Data Collection Survey on Transport Infrastructure Development for Regional Connectivity in and around South Asia

Final Report

March 2014

JAPAN INTERNATIONAL COOPERATION AGENCY

PADECO Co., Ltd.

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Contents

Abbreviations viii
Executive SummaryES-i
Chapter 1 Introduction1-1
1.1 Background1-1
1.2 Objective
1.3 Survey Area1-2
1.4 Country Visits1-3
1.5 Seminars
1.6 Structure of This Report
1.7 Map Showing the Name of Places Frequently Referred to in This Report
Chapter 2 Trade, Industry, and Land Transport Requirements in the Region2-1
2.1 Overview
2.2 Economic Status in the Region
2.2.1 Macroeconomic Performance by Country2-1
2.2.2 Economy Size and Sector Composition in Each Country/Region2-3
2.2.3 Overview of Industry and Trade in the Region2-6
2.2.4 Economic Development Frameworks2-6
2.3 Existing Goods Movement (Trade Flows by Country)2-11
2.3.1 Bangladesh
2.3.2 Bhutan
2.3.3 India2-13
2.3.4 Myanmar
2.3.5 Nepal
2.3.6 Thailand
2.4 Factors that Affect the Future Flow of Goods2-18
2.4.1 Possible Value Chains
2.4.2 Investment Climate for Foreign Direct Investment
2.5 Forecast on Economic Growth and Trade Flows
2.5.1 Forecasting Real GDP Growth
2.5.2 Forecasting Resulting Trade Flows by Customs Point2-24
Chapter 3 Soft Regional Transport Infrastructure
3.1 Overview
3.2 Current Regional Transport Development Needs
3.2.1 Country-by-Country Analysis
3.2.2 Route-by-Route Analysis
3.3 Current Status and Issues Related to Through Transport Arrangements
3.3.1 Transport-Related Agreements
3.3.2 Road and Railway Standards in the Region
3.4 Current Status and Issues Relating to Customs and Other Border Procedures3-18
3.4.1 Trade Barriers Related to Customs and Other Border Procedures

	3.4.2	Ongoing/Planned Projects to Facilitate Customs and Other Border Procedures	3_21
3.5	Reg	ional Cooperation Organization/Forums.	
5.0	3.5.1	Introduction	3-25
	3.5.2	South Asian Association for Regional Cooperation (SAARC)	
	3.5.3	Bay of Bengal Multi-Sectoral Technical and Economic Cooperation	
		(BIMSTEC)	
	3.5.4	South Asian Subregional Economic Cooperation (SASEC)	
	3.5.5	United Nations Economic Commission for Asia and the Pacific (UNESCAP)	
	3.5.6	Strengthening of Regional Cooperation Organizations and Forums for	
	P	Trade and Transport Facilitation	
3.6	Dev	elopment Strategies	
	3.6.1	Introduction	
	3.6.2	I hrough Transport	
	3.0.3	Improvement of Customs and Other Border Procedures	
	5.0.4	Identification of Phot Bolders/Confidors	
Chapte	r4 F	reight Transport and Border Facilities	4-1
4.1	Ove	rview	4-1
4.2	Cur	rent Situation of Freight Transport and Border Crossing Points	4-1
4.3	Trar	nsport Time and Cost of Intermodal Transport Cargo	4-16
4.4	Dev	elopment Strategies	4-18
Chanta	r5 F	nvironmental and Social Considerations	5-1
5 1		rview	5 1
5.1	Env	ironmental and Social Conditions of the Survey Area	
5.2	5 2 1	Comparison of Millennium Development Cools in the Survey Area	,
	5.2.1	Environmentally Protected Area in South Asia and Adjacent Areas	
	523	Socially Sensitive Areas	
53	Leg	al Frameworks	5-6
0.0	531	Environmental Protection and Environmental Clearance	5-6
	532	Land Clearance and Involuntary Resettlement.	5-9
5.4	Kev	Environmental/Social Factors in Project Evaluation	
5.5	Nati	ural and Social Environmental Evaluation of Proposed Projects	5-14
5.6	Rec	ommendations for Further Studies	5-17
Chanta		dentification and Evolution of International Economia Counidant	
Chapte	ro 10 (1	Road and Railway)	6-1
6.1	Ove	rview of Existing Situation	6-1
6.2	Eva	luation Overview	
6.3	Stag	e 1: Identification of the Long List of Corridors	
6.4	Stag	e 1: Corridor Evaluation Criteria	
6.5	Stap	e 1 Results: Regional Road Corridors	
6.6	Stag	e 1 Results: Regional Rail Corridors	6-18
Cnapte	r / 10 J	ICA Assistance	

7.1 Purpose and Outcomes of Stage 2				
7.2 Identification of Potential Road and Rail Projects				
7.3 Stage 2 Evaluation Criteria				
7.4 Sta	ge 2 Evaluation Results	7-9		
	-			
Chapter 8	Potential Projects for JICA Assistance	8-1		
8.1 Int	roduction	8-1		
8.2 Pot	ential Regional Road and Rail Corridor Projects	8-1		
8.2.1	Overview	8-1		
8.2.2	Projects along Road and Rail Corridors RO1 and RA1	8-1		
8.2.3	Projects along Road Corridor RO2	8-3		
8.2.4	Projects along Road and Rail Corridors RO3 and RA9	8-5		
8.2.5	Projects along Road Corridor RO7	8-6		
8.2.6	Projects along Road Corridor RO9	8-7		
8.2.7	Projects along Road Corridors RO14, RO15, and RO16	8-9		
8.2.8	Projects along Road Corridor RO1 /	8-10		
8.3 50	T Transport Infrastructure Development Projects	8-11		
8.3.1	S1: Pilot Border Crossing Efficiency Project	8-11		
8.3.2	S2: Harmonization of Maximum Cross Vahiala Mass and Ayla Load	8-12		
8.3.3	55. Harmonization of Maximum Gross venicle Mass and Axie Load	8-13		
834	S4: Determination of Appropriate Levels of Transit Charges	8-13		
835	S5: Comprehensive Regional Transport Agreement	8-14		
8.4 Pot	ential Freight Transport and Border Facilities Projects			
841	L1: Improvement of Border Crossing Points for Regional Connectivity			
0	between Landlocked Countries/Areas and Bangladesh Nepal	8-15		
8.4.2	L2: Pilot Unit Load System Project	8-15		
8.4.3	L3: Improvement of the Transport and Logistics System in the Bottleneck			
	Region (the "Chicken's Neck") of North East India	8-16		
Appendices				
Appendix 1	Organizations Visited during the Country Visits	A-1		
Appendix 2a	Summary Proceedings of the First Seminar	A-7		
Appendix 2b	Summary Proceedings of the Final Seminar	A-22		
Appendix 3	Assessment of Major Border Crossing Points in the Region	A-35		
Appendix 4	Calculation of Gains from Transport Cost Reductions Assuming the Implementation of Through Transport Arrangements	A-4 1		
Appendix 5	Evaluation of Natural and Social Environmental Impacts of Shortlisted Projects	A-47		
Appendix 6	Regional Economic Corridor (Road and Railway) Evaluation Summary Tables	A-48		
Appendix 7	Multi-Criteria Evaluation of Potential Projects for JICA Assistance (Road and Rail)	A-50		
Appendix 8	Project Profiles	A-51		
Photographs		P-1		

Figures

Figure 1.1	Map Showing the Names of Places Referred to in the Report	1-5
Figure 2.1	Sector GDP by Country/Region (2011/12)	2-5
Figure 2.2	Export Flows from Bangladesh (2012/2013)	2-12
Figure 2.3	Export Flows from Bhutan (2011)	2-13
Figure 2.4	Export Flows from India (2011/2012)	2-14
Figure 2.5	Export Flows from Myanmar (2011/2012)	2-15
Figure 2.6	Export Flows from Nepal (2011)	2-16
Figure 2.7	Export Flows from Thailand (2012)	2-17
Figure 2.8	Geographical Distribution of Potential Value Chains	2-20
Figure 2.9	Sector GDP Forecast by Country/Region (2030)	2-23
Figure 2.10	GDP Per Capita by Country/Region (2012)	2-24
Figure 2.11	Forecast GDP Per Capita by Country/Region (2030)	2-24
Figure 2.12	Trade Flows by Customs Point in Constant 2012/13 USD (2012)	2-26
Figure 2.13	Forecast Trade Flows by Customs Point in Constant 2012/13 USD (2030)	2-27
Figure 3.1	Location of the Identified Routes	3-8
Figure 3.2	Current Status of Bilateral Road Transport Agreements/Arrangements	3-9
Figure 3.3	Current Status of Bilateral/Trilateral Transit Agreements and Arrangements	3-9
Figure 3.4	Asian Railway Network in South Asia by Gauge Type	3-18
Figure 3.5	Asian Highway Network	3-29
Figure 3.6	Directions for Soft Infrastructure Development	3-31
Figure 3.7	Border Development Projects along Shortlisted Corridors	3-33
Figure 4.1	Location of Major Ports in the Region	4-2
Figure 4.2	Goods Flows by Border Crossing Point (Million Metric Tons in 2011)	4-4
Figure 4.3	Location of Major Border Crossing Points in Bangladesh	4-6
Figure 4.4	Layout of the Agartala Integrated Check Post	4-12
Figure 4.5	Locations of Major Customs Border Posts in Nepal	4-14
Figure 4.6	International Cargo Flow Diagram (to North East India)	4-19
Figure 4.7	Forecast Cross-Border Traffic by Type in the Subject Countries of This	
	Survey in South Asia	4-21
Figure 5.1	Protected Areas in the Survey Region	5-4
Figure 5.2	South Asia Conflict Map	5-5
Figure 5.3	Location of Refugees in the Survey Region	5-6
Figure 6.1	Example Road Network Issues and Opportunities	6-1
Figure 6.2	Example Railway Network Issues and Opportunities	6-2
Figure 6.3	Evaluation Flow Diagram	6-2
Figure 6.4	Long List of Regional Road Corridors	6-5
Figure 6.5	Long List of Regional Railway Corridors	6-7
Figure 6.6	Shortlist of Regional Road Corridors for Further Review	6-18
Figure 6.7	Shortlist of Regional Railway Corridors for Further Review	6-29

Figure 7.1	Stage 2 Flow Diagram	7-1
Figure 7.2	Example JICA Survey Team Site Visits of Potential Projects in Bangladesh	7-2
Figure 7.3	Example JICA Survey Team Site Visits of Potential Projects in the North Eastern Region of India	7-5
Figure 8.1	Potential Road and Rail Projects along Corridors RO1 and RA1	8-2
Figure 8.2	Potential Road Projects along Corridor RO2	8-3
Figure 8.3	Potential Road Projects along Corridor RO3 and RA9	8-5
Figure 8.4	Potential Road Project along Corridor RO7	8-7
Figure 8.5	Potential Road Projects along Corridor RO9	8-8
Figure 8.6	Potential Road Projects along Corridors RO14, RO15, and RO16	8-9
Figure 8.7	Potential Road Projects along Corridors RO17	8-11

Tables

Table 1.1	Summary of Organizations Visited during the Field Surveys1-3
Table 2.1	Summary of the Main Issues Affecting Trade, Industry, and Land Transport in the Region
Table 2.2	Trend of Real GDP Growth in Subject Countries
Table 2.3	Actual/Forecast Real GDP Growth by Industry in India (2004–05 Prices)
Table 2.4	Actual/Forecast Real GDP Growth by Industry in Nepal (2004–05 Prices)
Table 2.5	Eleventh National Economic and Social Development Plan (Summary)
Table 2.6	Kev Features of Draft New Investment Promotion Policy of Thailand
Table 2.7	Real GDP Growth Forecast by Country/Region
Table 2.8	Real GDP Growth Forecast (Comparison with Other Regions)
14010 2.0	
Table 3.1	Summary of Major Regional Transport Needs and Constraints
Table 3.2	Summary of Major Regional Transport Infrastructure Bottlenecks and Difficulties in Developing Soft and Hard Infrastructure
Table 3.3	Maximum Permissible Axle Loads and Gross Vehicle Weight in the Subject
T_{a} b 1_{a} $2/4$	Countries of the Survey (tons)
Table 3.4	A sign Highway Design Standards
Table 3.5	Asian Highway Design Standards
Table 3.6	Survey
Table 3.7	General Information on and Standards of Railway System in the Survey Countries
Table 3.8	Summary of Current Status of Modernization of Customs Systems
Table 3.9	Potential Export Products Constrained by SPS/TBT Issues
Table 3.10	Recent/Ongoing/Planned Transport and Trade Facilitation Projects in the
	Region
Table 3.11	Membership of Subject Countries in SAARC, BIMSTEC, and SASEC 3-25
Table 4.1	Summary of Freight Transport Issues
Table 4.2	Annual Imports and Exports through Major Ports in the Region
Table 4.3	Annual Seaborne Cargo in West Bengal and Bangladesh
Table 4.4	Relative Size of National Economies with India as 100
Table 4.5	Annual Regional Cargo Flows at Land Border Crossings of South Asian Countries and the North East Region of India
Table 4.6	Border Crossing Points Planned and Announced for Development by the Bangladesh Land Port Authority
Table 4.7	Traffic at Bangladesh's Major Land Ports
Table 4.8	Traffic through the Major Border Crossing Points of Bhutan
Table 4.9	List of Priority Integrated Check Posts in India (Phase 1)
Table 4.10	Land Ports between West Bengal (India) and Bangladesh
Table 4.11	Cargo Estimation into the North East Region of India
Table 4.12	List of Border Stations and Requirements in North East India
Table 4.13	Major Border Crossings in Nepal and Cargo Volumes

Table 4.14	Import Cargo Traffic Cleared by Nepal Customs (One Week) 4-16
Table 4.15	Costs of Container Haulage (20') from Kolkata to Bhutan and Nepal 4-17
Table 4.16	Detention Charges (USD Per Day)
Table 4.17	Truck Haulage Cost to the North East Region of India (for 10 Tons of Cargo) 4-18
Table 5.1	Summary of Potential Environmental and Social Issues
Table 5.2	Expectations for Achievement of Millennium Development Goals
Table 5.3	Summary of Achievement of Development Goals by the Subject Countries 5-3
Table 5.4	Legal Frameworks Regarding Environmental Protection and Clearance
Table 5.5	Legal Frameworks for Land Clearance and Involuntary Resettlement
Table 5.6	Environmental and Social Guidelines of JICA, the World Bank, and ADB 5-10
Table 5.7	Reference Environmental and Social Management Frameworks for the Road and Railway Subsectors in the Survey Region
Table 5.8	Checklist Items Extracted from the JICA Environmental and Social Impact Guidelines (2010)
Table 5.9	Expected Negative Impacts To Be Addressed
Table 5.10	Recommended Considerations for Further Studies
Table 6.1	Long List of Regional Road Corridors
Table 6.2	Long List of Rail Corridors
Table 6.3	Corridor Evaluation Criteria
Table 6.4	Review of Regional Road Corridors – Strategy Documents and References 6-9
Table 6.5	Review of Regional Road Corridors – Additional Information
Table 6.6	Shortlist of Regional Road Corridors for Further Review
Table 6.7	Review of Regional Rail Corridors – Strategy Documents and References 6-19
Table 6.8	Review of Regional Railway Corridors – Additional Information
Table 6.9	Shortlist of Rail Corridors for Further Review
Table 7.1	Assessment of Transit Facilitation Potential by Route/Section
Table 7.2	Review of Potential Road and Rail Projects for JICA Assistance in Bangladesh along Shortlisted Corridors
Table 7.3	Review of Potential Road and Rail Projects for JICA Assistance in Bhutan on Shortlisted Corridors
Table 7.4	Review of Potential Road and Rail Projects for JICA Assistance in India on Shortlisted Corridors
Table 7.5	Review of Potential Road and Rail Projects for JICA Assistance in Nepal on Shortlisted Corridors

Abbreviations

ADB	Asian Development Bank
AEO	authorized economic operator
AH	Asian Highway
ASEAN	Association of Southeast Asian Nations
ASYCUDA	Automated System for Customs Data
BACS	Bhutan Automated Customs System
BCIM	Bangladesh–China–India–Myanmar Forum for Regional Cooperation
BCP	border crossing point
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral, Technical and Economic Cooperation
BLPA	Bangladesh Land Port Authority
BRICS	Brazil, Russian Federation, India, China, and South Africa
BRO	Border Roads Organisation [India]
BOI	Board of Investment [Thailand]
BOT	build-operate-transfer
BTILS	BIMSTEC Transport Infrastructure and Logistics Study
CBTA	Cross-Border Transport Agreement
CFS	container freight station
СНТ	Chittagong Hill Tracts
CIQ	customs, immigration, and quarantine
CONCOR	Container Corporation of India Ltd.
DD	detailed design
DoE	Department of Environment [Bangladesh]
DTI	direct trader input
ECA	ecologically critical area
EDI	electronic data interchange
EIA	environmental impact assessment
EIRR	economic internal rate of return
EPZ	export processing zone
ESMF	Environmental Social Management Framework
EU	European Union
FS	feasibility study
GoB	Government of Bangladesh
GDP	gross domestic product

GIS	geographic information system
GMS	Greater Mekong Subregion
GNI	gross national income
ICCA	indigenous and community conserved area
ICD	inland clearance/container depot
ICES	Indian Customs and Excise System
ICP	integrated check post
IEE	initial environmental examination
IFC	International Finance Corporation
IMF	International Monetary Fund
ISRO	Indian Space Research Organisation
JDCF	Japan Debt Cancellation Fund
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JNPT	Jawaharlal Nehru Port Terminal
KOICA	Korean International Cooperation Agency
IIRS	Indian Institute of Remote Sensing
IUCN	International Union for Conservation of Nature
LARR	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act
Lao PDR	Lao People's Democratic Republic
LDC	least developed country
MoCHTA	Ministry of Chittagong Hill Tracts Affairs [Bangladesh]
MDG	millennium development goal
MFF	multitranche financing facility
MoEF	Ministry of Environment and Forests [Bangladesh]
MoIC	Ministry of Information and Communications [Bhutan]
MoL	Ministry of Land [Bangladesh]
MoNRE	Ministry of Natural Resources and Environment [Thailand]
MoRTH	Ministry of Road Transport and Highways [India]
MoSTE	Ministry of Science, Technology and Environment [Nepal]
MOU	memorandum of understanding
N/A	not available
NER	North East Region [India]
NES	National Export Strategy [Myanmar]
NESDB	National Economic and Social Development Board [Thailand]

NH	national highway
NHAI	National Highways Authority of India
ODA	official development assistance
ONEP	Office of Natural Resources and Environmental Policy and Planning [Thailand]
OP	operational policy
PA	protected area
p.a.	per annum
PPP	public private partnership
PWD	Public Works Department [India]
RA	railway
RAMIS	Revenue Administration Management Information System [Bhutan]
RCI	regional cooperation and integration
Ref	Reference
RFID	radio frequency identification
RHD	Roads and Highways Department [Bangladesh]
RKC	Revised Kyoto Convention
RO	road
SAARC	South Asian Association for Regional Cooperation
SAFE Framework	Framework of Standards to Secure and Facilitate Global Trade
SARDP-NE	Special Accelerated Road Development Programme in the North East
SASEC	South Asia Subregional Economic Cooperation
SDR	special drawing rights
SEZ	special economic zone
SRMTS	SAARC Regional Multimodal Transport Study
TAR	Trans-Asian Railway
TBT	technical barrier to trade
TEU	twenty-foot equivalent unit
TIA	Tribhuvan International Airport
UNCTAD	United Nations Conference on Trade and Development
UNEP-WCMC	United Nations Environment Programme's World Conservation Monitoring Centre
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development

WCO	World Customs Organization
WDPA	World Database on Protected Areas
WTO	World Trade Organization

Executive Summary

1. Background

Location of South Asia in the International Transport Network



Source: UNESCAP

Figure 1.1: Asian Highway Network



Source: UNESCAP

Figure 1.2: Trans-Asian Railway

Figure 1.1 presents the Asian Highway Network, while Figure 1.2 presents the Trans-Asian Railway Network, both of which were identified by the Asian and Pacific countries through the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

As shown, the South Asian region is strategically located at the center of the Eurasian Continent. Accordingly, it is important for the region to be connected with locations outside of the region.

Trade and Industry

Figure 1.3 shows the existing size of the regional economies, which vary considerably, with India by far the largest, followed by Thailand in Southeast Asia and Bangladesh. It is notable that the North East States of India, the so-called Seven Sisters, although relatively small at present, are collectively still somewhat larger than some of the neighboring countries. On the other hand, Figure 1.4 presents constant 2030 GDP in terms of constant 2011/12 US dollars – graphically shows the economic growth that is forecast. Not surprisingly, India will still have the largest economy in the region, but all economies are expected to grow at relatively rapid rates.



(Constant 2011/12 USD) with Industry Breakdown (Constant Figure 1.5 shows that GDP per capita also varies across the r

Figure 1.5 shows that GDP per capita also varies across the region. This indicates the "appetite" for consumption. It currently is highest in Thailand, and lower in the other countries and states. GDP per capita in North East India lags that of India as a whole and Bhutan, but exceeds that of Bangladesh, Myanmar, and Nepal. Figure 1.6 again shows that substantial growth in GDP per capita is expected, implying greater capacity for consumption.



Existing regional goods flows are modest. Figure 1.7 shows this in terms of the value of the goods, looking at over 40 international border crossing pairs in South Asia. However, as shown in Figure 1.8, substantial growth in goods value is expected by 2030 at most international border crossings in the region. While the forecasts are mainly indicative rather than definitive, the key message is that intraregional trade is generally expected to grow substantially.



Source: Directorate General of Commercial Intelligence and Statistics, India Figure 1.7: Current Value of Goods Flows by Customs Point (Constant 2012/13 USD)



Development Potential(s)



Source(s): This Survey (prepared from a variety of references) Figure 1.9: Potential Value Chains



Source: This Survey

Figure 1.10: Required Enhancement of Regional Connectivity to Support Economic Growth

As shown in Figure 1.9, cross-border regional value chains will develop. Since a large amount of labor and domestic demand still needs to be absorbed within India, the potential for regional value chains has not been explored much yet.

Summing up regarding the South Asia and Southeast Asia survey area as a whole, industry and trade will grow dramatically. Regional economic growth will total over 150% by 2030, the region's industrial and trade structure will be transformed, and GDP per capita will serve as a driving force for consumption. There will be dramatic growth in the regional flow of goods – by almost 350% in constant value terms – as well as value chain development.

Enhanced regional cross-border connectivity will support this economic growth. Figure 1.10 highlights various aspects of this view of enhanced regional connectivity. Frictionless cross-border movement is envisaged. Major trading routes will be developed, with fully connected road and railway networks. Landlocked countries will benefit from more efficient access to the sea, with through transport. In addition, border areas will become better integrated with the rest of their respective countries.

2. Road and Railway Infrastructure

Potential of the Regional Road Network to Enhance Connectivity

As shown in Figure 2.1, the regional road network offers potential for enhanced connectivity. As indicated in blue on the figure, there is a need to unlock constrained connectivity to/from the North East Region of India. As shown in yellow, there is potential to improve connectivity to seaports for landlocked countries. There are a number of congested sections and chokepoints, with a few examples shown in red. There are also a number of missing road links or sections that are in poor condition – a few examples are shown in purple. However, there are a number of ongoing projects building momentum, shown in green – e.g., Asian Highway upgrading in Bhutan, the Special Accelerated Road Development Program in North East India, and four-laning of the Dhaka–Chittagong highway in Bangladesh.



Figure 2.1: Potential of the Regional Road Network to Enhance Connectivity

Potential of the Regional Railway Network to Enhance Connectivity

The regional railway network also offers potential for enhanced connectivity. As shown in red in Figure 2.2, there is potential to develop missing links and complete the Trans-Asian Railway Network.



Figure 2.2: Potential of the Regional Railway Network to Enhance Connectivity

3. Soft Regional Transport Infrastructure

Both soft and hard regional transport infrastructure is critical to enhancing regional connectivity and promoting economic growth. Through transport arrangements in the South Asia region are inefficient. Transshipment is extensive, nearly 100%. Road and rail standards are not harmonized. In addition, customs and border procedures are inefficient. For example, border management is still uncoordinated, not only between countries (e.g., with different border operating hours, between Bangladesh and India), but also within countries. Import-export requirements are not fully transparent and a large number of non-standardized documents are required. Except for India (to some extent) and Thailand, modern customs procedures (e.g., risk management, post clearance audits), which would substantially reduce examinations/inspections, have not been widely implemented, especially at land border crossings. Also, except for India and Thailand, information and communications technology (ICT) is used by customs administrations mainly to record transaction data contained in hard copy documents, not as an automated processing tool as envisaged under the Revised Kyoto Convention. In addition, sanitary/phytosanitary measures and technical barriers to trade are significant hurdles to trade in the region. Table 3.2 summarizes the current status of soft infrastructure in the region.

Table 3.2: Current Status of Soft Regional Transport Infrastructure in South Asia

Major Bottlenecks		Reasons for Inefficiency
Inefficient through transport	\triangleright	Transshipment is extensive (nearly 100%)
arrangements	\succ	Road and rail standards are not harmonized
In efficient customs and	\succ	Border management is uncoordinated
other border procedures	\succ	Import-export requirements are not fully transparent, and a large number of
		(often non- standardized) documents are required.
	\succ	Modern customs procedures are not widely practiced and ICT use is limited,
		especially at land borders.
	\triangleright	Technical regulations and standards are not harmonized.

Abbreviation: ICT = information and communications technology

Sources: E.g.: (i) South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, SASEC Trade Facilitation Strategic Framework, 2014–2018, 2013; (ii) PADECO Co., Ltd., TA No. 6435-REG: Preparing the South Asia Subregional Cooperation. Transport Logistics and Trade Facilitation Project (Cross-Border Regime Component), Final Report, November 2011

Through Transport Arrangements



Figure 3.1 shows visually that transshipment is required at borders. This is indicated in the map as well as in the photographs of the Tamabil border crossing point in Bangladesh, across from Dawki in the North East Indian state of Meghalaya.

Source: This Survey

Figure 3.1: Example of Transshipment Requirements



Source: This Survey

Figure 3.2: The Concept of Through Transport



Because transshipment is now required, through transport would increase efficiency. This entails the shortest distance across transit countries, no transshipment (that is, the same vehicle and driver), and harmonized transit charges and maximum gross weight and maximum axle load standards. Figure 3.2 illustrates the concept.

As shown in Figure 3.3, all of the countries have transit requirements. Nepal seeks an alternative route to the sea and trade with Bangladesh by land. India's North East states could benefit from a transit arrangement with Bangladesh. For Bhutan, transit across India to Bangladesh is not possible due to an undeveloped legal framework. Bangladesh has difficulty trading with Bhutan and Nepal; also, the other countries cannot use Bangladeshi ports due to transit restrictions in India.

Although the all of the countries could benefit from transit arrangements, it is difficult to establish transit systems. However, there are examples of transit systems at various stages of implementation in other parts of the world, including Europe, South America, Southeast Asia, and Africa, as shown in Table 3.2

Source:	This	Survey
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Figure 3.3: Transit Requirement of The Survey Countries

Transit System	Area of Application	Comments
TIR Convention	68 contracting parties (67 countries + EU)	The most widely applied transit system in the world
Trans-Alpine Transport	Between Switzerland and the EU	Transit charges fund railway transport in part
International Land Transport Agreement	7 countries in the Southern Cone of South America	A South American example
Northern Corridor Transit and Transport Agreement	5 countries in the EAC	An early African example
GMS Cross-Border Transport Agreement + ASEAN Goods in Transit Agreement	6 countries in the GMS 10 countries in ASEAN	In the early stages of development and implementation
SADCOM	Various countries of COMESA and SADC in Africa	An African transit management

Table 3.2 Examples of Transit Transport Systems in the World

Source: This Survey

Customs and Other Border Procedures



Figure 3.4 Conceptual View of Improved Customs and Border Procedures

While inefficient customs and border procedures impose costs, these procedures can be improved. As shown in Figure 3.4, preclearance. risk management, an authorized economic operator system, online applications before the arrival of cargo, and data and information exchange are some ways to improve procedures. The goal is coordinated border management supported by an efficient ICT system.

As shown in Table 3.3, the countries have been making progress in modernizing customs systems. India and Thailand are relatively advanced. For example, India is operating an e-customs system, has a system of preclearance, a risk management program, and an AEO system. The other South Asian countries are modernizing at various speeds, developing these advanced systems.

Modernization Component	Bangladesh	Bhutan	India	Myanmar	Nepal	Thailand
Application of e-Customs	0	0	0	\bigtriangleup	0	O
e-Customs software	ASYCUDA ++/ ASYCUDA World	BACS/ RAMIS	ICES	(UNI-PASS)	ASYCUDA ++	Ô
Application of preclearance	×	×	0	×	×	0
Application of risk management program	×	×	0	×	0	O
Application of AEO system	\bigtriangleup	×	0	×	×	0

Table 3.3 Status of Modernization of Customs Systems

Abbreviations: AEO = authorized economic operator, ASYCUDA = Automated System for Customs Data, BACS = Bhutan Automated Customs System, ICES = Indian Customs and Excise System, RAMIS = Revenue Administration Management Information System, UNCTAD = United Nations Conference on Trade and Development

Legend: \bigcirc = the system has been applied and is fully operational; \bigcirc the system has been applied but could be improved; \triangle = the system is under development; \times = development of the system has not been started

Source: This Survey

4. Logistics and Border Facilities

Freight Transport/Logistics System

The freight transport and logistics system in the region is not well developed. There are basically only two sets of ports in the region – Kolkata, which along with Haldia, is the main gateway for Bhutan and Nepal, and Chittagong and Mongla, the gateways to Bangladesh. Generally, bagged cargo is reloaded at the port, at borders, and at transit hubs. Transshipment – which refers to a change in the means of transport during a trip – is the norm with all the associated inefficiencies (see Figure 4.1).



Source: This Survey

Figure 4.1 Current Freight/Logistics System in the Region

However, the freight transport and logistics system can be modernized. A unit load system may be introduced. Advanced procedural approaches can bring benefits – these may include introduction of an integrated information system with a new container system, elimination of transshipment at borders, improvement of customs procedures, and tracing of transit cargo. Also, it is important to have modern border facilities providing all services in an integrated manner. These steps are outlined below:

Step 1: Unit load system

Palletization and containerization for India-borne cargo

Step 2: Advanced procedural approaches

Introduction of an integrated information system with a new container system, elimination of transshipment at borders, improvement of customs procedures, tracing of transit cargo

Step 3: Modern border facilities

Providing all services in an integrated manner

Containerization

Containerization can be increased. Steps for doing so include introducing a unit load system with pallets, next introducing a 12-foot container system, and then moving to 20- and 40-foot containers, the international system of seaborne of containers. The steps are outlined below:

Step 1: A unit load system with pallets (quick loading-unloading with forklifts, reduction in damage and losses, a local cargo distribution system)

Step 2: A 12-foot container system (multimodal, with rail and truck made possible; provision for safe distribution of India-borne cargo; an effective system even with weak infrastructure)

Step 3: 20- and 40-foot containers (a move to the international system of seaborne containers)

Figure 4.2 provides an indicative forecast of regional cross-border cargo by type, showing how containerization can be increased dramatically. It is not unreasonable to suggest that with facilities installed by 2018, up to 50% of cargo can be containerized by 2025.



Source: This Survey

Figure 4.2 Regional Cross-Border Cargo Projections by Type

5. Potential Projects for JICA Assistance

The aim of this survey was to suggest an approach for Japan to address regional transport infrastructure development, including specific projects. The following subsections set out the JICA Survey Team's suggestions for such projects in the areas of road and railway infrastructure, soft transport infrastructure, and logistics.

Road and Railway Infrastructure

As shown in Figure 5.1, the JICA Survey Team followed a two-stage evaluation process to identify potential projects for JICA assistance. The first stage involved the identification and evaluation of regional corridors, through the identification qualitative evaluation of the long list of regional corridors. The second stage involved the identification and evaluation of a long list of potential projects for JICA assistance using a multi-criteria analysis. At all stages, stakeholder engagement proved vital to assure that the proposed projects reflect "realities on the ground".



Figure 5.1 Two-Stage Evaluation Process to Identify Potential Projects for JICA Assistance

Stage 1: Qualitative Evaluation of the Long List of Regional Corridors

The aim was to provide a simple and transparent shortlisting process for corridors of different sizes and modes, avoid duplication of previous prioritization studies instead offering added value and focus for Japanese assistance, and provide a rationale for where to focus attention in Stage 2. Many sources were reviewed including work undertaken by the South Asian Association for Regional Cooperation (SAARC), South Asian Subregional Economic Cooperation (SASEC), Bay of Bengal Initiative for Multi-Sectoral, Technical and Economic Cooperation (BIMSTEC), UNESCAP, and the Bangladesh–China–India–Myanmar Forum for Regional Cooperation (BCIM), as well as other development partners. The Stage 1 evaluation criteria are listed in Table 5.1 – these relate to connectivity in terms of the number of countries served, alignment with cooperation frameworks, synergies with other development partner projects, industrial growth potential, and the ease of implementation.

Category	Stage 1 Criteria (Qualitative)
Connectivity	1. Number of countries served
Strategy / Plans	2. Alignment with Cooperation Frameworks (SAARC / SASEC / BCIM / BIMSTEC / UNESCAP / others)
	3. Expected synergies with other potential, planned, or completed development partner projects (e.g., ADB, World Bank)
Economic	4. Industrial Growth Potential
Deliverability	5. Ease of Implementation

Table 5.1 Stage 1 Corridor Evaluation Criteria

Source: This Survey

The process first involved a long list of 19 regional road corridors as shown in Figure 5.2, and finally a shortlist of 11 regional road corridors as shown in Figure 5.3. Also, the process involved a long list of 14 regional rail corridors as shown in Figure 5.4, and then a shortlist of six regional rail corridors as shown in Figure 5.5.



Figure 5.2 Long-Listed Regional Road Corridors



Figure 5.3 Shortlisted Regional Road Corridors



Stage 2: Multi-Criteria Evaluation of Potential Projects for JICA Assistance

In Stage 2 of the evaluation process, a multi-criteria evaluation was undertaken to incorporate the sector analysis, as shown in Table 5.2. A total of 13 evaluation criteria were applied. These relate to connectivity, and freight and logistics, including potential freight time savings and connectivity to ports for landlocked countries; strategy and plans, including strategic importance, alignment with JICA strategy for the region,

and expected synergies with other development partner projects; economic and industrial criteria, including a qualitative review of traffic potential, economic growth potential, and the importance of the project for industry; a soft component, measured by transit facilitation potential; environmental and social considerations; and deliverability, as determined by project readiness and the ease of implementation. More than 45 potential projects for JICA assistance identified along the shortlisted corridors were evaluated to identify low, medium, or high priority.

	Table 5.2	Stage 2	Multi-Criteria	Evaluation	of Potential	Projects	for JIC	A Assistance
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Category	Stage 2 Project Evaluation Criteria (Qualitative)
Connectivity/Freight	1. Potential freight time savings
and Logistics	2. Connectivity to port(s) for landlocked countries
Strategy/Plans	3. Strategic importance
	4. Alignment with JICA strategy for region
	5. Expected synergies with other development partner projects
Economic/Industrial	6. Qualitative review of traffic potential
	7. Economic growth potential
	8. Importance of project for industry
Soft Component	9. Transit facilitation potential
Environment/Social	10. Social environment review
	11. Natural environment review (both following JICA guidelines)
Deliverability	12. Project readiness
	13. Ease of implementation (major constraints)

Source: This Survey

Figures 5.6 to 5.8 show projects from the long list that scored high or medium priority in the evaluation and therefore were recommended for further investigation by JICA. It is not envisaged that JICA will provide assistance for all these projects, but having filtered out the low scoring projects it provides the basis for the next steps of JICA project formulation in regional connectivity in and around South Asia.

Figure 5.6 focuses on two road corridors and two rail corridors, the so-called RO3 corridor (shown in yellow) linking Chittagong/Mongla, Dhaka, Banglabangha, Phulbari, Kakarbhitta, and Kathmandu, as well as the RO1 and RA1 corridors (shown in blue), connecting Chittagong, Cox's Bazar, Teknaf, Myanmar, and Thailand, and also the RA9 rail corridor (shown in purple) connecting Kolkata, Dhaka and Chittagong.

Figure 5.7 shows the RO2 corridor (in red), linking Kolkata, Petrapole/Benapole, Dhaka, Sylhet, Tamabil, Imphal, Moreh, and Myanmar; the RO9 corridor, in purple, linking Samdrup Jongkhar, Guwahati, Tamabil, Shillong, Sylhet, and Dhaka, onward to India; and the RO15 corridor, in black, connecting the North East Region's East-West Corridor, Moreh, Myanmar, and Thailand.

Figure 5.8 shows the RO7 corridor (in yellow), linking Chittagong/Mongla, Burimari, Chengrabandha, Jaigon, Phuentsholing, and Thimphu; the RO14 corridor (in dark green) connecting the North East Region, Mizoram, Myanmar, and Thailand, the RO16 corridor (in pink), linking Guwahati, Dimapur, Kohima, Imphal, and Myanmar; and the RO17 corridor (in light green), connecting Chittagong, Ramgarh, Sabroom, Agartala, and India's North East Region.







Source: This Survey

Figure 5.7 Potential Road/Rail Projects for JICA Assistance (2)



Figure 5.8 Potential Road/Rail Projects for JICA Assistance (3)

Soft Infrastructure

Regarding soft infrastructure, there are various ongoing programs and projects to improve customs procedures at the national level. A most significant one is ADB's SASEC Trade Facilitation Program, a regional project of more than USD 30 million that is assisting Bangladesh, Bhutan, and Nepal, e.g., with the modernization of customs systems Therefore, it was recommended to focus on selected border crossings at this stage.

RO3 was identified as priority corridors that could benefit from soft-side assistance (based on a number of factors, as discussed below). Pilot border efficiency projects may include provisions for efficient transshipment and trailer and/or container swaps, and coordinated border management to simplify and streamline procedures. Pilot corridor efficiency projects may include introduction of a modern transit regime and possible implementation of an RFID/GPS tracking system for corridor management.

The identification of possible pilot projects was based in part on a stocktaking of border improvement projects along shortlisted corridors, which is shown visually in Figure 5.9. In addition, there were various other reasons for border/corridor selection. Kakarbhitta/Panitanki between Nepal and India, along with Phulbari and Banglabandha between India and Bangladesh, were selected because there are more constraints on through transport along the route connecting Nepal and Bangladesh than along routes between other pairs of South Asian countries.



Figure 5.9 Border Improvement Projects along Shortlisted Corridors

Finally, the projects were selected as potential JICA assistance projects for soft infrastructure development based on the result of analyses of the existing issues, ongoing and planned projects of the governments and other development partners, and relevant assistance experience of JICA in other parts of the world (as shown in Figures 5.10 and 5.11). The projects are described below.

Pilot Border Crossing Efficiency Project

This project will entail the implementation of pilot border crossing efficiency improvements, with suggested sites including (i) Kakarbhitta (Nepal)/Panitanki (India) and (ii) Phulbari (India)/ Banglabandha (Bangladesh). Project components will include: (i) efficient transhipment and trailer and/or container swaps, and (ii) coordinated border management to simplify and streamline procedures

Pilot Corridor Efficiency Project

The pilot corridor for this project is assumed as RO3. The project will entail introduction of a modern transit regime and implementation of an RFID/GPS tracking system for corridor management.

Harmonization of Maximum Gross Vehicle Mass and Axle Load Limits in the Region

The expected subject countries of this survey are Bangladesh, Bhutan, India, Myanmar, Nepal, and Thailand. Project components include: (i) examination of the relationship between/among axle loads, transport costs, and construction/rehabilitation/maintenance costs by different road standards corresponding to different axle load limits; and (ii) continuous discussion among the countries on appropriate regional axle load limits to minimize total transport costs and construction/ rehabilitation/maintenance costs. In the long term, harmonization of transport-related rules and regulations may be pursued. The counterpart agency/agencies may be the BIMSTEC secretariat to be established and/or the respective ministries of transport, depending on respective capacities.

Determination of Appropriate Levels of Transit Charges

This study will determine transit charges to be assessed in the region drawing upon global best practices (e.g., trans-Alpine transit charges in Switzerland and Austria). Specific tasks will include: (i) evaluating the economic and financial benefits and costs occasioned for each of the GMS countries by the opening of transit routes; (ii) developing an initial transit fee structure by route and vehicle category in accordance with agreed charging principles and proposing an adjustment mechanism for inflation – to the extent possible, the transit fee structure should take into account factors such as willingness to pay and affordability, operations and maintenance cost, cost recovery, and an equitable distribution of transport cost savings; and (iii) recommending a charging system and transit fee structure for each route. For example, the toll rates by vehicle type could be given as factors, based on international experience (e.g., truck-trailer x times light truck) and perhaps indicative transit toll rates per km for each country be given by road standard.

