and the South Asian Association for Regional Cooperation (SAARC). They have their own charters and secretariats.

## Association of Southeast Asian Nations

ASEAN is a formal group comprising 10 member countries with a broad mandate, including infrastructure development. Its four flagship regional infrastructure programs are the ASEAN Power Grid, the Trans-ASEAN Gas Pipeline, the ASEAN Highway Network, and the Singapore–Kunming Rail Link. It also has programs to promote energy efficiency and renewable energy and has established the ASEAN Infrastructure Fund.

Having announced an ambitious goal to achieve a single market and production base as part of an integrated ASEAN Community by 2015, ASEAN policymakers have recognized the importance of internal and cross-border connectivity to link to global supply chains. ASEAN's connectivity efforts revolve around the implementation of the Master Plan on ASEAN Connectivity (MPAC) at regional, subregional, and national levels. ASEAN policymakers often tout the MPAC, adopted at the 17th ASEAN Summit in 2010, as the region's main "vehicle" for achieving regional economic integration. It is expected to give impetus to the recent move for establishing a Regional Comprehensive Economic Partnership (RCEP) among ASEAN and six of its partners with which it has a free trade agreement (FTA): Australia, the People's Republic of China (PRC), India, Japan, the Republic of Korea, and New Zealand.[1] The RCEP members may, in future, also become closer partners in connectivity. The 6th East Asia Summit (EAS) held in November 2011 in Bali, Indonesia, raised the possibility of developing a Connectivity Master Plan Plus to include ASEAN's EAS partners.

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[1] See Chapter 7 for a more detailed discussion of the RCEP and other broad trade agreement initiatives.

## Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation

Established in 1997, BIMSTEC aims to achieve its own free trade area by 2017. Though the seven-member group has a more focused mission for collaboration in sectors related to economic development, progress in implementation has not been as effective as initially expected. Members signed a framework agreement for an FTA in 2004, but it has yet to be implemented. This could be due to the lack of a dedicated coordinating body similar to the secretariats for the larger regional groups of SAARC or ASEAN. This is despite nascent attempts at regional coordination by Thailand's hosting of the BIMSTEC Centre from 2004 to 2010, and an agreement in 2011 to establish a permanent secretariat. The outcome of the Third BIMSTEC Summit, hosted and chaired by Myanmar in March 2014, highlights some of the aspirations for rejuvenating subregional cooperation mechanisms. Held 6 years after the second summit in India, the theme of the Third Summit, "Partnership for Harmony and Prosperity," was meant as an impetus for accelerating economic growth in the BIMSTEC region through closer partnerships (BIMSTEC 2013).

BIMSTEC's functional cooperation has continued regardless of any hiatus at the summit level. The foreign ministers and ministers for trade and investment are the primary drivers of regional cooperation at the policy level. In recent years, BIMSTEC cooperation has been more active in the economic-related sectors that focused attention on progressing the negotiations to implement the agreements on trade in goods and services, transport and energy, and tourism. In 2004, the BIMSTEC Trilateral Highway project linking India, Myanmar, and Thailand, with a length of 1,360 kilometers, was taken up by member countries to improve transport links and promote trade and tourism in the subregion. It is also worth noting that poverty alleviation is a priority area for BIMSTEC; if projects can start in the border areas of India, Bangladesh, and Myanmar, the push for South Asian–Southeast Asian connectivity will be strengthened.

BIMSTEC provides an additional stepping-stone for closer ASEAN–India connectivity. Regional cooperation agreements such as BIMSTEC can be additional catalysts in energizing development in the areas that constitute the Indian northeast region and Myanmar's western regions.[2] India and Myanmar have a common interest to initiate and support BIMSTEC programs in their shared border areas, particularly in the

[2] Myanmar is an important part of India's Look East Policy as it has traditionally been considered India's gateway to the ASEAN countries. It was for this reason that India invited Myanmar to join BIMSTEC in December 1997.

necessary infrastructure (both hard and soft) for physical (road and rail) connectivity, and people-to-people connectivity through sustainable tourism development. Additionally, Myanmar's role as a lead country in the BIMSTEC energy cooperation framework indicates the possibility of exploring greater energy interconnection.

## Greater Mekong Subregion

Supported by ADB, the GMS is another informal institution involving five countries as well as two provinces of the PRC. Its main goal is integration, and its main functional areas are trade and infrastructure. Its activities encompass transport, energy, telecommunications, agriculture, and tourism (ADB 2010). An important focus of the GMS Economic Cooperation Program is improving connectivity in the subregion by improving transport, energy, and telecommunications links.

GMS has high relevance for facilitating South Asian–Southeast Asian economic integration in view of the location of its members and the substantial progress it has made in integration efforts. Since its inception in 1992, the GMS has focused on a number of infrastructure projects to connect the countries in the subregion via economic corridors. These projects have developed road and rail networks and air transport in the GMS countries that can be useful "ready-made" links for connectivity. ADB serves as secretariat to subregional arrangements in the GMS as well as in South Asia for SASEC.

## Mekong–Ganga Cooperation

The Mekong–Ganga Cooperation (MGC) was established on 10 November 2000 in Vientiane at the First MGC Ministerial Meeting. Its members are India, Thailand, Myanmar, Cambodia, the Lao People's Democratic Republic (Lao PDR), and Viet Nam. It emphasizes four areas of cooperation, including tourism, culture, education, and transportation links to establish a foundation for future trade and investment cooperation in the region.

## South Asian Association for Regional Cooperation

South Asia's institutional counterpart to ASEAN is SAARC, composed of the eight countries in South Asia. Its main objective is economic integration through the South Asian Free Trade Area and to promote quality of life and economic growth in the region; strengthen collective self-reliance; encourage collaboration in economic, technical, and

related fields; and increase cooperation among members. Its thirtieth anniversary is due in December 2015, but the aspiration to achieve a free trade area is nowhere near the implementation level of its Southeast Asian equivalent. Similar to ASEAN, there are institutional arrangements for shared responsibility (and ownership) in regional cooperation. Focused SAARC regional centers give effect to SAARC summit decisions. The SAARC member governments try to remain relevant by initiatives that highlight the link between the strategic and the economic. For example, the work of SAARC now includes new and non-traditional security issues that have economic implications such as pandemics, terrorism, and energy security.

SAARC differs from ASEAN, however, in its low success rate of progressing economic cooperation and other aspirations. SAARC's inability to progress as fast as its founding aims and objectives intended has affected its regional programs, particularly those aimed at closer connectivity among the member states through economic integration. Despite having been in existence for close to three decades, SAARC member states have resorted to individual, bilateral, or subregional activities (with different participating members) to move forward their economic and strategic interests. This has taken place with little or no input from regional processes under the SAARC framework. SAARC mechanisms and processes are not well known or discussed beyond the government officials coordinating the annual meetings of senior officials.

## South Asia Subregional Economic Cooperation

South Asia Subregional Economic Cooperation (SASEC) is made up of six countries in South Asia, with ADB providing technical assistance. SASEC's shared vision is to "increase intra-regional trade by moving people, goods, and business across borders faster and at least cost, and to improve the quality of life and opportunity for the people of the SASEC countries" (ADB 2013:2). It focuses on three priority sectors: transport, trade facilitation, and energy. However, SASEC members face challenges similar to those of the newer ASEAN members in the GMS and Mekong–India initiatives. The existing constraints of poor infrastructure exacerbate the lack of access by landlocked SASEC countries such as Nepal and Bhutan to more venues for foreign direct investment and to regional and global markets. In the SASEC context, as in the ASEAN collaboration context, the common denominator—or link—is India, as well as the links that countries in both regional arrangements have established with ADB. Another common denominator is the central role of ADB in serving as secretariat to the GMS initiatives as well as to the SASEC partnership.

## 8.4 Factors Affecting Success of Cooperation Initiatives

These programs have shown varying degrees of success, and it is important to identify factors that promote successful performance. The GMS has been cited as an example of a regional organization that has performed well and should be replicated in other regions (ADB 2010). Cooperation among the diverse membership of the GMS has been a great success in improving cross-regional connectivity via the GMS economic corridors and railway programs. The GMS has also been supported by a secretariat housed at ADB, which is a key stakeholder and honest broker in GMS projects. This has permitted a careful nesting of these projects in the context of broader regional efforts—for example, the Asian Highway—and it has facilitated the targeting and prioritizing of major gaps in subregional connectivity.

Barriers exist at both individual country and regional levels. At the state level, regardless of geographic location, the constraints are similar: poor infrastructure and lack of capacity, large investment needs that are not attracting sufficient interest, lack of interest by the business community, and significant domestic and/or bilateral concerns that distract governments from economic development priorities. Additionally, there is also some overlap—thus causing confusion for implementing agencies and donors—of the various projects under each of the regional arrangements. Country-level constraints are found mainly in Myanmar, although Bangladesh, Thailand, and India also have their fair share of internal constraints. Perceptions of unequal benefit from massive infrastructure projects pursue all three countries.

### Political Interest Groups

The lifting of authoritarian control in Myanmar and the course taken toward greater democratization (see Box 2.1 in Chapter 2) have led to a proliferation of interest groups and civil society organizations that voice their concerns for transparency, human rights, cultural rights, land rights, equity, justice, environmental protection, and other local issues resulting from major projects. The changing political context in Myanmar has induced the current administration to increasingly invest more time and resources in consulting local communities for their "buy-in," but this has not been without trial and error. The fallout from the government crackdown on the Letpadaungtaung copper mine protests in 2012 has shown that the exercise of government "will" without due consultation could lead to delays, disruptions (and in the

case of the Myitsone dam project, discontinuation or suspension), and extra costs for investors. Pertinent examples for South Asian–Southeast Asian connectivity are the challenges made by local movements and advocacy groups over the Indian sponsored Kaladan Multimodal Transit Transport project and the Thailand–Myanmar joint initiative in Dawei. These are important nodes in the regional integration network. The Dawei project, in particular, attracted negative reactions from local communities, more of which is discussed in the following sections.

## Social Issues and Associated Criminal Activities

Illegal migration, human trafficking, narcotics use, and drug trafficking are trans-boundary problems that could be further aggravated by greater connectivity.[3] The long simmering problem of illegal immigration from Bangladesh into the Rakhine State in western Myanmar that flared up violently in 2012 as the "Rohingya problem" has alarmed the government to the extent that its responses toward enhanced connectivity (with its potential for abuse) might become more negative and less accommodating. The latent nationalist backlash and potential political fall-out from this issue have kept both countries from pushing initiatives further; the situation will remain so for the foreseeable future. Myanmar's President Thein Sein has advocated poverty alleviation initiatives in the border regions as a means of building peace and effecting reconciliation. There is hope for change on the horizon with the signing of two agreements between the Government of Myanmar and ADB on rural poverty reduction and HIV/AIDS treatment services, financed by the Japan Fund for Poverty Reduction.[4] The agreements emphasize a community-driven approach, targeting the most vulnerable communities and areas. However, perceptions of broken trust imply that the road to economic development in the depressed regions and reconciliation will be a long and uphill journey.

On the other hand, the migration problem associated with Thailand on the Eastern border is the emigration (legal and largely illegal) of Myanmar nationals to fill gaps in the Thai labor market. Currently estimated to be more than 2 million workers from Myanmar, this phenomenon is seen as undesirable by Myanmar authorities. The downside of improved connectivity would be the added impetus to the pull factor for potential migrants and might further facilitate the logistics of human trafficking.