Comprehensive Regional Transport Agreement

This project entails development of a comprehensive regional transport agreement, covering both cross-border road and rail transport. Specifically, the project will include: (i) continuous, facilitated discussion and consensus building for a regional transport agreement among the concerned countries (short-/medium-term), (ii) studies to examine and to draft an appropriate comprehensive transport agreement based on case studies of regional transport agreements in other parts in the world and legal frameworks of the member countries, and (iii) in the long term, ratification of the regional transport agreement.



Figure 5.10 Example of JICA Assistance – One-Stop Border Posts (OSBPs) in Africa



Source: JICA and PADECO, Study for the Harmonization of Vehicle Overload Control in the East African Community, 2011

Figure 5.11 Example of JICA Assistance – East African Community (EAC) Agreement on Vehicle Overload Control

Logistics and Cross-Border Facilities

Potential projects or measures for freight transport and logistics improvement are mapped in Figure 5.12. To better grasp these proposals, it may be helpful to refer to the map of possible alternative distribution channels in Figure 5.13. The projects are described below.

Improvement of Border Crossing Points for Regional Connectivity

In relation to corridor improvements, it is important to improve border crossing points along corridors such as those connecting Bangladesh and landlocked countries/areas. While some improvements have been programmed, implementation takes time because of the number of border points to be improved and in some cases the difficulty of land acquisition. Also considering the poor condition of public utilities such as electricity and water supply, development of border facilities should be done carefully and selectively. The pilot corridor traverses Kakarbhitta (Nepal)/Panitanki (India) and Phulbari (India)/Banglabandha (Bangladesh). While Kakarbhitta has already received support from ADB for the construction of facilities, improvements of the other three border crossing points (e.g., offices, warehouses, and yards/pavements) may be the focus of this project so as to complement soft improvements with associated facilities, as necessary.

Pilot Unit Load System Project

The project will be implemented along all corridors where currently inland bagged cargo movement prevails, especially between mainland India and (e.g., Delhi, West Bengal) and India's North East Region. The project includes facility improvements such as decked warehouse, forklifts, and a container handling yard to support development of a unit load system. Assistance for a pilot inland container depot (ICD) at Amingaon is envisaged for transloading containers between train and truck. The Ministry of Railways, as counterpart agency, would become the owner of the assets procured, which would be leased to the Container Corporation of India Ltd. (CONCOR), which would utilize the facilities and sublet certain facilities to trucking companies for multimodal transport.

IImprovement of the Transport and Logistics System in the Bottleneck Region (the "Chicken's Neck") between Mainland and the North East Region of India, Bangladesh, Nepal, and Bhutan

The project will focus on the transport and logistics systems in the "chickens neck area" nwhere neighboring countries (as well as India) are looking for better efficiency for their transit cargo. While there have been surveys and studies examining corridors traversing this area (including the current Survey), it is important to

have a comprehensive strategic study on the regional development plan of the area. Further assistance may follow to implement the projects or measures proposed.



Figure 5.12 Freight Transport and Logistics Measures/ Projects





Chapter 1 Introduction

1.1 Background

The South Asian region has a total population of about 1.6 billion and has been pursuing economic deregulation and liberalization. Since the economies of India and Bangladesh in particular have been growing in recent years, Japanese companies have become more in expanding their operations in the region and the number of Japanese companies in the region has been increasing.¹ As a result of increased globalization, the region's economic growth has been rapid, with annual average GDP growth of 6% since 1980. However, intra-regional trade has been only about 5% of the region's total trade, which is lower than that of other regions in the world (e.g., 26% in the Association of Southeast Asia Nation/ASEAN, 52% in the North American Free Trade Agreement/NAFTA region, and 58% in the European Union/EU).² Regional institutions such as the South Asia Association for Regional Cooperation (SAARC)³ and Bay of Bengal Initiative for Multi-Sectoral, Technical and Economic Cooperation (BIMSTEC)⁴ have been established and are seeking to improve regional cooperation and integration to address this issue.

In recent years development of transport infrastructure to support national economies has become an urgent task increasingly recognized in the regional context, particularly with the rapid growth of the economy of India, the largest country in the region. For example, under South Asia Subregional Economic Cooperation (SASEC),⁵ established in 2001 with the assistance of the Asian Development Bank (ADB), projects to develop regional transport infrastructure have been implemented in Bangladesh, Bhutan, India, and Nepal.⁶ In addition, the SAARC Regional Multimodal Transport Study (2006) and BIMSTEC Transport and Logistics Study (2008, assisted by ADB) formulated out plans for regional transport development.

At the same time, recent changes in the external environment (e.g., movement toward the establishment of the ASEAN Economic Community, targeted for 2015) have strengthened the importance of the trade relationship between South Asia and ASEAN countries and led to recognition of the necessity of integrating South Asia with the larger regional economy. Thus, the development of transport infrastructure for regional connectivity in and around South Asia has become critical.⁷

¹ At the First Seminar for the Survey held in New Delhi on 16 January 2014, Mr. Tamaki Tsukada, Minister (Economic and Development), Embassy of Japan in India, explained that Japan is interested in regional connectivity in South Asia because it serves Japan's growth strategy. Japanese companies operate with highly integrated supply chains across the region. For example, there are many Japanese automotive companies operating in India, but they import many of their components from ASEAN countries. Connectivity between ASEAN and India is therefore crucial for them to be productive. At the Final Seminar for the Survey held in Guwahati on 13 February 2014, Mr. Tsukada stated that the bilateral statement from the recent summit between the leaders of India and Japan for the first time addressed the topic of regional cooperation and connectivity, and directed officials to formulate a firm project to realize this vision.

² Asian Development Bank, *Transport: Summary Sector Assessment*, 2010, paragraph 1 (unpaginated).

³ The current member countries of SAARC are Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka.

⁴ The current member countries of BIMSTEC are Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.

⁵ The member countries of SASEC are Bangladesh, Bhutan, India, and Nepal.

⁶ Countries in this report are listed in alphabetical order.

⁷ At the First Seminar for the Survey, Mr. Sanjiv Ranjan, Joint Secretary (DPA [Development Partner Administration]-III), Ministry of External Affairs, Government of India, observed that connectivity is important to unlock human potential – it allows economic agents to exploit their respective comparative advantages. In addition, Mr. Girish Pillai, Advisor (Infrastructure), Ministry of Railways, Government of India, observed that connectivity between people can make a large difference. At the Final Seminar for the Survey held in Guwahati on 13 February 2014, Mr. Tsukada, Minister (Economic and Development), Embassy of Japan in India, observed that connectivity can be a "game changer" and can determine the investment behavior of private companies; also, at this seminar, Mr.

The development of regional transport infrastructure in South Asia to improve interregional connectivity will have various positive impacts: (i) provision of routes for the movement of goods and people to/from the region; (ii) contribution to sustainable economic growth by significantly decreasing transport time and costs, due to reduced physical and nonphysical constraints; (iii) facilitation of trade between South Asian and ASEAN countries through increased connectivity; (iv) reduction of poverty, mitigation of the negative impacts of cross-border traffic, and improvement in regional stability; and (v) strengthening the relationship between the region and Japan by attracting Japanese firms that will apply cutting-edge Japanese technologies.

This Final Report summarizes the findings of the Data Collection Survey on Transport Infrastructure Development for Regional Connectivity in and around South Asia (the Survey) based on activities from September 2013 to January 2014 – a first set country visits were made in September 2013 and a second set were made from October to early December 2013. This report reflects the results of analysis of data and information collected during these country visits as well as feedback from stakeholders during a first seminar in New Delhi on 16 January 2014 and a second seminar in Guwahati on 13 February 2014.

1.2 Objective

The objective of the Survey has been to investigate possibilities for JICA assistance for regional transport infrastructure development (including both "hard" and "soft" aspects) in and around South Asia. Land transport infrastructure has been the main focus of the Survey, including roads, railways, dry ports, and facilities at border crossing points.⁸

1.3 Survey Area

The subject countries of this Survey are Bangladesh, Bhutan, India, Myanmar, Nepal, and Thailand. However, the identification of potential projects for JICA assistance was undertaken only for Bangladesh, Bhutan, India, and Nepal, i.e., the South Asian countries that were the subject of the Survey.

M.P. Bezbaruah, Honourable Member, North Eastern Council, observed that connectivity is essential to ending the isolation caused by partition, although he added that the creation of economic zones is also important. Finally, during the seminar, Mr. Tsukada and Dr. Prabir De, Senior Research Fellow, Research and Information System for Developing Countries, concurred that in addition to connectivity, a domestic industrial policy is essential.

⁸ A JICA survey on regional maritime connectivity ("connectivity of the seas") is expected to commence later in 2014. The two surveys will enable a view of the "complete picture" of both land- and sea-based connectivity.
1.4 Country Visits

The JICA Survey Team conducted two major sets of country visits. The first included visits to Bangladesh, India, Myanmar, Nepal, the Philippines (the site of the headquarters of ADB, a major development partner in the region), and Thailand from 1 to 29 September 2013. The second field included visits to Bangladesh, Bhutan, India, and Thailand from 16 October to 1 December 2013. The objectives of these country visits were to collect: (i) macroeconomic and industry/trade information, as well as requirements for infrastructure development expressed by private companies; (ii) freight and logistics information; (iii) current conditions, medium- and long-term development plans, and current and planned assistance by other development partners for hard infrastructure including roads, railways, and facilities at border crossing points; and (v) information regarding social and environmental impacts, including issues related to refugees and ethnic groups.

Table 1.1 shows the number of organizations visited by type of institution. Appendix 1 presents details on the organizations visited in each country.

	Government	Development		
Country	Agencies	Partners	Others	Total
Bangladesh	20	2	34	56
Bhutan	10	1	7	18
India	36	3	24	63
Myanmar	2	1	14	17
Nepal	17	4	12	33
Thailand	4	4	19	27
Total	87	15	112	214

Table 1.1: Summary of Organizations Visited during the Field Surveys

Note: Visits to JICA country offices and Japanese embassies have not been included in the table. Source: This Survey

1.5 Seminars

Two seminars were undertaken during the Survey. The First Seminar was held in New Delhi, India, on 16 January 2014, and the Final Seminar was held in Guwahati, Assam, India. Senior executives in the public and private sectors, the academic and research community, and international development partner organizations attended both Seminars. A total of 87 participants attended the First Seminar and 90 participants attended the Final Seminar.

The aim of the Seminars was to present the survey findings and obtain comments and inputs from diverse stakeholders with a view to enhancing and improving the Survey. Specific aspects presented included: (i) background, (ii) road and rail infrastructure, (iii) logistics and cross-border facilities, and (iv) soft infrastructure.

The proceedings of each seminar – including the program and list of participants – are provided in Appendices 2a (First Seminar) and 2b (Final Seminar).

1.6 Structure of This Report

This report consists of eight chapters. Chapter 2 describes key findings in the industry and trade sector; Chapter 3 describes key findings in the soft infrastructure sector; Chapter 4 describes key findings in the freight transport sector; Chapter 5 describes key findings regarding environmental and social impacts; Chapter 6 describes identified road/railway corridors and the selection of priority corridors; Chapter 7 identifies priority road and railway projects; and Chapter 8 describes potential projects for JICA assistance. Eight appendices and photographs support the main text.

1.7 Map Showing the Name of Places Frequently Referred to in This Report

For reference, Figure 1.1 shows the names of places frequently referred to in this report (e.g., border crossing points and seaports).



No.	Border Crossing Point	Country	No.	Border Crossing Point	Country
1	Birgunj/Raxaul	Nepal–India	22	Bhadrapur/Galgalia	Nepal–India
2	Biratnagar/Jogbani	Nepal–India	23	Setobandha/Bhimnagar	Nepal–India
3	Benapole/Petrapole	Bangladesh-India	24	Rajbiraj/Kunauli	Nepal–India
4	Akhaura/Agartala	Bangladesh-India	25	Siraha-Janakpur/Jayanagar	Nepal–India
5	Tamu/Moreh	Myanmar–India	26	Jaleswar/Bhitamore	Nepal–India
6	Tamabil/Dawki	Bangladesh–India	27	Malangawa/Sonabarsa	Nepal–India
7	Hili/Hili	Bangladesh–India	28	Gaur/Bairgania	Nepal–India
8	Chengrabandha/Patgram	Bangladesh–India	29	Bhairahawa/Nautanwa	Nepal–India
9	Sutarkhandi/Dubagh	Bangladesh–India	30	Taulihawa/Khunwa	Nepal–India
10	Nanpara/Rupaidha	Nepal–India	31	Krishnanagar/Barhni	Nepal–India
11	Banglabandha/Phulbari	Bangladesh–India	32	Koilabas/Jarwa	Nepal–India
12	Birol/Radhikapur gaora	Bangladesh–India	33	Rajapur/Katerniyaghat	Nepal–India
13	Teknaf/Mongru	Bangladesh-Myanmar	34	Pritlwipur/Sati (Kailali)/Tikollih	Nepal–India
14	Bibir Bazar/Shimastapur	Bangladesh–India	35	Dhangadhi/Gauriphanta	Nepal–India
15	Bhomra/Gojadanga	Bangladesh–India	36	Mahendranagar/Banbasa	Nepal–India
	Chobbinporgona			-	-
16	Nakugaon/Dalu	Bangladesh-India	37	Mahakali/Jhulaghat	Nepal–India
17	Gobrakura and Koraitoli/	Bangladesh–India	38	Darchula/Dharchula	Nepal–India
	Gachuspara				
18	Sonahat/Dhuburi	Bangladesh–India	39	Maheshpur/Thutibari	Nepal–India
19	Chilahatay/Haldi Bari	Bangladesh-India	40	Sikta/Bhiswabazar	Nepal–India
20	Pashupatinagar/Sukhia Pokhari	Nepal–India	41	Laukaha/Thadi	Nepal–India
21	Kakarbhitta/Naxalbari	Nepal–India			
G	T1 . C				

Source: This Survey

Figure 1.1: Map Showing the Names of Places Referred to in the Report

Chapter 2 Trade, Industry, and Land Transport Requirements in the Region

2.1 Overview

In this chapter, trade, industry, and land transport requirements in the survey countries in South Asia and Southeast Asia are analyzed based on national account data (e.g., GDP), trade (e.g., import and export) data, and interviews with public organizations and private companies; Table 2.1 summarizes the main issues. Section 2.2 presents more details on the economies of the survey countries/regions mainly based on trends in real GDP and GDP growth. Section 2.3 presents further details on trade flows by country and the main factors impeding trade. Section 2.4 analyzes factors that will affect the future flow of goods. Finally, Section 2.5 presents a forecast of economic growth and trade.

Table 2.1: Summary of the Main Issues Affecting Trade, Industry, and LandTransport in the Region

Relevant Countries	Common Issues
India, Bangladesh	• Transit issues between India and Bangladesh (in relation to the
	connection involving the Seven Sisters States)
	 Nontariff barriers imposed by India
Bhutan, Nepal	Heavy import dependence on India
	 Limited variety of goods for export
Myanmar, Thailand	High transport costs between Myanmar and Thailand due to traffic
	imbalances (because of undeveloped industries in Myanmar)
Bangladesh, Myanmar	• Limited industrial data (due to undeveloped statistical systems)
	Ethnic issues

Notes: (i) The Seven Sisters States refers to Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura in North East India. These states cover an area of 255,511 km², or about 7% of India's total area, and had a population of 44.98 million in 2011, about 3.7% of India's total. (ii) Non-tariff barriers related to customs and other border procedures are detailed in subsection 3.4.1 of this report. Also, in India some states tax transit traffic (*octroi*). Source: This Survey

Due to the large imbalances between India and the rest of the region in terms of the economy and industrial sector, the position towards regional connectivity varies by country. One of the key issues involves transit rights between/among countries, particularly between India and other countries covered by this survey. Also, the interregional connection between South Asia and Southeast Asia (the countries of the Association of Southeast Asian Nations, ASEAN) across Myanmar is an emerging issue, with Thailand to the east of Myanmar, providing relatively greater potential for the development of value chains between the two regions.

2.2 Economic Status in the Region

2.2.1 Macroeconomic Performance by Country

Table 2.2 shows the trend of real GDP growth in the subject countries of this survey.

Bangladesh has maintained real GDP growth rate at about 6%, on the back of acceleration in exports and rather stable imports.¹ A slowdown in agriculture (due to unfavorable weather and falling rice prices) has been made up for by more rapid industrial expansion, with strong expansion in construction and small-scale manufacturing, particularly of higher garment exports.

¹ At the Final Seminar for the Survey held in Guwahati on 13 February 2014, Mr. Tamaki Tsukada, Minister (Economic and Development), Embassy of Japan in India, referred to Bangladesh as is one of the Next 11 economies following the BRICS (Bangladesh, the Russian Federation, India, China, and South Africa).

The economy of *Bhutan* was also maintaining real GDP growth in the mid-8% range in FY 2013, despite weak hydropower sales, slower tourism growth, and ongoing foreign exchange and credit restrictions to manage liquidity. Going forward, hydropower sales are expected to increase moderately as rainfall returns to normal, whereas tourism will continue a robust trend and support service sector growth, which eventually is likely to support the growth of the overall economy.

					Units: % p.a.
Country/State/Province	2008	2009	2010	2011	2012
Bangladesh	5.7	6.1	6.7	6.2	-
Bhutan	—	6.7	11.7	8.5	-
India	6.7	8.6	9.3	6.2	-
Andhra Pradesh	7.2	3.9	9.6	7.8	-
Arunachal Pradesh	8.2	8.6	3.3	9.6	-
Assam	6.0	9.2	8.1	6.4	-
Bihar	12.6	5.5	15.3	10.8	-
Goa	7.9	9.4	13.3	10.9	-
Gujarat	4.3	14.1	10.9	8.3	-
Haryana	7.7	12.5	9.3	8.2	-
Himachal Pradesh	4.9	5.4	8.7	6.6	-
Jammu and Kashmir	6.3	4.8	6.5	6.1	-
Jharkhand	-4.0	9.9	14.5	6.8	-
Karnataka	7.1	0.0	9.3	5.8	-
Kerala	6.1	9.0	8.3	9.8	-
Madhya Pradesh	12.6	9.8	6.8	12.2	-
Chhattisgarh	6.6	2.8	8.8	6.7	-
Maharashtra	1.6	9.5	11.8	10.2	-
Manipur	7.3	6.9	5.0	6.7	-
Meghalaya	12.8	6.4	9.3	6.2	-
Mizoram	15.0	11.5	8.6	10.4	-
Nagaland	6.4	5.7	5.8	5.1	-
Odisha	7.5	0.8	5.9	2.4	-
Punjab	5.5	6.4	6.5	5.6	-
Rajasthan	8.4	5.8	15.5	6.1	-
Sikkim	13.1	73.7	7.7	8.2	-
Tamil Nadu	4.7	9.9	9.7	7.4	-
Tripura	10.6	10.2	7.9	8.6	-
Uttar Pradesh	10.6	17.1	9.9	5.2	-
Uttarakhand	7.6	6.2	7.9	6.9	-
West Bengal	4.0	7.8	9.4	6.8	-
Andaman and Nicobar Islands	15.2	13.5	9.0	8.2	-
Chandigarh	7.5	10.2	8.7	7.5	-
Delhi	12.5	11.0	10.9	11.4	-
Pudcherry	9.8	17.4	10.2	1.1	-
Myanmar	10.3	10.6	10.2	-	-
Nepal	3.9	4.3	3.9	4.5	-
Thailand	-	-2.3	7.8	0.1	6.5
Northern	-	0.8	3.5	3.9	-
Northeastern	-	6.3	4.9	5.3	-
Western	-	0.1	2.6	1.8	-
Eastern	-	-3.4	8.8	-4.4	-
Central	-	-3.6	10.9	-5.7	-
Bangkok and Vicinity	-	-1.9	8.7	0.8	-
Southern	-	1.0	5.3	2.8	-

Table 2.2: Trend of Real GDP Growth in Subject Countries

Abbreviation: p.a. = per annum

Note: GDP numbers have been based on the fiscal years in Bangladesh (July–June), India (April–March), Myanmar (April–March), and Nepal (July–June), and on the calendar years in Bhutan and Thailand.

Source: Bangladesh: Bangladesh Economic Review 2012; Bhutan: National Accounts Statistics 2012; India: Reserve Bank of India; Nepal: Economic Survey 2012/13; Myanmar: Myanmar Data CD-Rom (2011), Central Statistical Organization; Thailand: Whole Kingdom: Quarterly Gross Domestic Product Q2 2013 (1994–2013), NESDB; Each Region: Gross Regional and Provincial Product, NESDB

The economy of *India* has also slowed due to turbulent macroeconomic conditions during the recent rupee crisis, but is expected to moderate in FY 2013. However, tight monetary policy toward price stability, along with limited fiscal space for stimulating growth, will constrain economic activity. A favorable monsoon is likely to help agriculture achieve robust growth but not to offset the slowdown in industry caused by liquidity tightening and slow progress in structural and fiscal reforms. In general, rupee depreciation will improve the trade balance.

The economy of *Myanmar* is most likely to remain robust on the back of expectations related to the country's potential, boosting investment inflows. Based on official statistics, real GDP growth rate has been over 10% in recent years and economic growth continues strong.

The economy of *Nepal* has been growing at about 4% per annum, while unfavorable weather, a shortage in chemical fertilizer, and a delay in budget execution has weakened growth. The external position deteriorated slightly as remittances decelerated and imports increased, narrowing the current account surplus. Going forward, real GDP growth is expected to accelerate once again, with more favorable monsoons, restored supplies of chemical fertilizers, and timely budget execution. However, growth in industry will remain constrained by persistent power outages and longstanding structural bottlenecks, including a distorted labor market (toward lower-skilled labor), insufficient research and development investments, inadequate infrastructure, and low productivity.

Although the growth rate of *Thailand* in 2009 and in 2011 was -2.3% and 0.1%, respectively, due to economic recession resulting from the Lehman Shock in 2008 and a huge flood in 2011, the economic situation recovered and the growth rate in 2012 was 6.5%.

2.2.2 Economy Size and Sector Composition in Each Country/Region

Overview: The sizes of the economy and the sector compositions in subject countries/regions are shown in Figure 2.1. The economies vary to a great extent, with India by far the largest, followed by Thailand and Bangladesh. The North East Region of India (the Seven Sisters States) is relatively small at present, although it is still somewhat larger than some of the neighboring countries.² A country-by-country assessment follows.

Bangladesh: In agriculture, Bangladesh is one of world's largest producers of fishery products (5th), rice (4th), potatoes (11th), mangoes (9th), pineapples (16th), tropical fruit (5th), onions (16th), bananas (17th), jute (2nd), and tea (11th). In manufacturing, the garment industry makes the largest contribution, due to cheap labor. The industry now employs more than 3 million workers, 90% of whom are women. There has also been a significant growth in the shipbuilding industry in the recent years.

Bhutan: Utilizing its natural conditions, Bhutan has experienced strong economic growth based on the production of hydropower. The main manufacturing industries in Bhutan are powerbased, forest-based, and agro-based, and all are capital-intensive. Because of the country's abundant mineral resources and cheap power supply, the share of total industrial output accounted for by industries engaged in the processing of raw minerals is large. Among the manufacturing industries, wood-based industries comprise about half of all enterprises, based on the availability of timber at low prices. Also, agro-industry has become increasingly important recently. A free trade agreement with India and a preferential trade agreement with Bangladesh have been driving the growth of these industries. In addition to a lack of technology and capital, the most serious constraint on the growth of manufacturing industries in Bhutan has been the

² At the Final Seminar for the Survey held in Guwahati on 13 February 2014, Mr. M.P. Bezbaruah, Honourable Member, North Eastern Council, stated that the North East is a "bridgehead" between India and Southeast Asia, and that Southeast Asia is a "natural extension" of the North East.

limited size of the country's domestic market and its landlocked condition, which restricts access to overseas markets beyond India.

India: The share of agriculture in the overall economy has been declining, but its impact is still significant, with its job creation potential and ripple effects to other industries, such as fertilizers, food processing, and farming equipment/machinery. The share of the industry sector has been rather stable at about 25%, with iron/aluminum, auto parts, yarn, and pharmaceuticals as major products. However, this is low compared to the corresponding shares in China (about 45%) and ASEAN countries (about 40%); the government has been trying to accelerate the expansion of the manufacturing sector, particularly with a view to absorbing abundant labor force. On the other hand, the economy is led by the service sector, with information technology (IT) services, software, communications, transport, and wholesale/retail trade as main contributors. As for the North Eastern Region, the economy has been growing rather steadily in recent years (Table 2.2 in subsection 2.2.1), with the industry structure skewed to the agricultural and other lower value-added sectors (Figure 2.1).

Myanmar: The nominal GDP of Myanmar was USD 50 billion in 2010/2011. Agriculture, fisheries, and forestry has been the largest sector, accounting for 37% of GDP, while the manufacturing and trade sectors have each accounted for 20% of GDP (i.e., these two sectors together have accounted for 40% of GDP).³ Although the proportion of GDP accounted for by the agricultural sector has been decreasing due to industrialization, it is expected that it will continue to be the main economic sector in Myanmar. Since the country has rich agricultural resources and the development of agricultural industry will contribute to poverty reduction, the Government of Myanmar has emphasized the development of the agriculture, fisheries, and forestry sector.

Nepal: The size of Nepal's economy compares to that of the lower to middle range of Indian states (e.g., Assam, Chhattisgarah, Jharkhand) in terms of GDP. Agriculture accounts for a greater share of the economy than in other countries and states in the region, with grains and fruit as major export items. Agriculture is followed in importance by the manufacturing sector, mainly with carpets, clothing, hemp, natural fiber, leather, and jute goods as main export items.

Thailand: Nominal GDP in Thailand was USD 371.4 billion in 2012 and the size of the country's economy (USD 50 billion) was 7.4 times that of Myanmar. Looking at shares by region, Bangkok and vicinity and the Eastern Region accounted for almost 60% of the national economy. Looking at shares by industry, the share of manufacturing accounted for 34% of GDP, a proportion that is the highest in ASEAN; accordingly, it may be said that Thailand is the manufacturing center of ASEAN.

³ Central Statistical Organization, Statistical Year Book 2011. In unofficial estimates (e.g., those of McKinsey and the World Bank), the share of the economy accounted for by agriculture is higher and by manufacturing and trade is lower.



Figure 2.1: Sector GDP by Country/Region (2011/12)

2.2.3 Overview of Industry and Trade in the Region

Since a large amount of labor and domestic demand still needs to be absorbed within *India*, the potential for regional value chains has not been explored much. For regional trade, transit issues between India and Bangladesh (in relation to the connection involving the Seven Sisters States) is one of the most serious bottlenecks. From the viewpoint of *Bangladesh*, the economy of which is generally focused on processing exports (especially labor-intensive garments/assembly, leveraging its labor cost advantage) and agriculture (to feed its own population), land route connectivity has considerable implications on their inputs from "mainland India" to the west and on their potential markets to the east (i.e., the Seven Sisters, Myanmar, and China). However, these flows are currently constrained by nontariff barriers imposed by India and still limited markets in the rest of the region. Similarly, *Bhutan* and *Nepal* are dependent heavily on India, with a majority of imports from, and a limited variety of exports to, this much larger country.

Turning to the ASEAN side, the potential of *Myanmar* is already drawing the attention of policy makers and business communities in countries in South Asia, particularly Bangladesh and India. Prospective goods to be exported by land from *Myanmar* to South Asia include agricultural products, processed foods, and wood products. The benefits of a land route connection seems greater for *Thailand*, which is also exploring connectivity with Myanmar, although the routes are not yet fully operational due to (still) high transport costs. The potential of a supply/value chain between the two countries is likely greater than between any other pair of countries covered by this survey.

2.2.4 Economic Development Frameworks

In this subsection, frameworks/plans for macroeconomic development are reviewed by country, focusing on those relevant to the overall economic growth and the industry structure, which can affect the regional trade flows.

(1) Bangladesh

Perspective Plan 2010–2021 was prepared by the Planning Commission in April 2012, to provide the road map for accelerating growth and laying down the approaches for eradication of poverty, inequality, and human deprivation. Specific strategies and the task of implementation are and will be detailed in the **Sixth Five Year Plan (2011–15)** and the forthcoming **Seventh Five Year Plan (2016–20)**. With a view to becoming a middle income country, the Plan targets the annual real GDP growth rate to increase to 8% by 2015, and further to 10% by 2021. Per capita annual income is projected to increase to about USD 2,000 (in constant 2013 USD) by 2021.

Regarding industrial development, the plans assume that the manufacturing sector will grow at or near double digits during 2010–21. Consequently, the industrial sector will continue to account for 37% of GDP by 2021, compensating for a decline in the share of agricultural sector, which will fall to 15%. The main driver for growth of the manufacturing sector will be the export markets, although growing domestic demand is also expected. Low-cost labor will continue to provide a competitive advantage in most labor-intensive activities. Reflecting these considerations, it is projected that the export share of GDP will increase to 25% by 2021.

To attract greater foreign direct investment with a view to accelerating investment-led industrial development, the plans consider strategic actions such as; (i) improving the investment climate, (ii) improving governance to improve the country's image, (iii) encouraging regional investment in emerging and potentially high return sectors (e.g., IT from India, electronics from China), (iv) establishing Special Economic Zones (SEZs) along international borders, and (v) encouraging

the private sector to enter into joint ventures and other forms of collaborative investment with international partners.

(2) Bhutan

Bhutan has put forward an overarching development vision in *Bhutan 2020: A Vision for Peace, Prosperity and Happiness*, which stresses the further development of the hydropower sector and small/micro enterprises. The mining sector is also considered an additional revenue source. Bhutan already produces significant volumes of dolomite, limestone, gypsum, coal, marble, and quartzite, with some of the minerals processed into products for export. In addition, Bhutan has deposits of lead, zinc, copper, tungsten, graphite, iron, phosphate, pyrite, and gold. Among the service industries, the tourism sector is emphasized as a strategic growth driver.

In pursuit of this vision, the *Eleventh Five Year Plan (2013–18)* has recently been launched. Under this plan real GDP is projected to increase by an annual average of close to 12%, with the hydropower sector the main growth driver. The plan itself stated that this projection is based on an optimistic growth scenario. According to the plan, the external sector is expected to worsen with current account deficits averaging 28% of GDP over the five years, and as high as 34.7% of GDP in 2015/16, due largely to the imports for hydropower projects. While no specific numbers are provided for industry composition in this plan, it is most likely that the priority sectors mentioned in the vision (e.g., hydropower, natural resource-based processing, tourism) will remain so throughout the plan period.

(3) India

Macroeconomic management in India is generally based on the *Twelfth Five Year Plan (2013–17)*, assuming a target average annual 8% GDP growth over the five years. Within this aggregate GDP growth target, two sub-targets are emphasized for inclusiveness, which are 4% annual growth for the agricultural sector and about 10% for the manufacturing sector in the last two years of the plan.

The strategy under the plan depends crucially on productivity gains as one of the key growth drivers. As the two traditional sources of growth, capital and labor, are likely to be insufficient going forward, the Indian economy needs to focus more on productivity in all sectors, by improving the business regulatory environment, strengthening the governance capacity of the states, investing more in infrastructure, and further utilizing science/technology to drive innovation.

Table 2.3 compares the annual average real GDP growth by industry under the previous fiveyear plan (the Eleventh Plan) and target growth rates under the current plan (the Twelfth Plan).

		Units: % p.a.
	Eleventh Plan	Twelfth Plan
Sector	Average (2008–12)	Average (2012–17)
1. Agriculture, forestry, and fishing	3.7	4.0
2. Mining and quarrying	3.2	5.7
3. Manufacturing	7.7	7.1
4. Electricity, gas, and water supply	6.1	7.3
5. Construction	7.7	9.1
6. Trade, hotels, and restaurants	8.3	7.4
7. Transport, storage, and communication	12.0	11.8
8. Financing, insurance, real estate, and business services	11.1	9.9
9. Community, social, and personal services	8.3	7.2
Total GDP	8.0	8.0
Industry (2–5)	7.2	7.6
Services (6–9)	97	9.0

Table 2.3: Actual/Forecast Real GDP Growth by Industry in India(2004–05 Prices)

Source: Planning Commission, Government of India

(4) Myanmar

The Government of Myanmar is formulating its first National Export Strategy (NES), to be finalized by the end of 2013. The NES aims to develop priority sectors, including (i) fish and crustaceans, (ii) pulses and oilseeds, (iii) rice, (iv) wood products, (v) textiles and garments, (vi) rubber, and (vii) tourism. The NES will explore the growth potential of new and existing products.

Comments from private companies and associations suggest that promising industries in Myanmar should contribute to social wealth (not the wealth of a few people) and the development of small and medium enterprises and can be developed sustainably. From these perspectives, sectors with large workforces, including the **agriculture and fisheries sectors**, and labor-intensive industries, such as the **garment industry**, could be considered promising and important. In particular, the agriculture sector employs 70% of the working population of Myanmar and is linked to the food processing industry and agricultural machinery sector. **Agricultural, forestry, and fisheries industries, including timber (teakwood), are also promising for exports**. However, currently most of these products are exported unprocessed, and it is necessary to increase value-added in the future. Also, the **auto parts industry is promising**, but it is necessary to develop supporting industries, including SMEs, which requires enhanced technical capacity through the promotion of labor-intensive industries, and improved product quality and quality standards.

(5) Nepal

Development planning in Nepal is based on a three-year framework, with the **Thirteenth Plan** (2013/14–15/16) the latest national plan. Under a long-term vision for Nepal to "graduate" from its least developed country status by 2022, an overall annual GDP growth rate of 6% has been targeted, of which agricultural and non-agricultural sectors are expected to grow by 4.5% and 6.7% per annum, respectively. Annual average per capita income is to grow by 4.6%.

Table 2.4 presents annual average real GDP growth rates by industry targeted under the current plan.

	Units: % p.a.
	Thirteenth Plan Average
	(2013/14–15/16)
Agriculture	4.5
Agriculture, forestry, and fisheries	4.5
Non-agriculture Industries	6.7
Industry, mining, and quarrying	4.7
Electricity, gas, and water	8.2
Construction	5.5
Services	7.1
Wholesale and retail trade	5.6
Hotel and restaurants	8.6
Transport, storage, and communications	8.4
Financial intermediaries	6.2
Real estate, rent, and business activities	6.7
General administration and defense	5.9
Education	8.2
Health and social work	7.7
Other social, community, and personal activities services	9.5
Gross domestic product (at basic prices)	5.9
Gross domestic product (at producer's prices)	6.4

Table 2.4: Actual/Forecast Real GDP Growth by Industry in Nepal (2004–05 Prices)

Source: National Planning Commission, Government of Nepal

(6) Thailand

The Eleventh National Economic and Social Development Plan (2012–2016, 11th NESDP) is the five-year national plan of Thailand. The Eleventh NESDP focuses on development of the agricultural industry, implementation of industrial advances, and enhancement of SMEs. Table 2.5 outlines key features of the Eleventh Plan.

Table 2.5: Eleventh National Economic and Social Development Plan (Summary)

Objectives		To develop an efficient and sustainable economy by upgrading production and services based on technology, innovation, and creativity with effective regional linkages, improved food and energy security, upgraded eco-friendly production, and consumption toward a low-carbon-society.					
Main		The Thai economy is expected to provide inclusive growth at a moderate pace					
Targets		3% per annum, improving Thailand's competitiveness rank, and increasing the					
		contribution of SMEs to not less than 40% of GDP.					
Key	≻	Economic aspects: Important indicators are growth rate, inflation rate, TFP,					
Indicators		national competitiveness, and the proportion of SME production (output) to					
		GDP. (Numerical targets are not set in the plan)					
Development	\succ	Strengthening of the agricultural sector and security of food and energy					
Strategy		✓ Reinforcing natural resources as the foundation for the agricultural					
		production base					
		 Increasing agricultural productivity 					
		 Increasing the value of agricultural commodities along supply chains 					
		 Creating job and income security for farmers 					
		 Enhancing food security and developing bio-energy at the household and community levels 					
		✓ Establishing bio-energy security to strengthen the agricultural sector and support the national development					
		✓ Improving public management to enhance food and energy security					

\triangleright	Restructuring the economy toward quality growth and sustainability
	✓ Utilizing science, technology, innovation, and creativity as fundamental
	factors for economic restructuring
	• Developing science and technology, research, and innovation as driving
	forces for sustained and inclusive growth
	 Enhancing the country's competitiveness with a freer and fairer competitive
	environment
	 Achieving stability through sound macroeconomic management
≻	Creating regional connectivity for social and economic stability
	✓ Developing connectivity in transport and logistics systems under regional
	cooperation frameworks
	✓ Developing investment bases by improving competitiveness in the region
	 Preparing for the ASEAN Economic Community
	✓ Constructively engaging in regional and international cooperation
	frameworks to provide alternatives in foreign policies in the international
	arena
	✓ Creating regional economic partnerships for human capital development,
	labor migration, and provision of support for Thai laborers in foreign
	countries
	\checkmark Contributing to the international community's efforts in improving the
	quality of life and in the fight against terrorism, international crime, drug
	trafficking, natural disasters, and epidemics
	✓ Promoting constructive international cooperation to support economic
	growth in an ethical and sustainable manner, including cooperation with
	nonprofit international organizations
	 Accelerating the utilization of currently effective free trade agreements
	Supporting foreign investors' use of Thailand as a business base for the
	Asian region, and support of nonprofit international organizations for
	regional development
	 Strengthening domestic development partners at the community level

Abbreviations: GDP = gross domestic product, SMEs = small and medium enterprises, TFP = total factor productivity Source: National Economic and Social Development Board, Eleventh National Economic and Social Development Plan (2012–2016)

Also, the Government of Thailand has an infrastructure development plan including a program for **development of the border areas**.⁴ The Government of Thailand increased the minimum wage to THB 300 in all provinces to accelerate change in industrial structures, to lead a "graduation" from labor-intensive industries. Therefore, the Government of Thailand supports investment by Thai and foreign companies in labor-intensive industries in neighboring countries, including the promotion of border development.

The Board of Investment of Thailand was drafting a new investment promotion policy in 2013. The new policy is to become effective on 1 January 2015. Table 2.6 outlines key features of a late draft of this new investment promotion policy.

⁴ The Government of Thailand is considering the establishment of special economic zones (SEZs) in 12 provinces in border and strategic areas. Areas under consideration include Mae Sot, Mae Sai, Chiang Saen, Chiang Khong, Ban Phu Namu Ron in Kanchanaburi, Koh Samui, Suvanabhumi Airport, Sa Kaeo, Trat, Songkhla, Narathiwat, Nakohn Phnom, Nong Khai and Mukdahan. The first priority for SEZs are Mae Sot, Mae Sai, Chiang Khong, and Chiang Saen.

New Policy Directions		Ten Target Industries
Promote investment to restructure Thai economy	1)	Infrastructure and logistics
for sustainable development and to overcome the	2)	Primary industry
"middle income trap":	3)	Medical and scientific equipment
1) Promote competitiveness and value creation in the industrial sector	4)	Renewable energy and environmental services
2) Promote green industry to drive balanced and sustainable growth	5) 6)	Business support services industries Advanced cored technologies
3) Promote new industrial clusters in the regions to create concentrations of new	7) 8)	Food and agricultural processing Hospitality and wellness
 investment Promote Thai overseas investment in order to increase the competitiveness of Thai industries 	9) 10)	Automotive and other transport equipment Electronics and appliances industry

Table 2.6: Key Features of Draft New Investment Promotion Policy of Thailand

Source: Board of Investment

Comments from private companies and associations indicate that promising industries in Thailand include: (i) food processing, bio-chemicals, bio-fuel, and medical industries, utilizing the country's rich resources (e.g., tapioca, palm, cassava); and (ii) the automotive industry, including the manufacturing of high-value added parts and a design and development center.

2.3 Existing Goods Movement (Trade Flows by Country)

Import sources and export markets for the countries covered by this survey, as well as the composition of the traded goods, are summarized in the following subsections.

2.3.1 Bangladesh

- Import sources: Most imports enter Bangladesh from West Bengal, with 80%–90% • entering through Benapole. Items include parts, machinery, cotton, steel, and other raw materials.
- The majority of exports from Bangladesh are by sea (from Chittagong Port), of which land route exports are limited to those to Bhutan, India (both to mainland India and the Seven Sisters States), and Nepal.
- Export markets: India's Seven Sisters States, and Nepal are the main markets, for such items as garments, construction materials, pharmaceuticals, plastics, ceramics, leather goods, daily necessities (e.g., soap, sanitary goods, food items), and furniture.
- Exports to India are as follows:
 - to mainland India: jute (through Benapole, Burimari).
 - to the Seven Sisters States (through Kasba, Tamabil, and Shewla): ceramic/plastic products, batteries, daily necessities, cement and blocks (for infrastructure construction), vegetables, fish, and flowers; also, demand for medical services can be served if the road infrastructure at the Kasba border crossing point is improved.
 - There are 8-9 entry points, of which 4-5 are especially active (e.g., Benapole, _ Banglabandha).
- Regional trade is still limited as a share of overall exports, with India at 2.1%, Nepal at 0.2%, and Bhutan at 0.04%, in FY2011/12.
- There is not much potential regarding India's Seven Sisters, due to the low consumption, instable economy, and nontariff barriers (antidumping duties and customs procedures to protect mainland businesses).
- Potential demand from Myanmar (currently absorbed by China and Thailand) includes ceramics, light engineering products, bicycles, electronics, garments, textiles,

construction materials (cement, bricks, and stone), medicine (with a cost advantage over India), heavy industries (shipbuilding), leather goods, jute, and IT services.



Note: Trade volumes include all flows between the countries; the origin and destination of the arrows do not necessarily correspond to the actual sites for shipment. Source: Bangladesh Economic Review, 2012

Figure 2.2: Export Flows from Bangladesh (2012/2013)

- Priority market issues include (i) **improving mutual access with India** and (ii) **exploring the potential of Myanmar**, which can be achieved by (a) charging traffic between "mainland" India and the Seven Sisters to transit Bangladesh, which has been proposed by the India-Bangladesh Chamber of Commerce and Industry⁵ (and others), evaluated by a Core Committee on Transit, and supported by the Ministry of Finance; and (b) exploiting the potential for importing fish, rice, and timber, and exports of fertilizers and similar products for the Seven Sisters, although political instability in the border area is a bottleneck.
- Although approaches (i) and (ii) above are not mutually exclusive, (i) is supported by the current relatively pro-India government, while (ii) is likely to be favored by the political opposition.

⁵ The India–Bangladesh Chamber of Commerce and Industry was established in 2007 by the Federation of Bangladesh Chambers of Commerce & Industry and the Federation of Indian Chamber of Commerce & Industry with a view to boosting trade between the two countries. Its main objectives include: (i) resolving bilateral business issues, (ii) increasing exports, (iii) reducing trade imbalances, (iv) encouraging Indian investors to invest in Bangladesh, (v) providing a one-stop business solution center for the business communities of both countries, (vi) facilitating technology transfer, (vii) helping set up export processing zones in Bangladesh in which Indian investors will feel encouraged to invest, (viii) resolving problems related to the issuance of visas for the businesses, (ix) encouraging cultural exchanges, and (x) pursuing provision of infrastructure in the land port of Bangladesh.

2.3.2 Bhutan

- Major export commodities include: (i) ferro-silicon, (ii) media products (discs, tapes, solid-state non-volatile storage devices, smartcards, and other media for recording), (iii) copper wire, (iv) bars and rods of iron or non-alloy steel (twisted), (iv) calcium, (v) manganese and related articles, (vi) cement, (vii) silicon, and (viii) gypsum.
- India is Bhutan's top export destination, with a 76% share of overall exports (2011). Among the countries covered by this survey, Bangladesh (5.8%) and Nepal (0.4%) are included, but Myanmar and Thailand are not (Figure 2.3).



Note: Trade volumes include all flows between the countries; the origin and destination of the arrows do not necessarily correspond to the actual sites for shipment. Source: Bhutan Statistical Yearbook 2012

Figure 2.3: Export Flows from Bhutan (2011)

2.3.3 India

• Exports to other countries in the region are limited in terms of the share of overall exports, with Bangladesh at 1.2%, Bhutan at 0.1%, Myanmar at 0.2%, Nepal at 0.8%, and Thailand at 1.0%, respectively (FY2011/12) (Figure 2.4).



Note: Trade volumes include all flows between the countries; the origin and destination of the arrows do not necessarily correspond to the actual sites for shipment. Source: 2012/2013 Economic Survey

Figure 2.4: Export Flows from India (2011/2012)

- Export items consist of agro-products (12.4% of total exports), minerals (2.8%), and manufactured goods (66.1%). The major items for each category include:
 - agro-products: cereals, cotton, marine products, spices, and oil meals;
 - minerals: iron ore and processed minerals; and
 - manufactured goods: gems and jewels, transport equipment, machinery, garments, and pharmaceutical products.
- To Bangladesh export items include food (e.g., onion, sugar, garlic), cotton, and cotton yarn.
- Production in the Seven Sisters includes tea, coal, wood products, fish, and seafood (Assam), but these are mainly for domestic consumption.
- For trade between Bangladesh and India (Bhubaneshwar, the capital of Odisha, formerly Orissa) may be considered the point beyond which sea transport has an advantage over land transport. North East states, such as Tripura, with their production of high-quality pineapples, can benefit from the land route across Bangladesh (instead of the current northern detour).
- Bottlenecks to the development of North East India include: (i) underdevelopment of roads (due to difficulties in land acquisition and funding, the limited working season, environmental/social issues, and (ii) the oligopolistic control of the transport market by small-scale local operators that benefit from the underdeveloped road infrastructure.

2.3.4 Myanmar

- Export items from Myanmar consist mainly of agricultural products, marine products, timber, and natural resources such as natural gas and jade transported by sea.
- The main destination is to Thailand and one of major export items to Thailand is natural gas by pipeline. Also, with the strength of economic connectivity with China, trade

volume with China has been increasing. Border trade has become particularly active with total trade over 80% consisting of border trade in 2011/2012.

• On the other hand, exports to South Asian countries except for India, are not so active at present. The main export items to India are pulses and wood and to Bangladesh are marine products, which are mainly transported by sea (Figure 2.5).



Note: Trade volumes include all flows between the countries; the origin and destination of the arrows do not necessarily correspond to the actual sites for shipment.

Sources: (i) Central Statistical Organization, Myanmar Data CD-Rom (2011) and (ii) Ministry of Commerce, (ii) Ministry of Commerce, Explore Myanmar, Vol. 3, No 1 (2012)

Figure 2.5: Export Flows from Myanmar (2011/2012)

- The current situation by country is as follows:
 - China: Agricultural and mineral products for export and daily commodities for import are the major trade items. In 2011/2012,⁶ the total export value from Myanmar was USD 2,214.3 million and border trade with China reached USD 1,822.1 million.
 - Thailand: The main export product is natural gas with an export value of USD 3,502.5 million (3.5 billion) by pipeline, which accounted for a significant proportion of the total value of exports to Thailand (USD 3,823.8 million, i.e., 3.8 billion). The main export products transported by land are marine products, the export value of which was USD 175.0 million in 2011/2012.
 - India: Marine products, pulses, and wood for export, and pharmaceutical products and iron imports are the major trade items. Total border export volume was USD 9.2 million in 2011/2012 and the portion of border trade was low.
 - Bangladesh: Marine products are a major trade item. Total border export volume was USD 16.6 million USD in 2010/2011 and the portion of border trade was low.
- Prospects are outlined below:
 - The Myanmar–China (Kunming, Yunnan) route is likely to be more heavily used.

⁶ The fiscal year in Myanmar is from March to April.

- For India, land transport may become more significant for agro/wood products and processed foods (exports from Myanmar), as well as for pharmaceutical and machinery products (exports from India).
- The connection with Bangladesh is more difficult, due to ethnic unrest (i.e., related to the Rohingya issue).
- Currently, there is little goods transport between Myanmar and India or Bangladesh, but it is expected that in the future the active transport of goods between Myanmar and China will lead to an increase in the transport of goods between Myanmar and India/Bangladesh.
- A priority issue is that the development of high value-added products for export to neighboring countries will be necessary.

2.3.5 Nepal

- About 65% of total Nepalese exports are to India via land routes, with 20%–30% exports by air, and 5%–15% by other routes (i.e., to countries other than India and exports by sea, the latter of which is mainly mostly from Kolkata).
- For export destinations, India accounts for 69% of overall exports (FY2011/12 data), which is followed by Bangladesh (3.5%), Bhutan (0.7%), and Thailand (0.3%) (Figure 2.6).



Note: Trade volumes include all flows between the countries; the origin and destination of the arrows do not necessarily correspond to the actual sites for shipment. Source: National Planning Commission, Government of Nepal

Figure 2.6: Export Flows from Nepal (2011)

- The land routes to/from India include Birgunj (50%), Bhairawa (10%–15%), Biratnagar (20%) and others (15%–20%, of which the share by air is rather small).
- About 60% of consumer goods go to Kathmandu Valley, while the entry points of raw materials are rather scattered across the country.
- Also, there are land route exports to China, through Lhasa in the Tibet Autonomous Region.
- Priority export items include herbs (e.g., cardamom), tea, flowers, apples, and cheese.

- Exports to Bangladesh include food products (e.g., lentils), gems, fruits (e.g., bananas, oranges), onion, ginger, spices, and processed food.
- Imports are substantially larger than exports, There are some potential sectors for earning foreign currency (e.g., hydropower, tourism, vegetable oil, cement, iron, copper, and other minerals), but there is a shortage of funds to explore these opportunities.
- The main land route import items from China are electricity, shoes, and daily products, accounting for 35% of overall imports from China, with the rest by sea.
- Potential sectors for regional value chain development (particularly with India) include tobacco, food grains, iron and steel products, and cotton yarn.

2.3.6 Thailand

- Export items from Thailand to foreign countries are mainly manufacturing products transported by sea, but border trade with Myanmar is also active.
- The main export items to Myanmar are agro-industry products. The total export volume was USD 3,127.0 million in 2012.
- Trade with South Asia is not active except with India and all goods are transported by sea (Figure 2.7).
- The current trade with Myanmar includes daily commodities, food and manufacturing products exports, and natural gas imports. In 2012, border exports accounted for over 70% of total export volume.
- Land route(s) to Myanmar are expected to be used actively by light industries (e.g., garments) in the future if the roads are improved.
- Few Japanese companies are considering the use of land routes in South Asia. Some local food companies are interested in utilizing such routes, depending on the transport cost and time.



Note: Trade volumes include all flows between the countries; the origin and destination of the arrows do not necessarily correspond to the actual sites for shipment. Source: Ministry of Commerce, *Thailand Trading Report* (http://www2.ops3.moc.go.th/)

Figure 2.7: Export Flows from Thailand (2012)

2.4 Factors that Affect the Future Flow of Goods

2.4.1 Possible Value Chains

The potential for regional/interregional functional divisions and regional value chains, particularly those involving India, can be summarized as follows:

 Potential sectors for regional value chains include textiles (India→Bangladesh→India: Bangladesh can process cotton imported from India, for exporting garment products back to India), wood products (Myanmar→Bangladesh→India: Bangladesh can process timber imported from Myanmar, for exporting wood products such as furniture to the larger market in India), and pharmaceuticals (India→ Bangladesh, Myanmar: Bangladesh and Myanmar can import chemicals and other raw materials from India, for processing into medicines and medical instruments to be exported to third countries).

Sectors that can be shifted from India to the rest of the region include food processing (\rightarrow Nepal, with a view to adding value to the agricultural products), basic (semi-high-technology) electronics and precision instruments (\rightarrow Nepal, Bhutan, to take advantage of the good access to utilities such as power and water), auto components (\rightarrow Bangladesh, to take advantage of the substantially lower labor cost and emerging peripheral subsectors), and chemicals such as liquid fertilizers (\rightarrow Bangladesh, to maximize the geographical advantage between India as a supplier of raw materials and the rest of the region as potential consumers).

• Expectations of Myanmar are growing regarding sectors such as textiles, food processing, and medical appliances. The relatively low labor costs in Myanmar can drive such value chain development.

Figure 2.8 shows these factors along with the location of the existing industries. Existing clusters of the industries are shown in different colors, and those with potential linkages are circled with shaded areas with relevant descriptions. Also, the potential shift of some of the industries (i.e., food processing, basic electronics, precision instruments, auto components, and chemicals) as mentioned above are shown with the pink arrows. As seen in the figure, the potential for the regional value chains can be identified in a number of locations, although the potential has not been explored much yet, as a huge amount of labor and domestic demand still needs to be absorbed within India.

2.4.2 Investment Climate for Foreign Direct Investment

The following country-specific issues have been identified in relation to further stimulating regional investments:

Myanmar: Some outstanding obstacles to inward investment include: (i) inadequate infrastructure (e.g., roads, electricity), (ii) insufficient human resources, and (iii) a lack of capacity/equipment for producing value-added products.

Thailand: Labor force issues (e.g., minimum wage increase, a shrinking labor force) are critical. From a strategic point of view, the main issues are the development of higher value-added industries and the relocation of labor-intensive industries to neighboring countries. On this front, Thailand needs to explore the development of industrial areas along its borders with Myanmar.



Figure 2.8: Geographical Distribution of Potential Value Chains

2.5 Forecast on Economic Growth and Trade Flows

Based on the foregoing observations, average annual real GDP growth and resulting trade flows in 2030 have been forecast applying the following methodology. The forecast was undertaken for the most probable scenario based on the survey findings.⁷

2.5.1 Forecasting Real GDP Growth

Average growth rates for 2013–30 were forecast based on the trend of real GDP growth over the past four years as well as the potential impact of new value/supply chains on GDP growth by country/state. This forecast was based on the upside potential of specific industries and is deemed neutral regarding the impact of changes in the transport infrastructure examined in this report.⁸ Table 2.7 presents the summary results.

					Units: % p.a
			Average		
	Actual		For	ecast	
	2008-12	2013-17	2018-22	2023-30	2013-30
Bangladesh	6.2	6.2	6.0	5.7	6.0
Bhutan	9.0	7.5	7.0	6.5	7.0
India	7.7	6.0	6.0	6.0	6.0
Arunachal Pradesh	7.4	7.0	7.0	7.0	7.0
Assam	7.4	7.0	7.0	7.0	7.0
Bihar	11.0	9.0	8.0	7.0	8.0
Jharkhand	6.8	6.5	6.0	6.0	6.2
Manipur	6.5	6.5	6.5	6.5	6.5
Meghalaya	8.7	7.0	7.0	7.0	7.0
Mizoram	11.4	10.0	9.0	8.0	9.0
Nagaland	5.7	5.5	6.0	6.0	5.8
Sikkim	25.7	8.0	7.0	6.0	7.0
Tripura	9.3	9.0	8.0	8.0	8.3
Uttar Pradesh	10.7	6.0	6.0	5.5	5.8
West Bengal	7.0	6.5	6.5	6.0	6.3
Delhi	11.5	10.0	9.0	8.0	9.0
Myanmar	10.4	7.9	7.9	7.9	7.9
Nepal	4.2	4.5	4.5	4.5	4.5
Thailand	3.0	4.5	4.0	3.5	4.0
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Table 2.7: Real GDP Growth Forecast by Country/Region

Source: JICA Survey Team

The six countries covered by this survey are in aggregate expected to grow in real terms at an average annual rate of 5.4% up to 2030 (Table 2.8). In fact, most South Asian countries are expected to grow at a more rapid rate. Also, the growth rates of the countries in the region compare favorably with those of other high-growth regions in the world such as China, as forecast by others. Going forward, the region is likely to be one of the most dynamic in the world.

⁷ This is based on the understanding that altering the growth scenario for the entire region is less likely to affect the relative importance of the transport infrastructure addressed in the following chapters.

⁸ In other words, at least a similar pace of infrastructure development as occurred in the past four years has been implicitly assumed.

Country/Region	Annual Real GDP Growth	Source
Bangladesh	6.0% (2013–30)	JICA Survey Team
Bhutan	7.0% (2013–30)	
India	6.0% (2013–30)	
Myanmar	7.9% (2013–30)	
Nepal	4.5% (2013-30)	
Thailand	4.0% (2013-30)	
6 countries (total)	5.4 % (2013–30)	
China	5.9% (2014–30)	Standard Chartered
	5.8% (2003-30)	Maddison
Asia except China and Japan	5.5% (2014–30)	Standard Chartered
	4.0% (2003–30)	Maddison
Latin America	4.2% (2014–30)	Standard Chartered
Sub-Saharan Africa	5.8% (2014–30)	Standard Chartered
Africa	3.6% (2003-30)	Maddison

Sources: (i) Standard Chartered Bank, 2013 [https://www.sc.com/en/news-and-media/news/global/2013-11-06-supercycle-EM-growth-is-key.html]; (ii) Angus Maddison, Contours of the World Economy 1-2030, 2007; and (iii) the JICA Survey Team

As a result of this growth, the size of the economy and the sector composition in each country/region is expected to change from what was shown in Figure 2.1 to that in Figure 2.9 (both in terms of constant 2011/12 US dollars for comparison in real terms). Not surprisingly, India will still have the largest economy in the region, but all economies are expected to grow rapidly.

The growth of GDP per capita in each country/region for same years is shown in Figures 2.10 and 2.11. This can be regarded as a "pull factor" for regional trade flows reflecting growth in the "appetite" for consumption. Again, substantial growth is expected, implying a greater capacity for consumption in most part of the region.



2-22

Figure 2.9: Sector GDP Forecast by Country/Region (2030)



Sources: Bangladesh Economic Review 2012, Bhutan National Accounts Statistics 2012, Reserve Bank of India, IMF, World Bank, Nepal Economic Survey 2012/13, Thailand Quarterly Gross Domestic Product Q2 2013 (1994-2013).





Source: JICA Survey Team

Figure 2.11: Forecast GDP Per Capita by Country/Region (2030)

2.5.2 Forecasting Resulting Trade Flows by Customs Point

Trade flows by customs point were forecast as follows:

- (i) Data on trade flows collected at each customs point on the India side were used. This database indicated "formal" (i.e., recorded) bilateral flows (both imports and exports) between India and the countries sharing borders with India (i.e., Bangladesh, Bhutan, Myanmar, and Nepal). "Informal" (i.e., unrecorded) flows are not included due to limited data availability rather, this analysis focuses on the relative importance of the border points that process the official flows of goods.
- (ii) By applying the relationship between growth in GDP growth and trade flows (both in real terms) for the entire region in 2008–12, growth rates for regional trade flows in 2013–30 were estimated based on forecast regional GDP growth for the period.
- (iii) The differences in the growth rates for regional trade flows between 2008–12 and 2013– 30 were added to those in 2008–12 at each of the customs points in order to obtain the forecast growth rates for 2013–30.
- (iv) Adjustments were made to the rates obtained in step c in order to (a) reflect the forecasts of GDP growth as well as GDP per capita for the countries/regions connected by the customs points, (b) take into account the implications for the industry structure affecting the composition of the flow of goods, and (c) reduce the influence of abnormal fluctuations in trade flows by applying caps/floors to the growth rates.

Figures 2.12 and 2.13 present the results of these forecasts, both in terms of USD values of the goods, for over 40 border crossing points. From the comparison of the two figures, a substantial growth in goods value is expected by 2030 at most border crossings in the region. While the forecasts are mainly indicative rather than definitive, the key message is that intraregional trade is generally expected to grow substantially.

In this analysis, flows of goods were forecast in value terms, on the basis of the macroeconomic framework, including such factors as the future development of relevant industries and the economies' appetite for consumption. A similar exercise was undertaken in terms of tonnages in Chapter 4, which may have greater implications for the demand for transport infrastructure.



2-25

Figure 2.12: Trade Flows by Customs Point in Constant 2012/13 USD (2012)



2-26

Figure 2.13: Forecast Trade Flows by Customs Point in Constant 2012/13 USD (2030)

Chapter 3 Soft Regional Transport Infrastructure

3.1 Overview

Development needs and major issues related to regional transport infrastructure in the survey countries in South Asia are summarized in Table 3.1, while major regional transport infrastructure bottlenecks and difficulties in developing soft and hard infrastructure are outlined in Table 3.2. Section 3.2 presents details on regional transport development needs by country and by route. Section 3.3 examines through transport arrangements, while Section 3.4 assesses trade barriers related to customs and other border procedures. Section 3.5 considers regional cooperation organizations/forums. Finally, Section 3.6 sets out development strategies. Soft regional transport infrastructure – the main focus of this chapter – is considered as important or more than hard infrastructure in enhancing regional connectivity.¹

Category	Countries	Existing Situation
Category Transit ^a requirements	Countries Bangladesh, Bhutan, India, and Nepal	 Existing Situation Each country needs to transit another country to trade with another country in the region or to transport commodities by a shorter route. For example, India needs to transit Bangladesh to reduce transport time and costs between North East and "mainland" India. Similarly, Bangladesh, Bhutan, and Nepal need to transit India to trade with each other. Also, if states in North East India could use
		seaports in Bangladesh and if western Bangladesh could use a seaport in India (e.g., Kolkata), their transport time and costs would be reduced.
Factors making countries less willing to enter into transit facilitation agreements	Bangladesh and India (and Nepal for India – China transport)	 Transit traffic may damage road infrastructure in the transit country, which makes such countries less willing to enter into transit facilitation agreements, unless associated costs can be recovered. Also, a coastal country such as India may not want to allow landlocked countries to use a seaport in another coastal country (Bangladesh) in order to benefit its freight transport industry. In addition, if trade between neighboring countries is facilitated and increases, trade between one of the coastal countries (i.e., India) and the neighboring countries may decrease, a prospect that may also make it less willing to enter into transit facilitation agreements. Also, there is a risk that transit cargo may be sold ("leak") in the transit country without duty payment if the control and monitoring system is not well developed.

 Table 3.1: Summary of Major Regional Transport Needs and Constraints

¹ At the First Seminar for the Survey held in New Delhi on 16 January 2014, Mr. Sanjiv Ranjan, Joint Secretary (DPA [Development Partner Administration]-III), Ministry of External Affairs, Government of India, observed that soft infrastructure (e.g., motor vehicle regulations, sanitary-phytosanitary [SPS] requirements) is important and needs to be addressed along with hard infrastructure; he stated that it is useful to look at these issues when projects are conceived so that they can be properly reflected. In addition, he observed that regional connectivity requires considerable coordination given the multiplicity of ongoing initiatives; there is a need to assure that projects in one country are aligned with projects in neighboring countries.

Category	Countries	Existing	Situation
Benefits from	Bangladesh-	 Although Bhutan and Ir 	dia have a road transport
allowing vehicles to	India/India–Nepal	(motor vehicle) agreeme	ent, ^b such an arrangement
enter the territory		has not been agreed bet	ween Bangladesh and
of each other		India, or between India	and Nepal.
		 Thus, in these latter case 	es, transshipment between
		different vehicles at bor	der crossing points is
		required, which increase	es transport time and costs.
Factors making countries less	Bangladesh, India, and Nepal	 The major factors making 	ng countries less willing to
		enter road transport agre	eements are similar to
willing to enter		those making them less	willing to enter transit
road transport agreements	•	facilitation agreements.	
		 Road damage caused by 	r transit trucks without cost
		recovery through adequ	ate road user charges is a
		 Also each country tend 	s to protect its one freight
		transport industry by no	t allowing foreign vehicles
		to enter its own territory	
		to enter its own territory	•

Notes: ^a If "Country A" is physically located between "Country B" and "Country C", and "Country B" and "Country C" must transit "Country A" in order to go to the territory of each other, "Country A" may be considered a transit country for transport or trade between "Country B" and "Country C". In such case, transit arrangements for "Country B" and "Country C" with "Country A" are required if they are to transport to or to trade with each other. Such transit arrangements may include bilateral or multilateral transit agreements (sometimes called transit trade agreements or transit transport agreements) between/among the countries. Sometimes a rule or regulation of one of the countries could address transit, in which case it may also be considered as transit arrangement. ^b In general, a road transport (or motor vehicle) agreement is a bilateral or multilateral agreement that allows a vehicles to enter the territory of another country. If there is no such agreement or there is no other road transport (or motor vehicle) arrangement, the transshipment of cargo between different vehicles at the border is required. Source: This Survey

Table 3.2: Summary of Major Regional Transport Infrastructure Bottlenecks and Difficulties in Developing Soft and Hard Infrastructure

Bottleneck	Countries		Situation
Difficulty of	Bangladesh, Bhutan,	٠	Even though all of the survey countries in South
concluding transport-	India, and Nepal		Asia would benefit from transit across their
related agreements			neighboring countries, it has generally been
			difficult to conclude agreements for such
			arrangements.
		٠	As a result, transit has been limited in the region
			and transshipment has been required at most of
			the major border crossing points.
Difficulty of	Bangladesh and India	٠	Although the road distance in India between
promoting hard			Bangladesh and Nepal is short, the condition of
infrastructure			these Indian road sections is in a number of
development in a			instances a bottleneck on the routes connecting
transit country			Bangladesh and Nepal.
		٠	On the other hand, the priority of developing the
			shortest route in Bangladesh connecting North
			East India with "mainland" India is relatively low
			in Bangladesh compared to developing other
			international roads.

Source: This Survey

3.2 Current Regional Transport Development Needs

3.2.1 Country-by-Country Analysis

This subsection assesses key regional transport issues from the point of view of Bangladesh, Bhutan, India, Nepal, Myanmar, and Thailand, the six countries in South Asia and Southeast Asia covered by the survey.

(1) Bangladesh

Enveloped by India to the west, north, and east, Bangladesh has difficulty trading with Bhutan and Nepal. Although it is a coastal country, none of the other countries in the region use its seaports due to transit restrictions imposed by India. Specific findings are presented below:

- Bangladesh has difficulty trading with Nepal because of requirements imposed by India (e.g., escorts, transshipment between trucks) to transit Indian territory although it has transit trade agreements with Nepal.
- Although Bangladesh would like to earn freight transport charges (e.g., port charges and road haulage fees) utilizing Mongla and Chittagong Ports for trade from/to Bhutan, the North East states of India, and Nepal, currently it is difficult to do so because there is no transit transport agreement with India.
- For trade with India by road, transshipment between Bangladesh and Indian trucks is required because of the lack of a road transport (motor vehicle) agreement between the countries (or a comparable regional agreement). Considering that Bangladesh imports fabrics and cotton from India and exports large quantities of garments to the rest of the world, this transshipment requirement increases the cost of Bangladesh's final products, thereby reducing its international competitiveness.
- Bangladesh would like to open a direct route to ASEAN countries to compete with routes via India but the required infrastructure in southeastern Bangladesh and western Myanmar has not been developed. Also, Bangladesh and Myanmar have not yet concluded a bilateral road transport agreement.
- The lack of scanners at major border crossing points results in increased physical inspection of cargo, with consequent delays.
- The limited number of agencies represented at the border (Customs, Immigration, the Land Port Authority, and the Border Guard of Bangladesh) has also resulted in delays because some necessary agencies are not represented.

(2) Bhutan

India provides favorable treatment for Bhutan's transit transport from/to Indian seaports.² However, transit through Bangladesh is currently not possible due to an undeveloped legal framework. There are no obvious restrictions imposed by India on Bhutanese trade with Bangladesh across India, which is different from Indian treatment of trade between Nepal and Bangladesh. Specific findings follow:

- The Kolkata/Haldia route (by road) is Bhutan's only route to the sea, but these are river ports, with low draft and limited space for expansion (at least in the case of Kolkata).
- A new transit agreement between Bhutan and Bangladesh³ is currently under

² The current agreement between the two countries on Trade, Commerce and Transit was renewed in July 2006. Only Bhutanese vehicles are allowed to enter India for transit transport from/to Indian seaports. Also, Bhutanese vehicles are not charged any transit fees or road tolls when traveling in India.

³ There was a transit agreement between Bhutan and Bangladesh that was effective from 1980 to 2000. However, actual transit across Bangladesh never materialized because the necessary detailed protocols were never prepared.

preparation.⁴ This new transit agreement would include opening up Chittagong Port for Bhutan, as well as river transport routes in Bangladesh, for bilateral trade and transit cargo of Bhutan.⁵

- The existing international road link from Thimphu to Phuentsholing is a narrow, winding link that is not passable by trailers. Therefore, containers transported from Kolkata to Phuentsholing by trailer have to be transshipped to smaller Bhutanese trucks at a yard near the border in Phuentsholing even though Indian and Bhutanese trucks with permits are allowed to enter the territory of the other country.
- There is no railway link from/to a seaport. Although several years ago India considered assistance for a railway extension to the border with Bhutan, land acquisition on the Indian side is difficult and implementation is unlikely in the foreseeable future.
- There is no specific problem with trade between Bhutan and Bangladesh through the current border crossing points used on the main route between the countries, which are Phuentsholing (Bhutan)/Jaigaon and Chengrabandha (India)/Burimari (Bangladesh). Although Bangladeshi trucks are not allowed to enter Indian territory for transit, Bhutanese trucks can cross India and enter Bangladeshi territory at Burimari for transshipment between Bangladeshi and Bhutanese trucks for trade between those two countries. In fact, the trade volume of Bhutan and Bangladesh through Chengrabandha/ Burimari is more than that between India and Bangladesh at this border crossing.⁶ The road between Jaigaon and Chengrabandha in Indian territory includes some sections that are or have been improved and is flat and in much better condition compared to the road between Thimphu and Phuentsholing.
- Although fruit products exported to Bangladesh (mainly apples and oranges) are produced in eastern Bhutan, they are transported to Chengrabandha/Burimari because that border is operational for trade between Bhutan and Bangladesh. Bangladesh and Bhutan have discussed use of Tamabil (Bangladesh)/Dawki (India) for eastern Bhutan, and Nakugaon (Bangladesh)/Dalu (India) and Haluaghat (Bangladesh)/ Gausapar (India) for central Bhutan, which could be included in the new transit agreement between these two countries that is under preparation.

(3) India

With its large economy and geographical position, India exercises control over the transit trade of its neighbors, as a response to security concerns. However, since its North East (Seven Sisters) states are remote from "mainland" India and connected only by a narrow "chicken's neck",⁷ these states could benefit considerably from a transit arrangement with Bangladesh. Specific findings are presented below:

⁴ After Bhutan and Bangladesh finalize a draft agreement, they will need to negotiate an agreement with India because transit traffic between Bhutan and Bangladesh needs to traverse India. Bhutan expects that India would be supportive of such an agreement facilitating its trade with Bangladesh. ⁵ The following three gives transmer transmer and the support of the support of the support of the support transmer transmer and the support of the support

⁵ The following three river transport routes are under consideration: (i) Daikhawa (Bangladesh side of Bangladesh/India border)–Chilmari–Sirajgonj–Aricha–Naranyanganj (as a trade route with Bangladesh); (ii) Chittagong–Changpur–Mawa–Aricha–Sirajgonj–Chilmari–Daikhawa (as a transit route across Bangladesh); and (iii) Mongla–Khawkhali–Barisal–Chandpur–Mawa–Aircha–Sirajgonj–Chilmari–Daikhawa (as a transit route across Bangladesh). Bhutan and Bangladesh have conducted a joint feasibility study of these river transport routes but the report has not been finalized as of writing.

⁶ According to interview with customs officials at Chengrabandha on 31 October 2013, the number of trucks for export from Bhutan to Bangladesh passing through Chengrabandha/Burimari is about 70-80 per day on average, mainly hauling dolomite, limestone, and other stones mined in the Bhutan/India border area, while that from India to Bangladesh is about 40-50 per day. Import traffic through Burimari/Chengrabandha from Bangladesh to Bhutan is only about 3-4 trucks per day while that from Bangladesh to India is about 10–20 trucks per day.

⁷ চিকেন নেক in Bengali.

- Currently, connectivity between states in North East India and India's mainland is limited. Although the North East states use Kolkata/Haldia Ports for their overseas trade and they also trade with West Bengal, they cannot transit Bangladesh to/from Kolkata because of a lack of transit agreement. This results in a great loss because a route via Bangladesh would on average reduce the transport distance between the North East states and Indian mainland by one half or more.
- Although Chittagong Port is the nearest international seaport for North East India, this region cannot use Chittagong Port because India and Bangladesh do not have a transit transport agreement.
- In order to trade with Bangladesh, Myanmar, or Nepal by road, transshipment between an Indian truck and a truck of the other country is required because India does not have a road transport agreement with those countries. The transshipment requirement increases transport time and costs, thereby reducing India's opportunities to export to those countries.
- India would like to open a route to ASEAN but the required infrastructure in the North East states and Myanmar has not been developed. Also, India and Myanmar have not concluded a bilateral road transport agreement.
- Although there is demand for Indian trucks to travel to/from the China via Nepal, this route is currently difficult because India and Nepal do not have a bilateral road transport agreement.

(4) Nepal

Since its existing routes from/to the sea are only through India from/to Indian ports, Nepal is disadvantaged regarding transit and trade. An alternative route or routes to the sea and trade with Bangladesh by land would benefit Nepal. Specific findings follow:

- The Kolkata/Haldia route (by both rail and road) is Nepal's only route to the sea, but these are river ports, with low draft and limited space for expansion (at least in the case of Kolkata).
- The lack of an alternative route to the sea creates a monopoly, resulting in low service levels (port, surface transport, customs) and high costs for Nepalese transit cargo, leading to reduced international competitiveness for export commodities. Since the procedures for Nepalese cargo transiting India are complicated, transport time and costs are high, which decreases the international competitiveness of Nepal's exports.
- Nepalese trucks cannot transit India while Indian trucks cannot enter Nepal because the two countries do not have a bilateral road transport agreement. Transshipment between Indian and Nepalese trucks at the border increases transport time and costs, thereby reducing the international competitiveness of Nepal's export commodities.
- Although Nepal seeks more trade with Bangladesh as well as a transit route across Bangladesh (via Mongla Port), road transport between the two countries is currently difficult because of escort requirements imposed by India and the required transshipment to/from Indian trucks for the short segment (only about 50 km) in Indian territory.
- Although western Bangladesh has a broad gauge railway network, it is not connected to Mongla Port or Nepal. The Bangladeshi railway network is connected to the Indian railway network only at the Benapole/Petrapole border crossing points.

(5) Myanmar

Although various approaches to developing Myanmar's transport sector are under formulation by the government with assistance by development partners (including JICA), there are a number of issues regarding the existing infrastructure. Specific findings follow.

- The country's transport network is not generally well connected to the neighboring countries. For example, the (Thailand–Lao PDR–Viet Nam) East–West Corridor currently connects with a narrow, mountainous route in Myanmar that cannot be used by heavy goods vehicles.
- The national transport network is not well developed. At this stage, the Government of Myanmar understandably prioritizes development of its national transport infrastructure in addition to the international transport network to ASEAN countries.
- In view of the foregoing, Myanmar has not been considering development of routes to/from South Asia with its own budget, although the government has supported the India–Myanmar–Thailand Trilateral Highway section to/from India with assistance provided by the Government of India for the road section from Tamu to Kalay.
- Another development issue regarding routes connecting Myanmar and South Asia is that the routes to/from Mizoram (India) and Bangladesh traverse conflict-affected areas both in Myanmar and in India/Bangladesh and the regional development impacts through the opening of these routes are expected to be limited.

(6) Thailand

Thailand has sufficient budget for hard infrastructure development projects from its own resources and also for soft infrastructure such as modern customs systems. Although there are not major issues regarding Thailand's connectivity with most Mekong Region countries, its (road) connectivity to Myanmar (and onward to South Asia) is affected by poor road conditions in Myanmar; as noted the Myanmar extension of the Thailand–Lao PDR–Viet Nam East–West Corridor follows a narrow, mountainous route.

3.2.2 Route-by-Route Analysis

Bottlenecks on specific routes are summarized below (while Figure 3.1 at the end of the subsection presents a map showing the location of the routes):

(1) Bottlenecks on India (North East Region)–India (Mainland) Trade via Bangladesh

- <u>Hard infrastructure bottlenecks</u>: Neither Asian Highway Route 1 in Bangladesh (including a bridge over the Padma River and the Asian Highway 1 section west of the river) nor the border posts of India have been adequately developed.
- <u>Soft infrastructure bottlenecks</u>: There is neither a road transport nor a transit agreement between Bangladesh and India.

(2) Bottlenecks for India (North East Region) in Using Chittagong Port

- <u>Hard infrastructure bottlenecks</u>: The roads in Bangladesh to/from Chittagong (especially the Dhaka–Chittagong section) are congested and need widening. Also, the Indian border posts are not well developed.
- <u>Soft infrastructure bottlenecks</u>: There is neither a road transport nor a transit agreement between Bangladesh and India.

(3) Bottlenecks for Western Bangladesh in Using Kolkata Port

• <u>Hard infrastructure bottlenecks</u>: While there is difficulty in crossing the Jamuna River to use Chittagong Port, there is not much difficulty in using Kolkata Port from the point of view of hard infrastructure.
• <u>Soft infrastructure bottlenecks</u>: There is neither a road transport nor a transit agreement between Bangladesh and India.

(4) Bottlenecks for Bhutan/Nepal in Using Mongla and Chittagong Ports

- <u>Hard infrastructure bottlenecks</u>: There is currently no railway link to Mongla or Chittagong Ports. Although the railways in western Bangladesh (including the line approaching Mongla) and India are broad gauge, India points to technical difficulties in connecting Indian and Bangladesh Railways (e.g., differences in axle loadings) along this route, although the issue has been addressed along the route crossing at Benapole/Petrapole. In addition, Mongla Port has not been fully developed, and both Chittagong and Mongla Ports have draft limitations (as does Kolkata Port). Also, the roads connecting Nepal with Bangladesh are not in good condition.
- <u>Soft infrastructure bottlenecks</u>: Although both Bhutan and Nepal have a transit trade agreement with Bangladesh, India does not allow Bhutan or Nepal to transit Bangladesh easily. An agreement or arrangement for cargo of Bhutan and Nepal to transit India from/to seaports in Bangladesh is required. Also, a road transport agreement or agreements between/among Bangladesh, Bhutan, India, and Nepal is required to avoid transshipment between trucks.

(5) Bottlenecks on Trade between Bangladesh and Bhutan and Nepal⁸

- <u>Hard infrastructure bottlenecks</u>: India's borders are generally not well developed to handle transit cargo by road (although the road between Bangladesh and Bhutan is of some minimally adequate quality). Also, there is no railway link between Bangladesh and Bhutan or Nepal.
- <u>Soft infrastructure bottlenecks</u>: A transit agreement between Bangladesh and India is required. In addition, transit arrangements across India for Nepal especially should be modified in order to facilitate trade between Bangladesh and Nepal. Also, a road transport agreement or agreements between/among Bangladesh, Bhutan, India, and Nepal is required to avoid transshipment between trucks.

(6) Bottlenecks on Bangladesh/India Trade with ASEAN to and/or through Myanmar

- <u>Hard infrastructure bottlenecks</u>: Transport infrastructure in the North East states of India, southeastern Bangladesh, and western Myanmar has not been well developed.
- <u>Soft infrastructure bottlenecks</u>: Neither a transit nor a road transport agreement between Bangladesh/India and Myanmar has been concluded. Also, the friendship bridge at the Gundam/Taungbro border crossing points between Bangladesh and Myanmar has been closed for political reasons.

(7) Bottlenecks Due to the Trade Procedures of Each Country

• <u>Soft infrastructure bottlenecks</u>: The number of organizations involved in trade procedures in each country before the departure of cargo should be reduced. Preclearance before arrival of cargo at the border would reduce clearance delays at the border caused by issues related to documents.

⁸ While subsection (4) indicates bottlenecks for the transit of cargo to/from Bhutan/Nepal across Bangladesh, subsection (5) refers to interstate (i.e., inter-country) trade between Bhutan/Nepal and Bangladesh. Because origins/destinations along routes (e.g., seaports, major production/consumption areas) as well as necessary transport facilitation arrangements differ between these two cases, relevant bottlenecks were described separately.



Figure 3.1: Location of the Identified Routes

3.3 Current Status and Issues Related to Through Transport Arrangements

3.3.1 Transport-Related Agreements

(1) Current Status of Transport-Related Agreements

As shown in the preceding section on development needs, transport-related agreements (e.g., road transport agreements, transit agreements)⁹ are important in addressing soft-side constraints.¹⁰ While such agreements have been discussed in the region for many years, not many country pairs have concluded effective agreements. The current status of bilateral road transport agreements and transit agreements between the countries surveyed is summarized in Figures 3.2 and 3.3.

⁹ Both road transport and transit agreements are major transport-related agreements. The main aim of a road transport agreement is to allow motor vehicles of one country to enter another (in the region such an agreement is also referred to as a "motor vehicle agreement"). On the other hand, the aim of a transit agreement is to allow cargo of one country to pass across another. For example, if Country A wants to trade with Country B or another part of Country A, and wants to transport their goods across Country C for that purpose, a bilateral transit agreement between Country A and C, or a trilateral transit agreement among Countries A, B and C, or a regional transit agreement involving those countries, is required. Also, in order to use a seaport in a neighboring country for trade with a third country, a transit agreement with or involving that neighboring country is necessary.

¹⁰ Pursuant to the scope of work for this survey, the focus was on land transport. However, agreements related to inland water transport are also important, as for example shown by the presentation of Mr. M.K. Saha, Director, Inland Waterways Authority of India, Ministry of Shipping, on the Indo-Bangladesh Protocol on Inland Water Transit and Trade, at the Final Seminar for this Survey, held at Guwahati on 13 February 2014.