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[3] For elaboration of these problems, see for example, US Department of State (2013: 111–114) and UNODC.

[4] The agreements were signed in February 2014 in Nay Pyi Taw (ADB 2014).

## Security Issues

Although military-to-military and state-to-state relations between Myanmar and both India and Thailand have been most cordial under President Thein Sein's government, the existence of ethnic armed groups on both borders as well as the unsettled border demarcations with Myanmar are unsettling issues for all three states (Bhat 2013).[5] For Myanmar, the issue of small bands of anti-India tribal insurgents has been more of an irritant in India–Myanmar relations (Xinhua 2013), while the more numerous Kayin, Mon, and Shan ethnic armed groups at the Myanmar–Thai border pose a significant security threat. Unless the ongoing peace talks with these groups (who are currently honoring ceasefire agreements with the Myanmar government) succeed and a political settlement is reached, the security situation along the Myanmar–Thai border could rapidly deteriorate and a resumption of violent conflict would undermine all efforts to enhance overland connectivity with Thailand (Della-Giacoma and Horsey 2013).

However, the security problem that could potentially derail the connectivity projects and retard the economic reform process is the threat of large-scale communal violence between Muslims (who comprise 4% of Myanmar's population) and the Bamar (mainly Buddhists). Widespread acts of violence were precipitated by the confrontation between Rakhine natives and Muslim residents (mostly stateless and believed by most Myanmarese to be illegal immigrants) of Bengali origin (self-identified as Rohingya) in the second half of 2012. Issues of identity, citizenship, and demographic pressure, and religious extremism on both sides, threaten a worst-case scenario with regional and international repercussions if the sectarian angle is amplified (Government of Myanmar 2013; International Crisis Group 2013).

There are also concerns in India. There is apprehension that an increased influx of illegal Bangladeshi migrants and refugees from other countries such as the Rohingyas from Myanmar and Chakmas will flow to India once the railway line between India and Southeast Asia gets completed. Demographic change is one of the major polarizing issues in some states of the northeast, particularly Assam. Another major predicament is the influx of drug peddlers from the drug triangle zones of Southeast Asia. Drug addiction is already a problem that has reached alarming proportions in India's northeastern region (Government of India, Ministry of Development of North Eastern Region 2008).

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[5] For a Myanmar perspective on Myanmar–Thai border issues, see Maung (2002).

It is widely believed that the continental land route via northeast India–Myanmar–Thailand is not safe nor cost-effective. Even so, India and Myanmar have agreed to open four checkpoints—Pangsau Pass, Paletwa, Lungwaanyong, and Pangsha-Pangnyo—to increase bilateral trade. According to the 2001 Annual Report of the International Narcotics Control Bureau, the 1,643-kilometer India–Myanmar border has been utilized as a transit point between the Golden Triangle and the Golden Crescent.

Another apprehension is that insurgent groups active in northeastern states might have unhindered access to Southeast Asia, and that will pose greater challenges to the Indian authorities to monitor the activities of insurgents. Indian security forces are concerned about the likely fallout of unhindered cross-border movement.

An added apprehension is the likely crisis emanating from increased interaction among people of the same ethnicity residing across the international borders, which might exacerbate ethnic issues and irredentism. Ethnic nationalism and insurgency have delayed the socio-economic development of the region. They have also posed challenges to effective and smooth border management, thus raising the difficulties in the relationship between India and its neighboring countries. According to intelligence reports, Islamic insurgency is a threat to northeast India and Myanmar connectivity. Manipuri Muslim insurgents are allegedly trying to establish links with Al Qaeda. Bomb blasts at Bodh Gaya, Buddha's birthplace in northern India and a popular religious pilgrimage site for Buddhists from Myanmar and Thailand, have also raised concerns regarding the Rohingya issue, its links with Indian fundamentalist groups, and its likely fallout on India (Mizzima 2013).

Moreover, one of the defining features of India's neighborhood in the past half century has been that, barring Bhutan, in all other countries, domestic politics has been marred by radical elements, and anti-India sentiments play significant role in the political rhetoric (for instance, Khalida Zia-led Bangladesh Nationalist Party in Bangladesh, Maoists in Nepal). This has been one of the biggest security concerns for India that dissuade it from taking proactive measures with regard to connectivity. Similar to the protests by local communities in Myanmar, communities in India's northeastern region have protested against land acquisition for road projects, delaying implementation of the projects.

Another dimension of the security issue is the increased opportunity for the spread of contagious diseases across borders. The arrival of a growing number of Myanmar workers in Thailand has led to the spread of drug-resistant malaria and tuberculosis in some Thai provinces that are hosting Myanmar workers. Incidences of elephantiasis, transmitted by mosquitoes, have recently been discovered although earlier thought to have been eradicated from Thailand. The challenges faced at the

country level indicate the nature of strategic and economic concerns that pose barriers to successful regional and subregional cooperation.

## Perceptions of Unequal Benefit and Uneven Development

Myanmar's current state of development and the internal challenges for greater investment in infrastructure may seem to suggest that India and Thailand stand to gain more from connectivity between South Asia and Southeast Asia. To assuage any negative perceptions, India and Thailand are assisting Myanmar's infrastructure development. The Trilateral Highway will connect other ASEAN members such as the Lao PDR and Viet Nam through the GMS corridors. Similarly, the Dawei project will benefit Cambodia and Viet Nam. However, difficulties persist in convincing the Myanmar authorities in general and the local people in Dawei of the long-term benefits of the project, especially the special economic zones. The Dawei project being featured in the Thai media as a solution to relocate some of the polluting industries from Mab Ta Phut to Dawei[6] may also have caused skepticism in Myanmar. Siting Dawei as a deepwater port and the first special economic zone in Myanmar may overshadow the greater prominence accorded to port and industrial estate development projects around Yangon, the former capital and current commercial hub of Myanmar. Sourcing the necessary professionals and skilled labor to run the deepwater port and industrial estates in Dawei remains a major question. The large-scale influx of foreigners will aggravate the perception of unequal benefit and uneven development, when coupled with expropriation of land and relocation of villagers. Additionally, the under-investment in education in the Dawei area creates the risk that the local population will not be able to benefit from the potential formal sector jobs that the project could generate. For connectivity initiatives to succeed, investments in hard infrastructure need to be accompanied by investments in soft infrastructure. Managing local resentment of foreign workers will remain a sensitive issue—politically and socially—for years to come.

## Different Stages of Intra-Regional Economic Integration

There are considerable gaps in the stages of intra-regional economic integration under the different regional arrangements. While ASEAN has been in the forefront of intra-regional economic integration, the

[6] According to Suphakit Nuntavorakarn of the Healthy Public Policy Foundation. See his views in Dawei Project Watch (2012).

level of economic integration within SAARC is weak and shows no improvement. There are several reasons given for the slow progress in strengthening intra-regional economic integration in South Asia, including inadequate intra-regional connectivity, lack of political commitment to liberalization, and weak national and regional institutions (Bhattacharyay 2012).

At this pace, the risk is that the closer economic ties between the two regions are focused mostly on India–Southeast Asia, not South Asian–Southeast Asian economic integration. The exclusion of other South Asian countries, due to limited intra-regional economic links, exacerbates the scope of economic complementarities, production-sharing under regional networks, and, ultimately, mutual benefits from economic integration.

## Sensitive Sectors and Economic Adjustments

South Asian–Southeast Asian economic integration will likely be hampered by some sectors that are sensitive to liberalization. The India–ASEAN FTA provides a good lesson for South Asian–Southeast Asian economic integration that sensitive sectors can potentially trigger setbacks in the ratification of agreements among member countries and, ultimately, undermine successful implementation of trade and investment liberalization (Sikda and Nag 2011). While India and ASEAN countries signed the agreement for trade in goods in 2010, conflicts and delays have hampered implementation of the agreement on services and investment. The reason is that India has a bigger stake in the services agreement as it is a major provider of information technology services and a source of engineers, and education and medical professionals. However, liberalization of trade in services is highly sensitive in Malaysia and Thailand where professional licenses are legally mandated to preserve national interests. In the case of such a bigger platform as South Asian–Southeast Asian economic integration, the range of sensitive sectors and special interests is likely to be even more difficult. For instance, the agriculture sectors could be problematic as many Southeast Asian countries like Indonesia, Malaysia, and Thailand are major exporters of palm oil, and an influx of palm oil into South Asian countries like India and Bangladesh could undermine domestic farmers' livelihood.

Sensitivity about integration in a wide array of economic sectors underlines the apprehension over who will be the winners and losers from South Asian–Southeast Asian economic integration, and the ensuing economic adjustments will be painstaking for both regions, even though they will generate considerable economic benefits (see

Chapter 9). To address the risks associated with structural adjustment due to greater South Asian–Southeast Asian economic integration, collective action on the part of national governments is imperative, both from an equity point of view and to facilitate industrial adjustments. In doing so, the negotiations need to list economic complementarities and identify the sectors that are sensitive to liberalization.

## 8.5 The Way Forward

Closing coordination gaps in South Asian and Southeast Asian cooperation and integration can require retooling existing institutions and creating new ones to facilitate economic links, identify and prioritize emerging and long-run obstacles to cross-regional connectivity and cooperation, and help contribute to solutions. The recommendations listed below consider the imperatives of regional connectivity—at times overlapping—under the ASEAN, SAARC, SASEC, GMS, or BIMSTEC arrangements, but also attempt to link national and bilateral priorities with the broader regional picture. Without domestic support and commitment (political will) to achieve multilateral objectives, many well-intentioned plans will stall. Regional connectivity needs to be reflected in national development strategies; otherwise it will not get traction. Moreover, in many cases the private sector also should be involved. At the same time, institutional connectivity is important. One of the lessons of the GMS experience is that soft infrastructure coordination should not come after the hard infrastructure is built, but rather be implemented simultaneously. Incentives should also be considered at the lower levels.

**Strengthen links between GMS, SASEC, and BIMSTEC:** It would be productive to find ways to strengthen coordination of SASEC and BIMSTEC with the GMS, since the GMS is an example of successful cooperation in the two regions. A pragmatic way to start could be to focus on specific regional projects and to convene project-specific technical working groups to oversee the planning and implementation of the projects. These projects could, in turn, be included in the agenda of meetings of the relevant GMS and SASEC working groups. As secretariat of both the GMS and SASEC, ADB can facilitate this process.

A memorandum of understanding (MOU) on a framework for GMS–SASEC–BIMSTEC cooperation could be useful in this context. The MOU could include components relating to information and knowledge dissemination and institutional improvements. There is a need to identify priority infrastructure investment projects in both regions, assess

barriers to cross-regional trade and investment, and review benefits and costs of enhanced economic integration. More importantly, it would be useful to recommend pilot projects based on country feedback and align the regional cooperation and integration components of respective country development strategies and programs. Success of these initiatives would also depend on reviewing and assessing how greater integration would benefit both regions, monitoring and evaluating the initiatives, and stakeholder support.

Since Myanmar is the key link for land transport between the two regions, having Myanmar join SASEC as a full member could enhance coordination between the GMS and SASEC. Myanmar is an observer of SASEC, but having full membership would make planning coordination more effective.

**Align national priorities with regional/bilateral undertakings:** Myanmar, Thailand, and India have recourse to regional platforms under the ASEAN–India dialogue and the EAS commitment for implementing MPAC priorities. Additionally, all three participate in the BIMSTEC initiatives that serve to connect the two Southeast Asian countries to the more focused South Asian economic integration move under SASEC. Bangladesh's location as neighbor to both India and Myanmar is also an important consideration. To strengthen the capacity of countries such as Myanmar, Bangladesh, and India to realize their potential as the land bridge between South Asia and Southeast Asia, it is important for the bilateral projects and programs to refer to ASEAN commitments in the case of Myanmar, and to emphasize the BIMSTEC and SASEC overlaps for Bangladesh and India. For Myanmar, this is relevant in the context of Myanmar's recognition that the current reforms should be consistent with ASEAN's economic integration objectives. To this end, India can explore hydropower cooperation with Myanmar in the Chindwin River, in support of Myanmar's physical and institutional connectivity needs. The three countries can also employ bilateral mechanisms to close the missing links for rail connectivity (India–Myanmar and Myanmar–Thailand) to complement the India–Myanmar–Thailand trilateral highway. India is already partnering with Myanmar to develop Sittwe as a deepwater port under the Kaladan project, complementing the development of Yangon, one of the existing major ports closest to connecting ASEAN and India. Myanmar and Thailand are also implementing the Dawei deepwater port project.

**Dovetail physical and institutional connectivity needs:** Development of communication and transportation links in the project areas should be prioritized under national and bilateral plans. Additionally,

governments may need to evolve a calibrated policy framework for developing or strengthening soft infrastructure for better connectivity. The GMS experience shows that the policy framework must be strengthened through the inclusion of stakeholders and the provision of right incentives, appropriate institution arrangements, sharing costs of infrastructure investment, capacity building, and public–private partnerships (PPPs). PPPs are often vaunted as the keystone in speeding up connectivity, but governments and business communities in each country need to agree on how PPPs would be carried out in the national and cross-border contexts (see Chapter 5). It is important to ensure that the partnerships are equal. It is equally important to ensure the accountability of all concerned. The countries most concerned in South Asian–Southeast Asian connectivity will need to develop a shared PPP framework that specifies roles, responsibilities, and risks for cross-border connectivity projects, as well as the internal projects linking to these cross-border initiatives. Current approaches involving private sector participation are largely ad hoc and driven by the public sector. The business community will require detailed information on the nature and viability of the connectivity projects before making financial commitments. Governments must be willing to provide such information.

**India to implement the recommendations of the North Eastern Region Vision 2020:** The Government of India can accelerate implementation of the plan and increase adequate budgetary commitments to achieve the recommendations. Recommendations pertaining to the rail link to Bangladesh, and developing the Asian road link through Myanmar to the Lao PDR and Thailand are priority areas. The vision provides eight recommendations to connect northeast India with Southeast Asia:

(i) To increase border trade in agriculture and some industrial goods, it is necessary to remove restrictions on border trade via Moreh, Nathu La, and other entry points.
(ii) Unrestricted trade with neighboring countries in agricultural and meat products could lead to a reduction in the costs of these items in the northeast region.
(iii) The Look East Policy has important security dimensions. It is desirable to promote interaction with neighboring countries through sports, music, and other cultural activities.
(iv) In case of the neighboring countries that are members of the World Trade Organization, a formal request for trade facilitation measures would improve trade access to the northeast region.

(v) In the longer term, industrial output of the northeast region should cater to the demand for industrial goods in the neighboring countries. This is important for border trade in items like cement, coal, timber, and steel.
(vi) To facilitate trade, it is essential to activate existing land-customs stations and to provide a secure transport corridor for traders.
(vii) In the long run, the northeast region needs to plug into the growing trade with ASEAN countries, particularly in items like wood products, ores, and rubber products.
(viii) Information technology facilities should be integrated in promoting infrastructure for trade with the ASEAN countries.

**Support Myanmar's economic reforms, especially in the border areas:** After embarking on a poverty-alleviation agenda early in the reform phase, there are few projects to show for the government's commitments to improve the situation of communities in the border areas. The question that arises is whether connectivity via the ASEAN initiatives and with large neighbors such as India and the PRC can further enhance economic reforms in Myanmar. Myanmar's National Economic and Social Advisory Council has identified transport, railway, information technology, and energy as priority sectors for connectivity initiatives, for which technical and financial assistance will be required. Myanmar is seeking this assistance under bilateral and regional (ASEAN) cooperation frameworks. Requirements for institutional connectivity include trade liberalization, National Single Window implementation, investment, transport facilitation, cross-border procedures, tourism, and culture for people-to-people connectivity.

**Role of state governments in supporting connectivity:** India's northeast states and Chittagong in Bangladesh are involved in linking with Myanmar and through it to the ASEAN region. For multimodal projects linking the three countries, the state governments have the primary responsibility to implement (and support) the projects funded by the central government. This has worked better between Myanmar and India. A number of initiatives have begun, including Myanmar–northeast state leaders' meetings and northeast India–Myanmar business conclaves.[7] The state governments have initiated several projects and

[7] The second northeast India–Myanmar business conclave was held in August 2012, and the Indian Chamber of Commerce, with the Myanmar government's support, organized the third round in May 2013 in Myanmar.

are working on them, though at a slower speed than expected due to issues largely relating to environmental clearance and land acquisition issues. To boost private sector partnership, the Confederation of Indian Industries (CII) has set up the CII-Northeast Council to work with the northeastern state governments in making that region a new hub for domestic and foreign investments. Similar arrangements should be explored for the local governments bordering Bangladesh. In Myanmar, the Federation of Chambers of Commerce and Industry can play a key coordinating role with counterparts from India and Bangladesh; but for this to happen, the Myanmar government will need to provide more information on the benefits of greater private sector involvement in projects.

**Consider the feasibility of a common loan/funding mechanism for priority infrastructure and connectivity-related projects in the overlapping subregions:** ADB's role in addressing the infrastructure needs of the ASEAN countries under the MPAC priority projects, and the secretariat function that it serves for the GMS and SASEC, point to ADB's potential bridging role for infrastructure financing in Asia, particularly in view of the PRC's proposal for an Asian Infrastructure Investment Bank. However, it will be necessary to have agreement on what constitutes safeguard policies, requirements for social and environmental impact assessments, and governance issues. A study into the dynamics of "top–down" connectivity initiatives where neutral third-party organizations (such as ADB) take on the role of transnational management will be a valuable addition to existing academic and policy literature on this subject.

Strong South Asian–Southeast Asian relations and connectivity present an attractive potential for Asia's economic growth and development. However, current initiatives at the national, subregional, and regional levels also need to be viewed in the context of complex political realities. Endeavors for greater connectivity will succeed only when they are linked with efforts for internal connectivity in the countries concerned. These are national responsibilities or undertakings, where broad regional commitments should be translated into practical action. The role of regional partners such as ADB thus takes on added significance in helping rationalize and, to a certain extent, unify the different and often parallel strands of large-scale projects and programs in each country.

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CHAPTER 9

# Assessing Impacts of Regional Integration

## 9.1 Introduction

This chapter first assesses how the potential effects of economic integration, including a free trade agreement (FTA) between South Asia and Southeast Asia, on the two regions' economies might be estimated in theory and via empirical models of economic integration (Section 9.2). This is followed by estimates of the potential gains from South Asian–Southeast Asian economic integration developed using an advanced computable general equilibrium (CGE) model (Section 9.3). Section 9.4 considers various qualitative aspects of integration that need to be considered by policymakers as they examine deeper forms of South Asian–Southeast Asian integration. Section 9.5 concludes.

The chapter estimates the potential gains to be large, assuming that both "soft" (for example, trade facilitation) and "hard" infrastructure are put in place to reduce interregional trade costs, which at present are high. As Myanmar is a key interregional bridge and launched ambitious, outward-oriented policy reforms beginning in 2011, the prospects for making progress in these areas are strong. For example, if the two regions succeed in dropping interregional tariffs, reducing non-tariff barriers (NTBs) by 50%, and decreasing other trade costs by 15%—which the study suggests is ambitious but nevertheless attainable—welfare in South Asia and Southeast Asia would rise by $375 billion (8.9% of gross domestic product [GDP]) and $193 billion (6.4% of GDP), respectively, by 2030, relative to the baseline. Rising exports and competitiveness will drive these gains, particularly for South Asia, whose exports would rise by almost two-thirds. Hence, the chapter underscores that investments in connectivity would justify a high level of investment. In addition, it emphasizes that governments need to take into account the inevitable problems that arise in the integration process, for example, the effects of structural change on the most vulnerable sectors and workers. Initiatives

related to economic integration also need to be nested in the context of other social priorities, such as food security and the protection of migrant workers.

## 9.2 Tools for Assessing Economic Effects of Regional Integration

Assessing the effects of trade-related policy innovations is complicated, given the many factors that influence international trade. In this section, the potential theoretical effects of an FTA are first considered, that is, via structural adjustment (static effects) and longer-term effects on productivity and policy (dynamic effects). The main conclusion from the theoretical review is that there are both positive and negative effects associated with regional integration, and hence, empirical estimation is needed to anticipate what the net effects on the economy will be. This section considers the most frequently used models in the empirical literature, focusing on CGE models.

### The Economics of Free Trade Areas: A Theoretical Review

An FTA is a commitment by the signatory members to remove tariffs across member states while continuing to maintain independent tariff regimes on imports from third countries. The preferential nature of an FTA is what economists are primarily concerned with when analyzing the trade and welfare effects of an FTA. In general, non-discriminatory trade liberalization on a most favored nation (MFN) basis under the WTO allows countries to export their products if they are the most efficient producers and to source their imports from the lowest-cost suppliers. This also happens in the context of an FTA in that it allows for a more efficient regional division of labor but, due to the fact that it creates preferences for partner-country producers (who may not be the most efficient), it will not necessarily source from the lowest-cost producer. A member country may be able to export its products to another member country simply because it enjoys tariff preferences under the FTA. This suggests that the importing partner will be paying more for its imports; in other words, its terms of trade (the price of exports in terms of imports) deteriorate. Jacob Viner coined the terms “trade creation” and “trade diversion” to describe the positive and negative efficiency effects, respectively, of a preferential trading arrangement such as an FTA (Viner 1950).

Trade creation and trade division are termed static effects, as they constitute one-time changes in economic structure either in the direction of greater efficiency (trade creation) or less efficiency (trade diversion). This second-best nature of FTAs—as opposed to first-best MFN liberalization that only has trade creation—underscores the importance of empirical analysis of the economic effects of FTAs. However, it is essential to note that it would be expected that the static effects would be less significant than longer-term implications of preferential liberalization, which have been termed "dynamic effects" in the literature. These dynamic effects are many, but we summarize them in four different categories:

**Economies of scale and variety:** The definition of economies of scale is a reduction in average costs as output expands. Economies of scale may occur because of improved technical efficiency in large-scale production, more capability to spread administrative costs and overhead over a bigger operation, bulk discounts from suppliers, or better logistics because of bigger volumes. Economies of scale exist in the production of some agricultural, natural-resource-intensive, and manufacturing sectors, as well as services. By creating a larger market for firms operating in partner countries, an FTA will allow producers to take advantage of a larger customer base, and hence, produce at a lower average cost on all sales.