Note: ^a There is an arrangement rather than a specific agreement between the countries addressing transport by the motor vehicles of each country on the roads of the other. Article IV of the Agreement on Trade, Commerce and Transit between India and Bhutan (2006) states that: "In view of the free movement of goods flowing between the two countries and of the possibility of flow from one to the other of goods of third country origin, the Governments of the two countries shall have annual consultations."





Source: This Survey

Figure 3.3: Current Status of Bilateral/Trilateral Transit Agreements and Arrangements

In addition to the bilateral and trilateral agreements or arrangements described above, the possibility of formulating regional transport agreements has been discussed in the region. In the South Asian Association for Regional Cooperation (SAARC), a draft framework motor vehicle agreement and a draft framework railway agreement including definition of SAARC railway corridors has been prepared and revised during negotiations among the member countries. A number of government officials involved in the negotiations have informed the JICA Survey Team that they consider that these are close to final drafts.

(2) Issues

Although various draft transport agreements have been prepared in the region, in a number of cases they have not been finalized. Factors underlying the difficulty in concluding such agreements in the region are explored below:

- Some countries such as India, perhaps due to its asymmetric size seek to conclude agreements without reciprocal conditions (e.g., India seeks benefits transiting Nepal to trade with China [to or across the Tibet Autonomous Region], but may be hesitant to allow Nepal the benefit of having its trucks transit India to trade with Bangladesh).
- Bangladesh and Nepal (and in some cases Bhutan) prefer regional rather than bilateral agreements in order to provide a more "level playing field" when negotiating with India (e.g., Bangladesh prefers a multilateral road transport agreement with Bhutan, India, and Nepal for transiting India to/from landlocked Bhutan and Nepal rather than concluding a bilateral road transport agreement with India, at least according to a stakeholder in Bangladesh).
- Although some consider that SAARC countries are close to agreeing on a draft SAARC motor vehicle agreement, details of related components such as transit fees have not yet been defined. In other words, the participating countries will need to conclude more detailed agreements in order to make what may be considered a framework agreement more effective.
- A consensus on transit charges has not yet been reached in the region (e.g., Bangladesh is seeking more than recovery of investment and maintenance costs per truck-km for Indian trucks transiting Bangladesh, according to some existing studies, stakeholders, and media accounts). For reference, Box 3.1 presents case studies of transit charges in other regions. Appendix 4 presents calculations on potential "win-win" benefits of implementing a regional transit system the results should be considered indicative rather than definitive.

Box 3.1: Case Studies of Transit Charges in Other Regions

Although introduction of transit charges will be necessary when long-distance traffic is permitted to transit Bangladesh, the concept of transit charges is relatively new in South Asia and has not been discussed much by the countries. In this box, several examples of transit charges in other regions of the world are introduced in order to provide some examples of how transit charges can be implemented and perhaps provide "inspiration" for the region by showing what is possible. Also, some considerations in determining possible levels of transit charges in the region are put forward based on the brief case studies.

Example 1: Greater Mekong Subregion

According to Article 6: Permissible Charges of "Cross-Border Transport Agreement (CBTA), Protocol 2: Charges Concerning Transit Traffic", it is described that the Contracting Parties may levy the following charges on cross-border traffic, subject to the conditions set out in this Protocol:

- i. Tolls: direct charges for the use of road sections, bridges, tunnels, and ferries;
- ii. Charges for excess weight, where permissible under the national law and/or regulations of the Host Country;
- iii. Charges for administrative expenses;
- iv. Charges for the use of other facilities or services;
- v. Taxes on fuel purchased in the Host Country; and
- vi. Road maintenance charges (to the extent not included in the charges mentioned above).

Example 2: Common Market for Eastern and Southern Africa (COMESA)

Harmonized road transit charges were introduced by COMESA in 1991 and are currently being implemented by Burundi, Ethiopia, Malawi, Rwanda, Sudan, Uganda, Zambia, and Zimbabwe. The common road transit charges recommended by COMESA are shown below.

Recommended Common Road Transit Charges of COMESA

Region of Registration	Vehicle Type	Fee (USD) per 100 km
COMESA	Bus	5
	Truck/trailer up to 3 axles	6
	Truck/trailer more than 3 axles	10
Out of COMESA	Bus	8
	Truck/trailer up to 3 axles	8
	Truck/trailer more than 3 axles	16

Source: Ministry of Trade, Kenya

Example 3: Southern African Development Community (SADC)

In SADC, various studies have been undertaken but they have not yet led to an agreement among member countries. A 1997 study on transit charges in SADC recommended including both road rehabilitation costs to be recovered and road maintenance costs per vehicle in the transit charges. On the other hand, a 2007 study suggested covering only road maintenance cost per vehicle in the transit charges assuming that the entire road network is in a maintainable condition. Recommended levels of transit charges proposed in the 1997 and 2007 SADC studies are shown below.

Recommended Levels of Transit Charges Proposed in 1997 and 2007 SADC Studies

Country	2007 versus 1997 Study Proposed Road Transit charges (US\$/100km)									
	LV		BUS		2-3 HV		4-5 HV		6 & 6+ HV	
	2007	1997	2007	1997	2007	1997	2007	1997	2007	1997
Angola	1.57	-	9.61	-	15.06	-	22.91	-	29.88	-
Botswana	0.21	0.60	1.78	3.40	2.34	4.20	4.02	8.80	5.62	12.20
DR Congo	6.21	-	30.13	-	55.28	-	75.80	-	91.96	
Lesotho	0.32	1.35	1.90	5.00	3.11	8.40	4.59	13.45	5.86	20.80
Malawi	0.47	1.00	3.57	5.40	4.75	7.90	8.11	15.55	11.32	20.50
Mozambique	0.44	1.50	3.10	7.10	4.52	10.50	7.21	21.10	9.67	27.90
Namibia	0.38	1.60	2.76	9.25	3.80	12.00	6.34	23.00	8.73	31.90
South Africa	0.16	0.35	0.94	1.55	1.50	2.15	2.26	4.25	2.92	7.55
Swaziland	0.13	0.55	0.89	2.65	1.29	3.65	2.08	7.55	2.80	8.80
Tanzania	0.30	0.90	1.81	3.90	2.82	5.70	4.32	11.40	5.67	15.05
Zambia	0.12	0.90	0.93	4.00	1.28	5.90	2.13	11.90	2.93	15.70
Zimbabwe	0.13	0.75	0.83	2.90	1.26	4.20	1.97	8.25	2.61	10.90
Average	0.24	0.95	1.56	4.50	2.61	6.45	3.27	12.50	4.27	17.00

Example 4: Switzerland and the EU

Because of the environmental costs caused by heavy vehicles, Switzerland decided to: (i) discourage road freight traffic by taxing road use, and (ii) attract traffic to railways by improving rail services. In 2001 Switzerland set and implemented a charge for both EU and domestic vehicles to cover a part of railway improvement project costs. That charge was called a proportional heavy vehicle tax, levied

based on distance and weight, and it provides about 55% of railway improvement costs. This charge – on both transit and domestic vehicles – can benefit transit and domestic transport by financing railway improvement (in part).

Recommendations of This Survey

Based on the case studies of transit charges in other regions, this Survey recommends the following directions for consideration of further possible levels of transit charges in this region:

- Transit charges should be set to cover road construction, rehabilitation, and maintenance costs imposed by the transit traffic.
- In addition, environmental and other external costs may be considered if they can be calculated.
- If there are any additional charges, they should be collected from both transit and domestic vehicles equally, and should benefit both transit and domestic transport equally.
- Regional studies to estimate road construction, rehabilitation, and maintenance costs per vehicle-km along the transit routes identified in the current survey could be conducted to suggest approximate charge levels and assess costs versus benefits.

Source: This Survey

3.3.2 Road and Railway Standards in the Region

(1) Road Standards

Although through transport by one vehicle across two or more countries in the region is not permitted at present except in the case between India and Bhutan, different road transport and design standards could become issues when such through transport by foreign vehicles is allowed. Therefore, the possibility of harmonizing these standards should be considered when realizing transport-related agreements.

Road standards and rules that may affect through (freight) transport include: (i) axle load and gross vehicle weight limits; and (ii) left-hand and right-hand driving. Issues concerning the former are more complex and require harmonization for an efficient through transport system. In the South Asian region the issue of different axle load standards between Bangladesh and India has been often discussed because these two countries are potential transit countries for each other and the proportion of route distances along regional corridors in these two countries is relatively high.

In the context of the Asian Highway promoted by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), harmonization of axle load was discussed but the countries could not reach agreement. While in an Asian Highway working group meeting in 2011, one country proposed an axle load standard of 11 tons per axle, most other countries did not concur. The delegation of India informed the meeting stated that they had serious overloading problems even at the current (lower) limit and any higher standard would only exacerbate the situation. This experience shows that harmonization of axle load standards at least for a large group of countries (e.g., Asian Highway member countries) is difficult.

Table 3.3 shows the maximum permissible axle loads and gross vehicle weights of Bangladesh and India for different types of axle and vehicle. Table 3.4 summarizes standards/information on freight transport in the six survey countries.

Tables 3.5 and 3.6 present Asian Highway design standards and relevant standards of the national highways of the survey countries. Although the design standards for Asian Highway routes are to be Class II or above, the standards for national highways or roads in the region are

below Asian Highway Class II standards.¹¹ The minimum road standards for the major selected regional corridors, including both Asian Highway and other routes, should be considered and discussed by the countries in the region.

(2) Railway Standards

Through railway transport is often impeded because of different national railway standards, particularly with respect to track gauge. When a line of one gauge meets a line of a different gauge (i.e., at a "break of gauge"), locomotives and rolling stock cannot operate direct through service; at such points freight must be transshipped and passengers must transfer between vehicles. Since transshipment causes delays and increases transport costs, arrangements to overcome breaks of gauge are sometimes implemented. One of the common methods to avoid transshipment is to build cars to the smaller of the two systems' loading gauges with bogies that can be easily removed and replaced with other bogies at the interchange location. Another solution is dual gauge, consisting of three rails of which two outer rails provide the wider gauge while one of the outer rails and the inner rail provides the narrower gauge. Containerization is another way to overcome a break of gauge since containers can be efficiently transferred from a train of one gauge to another of a different gauge.

In the survey area, while eastern Bangladesh, Myanmar, and Thailand have meter gauge railway systems, western Bangladesh, most of India, and Nepal have broad (1,676 mm) gauge systems. This situation requires break-of-gauge issues in Bangladesh, except where dual gauge has been installed (along sections around Dhaka).

Table 3.7 presents general information on and the standards of railway systems in the subject countries of this survey. Figure 3.4 shows different types of gauges along the Trans-Asian Railway network in the region.

¹¹ Consider, for example, that, the design speed for national roads in Bhutan is lower than that of Asian Highway Class II. In addition, although the minimum required pavement type for Asian Highway Class II is asphalt/cement concrete, 96% of Bhutanese national roads have double bituminous treatment (Infrastructure Development Institute, Japan, *Asian Highway Related Information and Reference Collection Survey Report*, 2009).

Standard	Vehicle Type	Bangladesh	Bhutan	Nepal	India	Myanmar	Thailand
Permissible axle load	Single axle	8.2 (10.0)	3.0	10.2	6.0 (10.2)	10.0	6.8 (9.1)
	Twin axle	- (16.5)	10.0	10.2	19.0	16.0	12.2 (16.4)
	Triple axle	- (19.5)	15.0	10.2	24.0	21.0	-
Gross vehicle weight	Single rigid vehicle	10.9 (22.0)	16.0	-	25.0	16.0	21.0
	Semi-trailer	10.9 (35.0)	25.0	-	26.4-44.0	25.0	37.4
	Truck/Trailer	10.9 (44.0)	-	-	36.6-44.0	38.0	39.2

Table 3.3: Maximum Permissible Axle Loads and Gross Vehicle Weight in the Subject Countries of the Survey (tons)

Abbreviation: - = not applicable

Note: Figures in parentheses were proposed but have not (yet) been adopted.

Source: United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), Transport Division, *Axle Load in ESCAP Region*, Working Group on the Asian Highway, Fourth Meeting, Bangkok, 27-28 September 2011

Table 3.4: Information for Freight Transport in the Subject Countries of the Survey

Country	Bangladesh	Bhutan	Nepal	India	Myanmar	Thailand
Driving "Style"	Left-hand	Left-hand	Left-hand	Left-hand	Right-hand	Left-hand
Authority/Authorities	Roads and Highway	Ministry of	Department of Roads,	Ministry of Road	Public Works, Ministry of	Department of
	Department	Communications	Ministry of Physical	Transport and	Construction/Road	Highways/
	_		Infrastructure and	Highways	Transport Administration	Department of Land
			Transport		Department, Ministry of	Transport
					Rail Transportation	

Notes: (i) Information on India and Thailand is as of 2008 while information for the other countries is as of 2010. (ii) A left-hand "driving style" means driving on the left side of the road (with the steering wheel on the right side), and vice versa.

Source: Asian Highway Database 2010 (UNESCAP): http://www.unescap.org/ttdw/common/tis/ah/Member%20countries.asp

Highway C	lassification	Prin	nary (4 o	r more la	nes)	Cla	ss I (4 or	more lar	nes)		Class II	(2 lanes)			Class III	(2 lanes)	
Terrain Cla	ssification ^a	L	R	Μ	S	L	R	Μ	S	L	R	Μ	S	L	R	Μ	S
Design spee	d (km/h)	120	100	80	60	100	80	5	0	80	60	50	40	60	50	40	30
Width (m)	Right of way	(50)				(4	0)			(4	0)			(3	0)		
	Lane		3.:	50			3.	50			3.	50			3.00 ((3.25)	
	Shoulder	3.0	00	2	50	3.	00	2.5	50	2.:	50	2.	00	1.5 ((2.0)	0.75	(1.5)
	Median strip	4.0	00	3.	00	3.	00	2.5	50	-	-		-	-		-	-
Minimum ra	dii of horizontal	520	350	210	115	350	210	8	0	210	115	80	50	115	80	50	30
curve (m)																	
Pavement sl	ope (%)		2				4	2				2			2 -	- 5	
Shoulder slo	ope (%)		3 -	- 6			3 -	- 6			3 -	- 6			3 -	- 6	
Type of pav	ement	As	phalt/cem	ent concr	ete	As	phalt/cem	ent concr	ete	As	phalt/cen	ent conci	ete	Dbl	. bitumin	ous treatn	nent
Maximum s	uperelevation (%)		1	0			1	0			1	0			1	0	
Maximum v	ertical grade (%)	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7
Structure loa	ading (minimum)		HS2	0-44			HS2	0-44			HS2	0-44			HS2	0-44	

Table 3.5: Asian Highway Design Standards

Abbreviation: - = not applicable ^a Level (L): 0-10% cross slope; Rolling (R): more than 10-25% cross slope; Mountainous (M): more than 25-60% cross slope; and Steep (S): more than 60% cross slope.

Source: UNESCAP, Intergovernmental Agreement on the Asian Highway Network, Annex II, 2003

Country	Country Bangladesh ^{a,b}				Bhutan ^c				Nepal ^b			
Terrain Cla	errain Classification Level Rolling Mountainous		Level Rolling Mountainous Steep		Level	Rolling	Mountainous	Steep				
Design spee	ed (km/h)	80-100	65-80	40-50	60	50	40	30	120	80	50	40
Width (m)	Right of way	N/D			30			50				
	Crest		12.20				N/D		N/D			
	Lane	7.32 (Category A)					6.5				3.75	
			5.50 (Category	B)								

Table 3.6: National Highway/National Road Standards in the Subject Countries of the Survey

Country		India ^b					Myanmar ^b		Thailand ^b		
Terrain Classification		Level	Rolling	Mountainous	Steep	Level	Rolling	Mountainous	Level	Rolling	Mountainous
Design spee	d (km/h)	100	80	50	40	112	96	80	90-110	80-110	70-80
Width (m)	Right of way	45 (oper 30 (urban	15 (open space)24 (open space)(urbanized area)20 (urbanized area)		46-91			60-80			
	Crest	12.	00	6.25 (single lane) 8.80 (double lane)			N/D			N/D	
	Lane		3.5 (double lanes or more) 3.75 (single lane)				3.66			7	

3-16

Abbreviation: N/D = not defined

Notes: ^a Road and Railway Division, Ministry of Communications, Bangladesh, Country Paper on Bangladesh Roads and Road Transport, 1996; ^b Infrastructure Development Institute, Japan, Asian Highway Related Information and Reference Collection Survey Report, 2009; Ministry of Works and Human Settlement, Bhutan, Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities, 2009 Source: This Survey

for Regional Connectivity in and around South 4	Data Collection Survey on Transport Infrastruct
i Asic	ıcture
ı	Developmen

Attribute			Bangladesh	Nepal	India	Myanmar	Thailand
Route Length (km)			2,460 ^a	53 ^a	64,600 ^b	5,099 ^a	4,071 ^a
Electrified Route Le	ength (km)		Non-electrified ^c	Non-electrified ^c	20,275km (31.4%) ^b	Non-electrified ^c	28.8km (0.71%) ^a
Track Gauge(s)(mm	n) ^a		1,000	1,676	1,676	1,000	1,000
			1,676		1,000		
					762		
Loading gauges	For broad track	Width (mm)	3,302 ^d	N/A	3,250 ^e	-	-
(freight)	gauge (1,676 mm)	Height (mm)	3,886 ^d	N/A	3,530 ^e	-	-
	For meter track	Width (mm)	N/A	-	N/A	2,591 ^d	N/A
	gauge (1,000 mm)	Height (mm)	N/A	-	N/A	3,429 ^d	N/A
	For imperial track	Width (mm)	-	-	N/A	-	-
	gauge (762 mm)	Height (mm)	-	-	N/A	-	-
Signaling systems			Color light signal, relay	N/A	N/A	Semaphore signal	Color light signal ^c
			interlocking ^f			and wire-based	
			_			communication ^c	
Axle loads (tons)	For broad track gaug	e (1,676 mm)	N/A	N/A	20.32 ^d	-	-
For metre track gauge (1,000 mm)		13.0 ^d	-	12.7 ^d	12.5 ^d	15.0 ^d	
	For imperial track ga	uge (762 mm)	_	-	N/A	-	_

Table 3.7: General Information on and Standards of Railway System in the Survey Countries

Legend: -: not applicable; N/A = not available

Notes: ^a Trans-Asian Railway – Facts and Figures (UNESCAP): http://www.unescap.org/ttdw/common/TIS/TAR/fact.asp#three (as of November 2013). ^b Indian Railways – Facts and Figures 2011-12: http://www.indianrailways.gov.in/railwayboard/view_section.jsp?lang=0&id=0,1,304,366,554,1275. ^c Jane's World Railways 2013-2014, 2013. ^d UNESCAP, Development of the Trans-Asian Railway: Trans-Asian Railway in the Southern Corridor of Asia-Europe Routes, 1999. UNESCAP, Development of the Trans-Asian Railway: Trans-Asian Railway in the North-South Corridor – Northern Europe to the Persian Gulf, 2001. Bangladesh Railway, http://www.railway.gov.bd/signalling_telecommunication.asp. Source: This Survey



Source: UNESCAP

Figure 3.4: Asian Railway Network in South Asia by Gauge Type

3.4 Current Status and Issues Relating to Customs and Other Border Procedures

3.4.1 Trade Barriers Related to Customs and Other Border Procedures

There are a number of trade barriers in the region related to customs and other border operations 12 :

- (i) Border management is largely uncoordinated, not only between countries (e.g., with different border operating hours, between Bangladesh and India), but also within countries. Multi-step, sequential, redundant, and generally uncoordinated processing of goods, vehicles, and people by regulatory agencies remains common practice at border crossing points. For reference, Appendix 3 assesses major border crossing points in the region in terms of traffic, delay time (i.e., border efficiency), and border/corridor priority, as well as providing information on current status (e.g., facilities, investment plans).
- (ii) Except for India and Thailand (which have trade portals), import-export requirements are not fully transparent.¹³ A large volume of documents are required to obtain

¹² Issues and constraints set out here should not be taken as criticisms of the respective customs administrations. Instead, they represent the existing situation compared to international best practices, as codified in the Revised Kyoto Convention. PADECO Co., Ltd., *TA No. 6435-REG: Preparing the South Asia Subregional Cooperation. Transport Logistics and Trade Facilitation Project (Cross-Border Regime Component), Final Report*, November 2011, p. 65.

¹³ Without "informed compliance" traders are unable to avail of the facilitated clearance available under modern customs practices. South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, *SASEC Trade Facilitation Strategic Framework, 2014–2018, 2013, Appendix 1, p. 16. Bangladesh has committed to establishing a trade portal under the Trade Facilitation Programme of its Ministry of Commerce and Nepal has committed to establishing one with development partner support.*

clearances, resulting in high transaction costs.¹⁴ In one example cited, 10 of 19 required documents were found to be superfluous to customs checks and requirements.¹⁵ Also, documents (e.g., customs declarations) are often non-standardized.

- (iii) Except for India (to some extent) and Thailand, modern customs procedures (e.g., risk management, post clearance audits), which would substantially reduce examinations/inspections, have not been widely implemented, especially at land border crossings. The approach of customs authorities to compliance/enforcement has generally been based on physical and documentary control mechanisms that are inconsistent with international best practice, as set out in the Revised Kyoto Convention (RKC) of the World Customs Organization. ¹⁶ Customs processes tend to be concentrated at the border, with little or no provision for customs clearance away from the border.¹⁷ Table 3.8 summarizes the progress of the countries in implementing state-of-the-art customs practices and procedures.
- (iv) Also except for India and Thailand, information and communications technology (ICT) is used by customs administrations mainly to record transaction data contained in hard copy documents, not as an automated processing tool as envisaged under the Revised Kyoto Convention. The current procedures tend to reinforce the traditional stakeholder concept of the customs administration as being a statistical regulator with "control" functions rather than as a trade facilitator with an enforcement role; there is substantial reliance on undertaking extensive routine administrative and physical interventions, rather than minimal administrative intervention and selected controls to ensure compliance. As a consequence, the use of ICT by customs administrations in the region has not reduced processing and clearance times.¹⁸ Moreover, in some cases ICT systems are not connected to land border crossing points, and even when connected, are often not used due to unreliable communications and power supplies (e.g., at Tamabil/Dawki, Burimari/Chengrabandha, Banglabandha/Fulbari).¹⁹
- (iv) A feature of border crossing procedures in the SASEC countries is that there may be too few officers at borders, if one takes the current regulatory environment as a given.²⁰ In most SASEC countries, only officers from customs, immigration, the border guard, and an authority in charge of border facilities (e.g., the Land Port[s] Authority in Bangladesh and India) are present at the border. Procedures of other government

¹⁴ See source in previous footnote, Appendix 1, p. 16. In one case (the Indian Customs Transit Document), 19 signatures are required. World Bank, *International Development Association Project Appraisal Document on a Proposed Loan to Nepal for a Nepal-India Trade and Transport Facilitation Project*, 17 April 2013, p. 18.

¹⁵ Egis International in association with Egis India, *ADB TA-7650 (REG): Regional Transport Development in South Asia, Draft Final Report*, June 2013, p. 8 [import of mandarin oranges into Bangladesh from Bhutan at Burimari].

¹⁶ South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, *SASEC Trade Facilitation Strategic Framework*, 2014–2018, 2013, Appendix 1, p. 16. India acceded to the Revised Kyoto Convention on 11 March 2005 and Bangladesh on 27 September 2012.

 ¹⁷ Egis International in association with Egis India, ADB TA-7650 (REG): Regional Transport Development in South Asia, Draft Final Report, June 2013, pp. 9–10.
 ¹⁸ (i) South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, SASEC Trade

¹⁸ (i) South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, *SASEC Trade Facilitation Strategic Framework*, 2014–2018, 2013, Appendix 1, p. 16. (ii) PADECO Co., Ltd., *TA No.* 6435-*REG: Preparing the South Asia Subregional Cooperation. Transport Logistics and Trade Facilitation Project (Cross-Border Regime Component), Final Report*, November 2011, p. 66. Indeed, in some cases it has increased the time required due to the parallel use of manual and automated systems. See, e.g., World Bank, *International Development Association Project Appraisal Document on a Proposed Loan to Nepal for a Nepal-India Trade and Transport Facilitation Project*, 17 April 2013, p. 18.

 ¹⁹ Egis International in association with Egis India, ADB TA-7650 (REG): Regional Transport Development in South Asia, Draft Final Report, June 2013, p. 10.
 ²⁰ A regulatory environment that allows free flows across international border is of course preferred from the

 $^{^{20}}$ A regulatory environment that allows free flows across international border is of course preferred from the standpoint of facilitation.

agencies must be carried out prior to departure of the cargo.²¹ Since these agencies do not have offices or testing laboratories at the border, such certificates need to be obtained in cities where they have offices. However, if there is an error is found on such certificates, the cargo will be delayed because such certificates cannot be (re)issued at the border. In such a case (which is not uncommon), the truck may have to wait at the for as long as two weeks while a sample of goods is sent to the (national or sometimes state/division/district) capital city and a new certificate is issued.

(v) Sanitary/phytosanitary (SPS) measures and technical barriers to trade (TBT) are significant hurdles to trade in the region. Technical regulations, standards, and conformity assessment procedures vary by country (or even within countries),²² and there is no harmonized approach in applying standard and conformity assessment procedures to ensure compliance. Further, since there is a lack of mutual recognition arrangements for certification and accreditation, compliance with technical standards can require repeated testing and disputes, with consequent costs to traders and governments.²³ Table 3.9 lists potential export products by country that are constrained by SPS/TBT issues.

Modernization						
Component	Bangladesh	Bhutan	India	Myanmar	Nepal	Thailand
Application of	0	0	0	\triangle	0	0
e-Customs		-			-	
e-Customs software	ASYCUDA ++/	BACS/	ICES ^c	(UNI-	ASYCUDA ++ ^e	O'
	ASYCUDA	RAMIS ^b	(with full	$PASS)^d$		
	World ^a (with		DTI			
	full DTI		capability)			
	capability)					
Application of	×	\times	0	\times	×	\bigcirc
preclearance						
Application of risk	×	×	0	×	0	0
management program						
Application of AEO	\bigtriangleup	×	0	×	×	0
system						

Table 3.8: Summar	y of Current Status	of Modernization of	Customs Systems
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Abbreviations: AEO = authorized economic operator, ASYCUDA = Automated System for Customs Data, BACS = Bhutan Automated Customs System, DTI = direct trader input. ICES = Indian Customs and Excise System, RAMIS = Revenue Administration Management Information System, UNCTAD = United Nations Conference on Trade and Development

Notes: ^a Bangladesh is in the process of upgrading ASYCUDA++ to ASYCUDA World (both systems developed by UNCATD). ^b Bhutan currently uses BACS, which it developed with assistance from India, but it plans to roll out RAMIS with ADB assistance. ^c Developed by India. ^d Myanmar is in the process of rolling out an e-Customs system (UNI-PASS) developed by the [Republic of] Korea Customs Service. ^e Nepal has rolled out ASYCUDA ++, but is considering changing to UNI-PASS. ^f Thailand has e-Customs software (called "e-Customs") it developed itself.

Legend: \bigcirc = the system has been applied and is fully operational; \circ the system has been applied but could be improved and/or extended; \triangle = the system is under development; \times = development of the system has not been started Source: This Survey

²¹ E.g., in Bangladesh, a certificate from the Ministry of Agriculture is required for seeds and vegetables, a certificate from the Ministry of Health is required for food products, and a certificate from the Bangladesh Standards Testing Institute is required for some specific items.

²² E.g., in Nepal various agencies maintain separate laboratories of varying quality and competence. World Bank, International Development Association Project Appraisal Document on a Proposed Loan to Nepal for a Nepal–India Trade and Transport Facilitation Project, 17 April 2013, p. 18.

²³ (i) South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, SASEC Trade Facilitation, 2014–2018, 2013, Appendix 1, p. 9; and (ii) ADB-UNESCAP Brainstorming Meeting on Sanitary/ Phytosanitary Priorities and Challenges in South Asia Subregional Economic Cooperation (SASEC) Countries, Summary of Conclusions and Recommendations, 24–25 November 2013, Bangkok.

Country	Identified Products
Bangladesh	Jute/jute products, textile, turmeric, pickles, fruit juice (mango, pineapple), lemons,
	potatoes, vegetables, processed food, fish and shrimp, processed fish, and citrus fruit
Bhutan	Herbal/medicinal products, ginger, mushroom, potato, chilies, asparagus, handmade
	paper, natural honey, and red rice
India	Fish and crustaceans; residues and waste from food industries, prepared animal
	fodder; coffee, tea, mate, and spices; meat and edible meat offal, lac: gums, resin, and
	other vegetable saps and extracts; edible fruit and nuts; sugar and sugar confectionery
	products; oil seeds and olea fruits; edible vegetables and certain roots and tubers; and
	preparations of vegetables, fruit nuts, or other parts of plants
Nepal	Tea, ginger, cardamom, pulses, herbs, dairy products (to India), and honey to the EU
Myanmar	Rice (mostly to Africa – there is a need to diversify), beans, and sesame

 Table 3.9: Potential Export Products Constrained by SPS/TBT Issues

Abbreviation: EU = European Union, SPS = sanitary/phytosanitary, TBT = technical barriers to trade Source: *ADB-UNESCAP Brainstorming Meeting on Sanitary/Phytosanitary Priorities and Challenges in South Asia Subregional Economic Cooperation (SASEC) Countries, Summary of Conclusions and Recommendations*, 24–25 November 2013, Bangkok, paragraph 5a.

3.4.2 Ongoing/Planned Projects to Facilitate Customs and Other Border Procedures

While there are a number of trade barriers in the region related to customs and other border operations (see the preceding subsection), there are recent, ongoing, and planned projects to facilitate trade focusing on customs and other border procedures in specific countries and regionally. The most significant of these efforts is ADB's Policy-Based Loans and Grants for the SASEC Trade Facilitation Program, which along with other initiatives in Bangladesh, Bhutan, and Nepal are set out in Table 3.10; in addition, ADB and SASEC have recently prepared a trade facilitation strategy with multiple strategic thrusts.²⁴ Also, India is implementing an Integrated Check Post (ICP) program along major corridors in the region, as described in the previous chapter.

Table 3.10: Recent/Ongoing/Planned Transport and Trade Facilitation Projectsin the Region

Country/	Development			Project	
Region	Partner	Project	Relevant Project Components	Cost	Year(s)
Bangladesh	ADB	SASEC Trade	(i) Action plan for compliance	SDR	2013-2015
		Facilitation	with WCO's SAFE Framework;	13.579	
		Program –	(ii) analyses for the development	million loan	
		Bangladesh	of an electronic single window as		
		Component	part of its customs management		
			systems upgrade to ASYCUDA		
			World, (iii) submission to the		
			Parliament proposed amendments		
			to the Customs Act, 1989, to make		
			it fully compliant with the General		
			Annex of the RKC; (iv) issuance		
			of a directive to establish an AEO		
			program; (v) issuance of updated		
			standard operating procedures on		
			risk management, post clearance		
			audit, assessment, physical		
			inspection, and non-intrusive		
			inspection that are compliant with		
			the SAFE Framework; (vi)		

 $^{^{24}}$ E.g., Simplify and expedite border formalities (1), increase the application of ICT processing (2), develop national single windows (3), identify SPS-sensitive products and strengthen national conformity assessment boards (4), develop and pilot bilateral transport facilitation arrangements for through transport (5).

Country/ Region	Development	Project	Palavant Project Components	Project	Voor(s)
Region		Tojeci	completion of a time release study	Cost	
			covering Chittagong Port and		
			Benapole Land Port to serve as		
			benchmarks for a performance		
			monitoring system; (vii) launching		
			operations of ASYCUDA World		
			with a pilot single window		
			program, to include the National		
			Bureau of Revenue of the		
			Ministry of Finance and the		
			Ministry of Shipping; and (Viii)		
	IEC	South Asia	Peduction of transaction costs to		2012 2015
	ne	Regional Trade	trade in the SASEC subregion	million	2012-2013
		Integration	including Bangladesh Nepal and	minion	
		Project	"Eastern India" states via (i)		
		110,000	simplification of documents and		
			procedures, (ii) integration of risk		
			management systems in border		
			clearance and inspections, and (iii)		
			support for automated processing		
			systems		
	EU/NORAD	Trade	Better work and standards in trade	EUR 16.9	2010-2014
		Development/ Facilitation	development/ facilitation	million	
	EU	Trade Policy	Capacity development	EUR 6.665	2011-2015
		Support Program		million	2011 2010
	EU	Enhancement of	Promotion of social and	EUR 4.9	2010-2013
		Technical	environmental standards	million	
DI	4.0.0	Standards			2012 2015
Bhutan	ADB	SASEC Trade	(1) Action plan for accession to the	Loan	2013-2015
		Program Bhutan	implementation plan: (ii) system	to SDP	
			requirement specifications	5 412	
		component	document for the customs	million and	
			management system component of	a grant of	
			the RAMIS; (iii) establishment of	USD 3.33	
			a trade facilitation committee; (iv)	million	
			accession to the RKC; (v) piloting		
			of the customs management		
			and (vi) piloting of the RAMIS.		
			based automation of the		
			application and approval process		
			of trade-related transactions at		
			border agencies		
Nepal	ADB	SASEC Trade	(i) Strategic Plan for Customs	USD 15.0	2013-2015
		Facilitation	Reform and Modernization,	million	
		Program – Nepal	including a timetable for accession	grant	
		Component	to the RKC, and implementation		
			of legislative reforms for		
			development of an e-customs		
			master plan, including a time-		
			bound implementation plan to		
			upgrade the country's automated		
			customs management system and		
			integrate customs operations with		
			a proposed national single window		
			program assisted by the World		
			Bank; (iii) an implementation plan		
			to establish client service centers		

Country/	Development	ent		Project		
Region	Partner	Project	Relevant Project Components	Cost	Year(s)	
			at customs border posts; (iv) a			
			regulatory impact assessment of			
			proposed amendments to the			
			regulations for full compliance			
			with the PKC : (v) a pational			
			single window program			
			specifying the lead agency and			
			other participating agencies, and			
			outlining the roles and			
			responsibilities of participating			
			agencies; and (vi) establishment of			
			client service centers at the			
			customs border posts at Birgunj,			
			Biratnagar, and Bhairahawa			
	IME and	Customs Paform	Development of a strategic action	N/A	2008 2012	
	Ianan	Management	plan and annual mini action plans	IN/A	2008-2012	
	Jupun	Project				
	USAID	Nepal Agriculture	Establishment of a modern	N/A	2011-2013	
		Trade Project	stakeholder communication			
			systems for custom client service			
			centers, establishment of a post			
			simplification of customs transit			
			procedures			
	KOICA	Customs	A business process reengineering	N/A	2011-2013	
		Modernization	and information strategic plan			
		Project	pilot project, implementation of a			
			risk management system, and			
			implementation of a customs			
	W 11D 1		valuation system.		2014 2019	
	world Bank	and Transport	(1) Modernization of transport and transit arrangements between	USD 99 million	2014-2018	
		Facilitation	Nepal and India including	minion		
		Project	introduction of a modern and			
		J. J. L.	effective transit regime,			
			simplification and harmonization			
			of customs and border			
			management procedures, and			
			strengthening of and			
			international trucking services			
			(including axle load control): (ii)			
			strengthening of trade-related			
			institutional capacity in Nepal,			
			including a trade portal and single			
			window development and			
			institutional strengthening for			
			interagency coordination; and			
			related infrastructure (e.g.			
			improvement of the infrastructure			
			at Birgunj and Bhairahawa ICDs,			
			improvement of SPS laboratories)			
	World Bank	Trade, Transport	(i) National trade facilitation and	N/A	2012-2013	
		and Broader	logistics strategy and master plan,			
		Economic	(11) customs infrastructure master			
		Cooperation in Nepal: Stratogic	pian, and (11) feasibility study for the development of the ICD at			
		and Feasibility	Dodhara and Chandani Far West			
		Studies for Trade	Development Region			

Country/ Region	Development Partner	Project	Relevant Project Components	Project Cost	Vear(s)
		Facilitation and Logistics Improvement	Refevant Project Components		
	World Bank	Regional Trade Program in Nepal	Technical assistance to support the preparation and design of the Nepal Trade Information Portal and Nepal National Single Window	N/A	2013
	World Bank	North East Subregional Trade and Transport Facilitation Project	Interagency coordination and single window system development	N/A	Pipeline
	IFC	Customs Reform and Modernization Strategy and Action Plan	(i) Simplification and harmonization of processes and procedures for border clearance between India and Nepal including process reengineering at the various Land Customs Stations of both countries, and (ii) assessment of options for implementing best practice border management approaches between India and Nepal (e.g., automation, risk management)	N/A	2013–2017
	EU	EU-Nepal WTO Assistance Programs (Phase 1)	Improvement of SPS measures and reduction of TBT	N/A	2008–2011
	EU	EU-Nepal WTO Assistance Programs (Phase 2)	To be determined	N/A	Pipeline
SASEC Region	ADB	South Asian Subregional Cooperation	Ongoing assistance on a large variety of customs, trade facilitation, sanitary/phytosantiary, and related issues, including the establishment of a Customs Sub- group and corridor business process analysis.	N/A	Continuing

Abbreviations: ADB = Asian Development Bank, AEO = authorized economic operator, ASYCUDA = Automated System for Customs Data, EU = European Union, ICD = inland clearance depot, IFC = International Finance Corporation, IMF = International Monetary Fund, KOICA = Korea International Cooperation Agency, N/A = not available, NORAD = Norwegian Agency for Development Cooperation, RAMIS = Revenue Administration Management Information System; RKC = Revised Kyoto Convention, SAFE Framework = Framework of Standards to Secure and Facilitate Global Trade, SASEC = South Asia Subregional Economic Cooperation, SDR = Special Drawing Rights, SPS = sanitary/phytosanitary, TBT = technical barriers to trade, USAID = United States Agency for International Development, WCO = World Customs Organization, WTO = World Trade Organization

Sources: (i) Loan Agreement (Special Operations)(South Asia Subregional Economic Cooperation Trade Facilitation Program – Bangladesh Component) between People's Republic of Bangladesh and Asian Development Bank, 20 December 2012. (ii) Financing Agreement (Special Operations)(South Asia Subregional Economic Cooperation Trade Facilitation Program – Bhutan Component) between Kingdom of Bhutan and Asian Development Bank, 30 January 2013. (iii) Grant Agreement (Special Operations)(South Asia Subregional Economic Cooperation Trade Facilitation Program – Nepal Component) between Nepal and Asian Development Bank, 25 December 2013. (iv) Asian Development Bank, SASEC Trade Facilitation Program (RRP REG 45260), Development Coordination, 2012. (v) World Bank, International Development Association Project Appraisal Document on a Proposed Loan to Nepal for a Nepal-India Trade and Transport Facilitation Project, 17 April 2013. (vi) Various interviews conducted for this survey, September-November 2013.

3.5 Regional Cooperation Organization/Forums

3.5.1 Introduction

This section assesses the effectiveness of the three main regional cooperation organizations or forums involving most or all of the subject countries of this survey:

- (i) the South Asian Association for Regional Cooperation (SAARC);
- (ii) Bay of Bengal Multi-Sectoral Technical and Economic Cooperation (BIMSTEC);
- (iii) South Asian Subregional Economic Cooperation (SASEC); and
- (iv) the United Nations Economic and Social Commission for the Pacific (UNESCAP).²⁵

Table 3.11 shows which of the subject countries of this survey are members of the respective organizations and forums.

Country	SAARC	BIMSTEC	SASEC	UNESCAP
Bangladesh	✓	✓	\checkmark	1
Bhutan	1	1	✓	1
India	1	1	✓	1
Myanmar		1		1
Nepal	✓	✓	✓	1
Thailand		✓		1

Table 3.11: Membership of Subject Countries in SAARC, BIMSTEC, and SASEC

Abbreviations: BIMSTEC = Bay of Bengal Multi-Sectoral Technical and Economic Cooperation, SAARC = South Asian Association for Regional Cooperation, SASEC = South Asian Subregional Economic Cooperation, UNESCAP = United Nations Economic and Social Commission for Asia and the Pacific Source: This Survey

3.5.2 South Asian Association for Regional Cooperation (SAARC)²⁶

Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka formally established SAARC on 8 December 2005; Afghanistan joined the association on 4 April 2007.