**Technology transfer and foreign direct investment:** Foreign direct investment (FDI) is an important means of transferring technology and know-how from developed to developing economies, and even across developing economies. Bilateral and regional FTA formation attracts these long-term, risk-sharing investment flows by creating a more integrated marketplace within which multinational corporations can enjoy a regional division of labor with low transaction costs and exploit economies of scale. FDI patterns following an FTA may be similar to the effects of trade creation and trade diversion. A multinational corporation that believes an FTA will lead to greater economic dynamism may be compelled to invest more in one of the members, thus resulting in "investment creation." However, if the corporation decides to invest in the member not because of a perceived increase in dynamism but because it will now have preferential access to the FTA market, this is an "investment diversion." Investment diversion can also flow from distortionary rules of origin that create an incentive to invest in the region to take advantage of preference margins accorded by the agreement.

**Structural policy change and reform:** FTAs have traditionally focused on commercial policy at the border, but, increasingly, they are effecting deeper integration by addressing behind-the-border measures. Examples of these behind-the-border areas are quality standards, complex measures specific to the service sectors, laws related to corporate and public governance, customs procedures, the national treatment of partner-country investors, competition policy, including the reform of state-owned enterprises, and other sensitive sectors with important links to the rest of the economy. The inclusion of these non-traditional areas in FTAs shows how instrumental these agreements have become in shaping and harmonizing the national economic policies of members. FTAs allow like-minded countries to address these non-traditional areas that improve the business environment by reducing costs, leveling the playing field for foreign investors, and pushing policy reforms toward best practices. Doing so at the multilateral level would be extremely difficult if not impossible because of diverse interests across 160 WTO member countries (as of January 2015). In ASEAN, this is being done within the context of the ASEAN Economic Community.

**Competitiveness and long-run growth effects:** Although trade liberalization in an FTA is preferential, the reduction in trade barriers still allows members to benefit from healthy increased intra-bloc competition. Increased exposure to competition from partner countries removes less productive firms and favors more productive ones. It also gives firms an incentive to invest in more efficient productive processes and technology. For each member economy and the FTA as a whole, these competitive forces may improve structural efficiency and resource allocation as different members specialize in the production of different final and intermediate commodities. All the effects of increased competition on productivity and efficiency combine to raise the FTA members' long-run growth prospects.

It is important to point out that there are many basic preconditions that must be in place if an FTA—or any trade-policy innovation—is to be successful. These are particularly relevant in the context of South Asian–Southeast Asian trade, given that there are many barriers impeding integration beyond commercial policy. First, the success of an FTA will depend on the soundness of its member countries' domestic economic policies. Few firms will be able to benefit from preferential trading if there is macroeconomic instability, weak property rights, corruption, or opaque tax laws and business regulations. As discussed above, an FTA may affect some reform in domestic economic policy, but the initial economic policy configuration has to be sufficiently conducive

for growth if the FTA is to succeed. Second, the success of an FTA will also depend on the efficiency of the transportation infrastructure. To realize benefits from the FTA, the transportation and logistics networks between member countries in particular should have enough capacity to handle increased trade volumes. The realization that transportation and other forms of hard and soft infrastructure are necessary conditions for success in trade liberalization is underscored in other chapters of this volume. Third, the distribution of economic gains among countries in an FTA may be very unequal with some members possibly facing net losses even if an FTA meets the conditions that are sufficient to ensure that the FTA as a whole will enhance welfare. If the FTA as a whole is designed and assessed to be beneficial, then members will have to decide on whether and how to redistribute the FTA's gains appropriately from agents that gain to those that lose. Issues related to these social aspects of integration are considered in Section 9.4.

Finally, a country should compare the costs and benefits of trade liberalization within an FTA versus those in the multilateral process that requires non-discriminatory trade liberalization. As noted, preferential trade liberalization has ambiguous net welfare effects whereas non-discriminatory trade liberalization is sure to result in a net welfare gain. Some authors have also raised the issue of regionalism blocking multilateralism.[1] An example might be the problem of scarce human resources, for example, in the context of transitional and low-income countries that are devoted to bilateral and regional agreements at the cost of working on the Doha Development Agenda. Of course, it may also be the case that experience gained through bilateral and regional FTA negotiations can train policymakers and deepen their understanding of multilateral issues, allowing them to become more effective at all levels.

## Empirical Methodological Approach: The CGE Model

By far the most commonly used approach for trade policy simulations is CGE models. These models have been used for most FTAs to date and using one has become a required exercise for many governments considering new FTAs.

There are several reasons why CGE models have become so popular for the analysis of FTAs. First, CGE modeling is based on explicit assumptions in a framework consistent with microeconomic theory and generates results for a variety of economic variables and sectors. Second, CGE models produce clear quantitative results that enable

[1] See Bhagwati (2008) for a survey of the arguments against regionalism.

policymakers to more easily assess who gains and loses from an FTA. Third, as an FTA involves changes in trade policy in multiple markets, the analysis may be too complex using algebraic or geometric methods. Fourth, CGE models can take into account some of the modern features of 21st century FTAs, such trade facilitation, reductions in trade costs via infrastructure improvements, and FDI. Lastly, CGE analysis may generate fresh insights about the role of certain economic assumptions in determining the results of an FTA.

The crux of general equilibrium analysis is that no market remains with excess demand or supply, that is to say that the circular flows of income and expenditure must all be balanced. To achieve market equilibrium, prices are assumed to adjust until demand for factors of production equals available endowments, consumers have chosen the desired basket of goods given their incomes, and firms have chosen production levels that maximize their profits. Because an FTA introduces a set of policy changes in an economy, CGE models simulate scenarios in which markets have adjusted and a new general equilibrium has been reached. The effect of an FTA can be estimated by comparing welfare under the old equilibrium with that under the new equilibrium.

To simulate an FTA, a CGE model strives to envision what the economy would look like if the FTA had occurred. By comparing post-FTA outcomes with the baseline situation, the modeler can study changes in welfare (changes in consumer and producer surplus or other welfare indicators such as equivalent variation), changes in the terms of trade of each partner and the FTA as a whole, changes in production by sector, changes in the returns to the factors of production (that is, labor, capital, landowners), and changes in imports and exports by sector and by partner. The modeler may also wish to compare the potential effects of different FTAs with different partners, different scenarios that may include or exclude different sectors, or combinations of trade agreements. By comparing the welfare outcomes of all scenarios, a policymaker would be able to determine the scenario that benefits a country the most.

CGE analysis is not without problems. First, the data requirements for the CGE analysis of FTAs are extensive, and frequently certain data items are arbitrarily chosen by the modeler. Second, the model's results may be very sensitive to the assumptions and data used. To address these first two concerns, almost all CGE exercises include a sensitivity analysis to get a range of results based on different assumptions or data. In this way, it is possible to check on the robustness of the results. Third, it is difficult to model certain non-tariff barriers such as sanitary and phytosanitary (SPS) measures, technical barriers to trade (TBT), or customs issues if these are included in an FTA. These are important areas

in modern FTAs. Moreover, incorporating detailed services trade data is challenging, due to a paucity of reliable data. Last, while some modelers have tried to endogenize productivity spillovers in CGE models, which can be extremely important, doing so is complicated.

## 9.3 Estimating the Effects of Regional Integration via a CGE Model

Chapter 2 suggests that economic integration across South Asia and Southeast Asia is proceeding, but that cross-regional trade growth is perhaps falling below its potential. It underscores that major bottlenecks exist that significantly impede the realization of this potential; most likely, these constraints will become increasingly binding over time. These include, for example, shortcomings in transport links (particularly rail and road), relatively high tariffs, NTBs, and other policy-induced barriers to trade, and issues related to customs clearance and additional aspects of trade facilitation.

Improvements in some of these areas will be less costly than in others; policy reforms in trade facilitation tend to be much less expensive than building new ports and rail links. The goal of this section is to gauge whether or not investments in hard and soft infrastructure will be worth the investment. That is, it focuses on what potential economic benefits and costs can be expected via various degrees of deep integration. The section first considers the (scarce) previous work that considers this issue, followed by a description of the novel CGE model used in this study to estimate the economic implications of deeper South Asian–Southeast Asian economic integration. Finally, it explains the estimation results for both South Asian and Southeast Asian economies.

### Earlier Studies of Benefits and Costs of Cross-Regional Integration

Studies of benefits and costs of greater connectivity between South Asia and Southeast Asia are few in number, and so far have focused mainly on connectivity between India and ASEAN under the auspices of the East Asia Summit.[2]

An early study by Bandara and Yu (2003) used a global CGE model to evaluate the effects of tariff elimination under a South Asia–ASEAN

[2] Members are the 10 ASEAN member states, Australia, the People's Republic of China, India, Japan, the Republic of Korea, and New Zealand.

FTA. They pessimistically report that all South Asian countries, including India, would incur welfare losses from such an FTA, while ASEAN as a whole would see modest gains. However, more recent and comprehensive simulation studies report different results.

As part of the work related to the Comprehensive Asia Development Plan prepared by the Economic Research Institute for ASEAN and East Asia (ERIA) for the East Asia Summit, Kumagai et al. (2013) used the IDE/ERIA Geographical Simulation Model, a detailed regional model, to estimate the impacts on the cumulative increase of GDP of countries in the two regions from 2010 to 2030 relative to the base case for a number of connectivity projects, including the Mekong–India Economic Corridor (MIEC), the Dawei and Kyaukpyu deepwater ports in Myanmar, and the India–Myanmar–Thailand Trilateral Highway. For the MIEC alone, they found cumulative impacts of over 5% for Cambodia, Myanmar, Thailand, and Viet Nam, and over 2.5% for India.

Regarding trade integration, a CGE study by Mohanty and Pohit (2008) shows welfare gains for members of the ASEAN+3–India FTA ranging from $52 billion for a simple FTA (involving only liberalization of tariffs) to $114 billion for a more comprehensive FTA (involving liberalization of tariffs as well as reduction in barriers to investment and services).

Using a slightly different regional unit of analysis (ASEAN+3 and South Asia), another study estimates large gains of about $260 billion, or 2% of GDP, from an East Asian and South Asian FTA, under conservative assumptions (François and Wignaraja 2008). Countries obtaining relatively large positive income impacts (over 2%) include the Republic of Korea, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam, India, and Sri Lanka.

## CGE Model Used in This Study and Integration Scenarios

Section 9.2 describes the general characteristics of a generic CGE model. The specific CGE model used in this chapter is based on a new type of global trade model developed by Zhai (2008). A novel feature of the model is that it incorporates recent innovations in trade theory regarding heterogeneous firms into the CGE framework. The firms of most sectors in the model are heterogeneous in productivity, enabling the model to reflect intra-industry changes that occur when, for example, trade liberalization enables the most productive firms to export more and expand, and the least productive to contract in the face of stiffer import competition. Given the fixed cost of entry into exporting activity, the model is also able to capture both the intensive margins (more trade of

already traded products) and extensive margins (trade in products not traded previously).

This model is especially appropriate for assessing the implications of deep integration efforts. Its demand structure enables it to track the effects of additional varieties of goods on consumer welfare; its scale-sensitive production function allows it to track productivity gains associated with the growth of firms; and its treatment of productivity variations makes it possible to track the shift in production from relatively unproductive firms to relatively productive ones.