Key aspects of SAARC follow:

- (i) The objectives of SAARC are to (a) promote the welfare of the peoples of South Asia;
 (b) accelerate their economic growth, social progress, and cultural development; (c) promote collective self-reliance; (d) contribute to mutual trust and understanding; (e) promote active collaboration and mutual assistance in the economic, social, cultural, technical, and scientific fields; and (f) strengthen cooperation with other developing countries and international organizations (SAARC Charter, Article I).
- (ii) Meetings of Heads of State or Government (summits) are held at least once per year (Article III). The Council of [Foreign] Ministers meets at least twice a year to formulate

²⁵ Other regional cooperation organizations or forums include (i) the Bangladesh–China–India–Myanmar (BCIM) Forum for Regional Cooperation, and (ii) Mekong–Ganga Cooperation, which includes India, Thailand and Myanmar, as well as Cambodia, the Lao People's Democratic Republic and Viet Nam.
²⁶ This section draws from: (i) Prabhu Gate, *The Institutions of Regionalism in South Asia – Do Institutions Matter?*",

²⁶ This section draws from: (i) Prabhu Gate, *The Institutions of Regionalism in South Asia – Do Institutions Matter?*", prepared for the Asian Development Bank, June 2011; (ii) Padmaja Murthy, *SAARC and BIMSTEC: Understanding the Experience in Regional Cooperation*, Briefing Paper, CUTS [Consumer Unity & Trust Society], Centre for International Trade, Economics & Environment, 2008; (iii) Tomislav Delinic, "SAARC – 25 Years of Regional Integration in South Asia", in *KAS [Konrad-Adenauer-Stiftung] International Reports*, 2011; (iv) SASEC and ADB, *Transport and Trade Facilitation under SASEC*, presentation at the Workshop in Secure and Efficient Cross-Border Transport for SASEC, 9–11 October 2013; (v) http://www.saarc-sec.org/; and (vi) http://www.adb.org/countries/sub regional-programs/sasec.

policies, review progress, and decide new areas of cooperation (Article III). The Standing Committee consisting of foreign secretaries is responsible for overall monitoring and coordination, approval of projects and programs and funding modalities, determination of inter-sectoral priorities, mobilization of regional and external resources, and identification of new areas of cooperation (Article V). The Standing Committee is assisted by the Programming Committee, composed of officials below the rank of foreign secretary, which prepares the SAARC Integrated Programme of Action. The Committee on Economic Cooperation, composed of trade/commerce secretaries, is responsible for promoting the charter objective of accelerating the growth of member states, and oversees the South Asian Free Trade Agreement (SAFTA). In addition, there are ministerial meetings on a large number of subjects, technical committees and working groups. With ADB assistance SAARC carried out the SAARC Regional Multimodal Transport Study in 2006, and by the end of 2013 SAARC was moving toward completion of regional motor vehicle and railways agreements (although are more of the nature of framework rather than detailed implementation agreements).

(iii) The SAARC Secretariat is headquartered in Kathmandu. It is headed by a Secretary General appointed by the Council of Ministers based on nominations from the member states in alphabetical order. Article III of the Memorandum of Understanding on the Establishment of the Secretariat (1986) limits its formal role to coordination and monitoring of SAARC activities including assisting association meetings. The secretariat has eight directors under the secretary general, one for each SAARC member country, seconded from each country's respective foreign ministries; the directors are assigned to a specific sector but they tend to have limited subject matter expertise. The secretariat has only about 13 professional staff, from the member countries, and support staff from the host country.

While SAARC has played a valuable role in promoting regional cooperation and integration, some shortcomings have been observed:

- (i) According to the SAARC Charter (Article X), "bilateral and contentious issues shall be excluded from deliberations".
- (ii) The secretariat's capacity is limited and initiatives for collaboration with external agencies are to come from SAARC itself, based on its own determination of priorities.
- (iii) ADB TA 6189-REG, Supporting Network of Research Institutes and Think Tanks in South Asia, found that none of the SAARC technical committees have made much impact in their respective fields. The TA found that it would be better to focus on selected fewer projects and implement them in a time-bound manner ("less is more").

Specifically regarding connectivity, it has been noted that the framework motor vehicle and railway agreements, on which work commenced in 2007, have not yet emerged from "SAARC's complex consensus-based process of consultations". Also, SAARC is not in a position to implement regional transport corridors except through bilateral cooperation by pairs of countries traversed.²⁷

3.5.3 Bay of Bengal Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)

BIMSTEC is a "cross-regional institution" involving Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand). Thus, it is composed of five SAARC countries (all except for

²⁷ Prabhu Gate, *The Institutions of Regionalism in South Asia – Do Institutions Matter?*", prepared for the Asian Development Bank, June 2011, p. 17.

Afghanistan, the Maldives, and Pakistan) and two ASEAN countries (Myanmar and Thailand). The organization was established on 6 June 1997, initially by Bangladesh, India, Sri Lanka, and Thailand,²⁸ which were later joined by Myanmar in December 1997, and by Bhutan and Nepal in 2004. The founding of BIMSTEC supported Bangladesh and India's Look East Policy and Thailand's Look West Policy.

Key aspects of BIMSTEC include the following:

- (i) The main policy making bodies of BIMSTEC are periodic summits and two sets of ministerial meetings (of foreign ministers and trade/economic ministers). However, there have been only two BIMSTEC summits, the last in Delhi in 2008, although a third one will be held in Myanmar from 1 to 4 March 2014. Operational bodies include a senior officials meeting and a senior trade/economics official meeting, as well as a Bangkok Working Group, which is composed of representatives of the BIMSTEC countries in Bangkok and the Department of International Economic Affairs of the Ministry of Foreign Affairs of Thailand, and which meets monthly to consider progress in various priority sectors (BIMSTEC has 14 priority sectors²⁹ of cooperation, including transport and communications, which is led by India).
- (ii) With ADB assistance, BIMSTEC prepared the BIMSTEC Transport Infrastructure and Logistics Study (BTILS) in 2008, which is now being updated, again with ADB assistance. Both hardware and software issues are being addressed.
- (iii) BIMSTEC member countries have established the BIMSTEC Free Trade Framework Agreement, which is to provide not only for liberalization of merchandise trade, but also of services and investments. The target date is now 2017.
- (iv) The 13th BIMSTEC Ministerial Meeting, held in Nay Pyi Taw, in January 2011, agreed on the establishment of a permanent secretariat in Dhaka. The initial organizational will include: (a) a Secretary General, (b) three directors, and (c) and support staff. The Secretariat is expected to become operational immediately after the 3rd BIMSTEC Summit in March 2014.³⁰

Going forward, BIMSTEC may become a more important regional cooperation organization. Cooperation in BIMSTEC is more functional than that of SAARC, focusing on economic matters. Myanmar offers the prospect of serving as a bridge between South Asia and Southeast Asia. There is also the potential for a stronger, more autonomous secretariat than that of SAARC, perhaps with a permanent set of directors with sector experience and expertise.³¹

3.5.4 South Asian Subregional Economic Cooperation (SASEC)

In 1996 four of the then seven SAARC member countries (Bangladesh, Bhutan, India, and Nepal) formed the South Asia Growth Quadrilateral, with the aim of accelerating sustainable economic development in eastern South Asia. Subsequently, they requested ADB's assistance to facilitate their economic cooperation initiative, in response to which ADB launched SASEC in 2001.

 ²⁸ The regional grouping was initially known as Bangladesh, India, Sri Lanka, and Thailand Economic Cooperation or BIST-EC).
 ²⁹ BIMSTEC's 14 priority sectors of cooperation are trade and investment, technology, energy, transport and

²⁹ BIMSTEC's 14 priority sectors of cooperation are trade and investment, technology, energy, transport and communication, tourism, fisheries, agriculture, cultural cooperation, environment and natural disaster management, public health, people-to-people contact, poverty alleviation, counterterrorism and transnational crime, and climate change (in the order listed on BIMSTEC's website).

³⁰ Email from Mr. Abdul Motaleb Sarker, Director General (SAARC & BIMSTEC), Ministry of Foreign Affairs, Bangladesh, to the JICA Survey Team, 8 January 2014.

³¹ Prabhu Gate, *The Institutions of Regionalism in South Asia – Do Institutions Matter?*", prepared for the Asian Development Bank, June 2011, pp. 5–6.

Organizationally, SASEC includes a country advisers meeting composed of finance ministers, and sector working groups with senior sectoral officials. SASEC is an informal organization with no permanent secretariat; it has been described as more of a program than an institution.³²

SASEC is "institution-light and projects-heavy".³³ About USD 5 billion has been invested in projects in the SASEC subregion since 2001, with the focus on transport, trade facilitation, and energy. SASEC supports SAARC and BIMSTEC. Recent/ongoing/planned transport projects include a series of SASEC road connectivity projects in all four SASEC countries, while recent/ongoing/planned trade facilitation projects include the SASEC Trade Facilitation Loan/Grant.

3.5.5 United Nations Economic Commission for Asia and the Pacific (UNESCAP)

UNESCAP is the regional development arm of the United Nations for the Asia-Pacific Region. It was established in 1947 with its headquarters in Bangkok and now has 53 member states and 9 associate members. Its Transport Division includes sections on Transport Infrastructure, Transport Facilitation and Logistics, Transport Policy and Development.

Core activities of UNESCAP's Transport Division include the following:

- the Asian Highway, including classification and design standards, formalized by the Intergovernmental Agreement on the Asian Highway Network, which was adopted on 18 November 2003 by an intergovernmental meeting held in Bangkok, and entered into force on 4 July 2005 (see Figure 3.5);
- the Trans-Asian Railway, formalized by the Intergovernmental Agreement on the Trans-Asian Railway Network, which was signed at Busan, Republic of Korea, on 10 November 2006 (see Figure 3.4 in subsection 3.3.2(2) above);
- (iii) adoption of the Intergovernmental Agreement on Dry Ports through Resolution 69/7 on 1 May 2013;
- (iv) work on improving transport processes, through joint trade and transport facilitation mechanisms, route analysis, studies on transit fees, and harmonization of transport facilitation agreements;
- (v) work on freight forwarding, multimodal transport, and logistics, including capacity building and assisting establishment of an appropriate regulatory environment; and
- (vi) preparation and application of transport facilitation tools, such as transport route analysts, a secure cross-border transport model, efficient cross-border transport models, and a model on integrated controls at border crossings.

In December 2011, UNESCAP established a South and South-West Asia Office serving 10 countries, including Afghanistan, Bangladesh, Bhutan, India, the Islamic Republic of Iran, Maldives, Nepal, Pakistan, Sri Lanka, and Turkey.

³² Source in previous footnote, p. 7

³³ SASEC and ADB, *Transport and Trade Facilitation under SASEC*, presentation at the Workshop in Secure and Efficient Cross-Border Transport for SASEC, 9–11 October 2013, slide 2.



Source: UNESCAP

Figure 3.5: Asian Highway Network

3.5.6 Strengthening of Regional Cooperation Organizations and Forums for Trade and Transport Facilitation

Assistance may be provided by development partners in general and specifically by JICA to strengthen regional cooperation organizations and forums for trade and transport facilitation. Such assistance may include:

- (i) provision of sector expertise through the stationing of long-term (JICA) experts in SAARC and/or BIMSTEC;
- (ii) assistance for the harmonization of transport-related rules and regulations (e.g., axle load limits);
- (iii) determination of appropriate levels of transit charges; and
- (iv) formulation of a comprehensive regional transport agreement.

For the subject countries of this survey – Bangladesh, Bhutan, India, Myanmar, Nepal, and Thailand – BIMSTEC may be the most suitable organization for international cooperation because these countries constitute six of its seven members. And, as noted, there may be a potential for a stronger, more autonomous secretariat in BIMSTEC compared to SAARC, especially if it is established with a permanent set of directors with sector experience and expertise.

3.6 Development Strategies

3.6.1 Introduction

As described in the previous sections, considering the current situation of regional transport among the survey countries, approaches for through transport and improvement in customs and other border procedures are most important from the standpoint of soft infrastructure. Approaches for through transport include studies, the development of bilateral and/or multilateral arrangements, the formulation of associated agreements, and discussions/ negotiations related to such transport-related arrangements/agreements and the harmonization of standards (e.g., on axle loads). Approaches for the improvement of customs and other procedures include (i) national-level approaches (e.g., improvement of customs IT systems, the development/implementation of risk management and AEO programs, the development of national single windows, implementation of the Revised Kyoto Convention); and (ii) border-level approaches (e.g., master plan and feasibility studies for the development of efficient border crossing points, the development of implementation guidelines and manuals to achieve coordinated border management to simplify and streamline procedures).³⁴

In addition, continuous coordination with regional organizations and other development partners will be vital for implementation of these components considering that the development of soft infrastructure is generally more complex than the development of hard infrastructure. Multiple approaches are required for soft infrastructure development and different development partners may assist (potentially overlapping) projects at the same time. For example, improvement of customs IT systems may facilitate to development of risk management and AEO programs, and national single windows. Another example is that a project to improve customs IT systems (e.g., introducing e-customs software) may identify other components of the customs IT systems of the country to be improved later (e.g., customs IT system training), with follow-on projects to address these components. Therefore, it is important for development partners to coordinate their assistance activities and continuously update the latest information on their respective ongoing and planned projects. Also, assistance through regional organization will be necessary to facilitate through transport arrangements. Accordingly, it is recommended that continuous coordination with regional organizations and other development partners should be handled by one or more experts with a background in regional transport infrastructure, including soft aspects. The dispatch of a JICA expert in regional transport to a regional organization such as BIMSTEC could assist development of such a mechanism.

It is also suggested that the BIMSTEC secretariat (if it has sufficient capacity), which is to be established in March 2014, may serve as a window for regional soft transport infrastructure assistance of JICA in the subject countries of this survey, especially regarding through transport. Because through transport arrangements cover at least two countries, involvement of a regional coordination agency may be effective. While BIMSTEC may be suited for this role, further assessment including confirmation of capacity will be required after establishment of the BIMSTEC secretariat.

Figure 3.6 presents an overview of directions for soft infrastructure development.

³⁴ At the Final Seminar for the Survey held in Guwahati on 13 February 2014, Dr. Prabir De, Senior Fellow, Research and Information System for Developing Countries, observed that borders should be seen as economy-building assets rather than deterrents to development.



Source: This Survey

Figure 3.6: Directions for Soft Infrastructure Development

3.6.2 Through Transport

Approaches for through transport relate to (i) transport-related arrangements/agreements, and (ii) the harmonization of road/railway-related standards. For both components, studies to identify appropriate arrangements or standards based on technical/economic/financial aspects, drafting of associated legal documents, and discussion/consensus building/negotiations between/among the countries concerned are required.

Considering the issues and difficulties described in subsection 3.3.1, through transport arrangements based on legal agreements may be difficult to achieve in the short term. However, studies to suggest appropriate levels of transit charges or standardization of transport-related regulations and rules in the region could be conducted in the short to medium term. Because consensus building among the stakeholders takes time, such studies and discussions among the countries through workshops may proceed step by step. Initiatives to formulate a comprehensive transport agreement (perhaps under the auspices of BIMSTEC) to further address transport and trade facilitation issues may also be considered. On the other hand, until such agreements can realistically be concluded, transshipment and trailer and container swaps and the introduction of an RFID/GPS tracking system for corridor management could be considered to facilitate through transport in the short to medium term.³⁵

The short- to medium- to long-term strategy, to be implemented step-by-step, includes the following measures and projects to facilitate through transport in the region:

- (i) determination of appropriate levels of transit charges;
- (ii) standardization of transport-related regulations and rules in the region (e.g., axle loads); and
- (iii) initiatives to formulate a comprehensive transport agreement (perhaps under the auspices of BIMSTEC) to further address transport and trade facilitation issues (e.g., a study to prepare a model agreement).

In particular, in the near (i.e., the short- to medium-) term, the strategy includes the following measures and projects:

(i) studies and implementation (including pilot projects) of efficient transshipment and trailer and container swaps to simplify and to streamline procedures at border crossings;

³⁵ This is consistent with the approach put forward in South Asia Subregional Economic Cooperation (SASEC) and Asian Development Bank, *SASEC Trade Facilitation*, 2014–2018, 2013.

- (ii) studies and implementation (including pilot projects) of introduction of a modern transit regime; and
- studies and implementation (including pilot projects) of introduction of a radio frequency identification (RFID)/global positioning system (GPS) tracking system for corridor management.

3.6.3 Improvement of Customs and Other Border Procedures

Approaches for improvement of customs and other border procedures include nationalapproaches and border-level approaches. Considering the current situation and issues described in Section 3.4, the following measures and projects are necessary for further improvements.

National-Level Approaches

- (i) Streamlining of business processes and documentation;
- (ii) Further improvement of customs IT systems, leading to develop of national single windows;
- (iii) Improved risk management and implementation of AEO programs;
- (iv) Technical cooperation for accession to/implementation of the Revised Kyoto Convention; and
- (v) Improved Customs-private sector cooperation.

Border-Level Approaches

- (i) Master plan and feasibility studies for development of efficient border crossing pairs on a pilot basis;
- (ii) Study and implementation to achieve coordinated border management to simplify and streamline procedures; and
- (iii) Annual time release surveys and measurement of performance indicators.

As described in Section 3.4.2, there are various ongoing approaches for improvement of customs procedures at the national level. A most significant one is ADB's SASEC Trade Facilitation Program, a regional project of more than USD 30 million that is assisting Bangladesh, Bhutan, and Nepal, for example with the modernization of customs systems (e.g., improvement of e-customs, accession to the Revised Kyoto Convention, development of single windows, implementation of an AEO program, risk management), and the establishment of trade facilitation committees. In addition, other national-level projects for Bangladesh and Nepal are ongoing with support from the World Bank (including the International Finance Corporation) and the Korean International Cooperation Agency. Therefore, it is suggested to focus on selected border crossings at this stage. Although future assistance at the national level following ADB's ongoing SASEC Trade Facilitation Program may also be necessary, such assistance cannot be identified before knowing the implementation outcomes of the current ADB program.

3.6.4 Identification of Pilot Borders/Corridors

To implement the improved border procedures proposed in the previous subsection, pilot border crossing points may productively be a focus of assistance projects. Also, for assistance for through transport (e.g., introduction of a modern transit regime and implementation of RFID/GPS tracking system for corridor management), the pilot corridors can be identified.

In this study, RO3 has been identified as a priority corridor where soft-side assistance could be productively provided. Specifically, the Kakarbhitta (Nepal)/Panitanki (India) and Phulbari (India)/Banglabandha (Bangladesh) border crossing points along RO3 were selected for possible pilot projects. The identification of possible pilot border crossing points was based in part on a

stocktaking of border improvement projects along shortlisted corridors, as displayed in Figure 3.7. In addition, the following contexts were considered in selecting pilot corridor/border crossing points.

- (i) there are more constraints on through transport along the route connecting Nepal and Bangladesh than along routes between other pairs of South Asian countries; and
- (ii) because Indian facilities and procedures can be improved for trade involving other countries, development partner assistance may be suitable.

Also, traffic and delay time were compared with those of other BCPs along the shortlisted corridors to select locations (see Appendix 3).

Finally, for "inspiration", examples of successful JICA assistance in another region of the world are provided in Box 3.2.



Figure 3.7: Border Development Projects along Shortlisted Corridors

Box 3.2: Examples of JICA Assistance for Soft Infrastructure

Although JICA is only now embarking on a program of assistance for regional transport development in South Asia, it has been involved in various regional transport development projects in other regions in the world. In particular, JICA has been especially active in regional transport infrastructure development in Africa, including soft infrastructure development. It may be instructive and perhaps inspirational to look at some successful examples of JICA assistance for soft infrastructure in this region. Two examples are summarized below.

Example 1: Technical Assistance for East African Community (EAC) Agreement on Vehicle Overload Control

This project involved the harmonization of standards, the formulation of a regional agreement, and consensus building. In fact, solving this problem had been difficult in this region, but JICA technical assistance proved effective in helping the five countries reach a consensus on this issue.



Example 2: Assistance for One-Stop Border Posts (OSBPs) in Africa

The concept of One-Stop Border Posts (OSBPs) entails moving from the traditional border post arrangement involving two or more stops in each direction, to an arrangement requiring only one stop in each direction. JICA has been involved in the implementation of one-stop border posts in various parts of Africa, including the construction of facilities, the formulation of legal procedures (including extraterritorial performance of sovereign duties), and capacity building. The efficiencies of moving toward one-stop border posts are considerable. For example, an evaluation of the Chirundu one-stop border post between Zambia and Zimbabwe found that waiting time for commercial traffic was reduced from about 4–5 days to a maximum of two days and often to a few hours.



Chapter 4 Freight Transport and Border Facilities

4.1 Overview

This chapter assesses regional integration and the connectivity of the subject countries of this survey from the aspect of freight transport. Cargo traffic crossing borders such as international ports and land crossings were surveyed and analyzed. Considering that characteristics of and impediments to the flow of cargo is a topic of major importance, potential improvement measures and projects were explored.

Every country seeks integrated and coordinated border control and management. Bangladesh established a Land Port Authority five years ago, has declared major land border crossing points as land ports, and has constructed facilities either with government budget or through build-operate-transfer (BOT) schemes. India is following a similar approach under the Land Ports Authority of India Act of 2010 under which it is implementing a program of phased construction of facilities for border agencies. Nepal's borders are led by the customs administration, and in the case of inland clearance/container depot (ICD) facilities, the operator of the ICD coordinates the border functions. Regarding operational aspects, every country is making efforts to supply electricity to operate offices and computers connected to their respective customs networks. While no problems were reported by central-level offices in the capital cities, during field inspections at border crossing points the JICA Survey Team found long queues of trucks waiting for document preparation and cargo inspection. Table 4.1 presents a summary of freight transport issues in the region.

Connectivity	Relevant		
Issues	Countries	Current Status	Nature of Issues
East-West connectivity by road and railway	Bangladesh and India	 Current infrastructure is inadequate for containers to move from West Bengal to Dhaka, or to North East India The railway system has issues related to gauge and bridge strength; a transport agreement is required 	Technical (engineering) and political
Transit cargo to Bhutan and Nepal by multimodal transport	Bangladesh, Bhutan, India, and Nepal	Time-consuming procedures at ports and inland border crossing pointsCostly transshipment	Port capacity; transit transport agreement
Freight transport to/from Southeast Asia (ASEAN)	Bangladesh, India, and Myanmar	• Railway to be extended south of Cox's Bazar; need for border checkpoints with sufficient space, for inspection and parking	Poor facilities at border checkpoints between Bangladesh and Myanmar and between India and Myanmar
Support for a shift from break-bulk to containerized cargo	All the countries in the region	 Weak infrastructure cannot support containerized traffic The economy is labor-intensive, which should accommodate a container-based system 	Infrastructure and logistics system improvements

Table 4.1: Summary of Freight Trans

Source: This Survey

4.2 Current Situation of Freight Transport and Border Crossing Points

(1) Regional Cargo Traffic at Major Ports in the Region

From a macro view, the subject South Asian countries (Bangladesh, Bhutan, India, and, Nepal) as well as Myanmar have total annual international cargo traffic of nearly 400 million metric

tons (including both sea and air cargo). Data summing imports and exports at major ports in the region indicate 365 million tons of throughput in 2012. A total of 87% of this cargo was handled in ports in India, as shown in Table 4.2 (Figure 4.1 shows the location of major ports in the region). Additional cargo (amounting to about 10% of seaborne cargo) arrives in the region by air.

		Containers	Dry Bulk	Liquid	Break-bulk	Year of	Year of
No.	Name	('000 TEUs)	('000 tons)	('000 tons)	('000 tons)	Data	Container
1	Kolkata/Haldia	600	28,804	1,619		FY2012	2011
2	Visakhapatnam	756					
3	Chennai	1,513	4,500	6,978	4,500	2012	2011
4	Ennore Port		14,930	1,220	1,740	FY2012	
5	Mumbai and JNPT	4,352					2011
6	Tuticorin Port	297			28,105	FY2011	
7	Cochin Port	337	1,027	14,239	110	FY2012	
8	New Mangalore Port						Mar/Apr
		45	8,819	24,345	3,169	FY2011	2012
9	Mormugao Port	18					2011
10	Kandla Port	170	46,810		46,810	FY2012	2011
B1	Chittagong	1,392	14,189		14,189	2010	
B2	Mongla	44	3,147			2010	
Total by type							
('00	0s of metric tons)	95,239	122,226	48,401	98,623		
Grand total							
('00	0s of metric tons)	364,488					
Shar	e of each type	26%	34%	13%	27%		

 Table 4.2: Annual Imports and Exports through Major Ports in the Region

Abbreviation: JNPT = Jawaharlal Nehru Port Terminal

Note: Container data was converted to metric tons by assuming 10 metric tons per TEU for all containers. This conversion rate is verified at major ports in the region.

Source: ITS Fairplay Ports and Terminals Guide, Website of Port Authority or Port Trust, Containerization International, Cargo Systems, Port and Harbours, Port Strategy



Figure 4.1: Location of Major Ports in the Region

Table 4.3 summarizes annual seaborne cargo traffic in West Bengal and Bangladesh. Onequarter of the cargo is containerized, but is carried in break-bulk form when distributed in the region (together with locally manufactured cargo).

Name	Containers ('000 TEUs)	Dry Bulk ('000 tons)	Liquid ('000 tons)	Break-bulk ('000 tons)
Kolkata/Haldia	600	28,804	1,619	_
Chittagong	1,392	14,189	_	14,189
Mongla	44	3,147	_	_
Total by type	20,359	46,140	1,619	14,189
Grand Total		82,306 (*000) metric tons)	
Share of each type	25%	56%	2%	17%

Table 4.3: Annual Seaborne Cargo in West Bengal and Bangladesh
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Source: (i) ITS Fairplay Ports and Terminals Guide, Website of Port Authority or Port Trust; (ii) Containerization International, Cargo Systems, Ports & Harbours, Port Strategy

From this macro view, it was estimated that the total cargo coming to/from points outside of the region is close to 100 million tons. Locally produced cargo was estimated to 200 million.

(2) Regional Cargo Crossing Land Borders

Before measuring the volume of cargo moving within the region, it is helpful to first consider the relative size of the countries. Among the South Asian countries, India has the largest economy and political presence. It was assumed that cargo traffic will be affected by differences in the size of the respective national economies as measured by GDP. Consider, for example, that India's economy is 10 times larger than that of Bangladesh, 100 times larger than that of Nepal, and 1,000 times that of Bhutan. Similarly, the impact of these size differentials can be seen in terms of industrial production and international trade. Table 4.4 indicates the relative size of the respective national economies.

Table 4.4: Relative Size of National Economies with India as 100
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	India						
	(USD billion)	India	Bangladesh	Nepal	Bhutan	Myanmar	Thailand
GDP Size	1,842	100	6.3	1.1	0.1	2.3	19.9
Industry in GDP	497	100	6.5	0.6	0.2	2.0	30.2
Population	1,236 million	100	12.5	2.2	0.1	4.2	5.4
a (1) m 11 b	1 (1) 1		1 (***)	0 11 0 1 1 1	Ŧ		

Sources: (i) World Bank GDP data and population and (ii) estimates of JICA Myanmar Transport Study Team

Interregional cargo distribution in the region is difficult to grasp, but macroeconomic data and information from the field survey provides an overall picture of the cargo traffic, as shown in Table 4.5.

11

		Uni	ts: 000 metric tons
	Outbound	Inbound	
	(in the	(in the	
	direction of	opposite	
Country (Region) Combination	the arrow)	direction)	Total
India (West Bengal) \Rightarrow Western Bangladesh	4,437	596	5,033
India (NER) \Rightarrow Northern and Eastern Bangladesh	803	615	1,418
India \Rightarrow Bhutan	1,305	1,280	2,585
India \Rightarrow Nepal	4,935	1,397	6,332
Mainland India \Rightarrow NER India	8,700	6,000	14,700
India NER \Rightarrow Myanmar	117	900	1,017
Bangladesh \Rightarrow Myanmar	23	3	26
Total (rounded)	20,300	10,800	31,100

Table 4.5: Annual Regional Cargo Flows at Land Border Crossings of South Asian Countries and the North East Region of India

Abbreviations: BLPA = Bangladesh Land Port Authority, NER = North East Region

Notes: (i) BLPA data on major land ports and data on Petrapole have been combined; (ii) Nepal Customs data on truck and trailer traffic for seven days have been combined; and (iii) figures were based on the comparison of international trade volumes.

Source: Research and Information System for Developing Countries (RIS), Expansion of North East India's Trade and Investment with Bangladesh and Myanmar, 2013

Figure 4.2 presents goods flows in the region by border crossing point. There is a total of about 20 million metric tons of annual cargo flows from mainland India to neighboring countries, indicated as "outbound". In the other direction there are about 10 million annual metric tons of cargo flows to mainland India, as indicated "inbound". Among these flows in the supply of goods, domestic trade from mainland India to landlocked areas of north east regions of India dominates over cross-border trade. The total border-crossing cargo flow is about 30 million metric tons, which is still less than half of the amount of cargo coming from third countries (about 82 million metric tons) through the two sets of international ports (Kolkata/Haldia and Chittagong/Mongla), as indicated in Table 4.3 on Seaborne Cargo in West Bengal and Bangladesh.



igure 4.2: Goods Flows by Border Crossing Pol (Million Metric Tons in 2011)

(3) Bangladesh

Bangladesh has two seaports for international trade. Chittagong is the country's major port with about 42 million metric tons of annual throughputs, while Mongla is a relatively minor port with 3.5 million tons of annual throughputs. About one third of the cargo handled by these ports is by container (1.4 million TEUs), with the rest consisting of bulk conventional cargo. In addition, Bangladesh has trade through land borders mostly with India, amounting to about 6.5 million metric tons.

In order to facilitate the land trade, the Bangladesh Land Port Authority has identified 20 border crossing points for future development, as enumerated in Table 4.6 and mapped in Figure 4.3. Three of these land ports are managed by the government, while six are managed by build-operate-transfer (BOT) operators. Cargo at the land ports involving BOT operators is mainly mostly declared before shipment with duties already having been are paid.

Table 4.6: Border Crossing Points Planned and Announced for Development by the Bangladesh Land Port Authority

Border Point	Date Declared	Management	
Benapole (road and rail)	12 January 2012	Own Management	
Burimari	12 January 2012	Own Management	
Akhaura	12 January 2012	Own Management	
Sona Masjid	12 January 2012	BOT	
Hilli	12 January 2012	BOT	
Banglabandha	12 January 2012	BOT	
Birol	12 January 2012	BOT	
Teknaf	12 January 2012	BOT	
Bibir Bazar	18 November 2009	BOT	
Bhomra	12 January 2011	In progress	
Nakugaon	30 September 2010	In progress	
Biloneya	23 February 2009	Land acquisition in progress	
Gobrakura and Koraitoli	14 June 2010	Land acquisition in progress	
Tamabil	12 January 2012	No construction yet	
Darshana (railway)	12 January 2012	No construction yet	
Ramgarh	7 November 2010	No construction yet	
Sonahat	25 October 2012	No construction yet	
Tegamukh	30 June 2013	No construction yet	
Chilahaty	23 July 2013	No construction yet	
Doulatgonj	31 July 2013	No construction yet	

Abbreviation: BOT = build-operate-transfer

Source: Bangladesh Land Port Authority



Figure 4.3: Location of Major Border Crossing Points in Bangladesh

Table 4.7 summarizes traffic data for Bangladesh's major land ports.

Benapole is the main gate of Bangladesh to India for land trade. In value terms, 70%–80% of Bangladesh's trade is through this border crossing point, although by weight the share is only one quarter since high-value items tend to be imported through Benapole (e.g., consumer goods, industrial parts for vehicles and machines), while northern border crossing points serve lower-value imports (e.g., gravel, rock, limestone, and agricultural products).

Benapole is a major land supply gate for Dhaka and cargo comes from even distant origins in India. There are about 500 customs and forwarding agents and 50 truck companies operating at
this border crossing point. The reloading of cargo from truck-to-truck (i.e., transshipment) is undertaken in the "no-man's land" along the border and in the warehouse in land port on the Bangladeshi side.

On the border with the West Bengal state of India there are several relatively busy border crossing points including Bhomra, Darshana, Hili, and Sona Masjid. Even though these border crossing points are declared as land ports, facilities such as parking are prepared by the private sector and investments and operations are planned as BOT for Hilli and Sona Masjid. Customs procedures are quick at these border posts because most cargo enters with prepaid duty status.

Borders crossing points in northern Bangladesh include Banglabandha, Burimari, and Tamabil. Low-value bulk cargo such as boulders, limestone and gypsum, fly ash, cement, and food grains is imported through these border crossings. Burimari is an import-oriented border crossing point especially for cargo gravel and limestone from Bhutan, while Banglabandha serves more exports than imports in value terms, with exports including medicines, medical equipment, apparel, and electrical items. Trucks from Bhutan and Nepal come to the Bangladeshi border and reload their cargo at the border points. Tamabil is another border crossing point where rocks and gravel crosses from India to Bangladesh in bulk.

Border crossing points to/from the North East Region of India include Akhaura, Bibir Bazar, Ramgarh, and Parshram. Akhaura and Bibir Bazar are export-oriented border crossing points with agro-industrial products such as rubber, fish, dried fish, bricks, cement, and other construction materials to Agartala (Tripura), India. This cargo is either manufactured in Bangladesh or imported originally from third countries through Chittagong Port. The road border crossing point of Ramgarh and the railway border crossing point of Parsham are much closer than Akhaura to Chittagong Port and therefore the Indian states of Tripura and Mizoram look forward to the early opening of these gates for their traffic. There are several other border crossing points to/from the North East Region but the cargo amounts are limited.

Bangladesh's border crossing points to Myanmar include Teknaf in Cox's Bazar District, where lentils, paddy bamboo, spices, fish, electrical goods, and cosmetics are imported. The land port was developed under a BOT scheme and jetties and warehouses have been improved with private sector investment(s).

Name of	Import	Export			City in India	
Border	('000 metric	('000 metric			across the	
Crossing Point	tons)	tons)	Total	Ratio	Border	Notes
Benapole*	1,148	563	1,711	27%	Petrapole	Road and railway gate.
Bhomra	1,001	13	1,014	16%	Gojadanga	Supplementary gate to Benapole
Darshana	660	0	660	10%	Gede	Railway gate
Hilli*	752	19	771	12%	Hili	
Sona Masjid	876	1	877	14%	Mahadipur	
Banglabandha	31	12	43	1%	Phulbari	
Burimari *	358	80	438	7%	Chagrabandha	Minimal shed only
Tamabil	389	0	389	6%	Dawki	
Akhaura	1	443	444	7%	Agartala	New ICP open
Bibir Bazar	1	48	49	1%	Shimanthpur	Railway gate
Ramgarh	0	0	0	0%	Subrum	On the Chittagong- Tripura, Road gate, not open yet
Parshram	0	29	29	0%	Belonia	Railway gate, not open yet
Teknaf*, Cox's Bazar	23	3	26	0%	Mundu, Myanmar	
Total	5,240	1,211	6,451	100%		

Table 4.7: Traffic at	Bangladesh's	Major Land Po	rts
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Sources: (i) Comments and import/export data of cities marked with an asterisk are for July 2012-June 2013 as collected by the JICA Survey Team in September-November 2013. (ii) Other data is drawn from PADECO Co., Ltd., *TA No. 6435-REG: Preparing the South Asia Subregional Cooperation. Transport Logistics and Trade Facilitation Project (Cross-Border Regime Component), Final Report*, November 2011, p. 33.

(4) Bhutan

Bhutan is dependent on land transport for its imports and exports. The country's land borders are open to India with the major one at Phuentsholing in southwestern Bhutan, which serves as a supply point to both Thimphu and Paro. A total of 85% of imported goods pass this border crossing point (gate), including industrial cargo (about 40%) delivered to the Pasakha industrial estate, about 18 km from Phuentsholing.

Other gates include Gelephu, Samdrup Jongkhar, and various border crossing points in Samtse district. Major cargo items passing through these gates include construction materials for electric power plants, cement and limestone, and agricultural products (e.g., potatoes, oranges). Table 4.8 describes traffic through the major border crossing points of Bhutan.

Border Crossing	Imports	Exports	
Point	(metric tons)	(metric tons)	Traded Goods
Phuentsholing	1,105,798	788,376	Various kinds of consumer goods to Thimphu and Paro;
			40% of the cargo is industrial and destined for factories
			in the Pasakha industrial estate
Gelephu	39,234	6,154	Hydropower plants and an industrial estate are planned
			at Jigmeling; seasonal exports of oranges and potatoes
			are major traded goods
Samdrup Jongkhar	68,833	126,325	There are two gates: one for general cargo goods and
			another for the export of industrial goods such as ferro
			silicon and coal
Samtse (district)	90,909	359,111	Cement material is imported by several factories in this
			districts; the products are exported to India.
Total	1,304,774	1,279,966	

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Sources: (i) PADECO Co., Ltd., TA No. 6435-REG: Preparing the South Asia Subregional Cooperation. Transport Logistics and Trade Facilitation Project (Cross-Border Regime Component), Final Report, November 2011; and (ii) interviews conducted for this survey in October and November 2013

The Pasakha industrial estate is a major source of demand for industrial materials imported from India. The factories in the estate are mostly heavy industries such as Bhutan Ferro Alloys Ltd. and Bhutan Carbide & Chemicals Limited.¹ Materials such as limestone, charcoal and coking coal, and scrap iron are imported through the Phuentsholing gate, and the products are shipped out through the same gate. Daily inward 2-axle, 9-ton truck traffic is estimated to be about 150, with daily loaded outbound traffic about 75. This cargo accounts for about 40% of the goods passing through the Phuentsholing gate.

Gelephu is located in south central Bhutan and has become the entry gate for construction materials and the export gate for agricultural products such as potatoes, oranges, and apples. An industrial estate is planned at Jigmeling, about 10 km west of this gate on a 1,185-acre (480-ha) site.

Samdrup Jongkhar is the main entry/exit point gate for eastern Bhutan. It has two gates: one for general goods and another (Matanga/Phuntshok Rabtenling) for the export of industrial goods such as gypsum, ferro-silicon, and coal. Current traffic is still limited to about 60 trucks per day, although there is a plan to expand the industrial estate.

(5) India – Mainland and West Bengal State

Of India's 13 major seaports for international trade, Kolkata is the major port for international transit cargo to/from Bhutan and Nepal. About 10% of the total containers imported at Kolkata are in transit to these two landlocked countries.

Regarding land border stations, the Land Ports Authority of India (Department of Border Management, Ministry of Home Affairs) is developing integrated check posts (ICPs). A first phase of construction projects is progressing at seven border crossing points (as shown in Table 4.9), with six to be developed in a second phase (plus 16 in a third phase). The ICPs will include required border-related facilities (e.g., facilities for customs, immigration, and quarantine, as well as border security stations, banks, warehouses, parking, and staff housing).

Integrated Check Post	
(Opposite City/Town, Country)	Observations
1. Attari (Wagah, Pakistan)	New ICP with 400 acres (162 ha) opened in April 2012;
	local cargo is exported to Pakistan in bagged form
2. Raxaul (Birgunj, Nepal)	Upgrading awaits agreement with Nepal; this border
	crossing point serves a high proportion of transit
	containers, carried by both road and railway
3. Jogbani (Biratnagar, Nepal)	This is a secondary gate to Nepal; the approach roads are
	narrow and congested
4. Petrapole (Benapole, Bangladesh)	One of the busiest border crossing points in the region; in
	value terms 70%-80% of exports from India to
	Bangladesh cross this gate; average border crossing time is
	about three days with long queues; a new ICP is to open in
	2014.
5. Agartala (Akhaura, Bangladesh)	A new ICP was opened in November 2013; this is an
	import-oriented gate, with about 90% the cargo from
	Bangladesh to Tripura State and other states in India's
	North East Region.

 Table 4.9: List of Priority Integrated Check Posts in India (Phase 1)

¹ For company profiles, see (i) http://www.tashigroup.bt/?page_id=26 (Bhutan Ferro Alloys Ltd.) and (ii) http://www.tashigroup.bt/?page_id=24 (Bhutan Carbide & Chemicals Limited).

Integrated Check Post	
(Opposite City/Town, Country)	Observations
6. Moreh (Tamu, Myanmar)	Land for a new ICP has been prepared with construction to
	start in 2014; this border crossing point is a symbol of
	friendship with Myanmar; most of the trade is informal
	(unrecorded), and accurate data is difficult to collect
7. Dawki (Tamabil, Bangladesh)	Facilities are limited but there are some cargo-piling yards
	for export goods (e.g., rock, limestone).

Abbreviation: ICP = integrated check post Soruce: This Survey

The following six border crossing points are listed for Phase 2 of the ICP program: (i) Hili, West Bengal; (ii) Chengrabandha, Burimari, West Bengal; (iii) Sutarkhandi, Assam; (iv) Kawarpuchiah, Mizoram; (v) Sunauli, Uttar Pradesh; and (vi) Rupaidiha, Uttar Pradesh.

The main border crossing points are located in West Bengal along the border with Bangladesh, as shown in Table 4.10. Customs stations are generally equipped with a shed and some open space for parking and inspection. The cargo loading space is an open yard and storage is often minimal. Among these stations, Petrapole is the largest and busiest and the construction of a new land port facility is underway there.

Border Point	Items Traded	Truck Traffic	Condition of Facility
Petrapole (both	Exports of cotton fabric,	Exiting: 350 trucks	Well equipped with
road and railway)	yarn, machinery, steel;	Entering: 150 trucks	warehouses, EDI offices,
	imports of jute products,		and related facilities; new
	ready-made garments,		land is to be developed
	nuts, and fish		and a road is planned
Ghozadanga	Exports of chili peppers,	Little traffic	Minimal inspection shed
	onions, and limestone		
Chengrabanda	Exports of coal and raw	Traffic is not very	Minimal shed for border
	cotton	busy	works
Hilli	Exports of wheat, rice,	Exiting: 200 trucks	The road is narrow, there
	dried chili peppers,	Entering: few trucks	are insufficient facilities,
	vegetables, fruits, and fish	only	and EDI has not yet been
	(both fresh and dried)		installed
Sona Masjid	Mainly exports of coal,	Exiting: 300 Trucks	Lack of proper
	stone, rice, fly ash, and	Entering: 50 Trucks	infrastructure and a poorly
	thermal ash		maintained road
Rohanpur–	Railway border	2 services per day	The facilities are
Singabad		with 45 wagons	insufficient; it takes 6
			hours to change
			locomotives at the border
Gede–Darshana	Railway border		Same as above;
			Bangladeshi locomotives
			can carry only 45 wagons,
			while domestic trains
			carry 75 wagons
Namkhana (India)	Waterway border; all cargo		
– Narayanganj	should pass through these		
(Bangladesh)	customs check points		
Abbreviation: $EDI = ele$	ectronic data interchange		
Source: This Survey			

Table 4.10: Land Ports between West Bengal (India) and Bangladesh

(6) India – North East Region

The North East Region of India is landlocked; the supply of goods to the region has been mainly through West Bengal and Assam. Even though there are some (limited) imports from Bangladesh, goods are generally first transported by road or rail to Guwahati and then distributed throughout the region. There are two border crossing points, Boxirhat and Damrat, at which the state government of Assam checks incoming cargo by road. Cargo carried by railway is declared at Guwahati Station. Based on declarations of cargo and data on truck and rail services, cargo volume from mainland India has been calculated as 8.7 million metric tons, half of which is by rail. Incoming goods include staple foods, daily commodities, machinery, and electrical appliances. Table 4.11 presents the details.

Railway Cargo (One rack of train cons	ists of 42 wagons of 56 ton capacity)
One Rack (ton)	1,999 42 Wagons, 56 ton/wagon
From Northern Zone	15 rack/week, 85% load factor
From West Zone	12 rack/week
From South Zone	8 rack/week
From West Bengal	7 rack/week
Total Racks (Week)	42 rack
Total Racks (Year)	approximate 2,200 rack
Total Cargo by Rail (Year)	4,398 ('000 tons)
Truck Cargo	
Boxirhat gate	900 Trucks daily
Damrat gate	300 Trucks daily
Total	1,200 trucks 10 tons
Total Trucks (Year)	432,000
Total Cargo by Truck	4,320 ('000 tons/year)
Total Cargo to the NER	8.7 million tons

Table 4.11: Cargo Estimation into the North East Region of India

Abbreviation: NER = North East Region

Source: This Survey (based on interviews with truck companies and data from the Assam Tax Department, November 2013)

Goods transported back to mainland India include tea and coal hauled by returning trucks and railway wagons. The total outgoing volume (about 6 million metric tons) is estimated to be 70% of the incoming volume.

Since Bangladesh lacks mineral resources, it imports coal and limestone from the North East Region. Since the North East Region's manufacturing industry is still underdeveloped, it mainly imports finished goods such as ready-made garments, synthetic fabrics, cement, and processed food.

Among the land customs stations on the border of the North East Region and Bangladesh, Agartala Integrated Check Post (ICP) is the best equipped – it was opened in November 2013 on 12 acres (about 5 ha) with warehouses, truck yards, a weighbridge, and facilities for customs, immigration, and quarantine (see Figure 4.4).² Other ICPs scheduled for improvement include Sutarkhandi in Assam and Kawarpuchiah in Mizoram; these are listed in the second phase of the ICP development program and the schedule is not yet certain.

² However, at the Final Seminar for this Survey, held at Guwahati on 13 February 2013, Mr. M.K. Saha, Director, IWAI, Ministry of Shipping, stated that the upgraded land customs station at Agartala is insufficient to serve expected cargo.



Source: Land Ports Authority of India

Figure 4.4: Layout of the Agartala Integrated Check Post

Four Indian states border on Myanmar (Arunachal Pradesh, Manipur, Mizoram, and Nagaland), but these border areas are mountainous and relatively sparsely inhabited. Most of the trade between the North East Region and Myanmar is through the Moreh-Tamu border crossing points (e.g., betel nuts, dried ginger, soy beans, and cumin seed, included on a 1995 barter list), although trade through other border crossing points is increasing more rapidly due to the poor and deteriorating infrastructure at Moreh/Tamu (e.g., poor warehouse facilities, lack of banking services.³ As a result, informal (unrecorded) trade dominates at Moreh, with estimates indicating that informal trade accounts for 95% of the total trade value.⁴

Table 4.12 provides an overview of all major border stations and requirements.

See, e.g., Research and Information System for Developing Countries, Ministry of Development of North Eastern Region, and North Eastern Council, Expansion of North East India's Trade and Investment with Myanmar: An Assessment of the Opportunities and Constraints, October 2011. ⁴ E.g., interview with Principal Secretary, Transport and Public Works Department, Government of Manipur,

November 2013.

Name	Condition of Trade and Border Station	Requirements
Assam State –	Bangladesh	
Sutarkandi	Coal and limestone from Meghalaya is exported to the border town of Seola (Bangladesh); the trade volume is still small (USD 6–8 million a year) in both directions	Improvement of the poor road connection is required; the informal collection of money is rampant and trade through this gate is stagnant
Karimganj Steamer and Ferry Station	The trade through this gate is dominated by exports from India with agricultural products (e.g., vegetables, ginger, and fruit) from Dima Hasao (the North Cachar Hills) and Meghalaya; cargo from Bangladesh to India includes cement and other construction material; the trade voilme is still small, at less than USD 1 million a year	The Barak River serves as the international border; the berth station and the land customs office requires improvement
Mankachar	Coal is exported to Bangladesh but the amount is limited; the trade follows two approaches: (i) Tura- Rahumari Road, and (ii) the Kalo River from Tura	Road facilities and the bridge between Mankachar and Rowmari need to be improved
Meghalaya Sta	te – Bangladesh	
Borsora	This is purely an export gate for coal and limestone from the West Khasi Hills to Bangladesh; traders choose four access routes to this gate including the river route during the rainy season	Road improvement is required
Dawki	This is the border crossing point opposite Tamabil; coal is exported from the Jaitia Hills to Bangladesh; the trade follows the Shillong–Sylhet road and/or the river during the rainy season	Better road connectivity and a vehicle scanner for processed foods imported from Bangladesh are required
Bagmara	This is an export gate for the Coal of the Garo Hills to Bangladesh; this gate is used especially when other border crossing points are impassable due to rain	Basic infrastructure including oad improvement of the Borsara road and financial facilities is required
Dalu	Located west of Garo Hills; coal exports are dominant	Warehouses and improvement of road connectivity with Nangol and other coal-mining centers
Tripura State -	- Bangladesh	
Agartala	Unlike other border crossing points between India and Bangladesh, this gate receives various goods from Bangladesh and functions as one of the most important land border gates to India's North East Region; imports to India (2012) amount to USD 6,644 million and exports USD 57 million	The Government of India opened a new integrated check post at Agartala in November 2013
Manipur State	– Myanmar	
Moreh	To facilitate friendship between India and Myanmar, a customs gate has been constructed near Lokchao Bridge; formal (recorded) trade amounts to only 0.15% of the total bilateral trade between India and Myanmar, but the volume of informal trade is considered significant	A site of 0.3 ha has been reserved; in addition to an ordinary ICP, expected facilities include a weighbridge and laboratory for animal and plant quarantine

Table 4.12: List of Border Stations and Requirements in North East India

Abbreviation: ICP = integrated check post

Note: Information on Karimganj Steamer and Ferry Station has been provided for reference.

Sources: (i) Research and Information System for Developing Countries, *Expansion of North East India's Trade and Investment with Bangladesh and Myanmar: An Assessment of the Opportunities and Constraints*, 2011; and (ii) This Survey

(7) Nepal

Nepal has 27 border crossing points with India and 9 with China. Among these points with India, there are 4 major border stations at which inland clearance/container depots (ICDs) have been developed or are planned: Birgunj, Biratnagar, Bhairahawa, and Kakarbhitta. Figure 4.5 presents a map of the major customs border posts of Nepal.



Figure 4.5: Locations of Major Customs Border Posts in Nepal

Table 4.13 lists the eight busiest Nepalese border crossing points in the order of cargo volume. Birgunj is the major entry gate – nearly half of incoming cargo enters at this point. Birgunj is the main customs gate for trucks and trailers entering Nepal. More than 2 million tons of cargo enters through this gate including diesel oil, petroleum, liquefied petroleum gas, vehicles including motorcycles, medicines, and various kinds of machines and daily commodities. The Birgunj ICD is the entry point for international containers hauled by railway. A total of 22,000 TEUs are imported annually.

Biratnagar is an industrial town in southeastern Nepal adjacent to the Indian town Jogbani; the road follows Asian Highway to Narayanghat. The border point crossing consists of a container yard of $2,700 \text{ m}^2$ with a $1,400 \text{ m}^2$ container freight station with a 150-TEU capacity. These facilities are fully utilized and insufficient to accommodate the recent increase of cargo. An expansion of the ICP and an extension of railway to connect this border crossing point to the railway network is expected.

Bhairahawa is a road-based border crossing point west of Birgunj. The Indian town of Sunauli is 8 km from the border and distance from Sunauli to Delhi is 900 km, while Kolkata is 1,033 km by NH 28. Located near Lumbini, the birthplace of the Lord Buddha, this border crossing point is busy with passenger traffic.

Kakarbhitta is located in eastern Nepal and has attracted attention for its proximity to Bangladesh. The Indian town across the border is Panitanki, and the distance to Phulbari, another town in the border vicinity, to the Bangladesh border town Banglabandha, is only 41 km by road. It is 532 km from the border to Dhaka and 346 km to Chittagong; the total distance from Kathmandu to Chittagong is 1,567 km. A new ICD was completed in 2010 with ADB

assistance and now the Nepal International Intermodal Transport Development Board operates the facility.

Nepalgunj is located 510 km west of Kathmandu and functions as a hub in western Nepal; it is 769 km to Delhi via Lucknow. There is a widely used meter gauge railway line 3 km from the border. The Department of Customs, Nepal, has commenced construction of a facility near the border.

Border Crossing Point	Imports ('000 metric tons)	Export ('000 metric tons)	Total ('000 metric tons)	Share of Total	Notes
Birgunj	2,417	445	2,862	45%	There are two gates: the Birgunj
C J	,		,		customs station and the Birgunj ICD.
					Cargo records sum volumes of these
					two. Excluding Indian cargo, the
					share of international cargo at this
					BCP is about 70%.
Biratnagar	709	587	1,296	20%	This is a road-based border station;
					most cargo is from Kolkata.
Bhairahawa	1,139	87	1,226	19%	This is road-based border station with
					significant passenger traffic. Cargo is
					from Delhi and Mumbai.
Kakarbhitta	250	134	384	6%	ADB is assisting the development of
					a larger BCP that is to open in 2014.
Nepalgunj	310	68	378	6%	This is the hub of western Nepal.
Krishnagar	83	6	90	1%	
Kailali	12	62	74	1%	
Kanchanpur	15	8	23	0%	
Total	4,935	1,397	6,333	100%	

 Table 4.13: Major Border Crossings in Nepal and Cargo Volumes

Abbreviations: ADB = Asian Development Bank, BCP = border crossing point, ICD = inland clearance/container depot

Note: For comparison purposes, the share of international cargo by border crossing point (excluding cargo to/from India) estimated by the manager of Birgunj ICD and Nepal Freight Forwarders was estimated 70% at Birgunj, 20% at Biratnagar, and the rest at Bairahawa and others points.

Sources: (i) PADECO Co., Ltd., TA No. 6435-REG: Preparing the South Asia Subregional Cooperation. Transport Logistics and Trade Facilitation Project (Cross-Border Regime Component), Final Report, November 2011; and (ii) This Survey

Data on import cargo traffic cleared by the Department of Customs, Nepal (16–22 July 2013), is presented in Table 4.14.

Border Crossing Point	Containers	Trucks	Tankers	Others	Total	Share
Birgunj ICD (*)	407	0	0	0	407	4%
Birgunj Customs	0	1,380	886	511	2,777	30%
Bhairahawa Customs	10	1,298	138	269	1,715	18%
Biratnagar Customs	116	602	222	337	1,277	14%
Dry Port Customs	178	571	0	87	836	9%
Mechi Customs	36	282	80	150	548	6%
TIA Customs	0	0	0	542	542	6%
Krishnagar Customs	0	153	0	192	345	4%
Nepalgunj Customs	2	136	66	81	285	3%
Kailali Customs	0	51	36	135	222	2%
Others (China border,						
_small points)	213	81	40	76	410	4%
Total	962	4,554	1,468	2,380	9,364	100%

Table 4.14: Import Cargo Traffic Cleared by Nepal Customs (One Week)

Abbreviations: ICD = inland clearance/container depot, TIA = Tribhuvan International Airport

Note: * This addition to the customs data was made by the JICA Survey Team. Since ICDs are in an account separate from the customs department account, information from interviews with ICD operators have been added to this dataset.

Source: Department of Customs, Nepal (also see the note above)

(8) Myanmar

Myanmar has two (notable) border crossing points with South Asian countries, one with Bangladesh and the other with North East India. The border crossing point with India is at Tamu, across from Moreh on the Indian side of the border. On the Myanmar side the border facilities are better furnished than on the Indian side, e.g., the Nampgalong market has more than 700 shops for trade with India, compared to only 100 shops on the Indian side for trade with Myanmar. The shops at Tamu stockpile large quantities of Chinese products for export to India. While in 2009 recorded exports from Myanmar were valued at only USD 2.12 million and imports at USD 1.47 million, local interviewees reported that unrecorded trade may exceed recorded trade by a ratio of about 20 to 1. The border crossing point with Bangladesh is still small and has insufficient facilities with unreliable power and water infrastructure. Trade at this point generally serves only local residents.

4.3 Transport Time and Cost of Intermodal Transport Cargo

Nepal relies on international multimodal transport. Customs officers interviewed at Birgunj reported that about 80% of inbound containerized cargo is from India, while the remaining 20% is unloaded and imported through Kolkata. These containers are treated as transit cargo in India and carried by trucks or by railway to Nepal.

Generally, it takes three days at Kolkata Port for customs and port clearance, and five days by truck to Birgunj. The transport of containers by railway takes about 10 days for container transport to the Birgunj ICD, where containers are opened and cargo reloaded on a truck and carried to Kathmandu.

The movement of a container from Kolkata to Kathmandu and back may take about 23 days in one round trip cycle, as described below:

- Day 1 (Monday): Customs agents submit declaration to both customs and port administration with the required reference documents. It takes three days for processing and requires 32 signatures in the customs office only.
- Day 4 (Thursday): The trailer leaves Kolkata for Raxaul. It takes five days to arrive at Raxaul. The customs procedure on the Indian side takes less than a day.

- Day 8 (Monday): The trailer cross the border and arrives at Birgunj.
- Day 9 (Tuesday): The import declaration is submitted to Nepal Customs. It takes a few days for processing.
- Day 11 (Thursday): The trailer starts moving to Kathmandu. It takes a few days to deliver and unload the contents of the container.
- Day 13 (Saturday): The trailer is on the return trip and back at Birgunj. Full-day processing is required for clearance at both customs offices.
- Day 15 (Monday): Processing is finished at Raxaul and the trailer starts moving toward Kolkata. It takes four days to carry the empty containers.
- Day 19 (Friday evening): The trailer is back at Kolkata
- Day 21 (Saturday): Since Sunday is not a working day, they wait until Monday to return.
- Day 23 (Monday): Containers are returned to the shipping company depot.⁵

The costs of hauling one 20-foot container from Kolkata to Kathmandu and Thimphu by trip component, for both road and railway transport, is set out in Table 4.15.

Table 4.15: Costs of Container Haulage (20') from Kolkata to Bhutan and Nepal

			Units: USD
	Trailer to	Trailer to	Railway to
Trip Component	Bhutan	Nepal	Nepal
Customs and port clearance at Kolkata	100	100	100
Cargo handling charges at Kolkata Port	150	150	100
Transport to Birgunj or Phuentsholing	800	850	500
Customs clearance	100	100	100
Border to Kathmandu			
or to Thimphu by Truck	300	300	300
Detention charge	100	100	250
Other facilitation costs	50	150	0
Total	1,600	1,750	1,350

Note: There is no railway connection to Bhutan. Source: This Survey

Containers from Kolkata to Nepal are carried by both trailer trucks and railway. The trailer charge is USD 850 on average, while the railway charge is USD 500. Containers are usually hauled up to the Nepal border crossing point. Most containers are opened at the border after customs clearance, after which the contents are reloaded onto trucks. However, some containers are carried to warehouses near Birgunj. Haulage from Birgunj to Kathmandu by truck requires two trucks for one container load and the total cost is USD 300. The situation is the same for containers arriving at the ICD Birgunj by railway.

Alternatively, break-bulk cargo can be carried on 15-ton trucks the entire way from Kolkata to Kathmandu without reloading at the border. The freight charge is USD 700 per truck. Since one container load equals two truckloads, when one compares the truck charge with the charge for container haulage, the cost of a truckload is USD 700 \times 2 = USD 1,400, while the cost of a container trailer is USD 800 + USD 300 = USD 1,100. In the case of an international through bill of lading⁶ from Singapore to Birgunj ICD, the rate is from USD 2,200–2,500. Detention

⁵ When there are holidays or irregularities, additional days of detention are charged. If containers are carried by railway, waiting queues are long and additional waiting time (weeks) is required.

⁶ A through bill of lading is a document issued by a shipping company and used for containerized door-to-door shipments, in this case from the port of Singapore to Birgunj (Nepal) that uses different means of transport (e.g., ship, railway, truck). An international through bill of lading is used specifically for containers crossing one or more

charges sometimes become high (as indicated in Table 4.16), perhaps a consequence of the lack of importance of Nepali cargo to the shipping lines.

Container Size	20'	40'
1–7 days	15	30
8–14 days	20	40
15–21 days	25	50
22+ days	48	96
G		

Table 4.16: Detention	Charges	(USD P	er Day)
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Source: This Survey

As for the cost to Bhutan, the procedures and cost for an international container at the port and land border are the same, and for trailers the charge is slightly less. Since the road from Kolkata to Phuentsholing is entirely within West Bengal, there are no state border charges. The travel time to Bhutan is nearly the same as to Nepal because the route in West Bengal is not well maintained. Containers are opened at the customs yard in Phuentsholing and reloaded to trucks for haulage to Thimphu.

Table 4.17 presents data on the cost of hauling cargo to the North East Region of India, by 6-, 10-, and 12-wheeled trucks. The charge per metric ton is about INR 6,000 (about USD 100 equivalent) from Delhi to Guwahati. The cargo is reloaded to smaller trucks and forwarded to cities in the North East Region with additional charges. In the case from Guwahati to Dimapur, an entry hub in Manipur, the charge is INR 8,000 per ton. Cargo is then reloaded onto another truck operating in Manipur for delivery to Imphal. A sample calculation assuming 1 TEU equals 10 tons on average yields a total cost of about USD 2,900 and travel time of 20 days for the 2,500 km trip from Delhi to Imphal.

Table 4.17: Truck Haulage Cost to the North East Region of India(for 10 Tons of Cargo)

Haulage	Distance (km)	Charge (USD)	Unit cost (INR/ton)
Delhi to Guwahati	1,900	968	6,000
Guwahati to Dimapur	500	1,290	8,000
Dimapur to Imphal	120	645	4,000
Total Charge	2,520	2,903	

Source: This Survey

4.4 Development Strategies

(1) Improvement of Border Crossing Points for Regional Connectivity

The improvement of BCPs along transit corridors is urgently required particularly to enhance regional connectivity between Bangladesh and the landlocked countries of Bhutan and Nepal. Improvements may include administration buildings, customs-immigration-quarantine (CIQ) facilities for trade facilitation, pavements, warehouses, and weighbridges. As noted, government authorities such as the Land Ports Authority of India (LPAI) and the Bangladesh Land Port Authority have plans to develop border stations into integrated check posts (ICP) and/or "land ports". Since many BCPs are listed as future assistance targets by the ADB and/or the World Bank, further liaison with these organizations is required.

countries in transit. The principal carrier takes care of all phases of the journey including customs procedures for transit through the third country, in this case India.

(2) Shift from Break-Bulk to Container Systems

When the generally recognized issues in trade and transport in the region such as weak infrastructure and institutional problems are addressed, containerized traffic will increase. Current infrastructure constraints on containerization traffic include the following:

- narrow roads, weak pavements, and mixed traffic (motorized and non-motorized);
- deteriorated railway infrastructure, a lack of locomotives and wagons, and proper cargo handling machines; and
- a lack of space and proper facilities at border crossing points.

In addition, there are issues regarding procedures and institutional aspects:

- a requirement for transshipment (reloading) at most borders;
- a lack of harmonized customs and other border procedures in the region; and
- limited or inadequate interregional transport and transit agreements.

Figure 4.6 presents a flow chart showing the international movement of goods in bags to the North East Region of India. Imported cargo, even in containers, is opened and reconsolidated in bags for distribution domestically to the North East Region or for processing. Because this bagged cargo is reloaded or transshipped at every border point, there is truck congestion, and additional time, land, and labor is required, resulting in high transport costs, and barriers to the flow of goods.

Customs and other border procedures are independently structured with multi-stop processing instead of being coordinated in one stop. While single-stop or single-window processing may be an ambitious goal at this stage, the need for good-practice coordinated border management is recognized by the officials of the countries in the region (as well as by international development partners). Thus, the realization of such coordinated border management in facilities such as joint ICPs at major border crossing points will be provide a challenge to be addressed by the region.



Abbreviation: NER = North East Region

Note: (i) Containers are not currently used for land transport. (ii) There is considerable reloading of bagged cargo at port, at the borders, and at transit hubs. Source: This Survey

Figure 4.6: International Cargo Flow Diagram (to North East India)

(3) Development of a Modern, Efficient Multimodal System

After infrastructure and institutional issues are addressed, containerization will increase. The market will utilize the containers as part of a multimodal transport system for haulage from the port and transit to landlocked countries. A containerized system will provide safety and certainty, while a multimodal system will provide speedy service.

There may be three steps to increase unit loading and containerization:

Step 1: Palletization for Loading Cargo on Trucks:

A unit load system with pallets will provide for quick loading-unloading with forklifts, a reduction in damages and losses, and a new local cargo distribution system.

Step 2: Use of 12-foot Containers while Infrastructure is Still Inadequate

A 12-foot container system will realize multimodal transport by rail and truck. The system will provide for safe distribution of India-borne cargo and be effective even with weak infrastructure.

Step 3: Implementation of a 20- and 40-foot Container System (compatible with the international system of seaborne containers)

A 12-foot container system can be implemented first for railway cargo from mainland India to the North East Region so that truck reloading to for travel to the destination will be easy and efficient. Management of containers should be properly done by railway companies in coordination with truck companies in the region. Pallets can provide handling efficiency for truck haulage and can be adopted first by truck companies in the North East Region and Bangladesh.

(4) Implementation of an Integrated Information System (Electronic Data Interchange to Single Window System)

The implementation of e-processing will improve procedures at borders and reduce the burden of officers in the field. In addition, cargo tracing will be possible with improved radio-frequency identification (RFID) technology. Also, risk management will be improved for all cargo types. At present, customs officers recognize the importance and possibility of single window procedures (and as shown in Table 3.10, Bangladesh with ADB assistance and Nepal with World Bank assistance have been developing national single window programs), but none of countries have commenced bilateral or multilateral discussions for single window implementation across borders. While some private companies have started using RFID technology to trace their trucks and cargo for their internal management purposes, institutional arrangements for implementing this technology for comprehensive trade facilitation remains a challenge for the region.⁷

Figure 4.7 presents a forecast of increased containerized in the subject countries of this survey in South Asia up to 2025, assuming infrastructure improvements are completed along all major routes. The forecast reflects an increase in consumer goods, an increase in industrial demand for materials, and a capacity increase allowing for an increase in containerized traffic.

⁷ Project S2 (Pilot Corridor Efficiency Project) profiled in Chapter 8 and Appendix 8.



Note: It was assumed that containerization will increased starting in 2018 after the installation of necessary facilities. Source: This Survey

Figure 4.7: Forecast Cross-Border Traffic by Type in the Subject Countries of This Survey in South Asia

Chapter 5 Environmental and Social Considerations

5.1 Overview

Table 5.1 summarizes existing development needs and potential environmental and social issues related to regional transport infrastructure in the survey countries in South Asia. Section 5.2 reviews general conditions of the survey area and development needs. Section 5.3 examines the main legal frameworks regarding environmental and social safeguards in the survey countries as well as those countries' safeguard policies for internationally assisted projects/programs. Section 5.4 sets out the key findings from data collection activities and interviews with relevant organizations undertaken during survey. Section 5.5 presents an initial environmental evaluation for shortlisted projects. Finally, Section 5.6 sets out key considerations for further studies.

	Relevant		
Issue	Countries	Current Status	Nature of Issue
Social and economic development disparities between/among regions within the survey countries	All survey countries	 Marked differences in economic and social development stages among the survey countries Inadequate land transport infrastructure development not only due to the geographical/technical reasons but also to historical, ethnic, and political reasons Active antigovernment movements/activities led by historical concerns and/or contemporary issues 	Geographical, historical, ethnic, and political
Difficult environmental clearance	Bhutan, India	 Relatively long and difficult process for both national and state environmental clearance No exceptions or special consideration given even for projects/programs of national importance, except for defense matters Uncertainty of a project approval in a case adjudicated by the courts 	Complexity of legal framework(s), independent and strict evaluation process
Difficult negotiations for land acquisition	Bangladesh, India, Nepal	 Underestimation of market prices for land compensation leading to critical gaps between the price offered by the government and the price expected by landowners Necessity of clear guidelines on value added after infrastructure development to manage the expectations of landowners Lack of safeguard policies on livelihood recovery in national legal frameworks Adaptation of JICA/World Bank/ADB guidelines for aid projects/programs 	Limited public land, highly strong and continuous demand for land due to population growth, outdated land laws

Table 5.1: Summary of Potential Environmental and Social Issues

	Relevant		
Issue	Countries	Current Status	Nature of Issue
Limited resilience to natural disasters	Bhutan, India (North East Region), Nepal	 Limited capacity and funding for emergency responses to large earthquakes Increasing number of landslides during rainy season(s) caused by prolonged and heavy rains likely due to the climate change phenomena 	One of the most active seismic zones in the world (the Himalayan Collision Zone) and global climate change

Note: The difficulty of environmental clearances/approvals for projects in North East India was noted during the Final Seminar for this survey held at Guwahati on 13 February 2014; streamlining was recommended. Abbreviations: ADB = Asian Development Bank, JICA = Japan International Cooperation Agency Source: This Survey

5.2 Environmental and Social Conditions of the Survey Area

5.2.1 Comparison of Millennium Development Goals in the Survey Area

The United Nations Millennium Development Goals (MDGs) provide a good reference to understand the overall natural and social conditions of the survey area. The MDGs include a set eight goals to be achieved by 2015 to combat poverty, hunger, and disease; provide education for all children and equal opportunities for both women and men; protect the environment; and establish a global partnership for development. Table 5.2 presents an assessment of progress towards selected targets in 2012 for the subject countries/region(s).

Goal	1	l		2	3	3	4	ŀ	5	5	(5		,	7	
	USD 1.25/d poverty	Underweight children	Primary enrolment	Primary completion	Gender primary	Gender secondary	Under 5 mortality	Infant mortality	Maternal mortality	Antenatal care	HIV prevalence	Tuberculosis	Forest cover	Protected area	Safe drinking water	Basic Sanitation
Southeast Asia	++	+	+	++	++	++	?	?	?	?	++	++	-	++	+	+
South Asia	?	?	+	?	++	+	?	?	?	?	++	++	++	++	++	?
Bangladesh	?	+	—	-	++	++	+	+	?	?	+	++	-	++	?	?
Bhutan	NA	?	?	+	++	++	+	?	++	+	I	++	++	++	?	?
India	?	?	++	+	++	+	?	?	?	?	++	—	++	++	++	?
Myanmar	NA	?	NA	++	++	++	?	?	?	?	++	++	-	++	?	++
Nepal	?	?	NA	?	+	+	+	?	?	?	++	_	-	++	++	?
Thailand	++	++	-	NA	++	++	+	?	?	++	++	++	-	++	++	++

 Table 5.2: Expectations for Achievement of Millennium Development Goals

<u>Goals:</u> 1: Eradicate extreme poverty and hunger, 2: Achieve universal primary education, 3: Promote gender equality and empower women, 4: Reduce child mortality, 5: Improve maternal health, 6: Combat HIV/AIDS, malaria and other diseases, 7: Ensure environmental sustainability, 8: Develop a global partnership for development

Signs: ++: Already achieved the 2015 target, +: Expected to meet the target by 2015, ?: Expected to meet the target, but after 2015, -: Slipping backwards or stagnating, NA: not available

Source: United Nations and Asian Development Bank, Accelerating Equitable Achievement of the MDGs: Asia Pacific Regional MDG Report, 2011/2012, February 2012

Although the disparities between/among countries are large, generally the achievement of MDGs in Southeast Asia has been better than in South Asia, especially regarding Goal 1, i.e., reduction of extreme poverty. As disparities between/among countries in the region are major development issues, so are disparities within countries, especially for emerging economies.

Thus, it is better to find supplementary references such as national censuses to better understand disparities within a country. Table 5.3 summarizes the status of achievement of the development goals in the survey area.

Development Goal	Status
1. Eradicate extreme poverty and hunger	Further efforts are necessary for all countries except for Thailand, which has already achieved the development goals.
2. Achieve universal primary education	Bangladesh and Thailand have not shown improvement or have gone backwards, while the other countries are likely to achieve the development goals.
3. Promote gender equality and empowerment of women	All countries have already achieved or are likely to achieve the development goals by 2015.
4. Reduce child mortality	Further efforts are necessary for all the countries except for Bangladesh, which is likely to achieve the development goals by 2015.
5. Improve maternal health	Further efforts are necessary for all countries except for Bhutan, which has already achieved the development goals.
6. Combat HIV/AIDS, malaria and other diseases	Except for Bhutan, all countries have achieved or are likely to achieve the HIV/AIDS goal. Bhutan has neither shown improvement nor gone backwards. Except for India and Nepal, all countries have achieved the tuberculosis goal; India and Nepal have neither shown any improvement nor gone backwards regarding achievement of the tuberculosis goal.
7. Ensure environmental sustainability	Bhutan and India have achieved the goal of forest cover while the other countries have neither shown any improvement nor gone backwards. All countries have already achieved the goal related to protected areas. Bangladesh, Bhutan, and Myanmar need further efforts to achieve the goal of safe drinking water while the others have already achieved this goal. Myanmar and Thailand have already achieved the goal of basic sanitation while the others need to make further efforts.

Table 5.3: Summary of Achievement of Development Goalsby the Subject Countries

Source: This Survey

5.2.2 Environmentally Protected Area in South Asia and Adjacent Areas

Environmentally protected areas are essential assets to ensure environmental sustainability not only for people alive now but also for future generations. However, environmentally protected areas have been a major constraint on economic development in some developing countries, especially for infrastructure development projects such as roads and hydropower plants.

All the countries in South Asia surveyed have legal statements for environmentally protected areas (indicating the name and size only), but precise boundary information is not available on the websites of the agencies responsible. However, such information is critical for project evaluation, especially for environmental clearance. The JICA Survey Team endeavored to collect boundary information during the field missions, but it was not possible to collect all relevant information due to scattered jurisdictions and data management issues. However, this information is also available on the World Database on Protected Areas (WDPA) for the entire survey region. WDPA is the most comprehensive global spatial dataset on marine and terrestrial protected areas. Since 1981 the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP–WCMC) has worked to complete and update the spatial data and make it available on its website in interactive GIS form.

The location of registered protected areas in the survey region in South Asia and vicinity are shown in blue in Figure 5.1. This boundary information will be utilized to evaluate the shortlisted/recommended regional connectivity projects in the following section of this chapter.



Source: The World Database on Protected Areas

Figure 5.1: Protected Areas in the Survey Region

5.2.3 Socially Sensitive Areas

Economic development stages and social needs vary among communities in the survey region. Although improvements in the road and railway network is generally accepted and welcomed by residents of the survey region, such improvements for economic development and provision of social services may not be the first priority for communities in areas where there have been longstanding conflicts. As noted, social development disparities within countries pose major development challenges for all countries in the survey region. In order to understand the social needs and potential risks of the development and operation of projects, understanding socially sensitive areas and their contexts is essential.

Recently, there has been some social instability due to the timing of elections in Bangladesh, Bhutan, Nepal, and India. However, there has been decades of conflict between central governments in the region and certain ethnic, religious, or other groups sharing common interests. Figure 5.2 maps the major conflicts in South Asia. Due to the political, physical, and/or technical/financial reasons, there are a number of active conflict zones, especially east of West Bengal (India).

In promoting regional connectivity, it will be preferable to work with key interest groups in addition to the government(s). While such conflicts pose risks for the development of regional connectivity projects, they may provide opportunities to address the interests of conflict groups and provide solutions for key stakeholders.



Figure 5.2: South Asia Conflict Map

There are a number of cross-border and internally displaced refugees in the survey region as a result of decades of social instability in the region. Myanmar in particular has been a major source of refugees in Asia as a consequence of decades of military governance. Figure 5.3 shows the location of refugee camps along Myanmar's borders with both Bangladesh and Thailand. The right side of the figure shows the number of refugees that have evacuated from the survey region and recognized by United Nations High Commissioner for Refugees (UNHCR). It also shows the number of refugees that have been accepted by the countries in the survey area and been recognized by UNHCR.

The Rohingya, an ethnic group originally settled in the Bangladesh–Myanmar border area in Rahhine State of Myanmar, are a major focus of refugee issues in the survey region. The Government of Bangladesh had accepted Rohingya refugees for over 30 years. The initial major influx of Rohingya refugees started in 1978 before the Enforcement of Citizenship Act (1982), which formally excluded them from both full and associate citizenship. Even before 1982, they were not formally recognized as one of the country's official national groups when the country gained independence in 1947. The Rohingya's roots are connected to those of ethnic groups in the Chittagong Hill Tracts in Bangladesh, and they speak different languages from the dominant Bama language and are adherents of Islam. Since Buddhism is the dominant religion in Myanmar, they have faced difficulties for over half a century.

After the Government of Myanmar began a transition toward a more democratic system in 2011, there have been a number of incidents of ethnic violence between the Rohingya in Rahkine State and Myanmar citizens. As a result, Rohingya refugees began to move to Bangladesh, but the Government of Bangladesh formally started to deny the Rohingya refugees entry with the advent of a more democratic Myanmar.

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	Refugees from	Refugees in	Internally Displaced
Bangladesh	10,161	230,697	0
Bhutan	41,589	_	0
India	14,258	185,656	0
Myanmar	<u>415,343</u>	0	430,400
Nepal	7,571	56,264	0
Thailand	380	84,479	0
Source: UNHC	R May, 2013		

Rohingya					
Displacement	Persons	Location			
Bangladesh	Unknown	Origins in Rahhine			
Citizen		State, Myanmar			
Camp	29,000	Kutupalong/Nayapara			
Informal Camp	36,000	Adjacent to C.P.			
		Kutupalong/Leda			
Chittagong	At least	Informal laborers in			
Division	200,000	CHT, other districts			
Abbreviation: CHT = Chittagong Hill Tracts					
Source: UNHCP Decision DDES/2011/12 (2011)					

Source: UNHCR Decision PDES/2011/13 (2011)

Source: United Nations High Commissioner for Refugees

Figure 5.3: Location of Refugees in the Survey Region

Legal Frameworks 5.3

5.3.1 **Environmental Protection and Environmental Clearance**

All countries in the survey region have enacted environmental protection laws and specified requirements for environmental assessment and guidelines in separate regulations. Table 5.4 summarizes the principal legal frameworks of each country followed by general assessment of each country's legal framework regarding environmental clearance.

	0 0 0	
Country	Principal Law	Environmental Clearance Regulations
Bangladesh	Environmental Conservation Act (1995)	Environmental Conservation Rules (1997)
Bhutan	Environmental Assessment Act (2000)	Regulation for the Environmental Clearance of Projects (2002)
India	The Environment (Protection) Act,	The Environment (Protection) Rules, (1986)
	(1986, amended 1991)	Environmental Impact Assessment
		Notification (2006)
Myanmar	The Environmental Conservation Law	Environmental Impact Assessment Rules
	(2012)	(draft; 2012)
Nepal	Environmental Protection Act (1997)	Environmental Protection Rules (1997)
Thailand	National Environmental Quality Act	Guidelines for environmental impact
	(1992)	assessment in selected industrial sectors
		(Office of Environmental Impact

Assessment)

Source: This Survey

(1) Bangladesh

- Most legal documents are available in Bengali (Bangla) on the relevant government websites, but only some are available in English.¹ Alternatively, the website of the Law Commission of Bangladesh, an integrated legislative government site,² provides some additional legal documents in English.
- There are two types of environmentally sensitive areas in Bangladesh: Ecologically Critical Areas (ECAs) and Protected Areas (PAs). Any project in an ECA or PA would be a Category A project. Environmental clearance is faster and easier in Bangladesh compared to most other countries in the region.³ Accurate boundary information in GIS formats is available from the Department of Environment/Ministry of Environment and Forests (MoEF) and the Bangladesh Forest Department/MoEF.
- Since the World Bank has been assisting the transport sector (including the road and railway subsectors) in Bangladesh, its environmental and social management framework (ESMF) safeguard policies have already been implemented in Bangladesh, as in India.⁴ Since the Government of Bangladesh adopts the policies and guidelines of international development partners for grant/loan projects, the environmental legal framework should be compatible with that in JICA guidelines.

(2) Bhutan

- Most legal documents are available in English on the National Environmental Commission's website, including relevant legislation, policies, and guidelines for environmental clearance documentations.⁵ Alternatively, the website of the Office of the Attorney General, an integrated legislative government site,⁶ provides other principal legal documents in English.
- There are four types of protected areas in Bhutan: national parks, nature reserves, wildlife sanctuaries, and biological corridors (buffer zones). These protected areas cover about 40% of the national land area. Any project in these protected areas is subject to heightened scrutiny; project proponents may expect that it will take at least two years to fulfill the requirements of an environmental clearance application. With increasing demand for development, the Bhutan Trust Fund for Environmental Conservation and the Forestry Services Division of the Ministry of Agriculture are actively preparing maps of ecological zones, which specify the value of these zones and may aid the Government of Bhutan's decision making regarding prudent development and the transformation of land use for economic activities.
- Since the Government of Bhutan adopts the policies and guidelines of international development partners for grant/loan projects, the environmental legal framework should be compatible with that in JICA guidelines.

(3) India

• The relevant legal documents⁷ including recent updates⁸ in English are available on government websites.

¹ Ministry of Environment and Forests (MoEF)/Bangladesh, laws downloaded from http://www.moef.gov.bd/html/ laws/laws.html.

² Law Commission of Bangladesh, see http://www.lawcommissionbangladesh.org.

³ Interview with the Ministry of Environment and Forests (MoEF)/Bangladesh, Department of Environment/MoEF, September 2013.

⁴ Interview with World Bank Bangladesh Office, Environmental Specialist, September 2013.

⁵ National Environmental Commission, http://www.nec.gov.bt.

⁶ Office of the Attorney General, Bhutan, see http://oag.gov.bt/resources/acts/.

⁷ MoEF/India, Impact Assessment Related Notifications, downloaded from http://moef.nic.in/division/impact-assessment-related-notifications.

- Information on all registered sensitive areas (e.g., ecologically sensitive areas, national parks) is available on the website of the Ministry of Environment and Forests (MoEF). Accurate boundary datasets with GIS shape files are available⁹ from the Indian Space Research Organisation (ISRO) and/or its relevant institutes. Such boundary information is useful for organizing potential projects and visualizing project demand as well as potential risks (e.g., environmental clearance, natural disasters).
- Since the World Bank has been assisting the transport sector (including the road and railway subsectors) in India, its Environmental Social Management Framework (ESMF) safeguard policies have already been implemented in the country, and these fulfill the requirements of JICA's environmental and social guidelines.