In the simulations below, the study uses several scenarios to capture the effects of South Asian–Southeast Asian economic integration on economic welfare, trade, factor returns, and structural change for the regional economies, each corresponding to differing levels of integration ambition. The policy innovations include full liberalization of tariff barriers, a 50% reduction of NTBs (under the assumption that not all NTBs can be addressed by policy), and improvements in (soft and hard) connectivity manifested in various decreases in trade costs. The study assumes two possibilities of trade-cost reduction to provide a range of efficiency gains due to better connectivity, that is, 5% and 15%. Given relatively high cross-regional trade costs and ample room to reduce them via trade facilitation and investment in hard infrastructure, this range was deemed to be plausible. Hence, the scenarios included here are:

(i) SAFTA1: Removal of all tariffs across South Asian economies over 2016–2025 (South Asian Free Trade Area, SAFTA)
(ii) SAFTA2: SAFTA1, plus 50% reduction in NTBs
(iii) SAFTA3: SAFTA2, plus 5% reduction in trade costs
(iv) SAFTA4: SAFTA2, plus 15% reduction in trade costs
(v) SA/SEA1: Removal of all tariffs across South Asian and Southeast Asian (SA/SEA) economies
(vi) SA/SEA2: SA/SEA1, plus 50% removal of NTBs between South Asia and Southeast Asia
(vii) SA/SEA3: SA/SEA2, plus 5% reduction in trade costs associated with South Asian and Southeast Asian trade
(viii) SA/SEA4: SA/SEA2, plus 15% reduction in trade costs associated with South Asian and Southeast Asian trade[3]

[3] Note that we did not include the same reduction in trade costs for intra-ASEAN trade. While the ASEAN Economic Community will likely lead to substantial reductions in trade costs (Plummer and Chia 2009; Petri, Plummer, and Zhai 2012), our goal here is to focus on the potential effects of South Asian and Southeast Asian connectivity, so we exclude it here. However, the study also ran simulations that included reductions in intra-ASEAN trade costs, and results increased intra-ASEAN gains in the aggregated by almost four-fold.

Liberalization of these barriers to trade is undertaken over 2016–2025 and is compared relative to the baseline forecasts, with projections ending in 2030. The simulations allow for the following country breakdown at the two subregional levels: (i) South Asia: Bangladesh, India, Nepal, Pakistan, Sri Lanka, and "other South Asia"; and (ii) Southeast Asia: Cambodia, Indonesia, the Lao PDR, Malaysia, the Philippines, Singapore, Thailand, Viet Nam, and "other ASEAN" composed of Myanmar, Brunei Darussalam, and Timor-Leste.[4] The model also includes 21 sectors (7 in primary products/agriculture, 9 manufacturing sectors, and 5 service sectors).

## Impacts on South Asia

The South Asian FTA scenarios suggest impressive gains for all countries except for the two largest ones, India and Pakistan, that nonetheless experience non-trivial increases in income (1.0% and 3.3% of GDP, respectively, in scenario SAFTA4) (Table 9.1). Bangladesh, the third largest country, experiences a 5% increase in SAFTA4. The smaller South Asian economies of Nepal and other South Asia are by far the biggest winners in the context of a South Asian FTA, with large gains of over 40% in SAFTA4. South Asia in total experiences a rise in its real income by 2.1% of GDP by 2030 under that scenario, led by a 25.2% increase in exports.

Note that simply reducing trade costs from 5% to 15% increases income gains by 60% or more in all cases and is the key reason why the smaller countries experience such large gains. This suggests that focusing on reducing trade costs is key to welfare improvement in the context of South Asian economic integration. Given that the gains are driven mainly by increases in exports, the internationalization of the region, as proxied by exports as a percentage of GDP, rises impressively, particularly for the smaller economies, for example, the internationalization of landlocked Nepal rises by 37 percentage points. ASEAN is little affected by trade diversion due to a South Asian FTA; losses come to $1 billion under SAFTA1 and $4.6 billion under SAFTA4, or about 0.1% of GDP.

In terms of South Asian–Southeast Asian economic integration, the overall gains are about 30% more for South Asia than for Southeast

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[4] The GTAP database did not allow for specific country effects of Myanmar, which is unfortunate given the "bridge" role that Myanmar will increasing play in South Asian–Southeast Asian economic integration. However, as Myanmar accounts for 98% of the population and 60% of the GDP of "other ASEAN," it can be assumed that much of the effect on "other ASEAN" relates to Myanmar.

## Table 9.1: Effects of South Asian–Southeast Asian Trade Initiatives on Income, Exports, and Exports/GDP in South Asia, 2030

| Scenario | SAFTA1 | SAFTA2 | SAFTA3 | SAFTA4 | SA/ SEA1 | SA/ SEA2 | SA/ SEA3 | SA/ SEA4 |
|---|---|---|---|---|---|---|---|---|
| **Real Income Gains in 2030** (equivalent variation as % of GDP) | | | | | | | | |
| Bangladesh | 0.3 | 0.8 | 1.8 | 5.0 | 0.4 | 1.2 | 2.5 | 6.9 |
| India | 0.2 | 0.3 | 0.5 | 1.0 | 2.3 | 3.3 | 4.6 | 8.7 |
| Nepal | 11.9 | 17.0 | 24.0 | 44.7 | 5.4 | 9.0 | 14.4 | 30.0 |
| Pakistan | 0.5 | 0.9 | 1.5 | 3.3 | 0.8 | 1.8 | 3.0 | 7.0 |
| Sri Lanka | 1.1 | 2.1 | 4.1 | 10.5 | 1.3 | 2.9 | 5.6 | 14.1 |
| Other South Asia | 11.4 | 15.5 | 22.2 | 42.4 | 5.2 | 8.3 | 14.1 | 31.7 |
| **Total South Asia** | 0.4 | 0.6 | 1.0 | 2.1 | 2.2 | 3.2 | 4.6 | 8.9 |
| **Export Gains in 2030** (% change from baseline) | | | | | | | | |
| Bangladesh | 15.1 | 25.8 | 36.1 | 67.0 | 20.0 | 35.0 | 48.4 | 86.7 |
| India | 2.6 | 4.9 | 6.9 | 12.7 | 19.6 | 29.4 | 36.7 | 59.5 |
| Nepal | 78.8 | 136.0 | 186.0 | 335.3 | 44.3 | 88.7 | 124.2 | 231.8 |
| Pakistan | 4.1 | 9.7 | 13.7 | 26.1 | 11.3 | 22.8 | 30.6 | 52.2 |
| Sri Lanka | 10.0 | 21.6 | 32.7 | 65.7 | 13.1 | 27.7 | 40.3 | 78.2 |
| Other South Asia | 52.7 | 88.2 | 120.6 | 212.5 | 29.9 | 58.7 | 83.7 | 158.8 |
| **Total South Asia** | 5.2 | 9.7 | 13.6 | 25.2 | 19.0 | 30.0 | 38.6 | 64.3 |
| **Change in Exports/GDP in 2030** (percentage points) | | | | | | | | |
| Bangladesh | 3.9 | 6.7 | 9.0 | 15.4 | 5.3 | 9.2 | 12.2 | 19.8 |
| India | 0.4 | 0.8 | 1.0 | 1.9 | 3.8 | 5.3 | 6.2 | 9.0 |
| Nepal | 10.4 | 18.0 | 23.4 | 36.8 | 7.5 | 14.6 | 19.3 | 31.6 |
| Pakistan | 0.6 | 1.6 | 2.2 | 4.1 | 2.4 | 4.5 | 5.9 | 9.1 |
| Sri Lanka | 2.3 | 5.0 | 7.1 | 12.8 | 3.5 | 6.9 | 9.4 | 15.7 |
| **Other South Asia** | 8.5 | 14.7 | 19.3 | 30.3 | 6.2 | 12.3 | 16.5 | 27.6 |

GDP = gross domestic product; NTB = non-tariff barrier; SA = South Asia; SAFTA = South Asian Free Trade Area; SEA = Southeast Asia.

Notes: SAFTA1 = removal of all SA tariffs over 2016–2025; SAFTA2 = SAFTA1 + 50% cut in NTBs; SAFTA3 = SAFTA2 + 5% reduction in trade costs; SAFTA4 = SAFTA2 + 15% reduction in trade costs; SA/SEA1 = removal of all tariffs across SA and SEA over 2016–2025; SA/SEA2 = SA/SEA1 + 50% cut in NTBs; SA/SEA3 = SA/SEA2 + 5% reduction in trade costs relevant to South Asian–Southeast Asian trade; SA/SEA4 = SA/SEA2 + 15% reduction in trade costs relevant to South Asian–Southeast Asian trade.

Source: Authors' estimates.

Asia, with real income gains relative to GDP in the former region coming to 8.9% under SA/SEA4 in 2030. South Asia shows larger absolute and percentage gains than Southeast Asia, with real income gains in the former region coming to as much as $375 billion or 8.9% of GDP under SA/SEA4 in 2030. All South Asian countries show substantial gains, including India (8.7% of GDP relative to the baseline), Pakistan (7.0%), and larger percentage increases for Bangladesh (6.9%), Sri Lanka (14.1%), Nepal (30.0%), and other South Asia (31.7%). Once again, growth in exports drives income growth. Nepal and other South Asia actually have lower gains in the South Asia–Southeast Asia FTA case, due to preference erosion, but they still grow the most in the group by 30.0% and 31.7% of GDP, respectively.

Table 9.2 shows the changes in factor prices associated with these policy innovations at the country level, as a means of gauging the distributional effects. Nominal and real wages rise in all scenarios for all countries, sometimes significantly, for all South Asian economies, assisted in most cases by a drop in prices (measured either as the GDP deflator or the consumer price index), with the exception of India, whose real wage nevertheless always increases. Real-wage increases in the South Asian–Southeast Asian FTA scenarios are larger than the South Asian FTA scenarios for all countries except Nepal and other South Asia, where, once again, the increases are still by far the largest in the region. Nevertheless, the gains to labor relative to other factors (capital, land) are mixed. For example, in India, labor always gains relative to land owners but not always relative to capital owners, and in Bangladesh, labor often gains relative to capital owners but not to land owners. In Nepal, labor does worse than capital and land in the South Asian FTA scenarios but always does better than land owners in the South Asian–Southeast Asian FTA scenarios. Thus, from a policy point of view, even in cases where labor does well, greater connectivity should still be accompanied by well-designed distributional policies to ensure that the gains are equitably distributed.