(4) Myanmar

• Most legal documents are available in English on the Ministry of Environmental Conservation and Forestry's website. ¹⁰ The principal environmental law is the Environmental Conservation Law (2012); draft Environmental Impact Assessment Rules have also been prepared. With the ongoing transition to democracy in Myanmar, the implementation of the legal frameworks and capacity of the responsible authorities is not well established. Therefore, as in other developing countries, capacity development of the responsible authorities and counterpart agencies in environmental management will be necessary to assure that official development assistance projects and programs are implemented following JICA and/or international development partner guidelines.

(5) Nepal

- Most legal documents are available in Nepali on the relevant government websites, but only some are available in English.¹¹ Alternatively, the website of the Nepal Law Commission, an integrated legislative government site,¹² provides some additional legal documents in English.
- There are four types of protected areas in Nepal: conservation areas, national parks, wildlife reserves, and hunting reserves, with buffer zones around these protected areas. Any project in such protected areas is a Category A project. Environmental clearance is relatively faster and easier in Nepal compared to most other countries in the region.¹³ Accurate boundary information in GIS formats is available from the GIS Unit of Department of National Parks and Wildlife Conservation, Ministry of Forest and Soil Conservation.
- Since the World Bank has been assisting the transport sector (including the road subsectors) in Nepal, the ESMF has already been implemented in the country, as in Bangladesh and India. Since the Government of Nepal has adopted the policies and guidelines of international development partners for grant/loan projects, the environmental legal framework should be compatible with that in JICA guidelines.

⁸ MoEF/India, Circulars downloaded from http://moef.nic.in/circulars.

⁹ The Indian Institute of Remote Sensing (IIRS) provided GIS datasets for the International Union for Conservation of Nature (IUCN) India for management of environmentally sensitive areas. Since there are no links to GIS maps on the IIRS website, the JICA Survey Team has requested IIRS to provide the link(s) to the GIS maps. If necessary, the JICA Survey Team will seek the GIS datasets from IIRS, or alternatively from the National Remote Sensing Center of ISRO.

¹⁰ Ministry of Environmental Conservation and Forestry, www.moecaf.gov.mm.

¹¹ MoSTE/Nepal, Legal Documents from http://moste.gov.np/legal_documents#.UkQCLWQY1ho.

¹² Nepal Law Commission, http://www.lawcommission.gov.np.

¹³ Interview with Ministry of Science, Technology and Environment (MoSTE)/Nepal, September 2013.

(6) Thailand

- Most legal documents are available in Thai on the website of the Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment (MoNRE). ONEP has been actively working on an English website and the translation of important legal documents.¹⁴ Overall environmental impact assessment (EIA) guides in English and even Japanese have recently been uploaded on the ONEP website.¹⁵ Although the principal law, the National Environmental Quality Act, was enacted in 1992, it has been amended a number of times to adapt it to emerging issues and international trends.
- The frameworks for environmental and social impact assessment and implementation are relatively strict, especially for projects that adversely affect protected areas. A long, complex process (requiring about one year) is required for official approval for activities in protected areas, including a baseline EIA study.
- In order to maintain the quality of EIA documents, ONEP has recently prepared EIA guidelines for the road/highway sector. An English version may be available by late 2013. Registered consulting firms for EIA preparation are available at ONEP's headquarters; the selection of a high-quality consulting firm is considered the fastest way to obtain environmental clearance.¹⁶

5.3.2 Land Clearance and Involuntary Resettlement

All countries in the survey region have land laws to ensure the ownership rights; these laws provide the principal legal framework to compensate landowners for the loss of land. However, there are no national safeguard policies to compensate for the loss of one's livelihood in the survey region in South Asia. In general, the taking of land for public projects is compensated by land for land or cash for land based on valuations prepared by the responsible agency; these valuations are typically far below market value and opportunity costs. Such differences have been a major issue and have led to long and hard negotiations for land clearance. Table 5.5 summarizes the principal legal frameworks for each country for land clearance and involuntary resettlement. Each country's practices and challenges are summarized in Section 5.4 on Key Factors for Project Evaluation.

¹⁴ Interview with ONEP, MoNRE, Thailand, September 2013.

¹⁵ ONEP, MoNRE/Thailand, http://www.onep.go.th/eia/index.php?option=com_content&view=category&id=12:cat-handbook.

¹⁶ Interview with ONEP, MoNRE, Thailand, September 2013.

Country	Principal Law	Resettlement Policy
Bangladesh	Acquisition and Requisition of Immovable Property Ordinance (1982)	No compensation is provided for resettlement assistance: only land for land or cash for land
	Highways Act (year to be provided)	compensation is provided under the land act and sector-related acts
Bhutan	Land Act (1979, revised 2007)	Same as above
India	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (2013) Land Act (1894, revised 1985) National Highways Act (1956) Railways Act (1989)	Same as above for highways and railways projects ^a until 2015 even though the LARRA (which requires recovery of livelihood and living conditions) entered into force in January 2014. In the case of implementation of the act for the initially excluded projects in its Fourth Schedule, the recovery of livelihood and living conditions for project affected persons is mandated although the actual date of implementation for highway and railway projects is uncertain. ^b .
Nepal	Land Acquisition Act (1977)	Same as Bangladesh and Bhutan

Table 5.5: Legal Frameworks for	or Land Clearance and	Involuntary Resettlement
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Abbreviations: LARR = Right to Fair Compensation and Transparency in the Land Acquisition, Rehabilitation and Resettlement Act

Notes: ^a Section 105 of the LARR specifies certain cases in which the LARR is not to be applied or is to be applied with some modifications. In particular, the fourth schedule of the LARR lists 13 acts, including the National Highways Act and the Railways Act, that are excluded from the LARR until January 2015. ^b Due to the power to amend the schedules (Section 106 of the LARR) and procedures to implement the act for excluded projects specified in the Fourth Schedule (Section 105(3) of the LARR), there is still uncertainty regarding the timing of implementation for excluded projects.

Source: This Survey

(1) Reference Guidelines for Projects Assisted by Development Partners

As noted, all countries in the survey region in South Asia have adapted JICA, World Bank, and/or ADB environmental and social management policies. Previously developed/adapted frameworks for the road and railway subsectors may serve as reference guidelines for the recommended priority projects in this survey. Tables 5.6 and 5.7 summarize the JICA, World Bank, and ADB environmental and social guidelines and reference frameworks.

Sector	JICA	World Bank	ADB
Environmental	 JICA Guidelines for Environmental and Social Considerations (2010) referring to relevant World Bank Operations 	 OP 4.01 Environmental Assessment (1999, updated 2013) OP 4.04 Natural Habitats (2001) OP 4.36 Forests (2002) OP 4.11 Physical Cultural Resources (2006) 	 ADB Safeguard Policy Statement (2009) Environmental Assessment Guidelines (2003) Environment Safeguards – A Good Practice Sourcebook (2012)
Social	 JICA Guidelines for Environmental and Social Considerations (2010) referring to relevant World Bank Operations 	 OP 4.12 Involuntary Resettlement (2001 updated 2011) OP 4.10 Indigenous Peoples (2005) 	 Involuntary Resettlement Safeguards – A Planning and Implementation Good Practice Sourcebook (2012) Indigenous Peoples Safeguards – A Planning and Implementation Good Practice Sourcebook (draft working document as of 2013)

Table 5.6: Environmental and Social Guidelines of JICA, the World Bank, and ADB

Abbreviations: ADB = Asian Development Bank, JICA = Japan International Cooperation Agency, OP = operational policy

Source: This Survey

Country	References			
Bangladesh	ADB Railway Sector Investment Program – Resettlement Planning Documents /			
	Resettlement Frameworks (2006)			
	• ADB Railway Sector Investment Program – IEE (2011)			
	• ADB Greater Dhaka Sustainable Urban Transport Corridor – Environmental Assessment			
	and Measures / Environmental Assessment Review Framework (2011)			
	• ADB Greater Dhaka Sustainable Urban Transport Project – Environmental Assessment			
	 ADB SASEC Railway Connectivity Investment Program: Initial Poverty and Social 			
	Analysis (2014)			
	• World Bank – Second Rural Transport Improvement Project (2012)			
	• World Bank – Bangladesh Padma Multipurpose Bridge Project (various)			
Bhutan	• ADB Road Network Project: Resettlement Framework (2005)			
	• ADB Road Network Project: Environmental and Social Monitoring Reports (2011)			
	• ADB SASEC Road Connectivity Project (formerly Road Network Project II (Additional			
	Financing): Environmental Impact Assessment for Nganglam–Deothang Road (2013)			
T 1'	• ADB Road Network Project II (all five sections, 2011)			
India	• World Bank – Eastern Dedicated Freight Corridor – 1 (2013)			
	• World Bank – India Second Kerala State Transport Project (2012)			
	• World Bank – Assam State Roads Project (2012)			
	• World Bank – Assam Agricultural Competitiveness Project (2011)			
	• ADB MFF – Railway Sector Investment Program: Environmental Assessment and Measures (2011)			
	ADD Bailway Sastar Investment Program: Besettlement Fremowerk (2011)			
	ADB Railway Sector Investment Program: Indigenous Peoples Planning Framework			
	(2011)			
	• ADB MFF – North Eastern States Roads Investment Program (Tranche 2): Resettlement			
	Planning Documents (2013)			
	ADB MFF – North Eastern States Roads Investment Program (Tranche 2): Combined			
	Resettlement Plan and Indigenous Peoples Plans (2013)			
	• ADB MFF – North Eastern States Roads Investment Program (Tranche 2): IEE (2013)			
Nepal	• ADB SASEC Road Connectivity Project (formerly Road Network Project II (Additional Financing)): Environmental Impact Assessment for Nganglam–Deothang Road (2013)			
	ADB SASEC Road Connectivity Project: Combined Indigenous Peoples Plan and			
	Resettlement Plan (2012)			
	• ADB SASEC Road Connectivity Project: Resettlement Planning Documents (2012)			
	ADB Subregional Transport Enhancement Project: Resettlement Planning Documents			
	(2012)			
	ADB Subregional Transport Enhancement Project: IEE (2010)			
	ADB Road Network Project II: Resettlement Planning Documents (2011)			
	 World Bank – Road Sector Development Project – Environmental and Social 			
	Management Framework – Vulnerable Community Development Framework (English)(2007)			
	• World Bank – Road Sector Development Project – Environmental and Social			
	Management Framework (Volume 1 of 2) – Resettlement Policy Framework (English) (2007)			
	• World Bank – Road Sector Development Project (Volume 1 of 3) – A Guide to the			
	Environmental and Social Issues Associated with New Road Construction and			
	Upgrading (2007)			

Table 5.7: Reference Environmental and Social Management Frameworks for the Road and Railway Subsectors in the Survey Region

Abbreviations: ADB = Asian Development Bank, IEE = Initial Environmental Examination, MFF = multitranche financing facility, PPP = public private partnership, SASEC = South Asia Subregional Economic Cooperation Source: This Survey

5.4 Key Environmental/Social Factors in Project Evaluation

While developing stages and needs vary among regions, project evaluations must address country- and region-specific issues, as set out below.

(1) Bangladesh

- **Resettlement:** Although the land law in Bangladesh does not cover livelihood recovery, all internationally assisted projects are to follow the guidelines of the participating development partner(s). The Ministry of Land (MoL/Bangladesh) is the focal point in securing land for project implementation. Since land is scarce and consequently a valuable asset in Bangladesh, MoL also evaluates projects and seeks to minimize land clearance. Early stage consultation with MoL may facilitate land acquisition and resettlement.
- Land Clearance and Resettlement in the Chittagong Hill Tracts: Different land clearance and resettlement processes are implemented for projects in the Chittagong Hill Tracts in southeastern Bangladesh (Khagrachhari, Rangamati, and Bandarban districts). The Ministry of Chittagong Hill Tracts Affairs (MoCHTA) is the focal point for projects in the area. Political and tribal power issues related to the Chittagong Hill Tracts tend to be complex, sometimes resulting in conflicts. Although tribal groups and the Government of Bangladesh signed a peace accord in 1997, some conditions of the accord have not been achieved and MoCHTA's annual budgets have been limited. As a result, the dissatisfaction of tribal groups has been increasing. Despite conflicts between and among stakeholders, road network development, especially between Bangladesh and Myanmar, could be supported by tribal groups due to their historical connection with communities in Myanmar.
- Environmental Clearance for Projects in Sensitive Areas: As a practical matter, there is no time difference for clearance between Category A projects and ECA/PA projects (also Category A). Although the Department of Environment (DoE), MoEF/Bangladesh, is to increase its scrutiny of projects, processing is expected to be the same as previously. If a project is a priority of the Government of Bangladesh, an environmental permit is likely to be given in a few weeks.¹⁷
- Rohingya Refugees in the Chittagong Hill Tracts, Cox's Bazar, and Chittagong District: The Rohingya ethnic group has settled in southeastern Bangladesh at least since the 1980s.¹⁸ Many Rohingya have been deeply involved in the local economy even without nationality (deprived by the Government of Myanmar) and formal documents without conflicts with Bangladeshi citizens. The issue of Rohingya refugees may not be critical for decision making of the Governments of Bangladesh and Myanmar regarding the implementation of transport infrastructure projects in the area due to the need for regional economic development.

(2) Bhutan

• **Resettlement:** As in other South Asian countries, the legal frameworks of Bhutan do not cover livelihood recovery. However, the Government of Bhutan accepts that all internationally assisted projects are to follow the guidelines of the participating development partner(s). The Ministry of Home and Cultural Affairs is the focal point in securing land for project implementation. Land acquisition may be less difficult in remote communities since the residents tend to have a strong desire to change their way

¹⁷ Interviews with IUCN Bangladesh and the Department of Environment, MoEF/Bangladesh, September 2013.

¹⁸ The origin of the Rohingya is unclear with some stating that they are indigenous to the state of Rakhine in Myanmar and others contending that they are Muslim migrants who originated in Bengal (now Bangladesh) and migrated to Burma (now Myanmar) during the period of British colonial rule.

of life and are therefore more willing to sell their property and start a new life in cities or wish to improve their lives by accessing markets through upgraded road networks. However, stakeholder assessments in the early planning stages are recommended.

- **Natural Disasters:** Earthquakes and landslides are major natural threats in Bhutan. Since the country is in one of the most active seismic zones in the world (the Himalayan Collision Zone), periodic major earthquakes are critical threats for any infrastructure development project in Bhutan. In addition, increasing rainfall in recent years, possibly due to climate change, has caused more frequent landslides and detached communities from their supply sources. With limited budget for road safety management and recovery works, it is essential at the planning stage to consider how to obtain additional budget for new road and railway infrastructure maintenance and emergency recovery. Considering expected budget constraints, avoiding of active landslide zones when developing new infrastructure may promote long-term sustainability.
- Environmental Clearance: Bhutan has unique natural habitats that it has successfully conserved with strong environmental policies. Accordingly, environmental clearance in Bhutan is more difficult than in its neighboring countries. However, due to increasing demand for economic development and required infrastructure development, the concerned agencies of Bhutan have commenced preparation of land use/development guidelines that will maintain core protected areas and allow for development in buffer zones outside of these core areas.

(3) India

- **Resettlement:** Although the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (LARR) of 2013 entered into force in January 2014, for the first year the National Highways Act and the Railways Act are to provide the main frameworks for compensation in the case of highway and railway projects¹⁹ and these framework do not provide for recovery of livelihood and living condition. Due to the power to amend the schedules (Section 106 of the LARR) and procedures to implement the act for excluded projects specified in the Fourth Schedule (Section 105(3) of the LARR), there is still uncertainty regarding the timing of implementation for excluded projects. If there is exceptional implementation of the LARR, the recovery of livelihood and living condition for project affected persons would be mandated by the LARR. In many cases, the difference between the market price under the acts and the actual market price has been the principal issue for legally titled persons. Illegal settlers have been relatively easy to relocate and they have been successful in recovering their living standards and improving their livelihoods with occupational training and employment.
- Land Clearance and Resettlement in Indigenous Communities: Approval of 80% of persons in a directly and indirectly affected indigenous community is necessary if a project requires land clearance and/or involuntary resettlement in an indigenous community area. There are tribal communities in the North East Region where the Government of India and the JICA India Office are interested in improving the road and railway networks. The Ministry of Tribal Affairs (MoTA) would serve as the focal point in mediating between project proponents and tribal communities. Early consultation and inclusive program development is recommended to facilitate eventual project implementation.²⁰
- Environmental Clearance for Projects in Sensitive Areas: Environmental clearance for Category A projects in India is relatively difficult and time consuming compared to

¹⁹ See the first note in Table 5.5.

²⁰ See the previous footnote.

comparable processes in other countries in Asia. Projects in or adjacent to environmentally sensitive areas, even on land already owned by the project proponent, take longer to clear than other Category A projects and there is some risk that clearance will not be received. Even a high-priority project of the government can be stopped by the Supreme Court of India, the decision of which is final. Due to the long process and the risk that clearance will eventually not be received, international development partners tend to avoid assisting projects in sensitive areas.

• Forest Clearance: It may not be difficult to acquire environmental permits (including permits for forest clearance) for projects that are not in environmentally sensitive areas. Clearance is likely if the project proponent commits to replanting 10 trees for each tree to be removed.²¹

(4) Nepal

- **Resettlement:** Although the land law in Nepal does not require livelihood recovery, all internationally assisted projects are to follow the guidelines of the participating development partner(s). The Ministry of Home Affairs is the focal point for securing land for project implementation, but the Ministry of Federal Affairs and Local Development is another important agency for determining land prices for compensation and building community consensus. Land acquisition has been increasingly difficult in recent years since the government's offering price at the time of purchase has been less than owners' expected/opportunity price. It is recommended that project proponents in Nepal communicate from the initial stage with local political leaders in project-affected communities in order to facilitate land acquisition and resettlement.²²
- Environmental Clearance for Projects in Sensitive Areas: The time for clearance for Category A projects and projects in protected areas (also Category A) is about the same. Although the Department of Environment (DoE), Ministry of Science, Technology and Environment (MoSTE)/Nepal, is to increase its scrutiny of projects, processing time is expected to be the same for the same category of projects. If a project is a priority of the Government of Nepal, an environmental permit is likely to be given.²³ Although the Environmental Protection Act 2053 (1977) requires implementation of environmental management plans with supervisory responsibility assigned to the line ministry undertaking the project, there has been little monitoring during construction and no auditing during project operation. A lesson of past JICA, ADB, and World Bank projects is that it will be productive to prepare a practical environmental management plan at the planning stage and assign necessary environmental management personnel (consultants) throughout the construction stage.

5.5 Natural and Social Environmental Evaluation of Proposed Projects

Then shortlisted projects presented in Chapter 8 were evaluated in terms of natural and social environmental impacts in order to assess their suitability for potential JICA assistance. In accordance with JICA's Guidelines for Environmental and Social Considerations (2010), the shortlisted projects/programs were (initially) examined with screening forms to better understand the nature of the projects/program and potential impacts. Although the shortlisted projects vary in terms of planning stage and the availability of information, common natural and social impacts were considered along with locally specific aspects from relevant documents and field surveys. Table 5.8 extracts JICA environmental and social impact checklist items for road

²¹ See the previous footnote.

²² Interviews with the Ministry of Federal Affairs and Local Development, ADB's Nepal Resident Mission, and JICA's Nepal Office, September 2013.

²³ Interview with the Ministry of Science, Technology and Environment/Nepal, September 2013.

and bridge projects. The summary of the expected impacts for the shortlisted projects is shown in Appendix 5.

Item	Points to Examine		
Natural Environment Factors			
Air Quality	possibility of air pollutants emitted from project-related sources, ambient air quality complying with the country's air quality standards, any mitigating measures taken in the case of existing industrial areas, possibility to worsen air pollution		
Water Quality	possibility of water quality degradation in downstream water areas from soil runoff from earthmoving activities possibility of water source contamination from surface runoff from roads and railways compatibility of project-related effluents with the country's effluent standards and ambient water quality standards		
Wastes •	proper treatment and disposal of waste generated from the project facilities in accordance with the country's regulations		
Noise and Vibration •	compatibility of noise and vibration from vehiclular and train traffic with the country's standards		
Protected Areas •	possibility of the project affecting protected areas designated by the country's laws or international treaties and conventions		
Ecosystem	encroachment on primeval forests, tropical rainforests, or ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats) encroachment on protected habitats of endangered species designated by the country's laws or international treaties and conventions possibility of adequate protection measures to reduce the impacts on the ecosystem of significant ecological impacts possibility of adequate protection measures to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accidents involving wildlife and livestock possibility of impacts (e.g., destruction of forests, poaching, reduction in wetland areas, and disturbance of ecosystems due to the introduction of exotic (nonnative, invasive species and pests) and adequate protection measures against such impacts. possibility of extensive loss of natural environments in cases where the project site is located in undeveloped areas		
Topography and Geology	possibility of the project adversely affecting surface water and groundwater flows presence of any soft ground along the route that may cause slope failures or landslides and implementation of adequate countermeasures possibility of slope failures or landslides caused by civil works (e.g., cutting and filling) and implementation of adequate countermeasures		
Impacts during Construction	 possibility of soil runoff from cut and filled areas, waste at soil disposal sites, and borrow sites, as well as implementation of adequate countermeasures adequate measures to reduce impacts during construction (e.g., noise, vibration, turbid water, dust, exhaust gases, and wastes) adequate measures to reduce impacts if construction activities adversely affect the natural environment (ecosystem) 		

Table 5.8: Checklist Items Extracted from the JICA Environmental and SocialImpact Guidelines (2010)

Item	Points to Examine
Social Environment Factor	'S
Resettlement	 involuntary resettlement caused by project implementation and efforts to minimize the impacts caused by the resettlement adequate explanation of compensation and resettlement assistance given to affected people prior to resettlement within the resettlement plan, inclusion of compensation with full replacement costs and restoration of livelihoods and living standards based on socioeconomic studies on resettlement prior compensation to be paid for resettlement documentation of compensation policies within the resettlement plan, particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples agreements with affected persons obtained prior to resettlement organizational framework established to properly implement resettlement as well as the capacity and budget secured to implement the plan plans developed to monitor the impacts of resettlement
	 establishment of grievance redress mechanism
Living and Livelihood	 possibility of affecting existing means of transport and associated workers; possibility of significant impacts such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment; and implementation of adequate countermeasures to prevent these impacts possibility of adversely affecting the living conditions of the residents other than the target population and implementation of adequate countermeasures to reduce the impacts possibility of disease, including infectious diseases brought by the influx of workers associated with the project, and implementation of adequate countermeasures for public health possibility of adversely affecting road traffic in the surrounding areas (e.g., an increase of traffic congestion and traffic accidents) possibility of project structures interfering with sunlight and/or radio waves
Heritage	• a possibility of damaging local archeological, historical, cultural, and religious heritage and implementation of adequate countermeasures
Landscape	 possibility of adversely affecting the local landscape
Ethnic Minorities and Indigenous Peoples	 consideration given to the reduction of impacts on the culture and lifestyle of ethnic minorities and indigenous peoples due respect of the rights of ethnic minorities and indigenous peoples in relation to land and resources
Working Conditions	 compliance by the project proponent with all laws and ordinances governing working conditions "tangible" safety considerations in place for individuals involved in the project (e.g., installation of safety equipment) planning and implementation of "intangible" safety and health program measures appropriate measures adverse safety impacts on other individuals involved or local residents
Impacts during Construction	• implementation of adequate countermeasures to reduce impacts on society

Source: JICA Guidelines for Environmental and Social Considerations (2010) summarized by This Survey

Based on information collected during this Survey, the types and magnitudes of impacts expected are generally typical for road, bridge, and railway projects, except for projects in hilly or mountainous area. Considering the relatively large number of projects and the limited availability of information for the natural and social impact assessments, most proposed/planned projects were indicated as "C" positive or negative (i.e., the extent of the impact is unknown impact). Further examination including more intensive field surveys will be required as specific projects move toward implementation. In the case of hilly or mountainous areas (particularly in Bhutan, India, and Nepal), landslides are a significant threat for any infrastructure development or maintenance projects. In the case of obvious landslide areas, the evaluation result was "A negative" (i.e., significant adverse impact is expected). But in other cases, since road, bridge, and railway projects in such hilly area were considered "A positive."

Although the expected impacts cannot specified with certainty at this planning stage, Table 5.9 sets out in general terms negative impacts that may be expected from the proposed road, bridge, and railway projects and which should be considered in more detail in the project planning documents prepared by local authorities and follow-on JICA studies.

Impact Area	Specific Impacts
Air Quality	Pollutants from construction machinery; waste management
	Pollutants from vehicles
	• Dust from construction machinery, vehicles, and railways
Water Quality	Muddy runoff during construction
	 Flash flooding or landslide runoff along/across new roads
	Contamination by toxic materials from accidents or illegal dumping
Noise and Vibration	• Disturbances from vehicles and railways in currently quiet communities and ecologically sensitive species
Protected Area	• Destruction of natural habitats in protected or adjacent areas
	• Disturbance of endangered or other ecologically important species
	• Interference with protected areas, buffer zones, or migration/ecological corridors (e.g., Asian elephant corridors)
Ecosystem	• Destruction of high-value ecological service areas identified by national or regional environmental policies, e.g., in rural communities or forest areas
Topography and Geology	• Triggering of landslides in hilly areas (in Bhutan, India, and Nepal) by earthquakes or rainfall
Resettlement	• Limited legal frameworks for livelihood recovery (covered by the safeguard policies of development partners)
	• Limited "land for cash" compensation (required by the safeguard policies of development partners)
	Assurance of proper implementation and monitoring of safeguards
Living and Livelihood	Relocation of existing businesses
	• Difficult transformation to contemporary lifestyle for elder project affected persons
Ethnic Minorities and	• Cultural and/or financial difficulties for residents of remote communities
Indigenous Peoples	Proper/reasonable benefit sharing among stakeholders

Table 5.9:	Expected	Negative	Impacts	То	Be Addr	essed

Source: This Survey

5.6 Recommendations for Further Studies

While this JICA Survey confirmed the eagerness for all stakeholders to benefit from economic development, it is recognized that the development of cross-border infrastructure is challenging,

for political reasons and sometimes geographic reasons. In moving forward with regional infrastructure development, it is recommended that further studies consider: (i) the proper design, implementation, and management of safeguard policies; (ii) requirements for financially practical and sustainable infrastructure development in harsh environmental areas; (iii) the understanding of stakeholders and assurance of participation by key stakeholders from the design stage onward. Table 5.10 presents additional details.

Impact	Remarks
(i) proper design, implementation, and management of safeguard policies	 Due to limited legal frameworks for land clearance and involuntary resettlement in the region, the safeguard policies of JICA and other development partners policies are necessary to address these issues. In order to avoid prolonged negotiations for involuntary resettlement, JICA's active participation in designing and implementing reasonable safeguard policies involving seamless communications among key stakeholders including governmental authorities and project affected persons is recommended. In order to ensure timely project implementation, it is also recommended that JICA ensure the proper implementation of safeguard policies by local authorities.
(ii) requirements for financially practical and sustainable infrastructure development in harsh environmental areas	 Infrastructure development in hilly areas in Bhutan, India, and Nepal has never been easy due to threat of natural disasters and landslides; funding for proper infrastructure management has been always short or tight in such areas. Infrastructure development in these areas is costly even with recently developed technologies. In order to avoid the high cost of new infrastructure and endless rehabilitation work in such areas, it is recommended to avoid specific locations with high levels of natural hazards as much as possible. In order to enhance regional connectivity and improve road safely, it is recommended to design or propose means of securing the funding for necessary infrastructure development at the design stage.
(iii) understanding of stakeholders and assurance of participation by key stakeholders from the design stage onward	 Some project areas will be within active conflict zones. Stakeholders and their demands may vary. However, most conflicts are based on poverty and the distribution of power, wealth, and resources. Regional connectivity projects alone cannot overcome such historical challenges, but it can directly reduce the effects of such issues when implemented with other social development programs. Since the design of the infrastructure should be based on user needs, it is recommended to first reach a consensus for project implementation in the local communities In order to avoid further conflicts and provide opportunities for active groups, it is recommended to better understand potential threats and possibilities for addressing community needs to build a consensus and achieve support for project implementation. It is recommended to involve key community stakeholders beginning with the design of the infrastructure.

 Table 5.10: Recommended Considerations for Further Studies

Source: This Survey

Identification and Evaluation of International Chapter 6 Economic Corridors (Road and Railway)

6.1 **Overview of Existing Situation**

The regional road network offers potential for enhanced connectivity. As shown in Figure 6.1, there is a need to unlock constrained connectivity to/from the North East Region of India. Currently, the East-West Highway serves as a trunk route to connect "mainland India" and the North East Region, but improved connections to better serve all states in the region are required. In addition, there is potential to improve connectivity to seaports for landlocked countries such as Nepal and Bhutan. There are a number of congested sections and chokepoints, between Nepal and India, and between India and Bangladesh. Within Bangladesh, connectivity between Dhaka and Chittagong needs to be improved. There are a number of missing road links or sections that are in poor condition in northern Bangladesh, between Petrapole and Dhaka, and the horizontal axis connecting Meghalava State and Nagaland State in the North East Region of India. There are, however, a number of ongoing projects building momentum, e.g., Asian Highway upgrading in Bhutan, the East-West Corridor Programme, the Special Accelerated Road Development Program in North East India, and four-laning of the Dhaka–Chittagong highway in Bangladesh. Further information by corridor is provided in the following chapter sections.



Source: This Survey

Figure 6.1: Example Road Network Issues and Opportunities

The regional railway network also offers potential for enhanced connectivity with examples shown in Figure 6.2. There is potential to develop missing links and complete the Trans-Asian Railway Network. There are capacity constraints of single-line sections and gauge standardization is also required through Bangladesh to maximize regional connectivity. There are a number of ongoing projects building momentum, e.g., the JICA Dhaka-Chittagong Project. Further information by corridor is provided in the following chapter sections.



Figure 6.2: Example Railway Network Issues and Opportunities

6.2 Evaluation Overview

One of the main objectives of this survey has been to identify and evaluate regional transport corridors (road and rail) with a view to identifying potential projects for JICA assistance. This objective was addressed through the two-stage process outlined in Figure 6.3.




Stage 1 focused on the development of a long list of regional transport corridors through a detailed stakeholder engagement process and review of regional policies, plans, and strategies. An evaluation of the long list under a set of strategic qualitative evaluation criteria was then completed to identify a smaller number of regional corridors to provide the focus for Stage 2. Further details are presented below.

Stage 2 set out the shortlisted regional road and rail corridors for further investigation and identification of possible projects for JICA assistance. The potential projects were then strategically assessed through a multi-criteria evaluation (including environmental and social considerations) to help identify high- and medium-priority projects for JICA assistance. Low-priority projects were then filtered out in the process to leave a more focused list of potential projects.

Stakeholder consultation with relevant government ministries and departments, regional bodies and development partners, private sector representatives, and academic institutions has been an important component throughout the process to collate, refine, and agree on corridors and projects.¹ Two seminars were held as part of this stakeholder consultation.

6.3 Stage 1: Identification of the Long List of Corridors

The JICA Survey Team compiled a long list of regional transport corridors. In line with the study objectives, these include road and rail corridors, but do not cover inland waterways or maritime transport. However, road and rail links to maritime gateways are included.

There has been a wealth of relevant regional connectivity strategies, studies, and plans prepared in the region, and these have been reviewed by the JICA Survey Team in order to formulate a comprehensive and up-to-date corridor list of medium- to long-term development plans. This review process assisted the JICA Survey Team's work to complement and add value to the previous work by other development partners.

In summary, the development of the long list took the following into account:

- **SAARC:** Regional corridors as set out in the SAARC Regional Multimodal Transport Study (SRMTS, 2006) were included where applicable from the SAARC-selected corridors. SAARC originally selected 10 road corridors and 5 railway corridors.
- **SASEC:** Key SASEC corridors were incorporated including a review of the 6 corridors from the SASEC Subregional Corridor Operational Efficiency Study.
- **Bangladesh–China–India–Myanmar (BCIM) Forum for Regional Cooperation:** While previously three corridors were discussed in this forum, the "middle" corridor is considered to have the most potential, with some potential for the "south" corridor. The "north" corridor was not included due to major implementation constraints.
- **BIMSTEC:** While BIMSTEC has not set out priority corridors, the "key routes for development", "key roads for development", and "priority crossings for upgrading" set out in the BIMSTEC Transport Infrastructure and Logistics Study (BTILS, 2008) were

¹ Consider, for example, that at the First Seminar for the Survey held in New Delhi on 16 January 2014, Mr. C. Kandasamy, Director General (Road Development) and Special Secretary, Ministry of Road Transport and Highways, Government of India, (i) urged a focus on catalytic, mega, greenfield, elevated smart corridors, citing Kolkata-Petrapole-Dhaka-Agartala-Myanmar-Thailand as an example "with potential to inspire"; (ii) noted the need to minimize land acquisition with three-dimensional land utilization; and (iii) called for providing multi-modal, multi-sectoral benefits to local people through "active roads", leading to a "regional welfare community". At the Final Seminar for the Survey held in Guwahati on 13 February 2014, Mr. M.P. Bezbaruah, Honourable Member, North Eastern Council, stated that the_concept of roads should be viewed broadly, and the Japanese *michi no eki* (roadside station) concept could be usefully applied.

incorporated. The BTILS is currently being updated with ADB assistance with completion expected by early 2014.

- Asian Highway and Trans-Asian Railway: The regional network of the Asian Highway and Trans-Railway routes was reviewed, including the sections of the long list of corridors that are included in these networks.
- United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP): Proposals for two greater integrated regional corridors are being developed by UNESCAP through a recently commenced master plan (one road corridor and one rail corridor) utilizing the Asian Highway and Trans-Asian Railway networks. The two UNESCAP corridors center on trunk movements as well as vertical connections.
- **ADB/World Bank:** Development programs and plans by other development partners were reviewed and discussed particularly with ADB and World Bank transport teams at the regional and country levels.
- **Government ministries and departments:** Corridors proposed by each country were reviewed through meetings with key ministries. These include some national- and state-level routes to complete the regional network.
- **Private sector:** Private sector interests particularly regarding future industrial requirements were reviewed.
- **Institutions and other stakeholders:** Key academic institutions and papers were also reviewed.

Therefore, this JICA Survey is well-timed to review and bring together these various plans and strategies. The long list of regional corridors based on a review of this information is presented in Tables 6.1 and 6.2 and the summary mapping in Figures 6.4 and 6.5.

Countries	Ref	Route
Bangladesh-(Myanmar)-	RO1	Chittagong–Cox's Bazar–[Teknaf]–(Myanmar)–(Thailand)
(Thailand)		
Bangladesh–India–	RO2	Kolkata–[Petrapole/Benapole]–Dhaka–Sylhet–
(Myanmar)–(Thailand)		[Sutarkhandi/Sheola] –Imphal–[Moreh]–(Myanmar)
Bangladesh–India–Nepal	RO3	Chittagong/Mongla–Dhaka–[Banglabandha]–Phulbari–
		[Kakarbhitta]–Kathmandu
Bangladesh–India	RO4	Jamuna Bridge–Shibganj–[Sona Masjid]–Maldha
	RO5	Chittagong–[Akhaura]–[Agartala]
	RO6	Kolkata-[Petrapole/Benapole]-Jessore-Dhaka-branches to
		Mongla and Chittagong Ports
Bangladesh–India–Bhutan	RO7	Chittagong/Mongla-[Burimari]-Chengrabandha-Jaigon-
		[Phuentsholing]–Thimphu
Bhutan–India	RO8	Thimphu-[Phuentsholing]-Jaigon-Kolkata
Bhutan–India–Bangladesh–	RO9	[Samdrup Jongkhar]–Guwahati–[Tamabil]–Shillong–
India		Sylhet – Dhaka-onward to India via other corridors
Bhutan–India–Nepal	Combina	tion of RO8 and RO3
India–(Myanmar)–(Thailand)	RO14	North East Region-Mizoram-[Myanmar]-[Thailand]
	RO2	Kolkata-[Petrapole/Benapole]-Dhaka-Sylhet-[Tamabil]-
		Imphal–[Moreh]–(Myanmar)
	RO15	North East Region's East-West Corridor-Moreh-
		(Myanmar)–(Thailand)
	RO16	Guwahati–Dimapur–Kohima–Imphal–[Moreh]–
		(Myanmar)

 Table 6.1: Long List of Regional Road Corridors

Countries	Ref	Route
India–Bangladesh–	Combina	tion of RO6 and RO1
(Myanmar)–(Thailand)	RO17	Chittagong-Ramgarh-Sabroom-Agartala-North Eastern
		Region
India–Bangladesh–India–	RO2	Kolkata-[Petrapole/Benapole]-Dhaka-Sylhet-[Tamabil]-
(Myanmar)–(Thailand)		Imphal–[Moreh]–(Myanmar)
	RO10	(Delhi)-Kolkata-[Petrapole/Benapole]-Dhaka-[Akhaura]/
		[Agartala]-connections through North East region of India
India–Bhutan	RO7	Chittagong/Mongla-[Burimari]-Chengrabandha-Jaigon-
		[Phuentsholing]–Thimphu
	RO8	Thimphu-[Phuentsholing]-Jaigon-Kolkata
India–Nepal	RO11	Kolkata/Haldia–[Raxaul]–[Birgunj]–Kathmandu
	RO12	New Delhi–[Nepalganj]–Kathmandu
	RO13	Lucknow–Sunauli–[Bhairahawa]–Kathmandu
	RO18	Kathmandu–AH2–Delhi
Nepal–India	RO3	Chittagong/Mongla–Dhaka–[Banglabandha]–Phulbari–
		[Kakarbhitta]–Kathmandu
	RO11	Kolkata/Haldia–[Raxaul]–[Birgunj]–Kathmandu
	RO12	New Delhi–[Nepalganj]–Kathmandu
	RO13	Lucknow–Sunauli–[Bhairahawa]–Kathmandu
	RO18	Kathmandu-AH2-Delhi
Nepal-India-Bangladesh	RO3	Chittagong/Mongla-Dhaka-[Banglabandha]-Phulbari-
1		[Kakarbhitta]–Kathmandu
Nepal–India–Bangladesh–	Combina	tion of RO3 and RO1
(Myanmar)-(Thailand)		
Nepal-India-(Myanmar)-	Combina	tion of RO3, RO8 then RO15
(Thailand)		

NB: RO19 forms a spur of RO2 within Bangladesh towards a potential new seaport at Kalapara Abbreviations: Ref = reference, RO = road

Source: This Survey



Figure 6.4: Long List of Regional Road Corridors

Countries	Ref	Route
Bangladesh-Myanmar-	RA1	Chittagong-Cox's Bazar-[Teknaf]-(Myanmar)-(Thailand)
(Thailand)		
Bangladesh-India-	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benepol-Dhaka-
(Myanmar)–(Thailand)		Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)
	Combin	ation of RA8 and RA10
Bangladesh-India-	RA3	Birgunji–Raxual–Singhabad–Rohanpur–Mongla/Chittagong Ports
Nepal	RA4	Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Port
-	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla
	RA6	Kakarbhitta-Phulbari (India)/Kakarbhitta-Panachagarh
		(Bangladesh)
	RA7	Nepal TAR East-West Corridor and connections to India
Bangladesh–India	RA3	Birgunj-Raxual-Singhabad-Rohanpur-Mongla/Chittagong Ports
	RA4	Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Ports
	RA5	Bardibas-Inarwa-Jaynagar-Radhikapur-[Birol]-Khulna-Mongla
	RA8	Imphal-Agartala-Akhaura/Gangasagar-Chittagong Port
	RA9	Kolkata–Gedes/Darsana–Padma river crossing–Dhaka–Chittagong
	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
		Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)
	RA10	Delhi-Kolkata-Gede/petrapol-Darshana/Benapole-Dhaka-
		Akhaura/Gagasagar-Agartala-(North East India)
	RA11	Birgunj–Raxaul–Kolkata Port/Haldia
	RA6	Kakarbhitta–Phulbari (India)/Kakarbhitta–Panachagarh
		(Bangladesh)
Bangladesh–India–	RA12	Mongla/Chittagong-Chilahati-Haldibari-Hasimara-(Bhutan)
Bhutan		
Bhutan–India	RA12	Mongla/Chittagong–Chilahati–Haldibari–Hasimara–(Bhutan)
	RA13	Kolkata–Hasimara–Phuentsholing
India–Bangladesh–	RA2	Delhi–Kolkata–Gede/Petrapole–Darshana/Benapole–Dhaka–
India		Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)
	RA10	Delhi–Kolkata–Gede/Petrapole–Darshana/Benapole–Dhaka–
		Akhaura/Gagasagar–Agartala–(North East India)
India–Nepal	RA11	Birgunj–Raxaul–Kolkata Port/Haldia
	RA4	Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Port
	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla
	RA14	Extension to connect to Vishakhapatnam Port
	RA6	Kakarbhitta–Phulbari (India)/Kakarbhitta–Panachagarh
		(Bangladesh)
	RA7	Nepal TAR East–West Corridor and connections to India
India–Bangladesh–	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
(Myanmar)– (Thailand)	0 1	Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)
	Combin	ation of KA8 and KA10
India–(Myanmar)–	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
(Inailand)		Shahbazpur–Maishashan–Imphal–Moren–(Myanmar)
	RA8	Imphal-Agartala-Akhaura/Gangasagar-Chittagong Port
India–Bnutan	KAI2	Niongia/Unittagong-Unitanati-Haldibari-Hasimara-(Bhutan)
No. 1 India	RAI3	Kolkata–Hasimara–Phuentsholing
ivepai-india	KA4	Birainagar–Jogoani–Kadnikapur–Birol–Khulna–Mongla Port
	KA3	Daruuvas-inarwa-jaynagar-Kadnikapur-[Birol]-Khulna-Mongla
	KA6	Kakaronitta–Phuloari (india)/Kakaronitta–Panachagarn
	D 4 1 1	(DangradeSfi) Dirguni Doyoul Kollecto Dest/Heldie
	KAII DA14	Birgunj-Kaxaul-Kolkata Port/Haldia
	KA14	Extension to connect to visnaknapatham Port

Table 6.2: Long List of Rail Corridors

Countries	Ref	Route		
Nepal–India–	RA3	Birgunji-Raxual-Singhabad-Rohanpur-Mongla/Chittagong Ports		
Bangladesh	RA4 Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Po			
	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla		
	RA6	Kakarbhitta–Phulbari (India)/Kakarbhitta–Panachagarh		
		(Bangladesh)		
Nepal–India–	Combin	ation of Nepal-India-Bangladesh corridors as described above plus		
Bangladesh-	RA1			
(Myanmar) (Thailand)				

Abbreviations: RA = rail, Ref = reference, TAR = Trans-Asian Railway Source: This Survey



Figure 6.5: Long List of Regional Railway Corridors

6.4 Stage 1: Corridor Evaluation Criteria

Stage 1 centered on a strategic qualitative analysis of the long list of road and rail corridors in order to shortlist a set of corridors for further investigation in Stage 2.