With respect to structural change, the South Asian region experiences many large changes as countries specialize in their comparative advantage goods. Sometimes these changes are exaggerated, as a small change from an even smaller base will yield a large result. For example, in Nepal, the chemical sector in both SAFTA4 and SA/SEA4 increases more than tenfold, but it is a small sector in Nepal (5% of the manufacturing sector and only 0.67% of labor compensation in manufacturing). The food and other grains sectors in India experiences a strong negative shock, whereas metals and chemicals experience significant gains. Indeed, structural changes in India and Pakistan

## Table 9.2: Changes in Factor Prices in South Asia, 2030

(% change relative to baseline)

| Scenario | SAFTA1 | SAFTA2 | SAFTA3 | SAFTA4 | SA/SEA1 | SA/SEA2 | SA/SEA3 | SA/SEA4 |
|---|---|---|---|---|---|---|---|---|
| **Bangladesh** | | | | | | | | |
| Wage | 0.5 | 1.3 | 2.3 | 6.0 | 0.6 | 1.6 | 2.9 | 7.5 |
| Land rental price | 1.1 | 2.0 | 3.6 | 8.7 | 1.0 | 3.1 | 5.5 | 13.4 |
| Capital rent rate | 0.6 | 1.5 | 2.4 | 5.7 | 0.6 | 2.0 | 3.1 | 28.1 |
| **India** | | | | | | | | |
| Wage | 0.0 | 0.3 | 0.5 | 1.3 | -3.0 | -1.9 | -0.7 | 4.1 |
| Land rental price | -0.6 | -0.2 | 0.0 | 0.8 | -14.7 | -12.8 | -11.4 | -5.8 |
| Capital rent rate | 0.1 | 0.2 | 0.2 | 0.4 | -0.3 | 0.1 | 0.6 | 1.8 |
| **Nepal** | | | | | | | | |
| Wage | 15.0 | 19.6 | 24.4 | 37.0 | 2.6 | 5.3 | 8.3 | 16.3 |
| Land rental price | 32.0 | 39.9 | 47.4 | 66.2 | -1.7 | 0.1 | 2.5 | 9.5 |
| Capital rent rate | 15.6 | 24.3 | 32.1 | 51.9 | 14.1 | 23.0 | 29.9 | 47.9 |
| **Pakistan** | | | | | | | | |
| Wage | 1.4 | 2.7 | 3.9 | 7.6 | 1.0 | 2.9 | 4.7 | 10.2 |
| Land rental price | 3.7 | 8.7 | 11.6 | 19.8 | 2.9 | 9.2 | 13.2 | 25.5 |
| Capital rent rate | 0.6 | 0.7 | 1.1 | 2.1 | -0.7 | -0.7 | -0.6 | 0.1 |
| **Sri Lanka** | | | | | | | | |
| Wage | 1.1 | 2.2 | 4.4 | 11.2 | 0.2 | 1.8 | 4.4 | 12.7 |
| Land rental price | -1.9 | -3.5 | -2.4 | 0.3 | -8.0 | -10.5 | -10.3 | -9.1 |
| Capital rent rate | 0.4 | 2.0 | 3.3 | 7.4 | -0.9 | 0.9 | 1.9 | 5.8 |
| **Other South Asia** | | | | | | | | |
| Wage | 14.1 | 18.6 | 23.7 | 36.8 | 5.0 | 8.1 | 11.7 | 21.4 |
| Land rental price | 34.5 | 42.2 | 50.5 | 73.6 | 5.5 | 6.0 | 8.1 | 14.7 |
| Capital rent rate | 6.1 | 12.2 | 16.9 | 28.0 | 5.4 | 12.1 | 16.5 | 28.5 |

NTB = non-tariff barrier; SA = South Asia; SAFTA = South Asian Free Trade Area; SEA = Southeast Asia.

Notes: SAFTA1 = removal of all SA tariffs over 2016–2025; SAFTA2 = SAFTA1 + 50% cut in NTBs; SAFTA3 = SAFTA2 + 5% reduction in trade costs; SAFTA4 = SAFTA2 + 15% reduction in trade costs; SA/SEA1 = removal of all tariffs across SA and SEA over 2016–2025; SA/SEA2 = SA/SEA1 + 50% cut in NTBs; SA/SEA3 = SA/SEA2 + 5% reduction in trade costs relevant to South Asian–Southeast Asian trade; SA/SEA4 = SA/SEA2 + 15% reduction in trade costs relevant to South Asian–Southeast Asian trade.

Source: Authors' estimates.

present mirror results; the Indian manufacturing and services sectors tend to expand and agriculture contracts, whereas the opposite happens in the case of Pakistan. An important point to underscore, however, is that, since this is a long-run model, the model assumes full employment, meaning that, for a sector with comparative advantage to expand, resources have to be moved from another sector. Movement across sectors is what ultimately leads to the large economic gains reaped by South Asian economies.

## Impacts on Southeast Asia

Real income in ASEAN rises by $193 billion (6.4% of GDP in 2030) under the SA/SEA4 scenario. Table 9.3 shows the effects on income (relative to GDP), exports, and exports relative to GDP for Southeast Asian economies. As noted above, trade diversion under the South Asian FTA scenarios is minor, with Viet Nam experiencing the largest negative effect in terms of welfare, but it comes to only 0.3% of GDP. At the country level, the biggest gains from South Asian–Southeast Asian economic integration vary considerably, from (scenario SA/SEA4) –0.1% for the Lao PDR and 0.6% for Cambodia to 14.4% for Singapore and 9.7% for Malaysia. Again, exports drive income gains, with exports rising by 18.1% for all of ASEAN led by Indonesia (38.5%), Singapore (19.7%), and Malaysia (17.4%), though Viet Nam registers impressive export gains as well (13.0%) (Table 9.3).

Given that the Lao PDR experiences a minor contraction, it is worthwhile to consider why this might be the case. There is little trade between the Lao PDR and South Asia; hence, at base year levels, the Lao PDR gains very little from increased market access to South Asia with an FTA. However, the Lao PDR does export a great deal to its ASEAN partners, and the South Asian–Southeast Asian FTA erodes the preferences that the Lao PDR has in ASEAN markets via the ASEAN Free Trade Area (AFTA). The same mechanism affects results for Cambodia and the Philippines, whose gains end up being relatively modest.[5]

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[5] However, it is important to note that these economies will gain substantially from deeper intra-ASEAN integration within the context of the ASEAN Economic Community (AEC). The simulations in Table 9.4 do not include decreases in intra-ASEAN trade costs, as the chapter is focused on the potential associated with greater South Asian and Southeast Asian connectivity. But using the same CGE model, the study also considered the effects of decreases in intra-ASEAN trade costs as part of the process of greater South Asian–Southeast Asian connectivity (available from the authors on request), and the Lao PDR, Cambodia, and the Philippines do well; scenario SA/SEA4 leads to real income growth relative to GDP of 32.5%, 24.1%, and 16.9%, respectively, that is, among the largest gains in South Asia and Southeast Asia. Hence, since implementation of the AEC is proceeding apace, gains from deeper intra-ASEAN integration will more than compensate for the preference erosion effects of integration with South Asia.

## Table 9.3: Real Income, Export Gains, and Change in Exports/GDP in Southeast Asia, 2030

| Scenario | SAFTA1 | SAFTA2 | SAFTA3 | SAFTA4 | SA/SEA1 | SA/SEA2 | SA/SEA3 | SA/SEA4 |
|---|---|---|---|---|---|---|---|---|
| **Real Income Gains in 2030** (equivalent variation as % of GDP) | | | | | | | | |
| Cambodia | 0.0 | -0.1 | -0.1 | -0.2 | -0.3 | -0.1 | 0.1 | 0.6 |
| Indonesia | 0.0 | 0.0 | 0.0 | -0.1 | 2.3 | 2.4 | 3.1 | 5.0 |
| Lao PDR | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 |
| Malaysia | 0.0 | 0.0 | -0.1 | -0.1 | 2.8 | 3.6 | 5.2 | 9.7 |
| Philippines | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.6 | 0.9 | 1.9 |
| Singapore | -0.1 | 0.0 | -0.1 | -0.2 | 3.1 | 4.8 | 7.3 | 14.4 |
| Thailand | -0.1 | -0.1 | -0.1 | -0.2 | 1.7 | 2.3 | 3.2 | 6.1 |
| Viet Nam | -0.1 | -0.1 | -0.1 | -0.3 | 0.6 | 2.0 | 3.2 | 7.0 |
| Other ASEAN | 0.0 | 0.0 | -0.1 | -0.1 | 0.1 | 0.5 | 1.5 | 2.3 |
| **Total Southeast Asia** | 0.0 | 0.0 | -0.1 | 0.5 | 1.9 | 2.5 | 3.5 | 6.4 |
| **Export Gains in 2030** (% change from baseline) | | | | | | | | |
| Cambodia | -0.1 | -0.2 | -0.3 | -0.5 | -0.5 | 0.4 | 0.8 | 2.3 |
| Indonesia | -0.1 | -0.1 | -0.2 | -0.3 | 17.5 | 23.3 | 27.3 | 38.5 |
| Lao PDR | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.3 |
| Malaysia | 0.0 | -0.1 | -0.1 | -0.2 | 4.1 | 7.2 | 9.8 | 17.4 |
| Philippines | 0.0 | 0.0 | 0.0 | -0.1 | 0.6 | 2.4 | 3.3 | 6.2 |
| Singapore | -0.1 | -0.2 | -0.2 | -0.5 | 4.6 | 7.3 | 10.6 | 19.7 |
| Thailand | -0.1 | -0.1 | -0.2 | -0.3 | 2.7 | 4.7 | 6.4 | 11.6 |
| Viet Nam | -0.1 | -0.2 | -0.2 | -0.4 | 1.1 | 4.8 | 6.9 | 13.0 |
| Other ASEAN | -0.1 | -0.1 | -0.1 | -0.3 | 0.0 | 1.9 | 3.1 | 7.3 |
| **Total Southeast Asia** | -0.1 | -0.1 | -0.2 | -0.3 | 5.3 | 8.3 | 10.9 | 18.1 |
| **Change in Exports/GDP in 2030** (percentage points) | | | | | | | | |
| Cambodia | 0.0 | -0.1 | -0.1 | -0.1 | -0.2 | 0.3 | 0.5 | 1.1 |
| Indonesia | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 3.5 | 4.1 | 5.9 |
| Lao PDR | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | -0.2 | -0.2 | -0.2 |
| Malaysia | 0.0 | 0.0 | 0.0 | -0.1 | 0.8 | 2.4 | 3.2 | 5.7 |
| Philippines | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 1.0 | 1.9 |
| Singapore | -0.1 | -0.2 | -0.2 | -0.5 | 2.2 | 3.2 | 4.7 | 8.3 |
| Thailand | 0.0 | 0.0 | -0.1 | -0.1 | 0.7 | 2.0 | 2.7 | 5.0 |
| Viet Nam | 0.0 | 0.0 | -0.1 | -0.1 | 0.3 | 2.5 | 3.3 | 5.9 |
| Other ASEAN | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.2 | 0.5 | 7.3 |

ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; NTB = non-tariff barrier; SA = South Asia; SAFTA = South Asian Free Trade Area; SEA = Southeast Asia.

Notes: SAFTA1 = removal of all SA tariffs over 2016–2025; SAFTA2 = SAFTA1 + 50% cut in NTBs; SAFTA3 = SAFTA2 + 5% reduction in trade costs; SAFTA4 = SAFTA2 + 15% reduction in trade costs; SA/SEA1 = removal of all tariffs across SA and SEA over 2016–2025; SA/SEA2 = SA/SEA1 + 50% cut in NTBs; SA/SEA3 = SA/SEA2 + 5% reduction in trade costs relevant to South Asian–Southeast Asian trade; SA/SEA4 = SA/SEA2 + 15% reduction in trade costs relevant to South Asian–Southeast Asian trade.

Source: Authors' estimates.

In addition, given that Myanmar is at the center of South Asian–Southeast Asian connectivity, it is relevant to consider the effects on this country, even as part of the "other ASEAN" group together with Brunei Darussalam and Timor-Leste. Table 9.3 shows that Myanmar/other ASEAN would be marginally affected by trade diversion in the case of the South Asian FTA scenarios (peaking at 0.1% of GDP), but it would experience real income gains of 2.3% in SA/SEA4, led by increases in exports of 7.3% relative to the baseline and an increase in exports relative to GDP of 4.9%. These gains are moderate and are affected by the fact that Myanmar has only recently begun its outward-oriented economic reform program and hence is a relatively closed economy in the base year (2010). Moreover, at present, Myanmar trades very little with South Asia; indeed, approximately 70% of its trade is with ASEAN and the PRC. As Myanmar's reform program proceeds and connectivity with South Asia improves, it will likely be one of the greatest beneficiaries of South Asian–Southeast Asian economic integration, even if this does not show up in the numbers. Finally, it is worth noting that Myanmar/other ASEAN would be one of the biggest winners if deeper intra-ASEAN integration is included as well (as discussed above)—its real income grows by over 31% of GDP in this scenario.

With respect to factor returns, similar to the South Asian case, Table 9.4 shows that labor gains in ASEAN in virtually all South Asian–Southeast Asian FTA scenarios in terms of nominal and real wages, with the minor exception of Cambodia under SA/SEA1 (in which there is a very minor deterioration of the nominal and real wage). But again, the gains of labor relative to other factors are somewhat mixed. In the cases of the Philippines, Singapore, and (almost always) Viet Nam, labor gains relative to the other two factors in all South Asian–Southeast Asian FTA scenarios; for Indonesia, Malaysia, Thailand, the Lao PDR, and Myanmar/other ASEAN, wages rise faster than the returns to capital but not land; and in Cambodia, labor usually gains relative to land but not capital. Thus, as in the South Asian case, while integration will be pro-labor, there could be distributional issues that policymakers should tackle with integration.

Finally, there will be significant structural adjustment in the ASEAN economies with South Asian–Southeast Asian integration, but again one must be careful in drawing conclusions regarding the significance of the magnitudes of the effects. For example, Singapore experiences a contraction of 34% in its "other grains" sector. However, this sector is extremely small; the percentage change may be large, but the significance for labor adjustment in Singapore is trivial. Still some general observations are in order. First, more agriculture sectors will

contract than expand in most ASEAN economies, with the notable exceptions of Indonesia and Thailand. Manufacturing sectors tend to expand in the majority of countries, again with the exception of Indonesia (whose manufacturing sectors contract) and mixed results in the Lao PDR and Myanmar/other ASEAN. The effects on service sectors are even more mixed, with Singapore and Malaysia mostly winning but with varied results in other economies.

## Discussion

The results reported in Tables 9.1–9.4 strongly suggest that the potential gains from South Asian–Southeast Asian economic integration are great, and in some cases remarkable. The aggregate income increases relative to GDP of 8.9% in South Asia and 6.4% in Southeast Asia are also relatively large compared to many other CGE models used to capture the effects of economic integration in general. It is, therefore, natural to question some of the underlying assumptions to make sure they are reasonable.

The first question would relate to the policy innovation scenarios. Is it reasonable, for example, to assume that South Asia and Southeast Asia could remove all tariff barriers and 50% of their NTBs. It would arguably seem so in the case of ASEAN; the AFTA is already essentially in place, and while it is difficult to gauge exactly to what degree NTBs have fallen on intra-ASEAN trade, they are slated to be removed altogether by the end of 2015 (with more time for the transitional ASEAN economies) according to the ASEAN Economic Community (AEC) Blueprint. It is not unreasonable to believe that half will have been removed by then. Extending these initiatives to South Asia would take some doing, but ASEAN and India are already in negotiations under the Regional Economic Comprehensive Partnership (RCEP) and, in the past, there has been member country support for multilateralizing intra-ASEAN trade liberalization.

A bigger question is whether such trade liberalization is reasonable in the case of South Asia. The South Asian FTA falls well short of intra-regional free trade, and NTBs abound in South Asia (Weerakoon 2010). The political support for liberalization is rising in most countries in South Asia but is not on the level of that of Southeast Asia, which arguably has the most liberal trade policies in the developing world. Hopefully, the identification of potential gains—from this and other studies—will buttress political support.

The largest gains from integration regard the reduction in trade costs, which the study assumes derive from a combination of trade

## Table 9.4: Changes in Factor Prices in Southeast Asia, 2030

(% change relative to baseline)

| Scenario | SAFTA1 | SAFTA2 | SAFTA3 | SAFTA4 | SA/SEA1 | SA/SEA2 | SA/SEA3 | SA/SEA4 |
|---|---|---|---|---|---|---|---|---|
| **Cambodia** | | | | | | | | |
| Wage | -0.1 | -0.1 | -0.2 | -0.3 | -0.1 | 0.2 | 0.4 | 1.1 |
| Land rental price | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | -0.2 | -0.4 | -1.1 |
| Capital rent rate | -0.1 | -0.1 | -0.1 | -0.2 | -0.1 | 0.3 | 0.5 | 1.2 |
| **Indonesia** | | | | | | | | |
| Wage | 0.0 | -0.1 | -0.1 | -0.1 | 7.0 | 7.6 | 8.3 | 10.1 |
| Land rental price | -0.1 | -0.2 | -0.2 | -0.2 | 24.0 | 26.6 | 27.9 | 30.5 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 2.1 | 2.3 | 3.0 |
| **Lao PDR** | | | | | | | | |
| Wage | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 |
| Land rental price | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | -0.2 | 0.8 | 1.1 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | -0.1 | 0.2 | 0.0 | -0.1 | -0.6 |
| **Malaysia** | | | | | | | | |
| Wage | 0.0 | 0.0 | 0.0 | -0.1 | 2.8 | 3.7 | 5.1 | 9.0 |
| Land rental price | 0.0 | -0.1 | -0.1 | -0.1 | 19.9 | 22.8 | 25.1 | 29.9 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.9 | 1.2 | 2.1 |
| **Philippines** | | | | | | | | |
| Wage | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.4 | 0.5 | 0.9 |
| Land rental price | 0.0 | 0.0 | 0.0 | 0.1 | 0.8 | -0.5 | -0.9 | -1.8 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | -0.2 |
| **Singapore** | | | | | | | | |
| Wage | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 4.0 | 5.9 | 11.8 |
| Land rental price | 0.0 | -0.1 | -0.1 | -0.1 | 3.9 | 3.1 | 2.7 | 2.0 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.7 | 2.3 | 3.9 |
| **Thailand** | | | | | | | | |
| Wage | 0.0 | 0.0 | -0.1 | -0.1 | 1.5 | 1.8 | 2.4 | 4.3 |
| Land rental price | 0.0 | 0.0 | 0.0 | 0.1 | 5.6 | 5.8 | 5.9 | 6.3 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | -0.1 | 0.6 | 0.9 | 0.9 | 2.2 |

*continued on next page*

*Table 9.4 continued*

| Scenario | SAFTA1 | SAFTA2 | SAFTA3 | SAFTA4 | SA/SEA1 | SA/SEA2 | SA/SEA3 | SA/SEA4 |
|---|---|---|---|---|---|---|---|---|
| **Viet Nam** | | | | | | | | |
| Wage | 0.0 | -0.1 | -0.1 | -0.2 | 0.7 | 2.0 | 2.0 | 6.0 |
| Land rental price | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 0.7 | 0.7 | 1.0 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | -0.1 | 0.4 | 1.2 | 1.2 | 3.1 |
| **Other ASEAN** | | | | | | | | |
| Wage | 0.0 | 0.0 | -0.1 | -0.1 | 0.5 | 1.2 | 1.6 | 3.3 |
| Land rental price | 0.0 | -0.1 | -0.1 | -0.2 | 1.7 | 3.0 | 3.6 | 5.8 |
| Capital rent rate | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |

ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; NTB = non-tariff barrier; SA = South Asia; SAFTA = South Asian Free Trade Area; SEA = Southeast Asia.

Notes: SAFTA1 = removal of all SA tariffs over 2016–2025; SAFTA2 = SAFTA1 + 50% cut in NTBs; SAFTA3 = SAFTA2 + 5% reduction in trade costs; SAFTA4 = SAFTA2 + 15% reduction in trade costs; SA/SEA1 = removal of all tariffs across SA and SEA over 2016–2025; SA/SEA2 = SA/SEA1 + 50% cut in NTBs; SA/SEA3 = SA/SEA2 + 5% reduction in trade costs relevant to South Asian–Southeast Asian trade; SA/SEA4 = SA/SEA2 + 15% reduction in trade costs relevant to South Asian–Southeast Asian trade.

Source: Authors' estimates.

facilitation improvements and investments in hard infrastructure. The 5% reduction in trade costs would seem to be quite reasonable by any measure; the Asia-Pacific Economic Cooperation (APEC) forum has been able to do that on a voluntary basis, and this in the context of many member countries who already have cutting-edge hard and soft infrastructure and "first best" trade practices. The 15% reduction is more ambitious, but, given the existing high costs of trade in South Asia, this scenario would also be credible. The findings of this study described in Chapters 3, 4, and 6 suggest that the gains via trade facilitation and hard infrastructure could be considerably more than that.

The empirical literature is supportive of the assumption that economic integration could lead to considerable gains via reducing trade costs. For example, Brooks, Roland-Holst, and Zhai (2005) run simulations to compare the aggregate impact on real income, exports, and terms of trade in the context of deep Asian integration. They assume that non-policy-related trade costs are around 120% and are cut by half over a 20-year period for East Asia, Southeast Asia, and South Asia; they find such an approach increases gains over a standard tariff-based scenario by many times, coming to 8.1%–53.8%, 35.5%–116.6%, and 10.4%–22.4% of GDP, respectively. De Dios (2006) estimates that a 10%

saving in transport costs alone increases trade by approximately 6%. Wilson and Shepherd (2008) show that the gains from improvements in trade facilitation in ASEAN yield far greater gains than comparable tariff reforms. For example, improving port facilities alone in ASEAN expands trade by 7.5%. Estimates of the effects of improvements in infrastructure development noted in the AEC Blueprint on the ASEAN-4 (Indonesia, Malaysia, Singapore, and Thailand) could increase per capita GDP in these countries by 2%–12% (Plummer and Chia 2009).

Thus, the underlying assumptions with respect to trade costs in the order of 5%–15% are not necessarily large with respect to the existing literature, and in many ways the results would be consistent with what the (relatively sparse) literature derives. In any event, it is clear that these reductions in trade costs matter a great deal and, hence, need to be a primary focus of policymakers.

A second set of questions would regard the model itself. Any tractable empirical trade model has its shortcomings, but CGE models have established themselves as a standard technique in this area. The CGE model employed in this study uses cutting-edge trade theory assumptions, such as heterogeneous firm productivity, that lead to larger results compared to the standard assumption of homogeneous firms. The literature suggests (for example, Zhai 2008) that the latter assumption is less consistent with observed firm behavior and, in fact, explains to some degree why ex post analyses show that earlier CGE models seem to significantly underestimate the effects of regional integration. Moreover, it is important to note that the model does not include FDI, which has been shown to increase significantly the potential effects of regional integration (Petri, Plummer, and Zhai 2012) and, in fact, is an important attraction for Asian countries entering into regional cooperation agreements. Hence, while the results of all trade models are subject to the underlying assumptions used to build them, any potential upward biases, for example, in terms of its use of new trade theory and its use of standard CGE macro closures, are compensated at least in part by downward biases.

## 9.4 Qualitative Issues

Economists tend to focus on changes in key economic variables (for example, welfare, exports, price changes, or consumption) when assessing the economic implications of deeper integration. However, to the rest of the world and policymakers in general, there are many more aspects that need to be taken into account from a social perspective.

Indeed, the social and political dimensions of deepening economic integration tend to be often far more important than the economic effects. Many FTAs exist that have important political implications but precious little to do with economics, but virtually no FTA exists solely for economic reasons.

These issues are especially important in the context of South Asian–Southeast Asian integration. Essentially, all are developing economies with special needs and concerns, including the bottlenecks that exist in the development process. Each has its own particular vector of political, social, and institutional policy changes and priorities. Like globalization itself, as economic integration brings these economies together, challenges emerge that are often off the radar of economists but are as essential to the success of integration as the standard economic variables.

One such challenge regards costs associated with structural change. Economists understand structural change as a necessary condition to improve efficiency. However, structural change does not happen automatically; it takes a good deal of time, depending on the social, political, cultural, and institutional characteristics of the country. During the adjustment process, workers changing jobs will be unemployed, and the most vulnerable could be affected by this "frictional" unemployment. The case of Myanmar is illustrative: before its opening up program that began in 2011, it was an inward-oriented economy in part due to its ostracism by the world's largest economies. The industrial structure that emerged before reform was characterized by low productivity work in low-productivity sectors. Reform has already led to a strong boost to growth, but the displacement due to structural change is an urgent policy priority in Myanmar.

Hence, it is important to qualify the optimistic results of Section 9.3 by noting that there are always certain social costs associated with structural change, and a key priority of the government should be to facilitate this structural change as well as to protect families that are vulnerable to displacement. Such an approach is essential for reasons associated with efficiency (unemployment is costly to the economy), equity (the benefits of integration need to be widely shared) and political economy (in developed and developing economies alike, the media tend to be suspicious of trade, and it is important to show that the government is actively working to minimize the costs of integration and spread the benefits). Empirically, international trade generally has had an important positive effect on reducing poverty (see, for example, the survey by Winters, McCulloch, and McKay 2004) but the poverty-reducing effects of trade can be diminished or even reversed in the context of an inflexible labor-related institutional environment (Topalova 2010).

Also, regarding the labor market, while the economic estimates in Section 9.3 underscore that there will be large welfare gains that should generate a significant increase in the purchasing power of workers in just about all economies, given the long-run nature of that model, the approach assumes that the labor force is always at full employment. Although the assumption of full employment is appropriate for the purposes of the model and available data, it does not capture the actual structure of labor markets at the disaggregated level. For example, it may be reasonable to assume that the stock of labor is fixed for skilled workers, but it is certainly not fixed for unskilled workers in South Asian and most Southeast Asian economies, where labor-market informality tends to be a salient problem. Thus, the effect of integration would be to bring many unskilled workers into the formal sector without much of an effect on wages. This would expand the economic potential of the economy and increase employment beyond what the estimates of Section 9.3 would suggest. Yet, it would also have the effect of increasing precariousness in labor markets (Plummer, Petri, and Zhai 2014).

Thus, while we can expect deeper South Asian–Southeast Asian initiatives to generate large welfare gains and increases in employment, it is essential for regional governments to take into account the mixed effects on the distribution of these gains and act accordingly in order to ensure that the benefits are fairly spread and that the "winners" will compensate the "losers." While an extensive analysis of the options that might be pursued in order to create adequate compensation mechanisms is beyond the scope of this text, establishing effective social safety nets, including social-protection floors—which in most South Asian and Southeast Asian countries tend to be underdeveloped—needs to be an important priority as integration deepens.

Unequal gains could also have a gender dimension. While this study does not have the type of labor surveys necessary to show the effects on gender of economic integration, Plummer, Petri, and Zhai (2014) note that, in the context of the AEC and AEC+ initiatives, the effects of changes in wages and employment by gender vary considerably across countries and scenarios, and in some cases can be significant. For example, in Indonesia, the Lao PDR, and Thailand, the increase in male wages exceeds those of women in every policy scenario.

Another issue relates to food security. While there is no common definition of food security, most of the literature uses the Food and Agriculture Organization definition, that is, that "food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO website). Note that the definition focuses on access rather than availability; sufficient

food may be available but the challenge has been to make sure that citizens have access to it.

In one form or another, food security receives priority in all countries. If economic integration initiatives were to make people seriously more food insecure, it is unlikely that they would be politically acceptable. However, in the case of South Asian–Southeast Asian initiatives, this would be a highly unlikely outcome. First, inevitably all FTAs include "carve outs" for the most sensitive sectors. Even the European Union's eurozone, which is an economic and monetary union, features some sectors that have not been integrated (for example, energy, some aspects of finance), despite an integration process that began with a customs union in 1957. Some sectors will inevitably be excluded in, for example, a South Asian–Southeast Asian FTA, as they are even in the context of the AFTA.

That said, food security should not be used as an excuse to exclude all agriculture sectors from the agreement. First, such an approach would reduce the efficiency benefits of liberalization and reduce incentives to enhance productivity in the two regions, thereby leading to less food production and higher prices than would otherwise be the case (that is, greater food insecurity). One would predict that the share of agriculture in the overall economy and employment will decline anyway as part of the development process, and governments need to prepare for this eventuality. Second, economic cooperation can be used as a means to avoid "beggar-thy-neighbor" measures that tend to increase food security in one country at the expense of others. For example, ensuring that excess accumulation of food stocks generated due to food security programs will not be "dumped" in neighboring markets would reduce potential market volatility. Third, via economic cooperation programs, countries can work to create means to enhance food security at the regional level, thereby reducing the threat of food insecurity for all. In fact, ASEAN has developed a number of food security-related initiatives over the years, including the ASEAN Integrated Food Security Framework and the Strategic Plan of Action on ASEAN Food Security. Given the food security priorities embraced by most economies in South Asia and Southeast Asia, many opportunities exist for cooperation initiatives in this area as economic integration deepens. After all, food security at its heart is about risk, and pooling risk in a regional context makes strong economic as well as political sense.

Finally, there is the issue of migration, which is a sensitive topic in most regional integration negotiations. Almost all regional cooperation initiatives exclude cross-border labor flows or are very specific as to what forms would be permitted under the agreement. For example, migration has been a major contention in the context of North American Free

Trade Agreement and labor flows are generally excluded, even though migration from Mexico has more than doubled since the agreement was signed (Zamora 2009). Free migration within the European Union started almost four decades after the Treaty of Rome, and cross-border flows have been relatively low. The AEC only considers free movement of skilled labor, as liberalizing movements of other forms of labor (for example, under "Mode 4 services") is too politically contentious at present. Yet, cross-border migration is relatively high: skilled labor flows to Singapore from Malaysia and the Philippines, unskilled labor flows from Indonesia to Malaysia and Brunei Darussalam, Myanmar labor flows to Thailand, and so forth.

In short, with or without a regional accord that deals with migration, it is an important topic for regional trading partners that requires recognition via ancillary forms of cooperation to complement trade agreements. While the free flow of labor is unlikely to show up in any South Asian–Southeast Asian accord, it could easily be expected that closer integration will manifest itself also in the form of greater interregional labor flows as well as trade. It would behoove regional governments to anticipate this eventuality through, for example, agreements on the protection and promotion of the rights of migrant labor.

## 9.5 Conclusions

This chapter first considers what the expected theoretical effects would be, followed by an exposition of the empirical approach used to capture the economic effects on integration. It then uses a cutting-edge CGE model to simulate several scenarios of South Asian–Southeast Asian economic integration and analyzes the resulting effects.

The gains from regional economic integration are large for most countries. In general, the deeper the integration scenario, the greater the gain. Reducing trade costs in the region generates the largest gains, but gains from removing NTBs and tariffs are large as well (especially for South Asia). On the whole, South Asia does much better in the context of a cross-regional FTA than with merely an intra-regional FTA; still, the results support a two-track approach to economic cooperation on the part of South Asian countries, that is, strengthening intra-regional integration with South Asian partners at the same time that it pursues deeper forms of economic cooperation with Southeast Asia. Moreover, by deepening links with South Asia, Southeast Asia is able to benefit from greater market access and cost reductions in the relatively protected South Asian region, leading to greater gains (a 6.4% rise in real income relative to GDP) than even in the case of the AEC, where Petri, Plummer,

and Zhai (2012), for example, estimate a regional gain of about 5%. Exports tend to be an important driver of gains in all scenarios, but particularly in the context of a South Asian–Southeast Asian FTA for the larger South Asian economies. Moreover, a South Asian–Southeast Asian FTA would increase significantly the internationalization of especially the South Asian economies, adding 9 percentage points to the exports/GDP ratio for India and Pakistan and 16–32 percentage points in the case of the other South Asian economies. Indeed, the internationalization of the Nepalese economy rises by almost one third, and that of the other South Asian economies, by more than one fourth.

In short, the estimates generated by the CGE model used in this study make a strong case for deeper intra- and cross-regional economic cooperation as well as initiatives that lower the cost of doing business and trade, especially in South Asia, via investments in greater connectivity through improved hard and soft infrastructure. This study suggests how this might be done in terms of improving trade facilitation-related variables, investments in transport infrastructure, and other areas such as energy, and improved financial institutions that facilitate investment and provide trade finance.

However, this study also underscores that the dramatic increases in efficiency from economic integration derive from structural changes, which can change the distribution of income in ways that could exacerbate existing problems, such as the trend toward rising income inequality in many Asian economies since the global financial crisis. This does not imply that the initiatives should not be embraced; it only emphasizes the importance of active government policies to facilitate economic integration and ensure that the gains are widely spread and the big "winners" of integration will compensate the most vulnerable that lose from it.

Other political and social aspects of integration, such as food security and migration, are also relevant as policymakers envision new forms of economic integration. Economic cooperation can enhance food security for integrating countries, and put constraints on domestic initiatives that could potentially harm partner countries. Very few regional cooperation initiatives include labor flows, particularly in the developing world, and it is unlikely that they would be included in any formal trade agreement between South Asia and Southeast Asia. Yet, from a policy point of view, it is important to anticipate rising migration by jointly advancing programs and initiatives that protect and promote the rights of migrant labor.

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## Connecting South Asia and Southeast Asia

This report analyzes how closer regional connectivity and economic integration between South Asia and Southeast Asia can benefit both regions, with a focus on the role played by infrastructure and public policies in facilitating this process. It examines major developments in South Asia–Southeast Asia trade and investment, economic cooperation, the role of economic corridors, and regional cooperation initiatives. In particular, it identifies significant opportunities for strengthening these integration efforts as a result of the recent opening up of Myanmar in political, economic, and financial terms. This is particularly the case for land-based transportation—highways and railroads—and energy trading. The report's focus is on connectivity in a broad sense, covering both hardware and software, including investment in infrastructure, energy trading, trade facilitation, investment financing, and supporting national and regional policies.

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