The evaluation criteria were derived to: (i) provide an overarching evaluation applicable to corridors of different sizes and modes; (ii) provide a simple, straightforward, and transparent shortlisting process; (iii) avoid duplication of previous prioritization studies and instead offer added value; (iv) provide an initial view of where to focus attention for Stage 2 of the study including the second field mission; and (v) offer flexibility and scope for further refinement when all information is available.

Five initial criteria based around four key themes (connectivity, strategy/plans, economics, and deliverability) were scored with the criteria summarized in Table 6.3.

Corridor	Evaluation Criteria	Criteria Scoring	
Connectivity	Number of countries	Provides direct links between three or more	2
	served	countries	
		Provides direct links between two countries	1
		Does not provide direct links with more than one	0
		country	
Strategy/Plans	Alignment with regional	Whole corridor included in one or more key	2
	strategy and plans	regional strategy documents	
	(SAARC/SASEC/BCIM	Part of the corridor included in one or more key	1
	BIMSTEC/UNESCAP)	regional strategy documents	
		Corridor not included in key regional strategy	0
		documents	
	Expected synergies with	Corridor plays a significant role in delivering	2
	other potential, planned,	potential or planned development partner projects	
	or completed	Corridor plays a slight role in delivering potential	1
	development partner	or planned development partner projects	
	projects	Corridor does not play a role in delivering	0
		potential or planned development partner projects	
Economic	Industrial Growth	Corridor has high industrial growth potential	2
	Potential	Corridor has medium industrial growth potential	1
		Corridor has low industrial growth potential	0
Deliverability	Ease of implementation	Corridor utilizes existing infrastructure without	2
		missing links	
		Corridor utilizes existing infrastructure in part	1
		but has missing links	
		Corridor does not use existing infrastructure	0

Abbreviations: BCIM = Bangladesh-China-India-Myanmar (BCIM) Forum for Regional Cooperation, BIMSTEC = Bay of Bengal Initiative for Multi-Sectoral, Technical and Economic Cooperation, SAARC = South Asian Association for Regional Cooperation, SASEC = South Asia Subregional Economic Cooperation, UNESCAP = United Nations Economic and Social Commission for Asia and the Pacific Source: This Survey

6.5 Stage 1 Results: Regional Road Corridors

Following the Stage 1 strategic evaluation, the scoring results for shortlisted regional road corridors are shown in Appendix 6. In addition to the scoring results, Tables 6.4 and 6.5 present information collected by corridor in this Survey to support the evaluation including a detailed strategy document/cooperation framework review, general comments, and details of projects and initiatives by other development partners including ADB and the World Bank.

Region	nal Econo	omic Corridor (Road)	Strategy Document Review/Reference				ıces*
Countries	Ref	Route	Α	В	С	D	Е
Bangladesh-	RO1	Chittagong-Cox's Bazar-	No	No	Yes (S)	No	Part
(Myanmar)–		[Teknaf]–(Myanmar)–(Thailand)					
(Thailand)							
Bangladesh-	RO2	Kolkata-[Petrapole/Benapole]-	No	No	Yes (M)	Part	Part
India–(Myanmar)		Dhaka–Sylhet–[Tamabil]–					
-(Thailand)		Imphal-[Moreh]-(Myanmar)					
Bangladesh-	RO3	Chittagong/Mongla–Dhaka–	Yes	Yes (9)	Part (S)	Part	Yes
India-Nepal		[Banglabandha]–Phulbari–	(4)				
		[Kakarbhitta]–Kathmandu					
Bangladesh-	RO4	Jamuna Bridge–Shibganj–[Sona	Yes	No	No	No	Part
India		Masjid]–Maldha	(9)				
	RO5	Chittagong–[Akhaura]–	Yes	Part	Part (S)	Part	Part
		[Agartala]	(6)	(5a)			
	RO6	Kolkata-[Petrapole/Benapole]-	No	Yes	Part (S)	Part	Part
		Jessore–Dhaka-branches to		(5a)			
		Mongla and Chittagong Ports					
Bangladesh-	RO7	Chittagong/Mongla-[Burimari]-	Yes	Part	Part (S)	Part	Part
India–Bhutan		Chengrabandha–Jaigon–	(8)	(5a)			
		[Phuentsholing]–Thimphu	(-)	()			
Bhutan–India	RO8	Thimphu-[Phuentsholing]-	Yes	Yes	No	Part	Part
		Jaigon–Kolkata	(3)	(3a)			
Bhutan–India–	RO9	[Samdrup Jongkhar]–Guwahati–	Yes	Part	Part	Part	Part
Bangladesh-		[Tamabil]-Shillong-Sylhet-	(5)	(5a)	(M)		
India		Dhaka-onward to India via other	(-)	()			
		corridors					
Bhutan-India-Nen	al	Combination of RO8 and RO3					
India-	RO14	North East Region–Mizoram–	No	No	No	No	No
(Mvanmar)–		(Myanmar)–(Thailand)					
(Thailand)	RO2	Kolkata-[Petrapole/Benapole]-	No	No	Yes	Part	Part
		Dhaka–Svlhet–[Tamabil]–			(M)		
		Imphal-[Moreh]-(Mvanmar)					
	RO15	North East Region's East–West	No	No	Part	No	Part
		Corridor–Moreh–(Myanmar)–			(M)		
		(Thailand)					
	RO16	Guwahati–Dimapur–Kohima–	No	No	Part	No	Part
		Imphal-[Moreh]-(Myanmar)			(M)		
India–	Combin	nation of RO6 and RO1					
Bangladesh-	RO17	Chittagong-Ramgarh-Sabroom-	No	No	No	No	Part
(Myanmar)-		Agartala–(North Eastern					
(Thailand)		Region)					
India–	RO2	Kolkata-[Petrapole/Benapole]-	No	No	Yes	Part	Part
Bangladesh-		Dhaka–Sylhet–			(M)		
India–		[Sutarkhandi/Sheola]–Imphal–					
(Myanmar)-		[Moreh]–(Myanmar)					
(Thailand)	RO10	(Delhi)–Kolkata–[Petrapole/	Yes	Part	Part	Part	Yes
× /		Benapole]–Dhaka–[Akhaura]/	(1)	(5a)	(M)		
		[Agartala]-connections through		. ,			
		North East region of India					
India–Bhutan	RO7	Chittagong/Mongla-[Burimari]-	Yes	Part	Part	Part	Part
		Chengrabandha-Jaigon-	(8)	(5a)	(S)		
		[Phuentsholing]-Thimphu					
	RO8	Thimphu-[Phuentsholing]-	Yes	Yes	No	Part	Part
		Jaigon–Kolkata	(3)	(3a)			
India-Nepal	RO11	Kolkata/Haldia–[Raxaul]–	Yes	Yes	No	Yes	Part
·····		[Birgunj]– Kathmandu	(2)	(1a)		•~	
	RO12	New Delhi-[Nepalgani]-	Yes	No	No	No	Part
		Kathmandu	(7)				

Table 6.4: Review of Regional Road Corridors – Strategy Documents and References

Regional Economic Corridor (Road)			Strat	Strategy Document Review/References*			
Countries	Ref	Route	Α	В	С	D	Е
	RO13	Lucknow-Sunauli-	Yes	No	No	No	Part
		[Bhairahawa]–Kathmandu	(10)				
	RO18	Kathmandu–AH2–Delhi	No	No	No	No	Yes
Nepal–India	Nepal–India See corridors 3, 11, 12, 13, and 16 above						
Nepal-India-	RO3	Chittagong/Mongla–Dhaka–	Yes	Yes	Part	Part	Yes
Bangladesh		[Banglabandha]–Phulbari–	(4)	(9)	(S)		
[Kakarbhitta]–Kathmandu							
Nepal-India-Bang	gladesh-	Combination of RO3 and RO1					
(Myanmar)-(Thail	land)						
Nepal–India–(Myanmar)– Combination of RO3, RO8 then RO15							
(Thailand)							
Notes: * (A) SAAF	RC 10 Pri	ority Corridors 2006 (SAARC Co	orridor No.)	; (B) SAS	EC 6 Prior	rity Corric	lors 2004

Notes: * (A) SAARC 10 Priority Corridors 2006 (SAARC Corridor No.); (B) SASEC 6 Priority Corridors 2004 (SASEC Corridor No.); (C) BCIM Middle (M) or, Southern Route (S) - Southern Route included for the moment, although indications are that BCIM may solely focus on the Middle Route; (D) BIMSTEC "Key Routes for Development" etc, 2008; (E) Asian Highway (AH) as per AH mapping, 2010; general note: full evaluation scoring included in Appendix 6. RO19 forms a spur of RO2 within Bangladesh towards a potential new seaport at Kalapara. Source: This Survey

Countries/		Other Development Partner		Example Benefits of
Corridor Ref	Comments	Projects	Needs (Demands)	Improvement
Bangladesh- (Myanmar)- (Thailand) RO1	 Trade between Myanmar and Bangladesh is limited; there are some political issues; improving the link to India, e.g., via Akhaura, may make more sense Lack of studies/plan for road on Myanmar side A priority of the Government of Myanmar is development of corridors to Thailand The Eastern Bangladesh Bridge Improvement Project 2009–13 (JICA-funded small-medium size bridges include locations along this corridor) 	ADB studying corridor but open to JICA assistance.	Political need of Bangladesh to open a gate to ASEAN without passing through India	Increased trade between (i) southeastern Bangladesh and northwestern Myanmar, and (ii) Bangladesh and ASEAN
Bangladesh– India– Myanmar) – (Thailand) RO2	 BCIM Middle Route Includes Trilateral Highway Government of India upgrading road/land port infrastructure near Kolkata, but there is room for JICA assistance related to road sections on AH1 (NH35) Eastern Bangladesh Bridge Improvement Project 2009–13 (JICA-funded small- medium size bridges 	 ADB is funding the road to Moreh as part of the ADB India/Myanmar SASEC Road Connectivity Sector Project: (i) Imphal– Moreh; (ii) Imphal– Tamenglong; and (iii) Imphal ring road World Bank is discussing the Trilateral Highway with Myanmar 	(i) Need for trade between North East India (Manipur) and West Bengal; (ii) need of North East India to access a seaport; (iii) demand for trade between India and Myanmar; and (iv) potential demand for trade between Bangladesh and Myanmar	(i) Reduction in transport time and costs between North East India (Manipur) and West Bengal, (ii) reduction in transport time and costs between North East India and a seaport, (iii) increased trade between Bangladesh and India, (iv) increased trade between India and Myanmar, and (v) development of trade potential between

Table 6.5: Review of Regional Road Corridors – Additional Information

Countries/	Comments	Other Development Partner	Noods (Domonds)	Example Benefits of
	include locations along this corridor)	rojects	weeds (Demands)	Bangladesh and Myanmar through India
Bangladesh– India–Nepal RO3	 Mongla Port has similar constraints as Kolkata Port – it is not a deep-sea port and has future capacity/expansion constraints Dhaka–Chittagong section heavily congested and requires improvement 	 ADB is prioritizing SAARC corridors 4 and 8. ADB supported works at Kakarbhitta land customs station but it is underutilized ADB Nepal/India SASEC Regional Road Project Kakarbhitta–Panitanki– Phulbari–Banglabandha ADB Bangladesh SASEC Regional Road Project – 4-laning of Joydevpur– Chandra–Tangail Road ADB Nepal Road Connectivity projects: SASEC Connectivity project, Subregional Transport Enhancement Project, and Transport Project Preparatory Facility 	(i) Need of Nepal to have an alternative seaport in a country other than India, and (ii) political needs of Bangladesh and Nepal to have a closer relationship	(i) Increased trade between Bangladesh and Nepal and (ii) benefits to road transport enterprises of Bangladesh from hauling Nepalese cargo from/to seaports in Bangladesh
Bangladesh– India RO4	• SAARC corridor but fairly minor	• N/A	Needs of western Bangladesh (separated from the rest of the country by the Jamuna River) to use Kolkata Port and to trade with West Bengal (India)	(i) benefits to road transport enterprises of India from hauling Bangladeshi cargo from/to Kolkata Port, and (ii) increased trade between Bangladesh and India
Bangladesh– India RO5	 Road and railway improvements are necessary for future growth Congestion chokepoint on route to Chittagong Provides gateway into North Eastern Region 	AH41 section part of ADB Priority Subregional Road Projects being studied	(i) Need of Tripura (India) to use the nearest international seaport, and (ii) need of Tripura to import commodities from Bangladesh (e.g., construction materials)	(i) Reduction in transport costs between North East India and an international seaport, (ii) benefits to road transport enterprises of Bangladesh from hauling Indian cargo from/to a seaport in Bangladesh, and (iii) increased trade between Bangladesh and North East India
Bangladesh– India RO6	Scored well but ruled out completely covered by ot	of shortlist since it is covered her corridors	Need for trade between India and Bangladesh	Increased trade between Bangladesh and India
Bangladesh– India–Bhutan RO7	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deepsea port and has future capacity/expansion constraints Dhaka–Chittagong section heavily congested and requires improvement 	 ADB prioritizing SAARC Corridors 4 and 8 ADB SASEC Road Connectivity Project in and around Phuentsholing (Pasakha Access Road, Mini Dry Port, Northern Bypass)Nepal Subregional Transport Enhancement Project (completion in 2014) 	(i) Need of Bhutan to have an alternative seaport in a country other than India, and (ii) political advantage of Bangladesh and Bhutan to have a closer relationship	(i) Increased trade between Bangladesh and Bhutan, and (ii) benefits to road transport enterprises of Bangladesh from hauling Bhutanese cargo from/to seaports in Bangladesh

Countries/		Other Development Partner		Example Benefits of
Corridor Ref	Comments	Projects	Needs (Demands)	Improvement
		 ADB Bhutan/India SASEC Regional Road Project – Phuentsholing– Jaigaon–Hasimara– Chengrabandha–Burimari ADB Bangladesh SASEC Regional Road Project – 4-laning of Joydevpur– Chandra–Tangail Road ADB SASEC Connectivity –Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain 		
Bhutan–India RO8	 70% of Bhutan's trade is along the corridor to Kolkata Port and the road is in poor condition (ADB); Kolkata Port has capacity constraints The Government of India is upgrading road and land port infrastructure although there is room for JICA assistance related to road sections on NH34 	 ADB Bhutan SASEC Road Connectivity Project in and around Phuentsholing (Pasakha Access Road, Mini Dry Port, Northern Bypass) ADB West Bengal Corridor Development (2011) ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain ADB pipeline project – SASEC Port Connectivity project (2015) – connections north from Kolkata 	(i) Need of Bhutan to use Kolkata as the nearest major international sea port, and (ii) need of Bhutan to trade with West Bengal (India)	(i) Increased trade between Bhutan and India, and (ii) benefits to road transport enterprises of India from hauling Bhutanese cargo from/to a seaport in India
Bhutan– India– Bangladesh– India RO9	 There is currently a gap in the AH network between India and Bhutan The Government of India is upgrading road and land port infrastructure near Kolkata, but there is room for JICA assistance related to road sections on AH1(NH35) Eastern Bangladesh Bridge Improvement Project 2009–13 (JICA-funded small- medium size bridges include locations along this corridor) 	 Small ADB road link in Bhutan – project to industrial zone at Samdrup Jongkhar (SASEC) ADB North Eastern State Roads Investment Project (approved in 2011) 	(i) Need for trade between North East India (Assam and Meghalaya) and West Bengal, (ii) need of North East India to access a seaport, and (iii) need of eastern Bhutan to access a seaport	(i) Reduction in transport time and costs between North East India (Assam and Meghalaya) and West Bengal, (ii) reduction in transport time and costs between North East India and a seaport, (iii) reduction in transport time and costs between eastern Bhutan and a seaport, (iv) increased trade between Bangladesh and India, and (v) increased trade between Bangladesh and Bhutan

Countries/		Other Development Partner		Example Benefits of
Corridor Ref	Comments	Projects	Needs (Demands)	Improvement
India– (Myanmar)– (Thailand) RO14	 Future importance of Sittwe Port – being enhanced by the Kaladan Multi-Modal Project, which will provide alternative connectivity for the North East with mainland India through the Kaladan River and Sittwe Port in Myanmar – project funded by the Ministry of External Affairs, India 	 World Bank Mizoram State Roads Project plus connection to Myanmar; World Bank State Roads Project II – split into two groups of projects, with the smallest section 28 km and largest of 112 km ADB Mizoram new road connection (road serving Kaladan project) 	Need for trade between North East India (Mizoram) and Myanmar	Increased trade between North East India (Mizoram State) and Myanmar
India– (Myanmar)– (Thailand) RO2	 BCIM Middle Route BCIM Middle Route Includes Trilateral Highway Government of India upgrading road/land port infrastructure near Kolkata, but there is room for JICA assistance related to road sections on AH1 (NH35) Eastern Bangladesh Bridge Improvement Project 2009–13 (JICA-funded small- medium size bridges including locations on this corridor) 	 ADB is funding the road to Moreh as part of the India/Myanmar SASEC Road Connectivity Sector Project: (i) Imphal–Moreh; (ii) Imphal–Tamenglong; (iii) Imphal ring road The World Bank is discussing the Trilateral Highway with Myanmar 	(i) Need for trade between North East India (Manipur) and West Bengal; (ii) need of North East India to access a seaport; (iii) demand for trade between India and Myanmar; and (iv) potential demand for trade between Bangladesh and Myanmar	(i) Reduction in transport time and costs between North East India (Manipur) and West Bengal, (ii) reduction in transport time and costs between North East India and a seaport, (iii) increased trade between Bangladesh and India, (iv) increased trade between India and Myanmar, and (v) development of trade potential between Bangladesh and Myanmar through India
India– (Myanmar)– (Thailand) RO15	 Includes Trilateral Highway (India– Myanmar–Thailand) Includes NHAI East- West Corridor project (ongoing) which stretches 678 km from Galgalia–Guwahati– Silchar. It is approximately 70% complete (average completion of each section according to NHAI) 	 ADB is funding the road to Moreh as part of the ADB India/Myanmar SASEC Road Connectivity Sector Project i) Imphal– Moreh; ii) Imphal- Tamenglong; iii) Imphal ring road. ADB North Eastern State Roads Investment Project (approved in 2011) 	Need for trade between North East India (Assam, Manipur, and Sikkim) and Myanmar	Increased trade between North East India (Assam, Manipur, Assam, and Sikkim) and Myanmar
India– (Myanmar)– (Thailand) RO16	Corridor similar to RO15 but alternate route better serves Nagaland	 ADB is funding the road to Moreh as part of the India/Myanmar SASEC Road Connectivity Sector Project: (i) Imphal–Moreh; (ii) Imphal–Tamenglong; (iii) Imphal ring road ADB North Eastern State Roads Investment Project (approved in 2011) 	Need for trade between North East India (Assam, Manipur, and Sikkim) and Myanmar	Increased trade between North East India (Assam, Manipur, Assam, and Sikkim) and Myanmar

Countries/		Other Development Partner		Example Benefits of
Corridor Ref	Comments	Projects	Needs (Demands)	(i) Deduction in
Bangladesh– (Myanmar)– (Thailand) RO17	 Potentially good support from both India and Bangladesh; Tripura and Mizoram states keenly interested; can link to existing AH in Bangladesh Eastern Bangladesh Bridge Improvement Project 2009–13 (JICA-funded small- medium size bridges including locations along this corridor) 	• N/A	(1) Need of Tripura (India) to use the nearest international seaport, and (ii) need of Tripura to import commodities from Bangladesh (e.g., construction materials)	(1) Reduction in transport costs between North East India and an international seaport, (ii) benefits to road transport enterprises of Bangladesh from hauling Indian cargo from/to a seaport in Bangladesh, and (iii) increased trade between Bangladesh and North East India
India– Bangladesh– India– (Myanmar)– (Thailand) RO2	 BCIM Middle Route Includes Trilateral Highway Government of India upgrading road/land port infrastructure near Kolkata, but there is room for JICA assistance related to road sections on AH1 (NH35) Eastern Bangladesh Bridge Improvement Project 2009–13 (JICA-funded small- medium size bridges including locations along this corridor) 	 ADB is funding the road to Moreh as part of the India/Myanmar SASEC Road Connectivity Sector Project: (i) Imphal–Moreh; (ii) Imphal–Tamenglong; and (iii) Imphal ring road The World Bank is discussing the trilateral highway with Myanmar 	(i) Need for trade between North East India (Manipur) and West Bengal; (ii) need of North East India to access a seaport; (iii) demand for trade between India and Myanmar; and (iv) potential demand for trade between Bangladesh and Myanmar	(i) Reduction in transport time and costs between North East India (Manipur) and West Bengal, (ii) reduction in transport time and costs between North East India and a seaport, (iii) increased trade between Bangladesh and India, (iv) increased trade between India and Myanmar, and (v) development of trade potential between Bangladesh and Myanmar through India
India– Bangladesh– India– (Myanmar)– (Thailand) RO10	 Scored well but ruled out since it is covered by other corridors New 4-lane bypass road of NH35 is planned (Kolkata– Petrapole) by the Government of India. Land port at Benapole is well equipped, and Petrapole on the Indian side is being expanding to meet demand (own funds) 	• ADB pipeline project - SASEC Port Connectivity project (2015) – connections north from Kolkata	(i) Need for trade between North East and mainland India; and (ii) need of North East India to access a seaport	(i) Reduction in transport time and costs between North East and mainland India, (ii) reduction in transport time and costs between North East India and a seaport, and (iii) increased trade between Bangladesh and India
India–Bhutan RO7	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and it has capacity/expansion constraints The Dhaka–Chittagong section is heavily congested and requires improvement 	 ADB prioritizing SAARC Corridors 4 and 8 ADB SASEC Road Connectivity Project in and around Phuentsholing (Pasakha Access Road, Mini Dry Port, Northern Bypass) Nepal Subregional Transport Enhancement Project (completion in: 2014) ADB Bhutan/India SASEC Regional Road Project – Phuentsholing– 	(1) Need of Bhutan to have an alternative seaport in a country other than India, and (ii) political advantage of Bangladesh and Bhutan to have a closer relationship	(1) Increased trade between Bangladesh and Bhutan, and (ii) benefits to road transport enterprises of Bangladesh from hauling Bhutanese cargo from/to seaports in Bangladesh

Countries/		Other Development Partner		Example Benefits of
Corridor Ref	Comments	Projects	Needs (Demands)	Improvement
		 Jaigaon–Hasimara– Chengrabandha–Burimari ADB Bangladesh SASEC Regional Road Project – 4-laning of Joydevpur– Chandra–Tangail Road ADB SASEC Connectivity – proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain 		
India–Bhutan	• 70% of Bhutan's trade	ADB Bhutan SASEC	(i) Need of Bhutan	(i) Increased trade
RO8	 is along the corridor to Kolkata Port and the road is in poor condition (ADB); Kolkata Port has capacity constraints The Government of India is upgrading road and land port infrastructure although there is room for JICA assistance related to road sections on NH34 	 Road Connectivity Project in and around Phuentsholing (Pasakha Access Road, Mini Dry Port, Northern Bypass) ADB West Bengal Corridor Development (2011) ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain ADB pipeline project - SASEC Port Connectivity project (2015) – connections north from Kolkata 	to use Kolkata as the nearest major international sea port, and (ii) need of Bhutan to trade with West Bengal (India)	between Bhutan and India, and (ii) benefits to road transport enterprises of India from hauling Bhutanese cargo from/to a seaport in India
India–Nepal RO11	• Congestion and bottleneck issues from Kathmandu to the Indian border (e.g., at Birgunj)	 Kathmandu–Birgunj–India section to be taken up by the World Bank; Nepal– India Regional Trade and Transport Project (including the Birgunj corridor) ADB Nepal Road Connectivity projects: SASEC Connectivity project, Subregional Transport Enhancement Project, and Transport Project Preparatory Facility ADB pipeline project – SASEC Port Connectivity Project (2015) – connections north from Kolkata 	(i) Need of Nepal to use Kolkata/Haldia Ports as the nearest major international seaports; and (ii) need of Nepal to trade with West Bengal (India)	(i) Increased trade between India (West Bengal) and Nepal; and (ii) benefits to road transport enterprises of India from hauling Nepalese cargo from/to a seaport in India
India–Nepal RO12	• Corridor connecting to Delhi at periphery of study area	ADB Nepal Road Connectivity Projects: SASEC Connectivity project, Subregional Transport Enhancement Project, and Transport Project Preparatory Facility	Need for trade between India and Nepal	Increased trade between India and Nepal

Countries/		Other Development Partner		Example Benefits of
Corridor Ref	Comments	Projects	Needs (Demands)	Improvement
India–Nepal RO13	• Corridor connecting to Delhi at periphery of study area	 ADB Nepal Road Connectivity projects: SASEC Connectivity project, Subregional Transport Enhancement Project, and Transport Project Preparatory Facility 	Need for trade between India and Nepal	Increased trade promotion between India and Nepal
India–Nepal RO18	New bridge required to connect to Asian Highway near Nepalese border	• N/A	Need for trade between India and Nepal	Increased trade between India and Nepal
Nepal–India– Bangladesh RO3	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and has future capacity/expansion constraints Dhaka–Chittagong section heavily congested and requires improvement 	 ADB prioritizing SAARC Corridors 4 and 8. ADB supported works at Kakarbhitta land customs station but underutilized ADB Nepal/India SASEC Regional Road Project Karkabitta–Panitanki– Phulbari–Banglabandha ADB Bangladesh SASEC Regional Road Project – 4- laning of Joydevpur– Chandra–Tangail Road ADB Nepal Road Connectivity projects: SASEC Connectivity Project, Subregional Transport Enhancement Project, and Transport Project Preparatory Facility 	(i) Need of Nepal to have an alternative seaport in a country other than India, and (ii) political needs of Bangladesh and Nepal to have a closer relationship	(i) Increased trade between Bangladesh and Nepal and (ii) benefits to road transport enterprises of Bangladesh from hauling Nepalese cargo from/to seaports in Bangladesh

Abbreviations: ADB = Asian Development Bank, AH = Asian Highway, BCIM = Bangladesh-China-India-Myanmar, DD = detailed design, FS = feasibility study, NH = National Highway, NHAI = National Highways Authority of India, SARDP-NE = Special Accelerated Road Development Programme in the North East

Notes: (i) The Southern Route has been included for now, but indications are that BCIM may solely focus on the Middle Route. RO19 forms a spur of RO2 within Bangladesh towards a potential new seaport at Kalapara. Source: This Survey

As shown in Table 6.6 and Figure 6.6, following the evaluation of the 16 regional road corridors in the Stage 1 review process, eight corridors were selected as potential JICA projects for further review in Stage 2. The corridors selected for further review in Stage 2 as potential projects were those that achieved a minimum of 7 points in the qualitative evaluation scoring (see Appendix 6). Therefore, the corridors not selected were those that were identified as either of less strategic importance and/or with less potential as JICA regional road projects.

Countries	Ref	Route
Bangladesh-(Myanmar)-	RO1	Chittagong–Cox's Bazar–[Teknaf]–(Myanmar)–(Thailand)
(Thailand)		
Bangladesh–India–	RO2	Kolkata–[Petrapole/Benapole]–Dhaka–Sylhet-
Myanmar)–(Thailand)		[Sutarkhandi/Sheola] — Imphal–[Moreh]–(Myanmar)
Bangladesh-India-Nepal	RO3	Chittagong/Mongla–Dhaka–[Banglabandha]–Phulbari–
		[Kakarbhitta]–Kathmandu
	RO5	Chittagong–[Akhaura]–[Agartala]
Bangladesh-India-Bhutan	RO7	Chittagong/Mongla-[Burimari]-Chengrabandha-Jaigon-
		[Phuentsholing]–Thimphu
Bhutan-India-Bangladesh-	RO9	[Samdrup Jongkhar]–Guwahati–[Tamabil]–Shillong–
India		Sylhet-Dhaka-onward to India via other corridors
India–(Myanmar)–(Thailand)	RO14	North East Region-Mizoram-(Myanmar)-(Thailand)
	RO2	Kolkata-[Petrapole/Benapole]-Dhaka-Sylhet-[Tamabil]-
		Imphal–[Moreh]–(Myanmar)
	RO15	North East Region's East-West Corridor-Moreh-
		(Myanmar)–(Thailand)
	RO16	Guwahati–Dimapur–Kohima–Imphal–[Moreh]–
		(Myanmar)
India-Bangladesh-		See RO1 and RO6
(Myanmar)–(Thailand)	RO17	Chittagong-Ramgarh-Sabroom-Agartala-(North Eastern
		Region)
India–Bangladesh–India–	RO2	Kolkata-[Petrapole/Benapole]-Dhaka-Sylhet-[Tamabil]-
(Myanmar)–(Thailand)		Imphal–[Moreh]–(Myanmar)
	RO10	(Delhi)–Kolkata–[Petrapole/Benapole]–Dhaka–
		[Akhaura]/[Agartala]-connections through North East
		region of India
India–Bhutan	RO7	Chittagong/Mongla-[Burimari]-Chengrabandha-Jaigon-
		[Phuentsholing]–Thimphu
Nepal–India	RO3	Chittagong/Mongla–Dhaka–[Banglabandha]–Phulbari–
		[Kakarbhitta]–Kathmandu
Nepal-India-Bangladesh	RO3	Chittagong/Mongla–Dhaka–[Banglabandha]–Phulbari–
		[Kakarbhitta]–Kathmandu
Nepal-India-Bangladesh-		Combination of RO3 and RO1
(Myanmar)–(Thailand)		

Table 6.6: Shortlist of Regional Road Corridors for Further Review

Abbreviations: Ref = reference, RO = road Source: This Survey



Figure 6.6: Shortlist of Regional Road Corridors for Further Review

6.6 Stage 1 Results: Regional Rail Corridors

Following the Stage 1 strategic evaluation, the shortlisted regional railway corridors were scored as shown in Appendix 6. Tables 6.7 and 6.8 present additional information collected by corridor in this Survey to support the evaluation including a detailed strategy document/ cooperation framework review, general comments, and details of projects and initiatives by other development partners including ADB and the World Bank.

Regional Econor	mic Cor	ridors (Rail)	Strategy	Docume	nt Review/	Referenc	es*
Countries	Ref.	Route	Α	В	С	D	Е
Bangladesh– Myanmar– (Thailand)	RA1	Chittagong–Cox's Bazar–[Teknaf]– (Myanmar)–(Thailand)	No	No	No	Part	No
Rangladesh_	RA2	Delhi-Kolkata-Gede/Petrapole-	Ves	No	Ves	Ves	Part
India-	1012	Darshana/Benenol-Dhaka-	(1)	110	(2 i)	105	1 urt
(Myanmar)–		Shahbazpur–Maishashan–Imphal–	(-)		(=)		
(Thailand)		Moreh–(Myanmar)					
`´´´ <u></u>	Combina	ation of RA8 and RA10					
Bangladesh-	RA3	Birgunji–Raxual–Singhabad–	Yes	No	Yes	Part	Part
India-Nepal		Rohanpur-Mongla/Chittagong	(4)		(5.i)		
_		Ports					
	RA4	Biratnagar–Jogbani–Radhikapur–	Part	No	Yes	Part	No
-		Birol–Khulna–Mongla Port	(4)		(5.ii)		
	RA5	Bardibas–Inarwa–Jaynagar–	No	No	Yes	Part	No
-	DAC	Kadnikapur-[Birol]-Knuina-Mongia	Na	Na	(5.111) N.a	Na	Ma
	KA0	Kakarbhitta, Panachagarh	INO	INO	INO	INO	NO
		(Bangladesh)					
-	RA7	Nepal TAR East–West Corridor and	No	No	No	Yes	No
	101)	connections to India	110	110	110	100	110
Bangladesh-	RA3	Birgunj-Raxual-Singhabad-	Yes	No	Yes	Part	Part
India		Rohanpur-Mongla/Chittagong	(4)		(5.i)		
_		Ports					
	RA4	Biratnagar–Jogbani–Radhikapur–	Part	No	Yes	Part	No
_		Birol-Khulna-Mongla Ports	(4)		(5.ii)		
	RA5	Bardibas–Inarwa–Jaynagar–	No	No	Yes	Part	No
-		Radhıkapur–[Bırol]–Khulna–Mongla			(5.111)		
	RA8	Imphal–Agartala–Akhaura/	No	No	Yes (2)	No	No
-	DAO	Kalkata Gadas/Darsana Badma	Vac	Vac	(5) No	Vac	Dort
	KA9	River crossing_Dhaka_Chittagong	(1 3 4)	(5h)	INU	105	rait
-	RA2	Delhi-Kolkata-Gede/Petrapole-	Yes	No	Yes	Yes	Part
	14.12	Darshana/Benapole–Dhaka–	(1)	110	(2.i)	105	i uit
		Shahbazpur–Maishashan–Imphal–					
_		Moreh–(Myanmar)					
	RA10	Delhi-Kolkata-Gede/Petrapole-	Part	No	Yes	Yes	Part
		Darshana/Benapole–Dhaka–	(1,4)		(2.ii)		
		Akhaura/Gagasagar–Agartala–					
-	D A 11	(North East India)	V	NI.	V	V	V
	KAII	Birgunj–Kaxaui–Koikata Port/ Haldia	(3)	INO	(4)	res	res
-	RA6	Kakarbhitta_Phulbari (India)/	(5) No	No	<u>(4)</u> No	No	No
	1010	Kakarbhitta–Panachagarh	110	110	110	110	110
		(Bangladesh)					
Bangladesh-	RA12	Mongla/Chittagong–Chilahati–	No	No	Yes	Part	No
India–Bhutan		Haldibari–Hasimara–(Bhutan)			(7)		
Bhutan–India	RA12	Mongla/Chittagong-Chilahati-	No	No	Yes	Part	No
-		Haldibari–Hasimara–(Bhutan)			(7)		
	RA13	Kolkata-Hasimara-Phuentsholing	No	No	No	No	No
India–	RA2	Delhi-Kolkata-Gede/Petrapole-	Yes	No	Yes	Yes	Part
Bangladesh-		Darshana/Benapole–Dhaka–	(1)		(2.1)		
India		Snanbazpur–Maishashan–Imphal– Moreh (Myanmar)					
-	RA10	Delbi_Kolkata_Gede/Detranole	Dart	No	Vac	Vec	Dart
	AA10	Denn-Kukaia-Ocuc/Fellapoie- Darshana/Benanole_Dhaka_	(1 4)	INU	(2 ii)	105	1 411
		Akhaura/Gagasagar_Agartala_	(1, 7)		(2.11)		
		(North East India)					

Table 6.7: Review of Regional Rail Corridors – Strategy Documents and References

Regional Economic Corridors (Rail)			Strategy	Docume	nt Review/	Referenc	es*
Countries	Ref.	Route	A	В	С	D	Е
India-Nepal	RA11	Birgunj-Raxaul-Kolkata Port/ Haldia	Yes (3)	No	Yes (4)	Yes	Yes
	RA4	Biratnagar–Jogbani–Radhikapur– Birol–Khulna–Mongla Port	Part (4)	No	Yes (5.ii)	Part	No
	RA5	Bardibas–Inarwa–Jaynagar– Radhikapur–[Birol]–Khulna– Monda	No	No	Yes (5.iii)	Part	No
	RA14	Extension to connect to Vishakhapatnam Port	No	No	No	No	No
	RA6	Kakarbhitta–Phulbari (India)/ Kakarbhitta–Panachagarh (Bangladesh)	No	No	No	No	No
	RA7	Nepal TAR East–West Corridor and connections to India	No	No	No	Yes	No
India– Bangladesh– (Myanmar)– (Thailand)	RA2	Delhi–Kolkata–Gede/Petrapole– Darshana/Benepol–Dhaka– Shahbazpur–Maishashan–Imphal– Moreh–(Myanmar)	Yes (1)	No	Yes (2.i)	Yes	Part
. ,	Combin	ation of RA8 and RA10					
India–	RA2	Delhi-Kolkata-Gede/Petrapole-	Yes	No	Yes	Yes	Part
(Myanmar)– (Thailand)		Darshana/Benapole–Dhaka– Shahbazpur–Maishashan–Imphal– Marah (Muramar)	(1)		(2.i)		
	RA8	Imphal–Agartala–Akhaura/ Gangasagar–Chittagong Port	No	No	Yes (3)	No	No
India–Bhutan	RA12	Mongla/Chittagong–Chilahati– Haldibari–Hasimara–(Bhutan)	No	No	Yes (7)	Part	No
	RA13	Kolkata–Hasimara–Phuentsholing	No	No	No	No	No
Nepal–India	RA4	Biratnagar–Jogbani–Radhikapur– Birol–Khulna–Mongla Port	Part (4)	No	Yes (5.ii)	Part	No
	RA5	Bardibas–Inarwa–Jaynagar– Radhikapur–[Birol]–Khulna– Mongla	No	No	Yes (5.iii)	Part	No
	RA6	Kakarbhitta–Phulbari (India)/ Kakarbhitta–Panachagarh (Bangladesh)	No	No	No	No	No
	RA11	Birgunj–Raxaul–Kolkata Port/ Haldia	Yes (3)	No	Yes (4)	Yes	Yes
	RA14	Extension to connect to Vishakhapatnam Port	No	No	No	No	No
Nepal–India– Bangladesh	RA3	Birgunji–Raxual–Singhabad– Rohanpur–Mongla/Chittagong Ports	Yes (4)	No	Yes (5.i)	Part	Part
	RA4	Biratnagar–Jogbani–Radhikapur– Birol–Khulna–Mongla Port	Part (4)	No	Yes (5.ii)	Part	No
	RA5	Bardibas–Inarwa–Jaynagar– Radhikapur–[Birol]–Khulna– Mongla	No	No	Yes (5.iii)	Part	No
	RA6	Kakarbhitta–Phulbari (India)/ Kakarbhitta–Panachagarh (Bangladesh)	No	No	No	No	No
Nepal–India– Bangladesh–		Combination of Nepal–India–Banglad	esh corrido	ors as deso	cribed abov	e plus RA	1

(Myanmar)–(Thailand)

Note: * (A) SAARC 5 Priority Corridors 2006 (SAARC Corridor No.); (B) SASEC 6 Priority Corridors 2004 (SASEC Corridor No.); (C) Draft SAARC Agreement (SAARC Ref); (D) Trans Asian Railway as per TAR mapping, 2011; (E) UNESCAP Rail Corridor; general note: full evaluation scoring included in Appendix 6. Source: This Survey

Countries/	Commente	Othern Development Development Development
Bangladesh– (Myanmar)– (Thailand) RA1	 Deliverability constraints Myanmar–Bangladesh trade is limited, plus there are political issues; improving the link to India, e.g., via Akhaura may make more sense Lack of studies/plan for railway on Myanmar side through Teknaf The corridor can serve a potential deep- sea port at Sonadia and help establish Bangladesh as a regional transport hub Sonadia Port would provide the nearest deep seaport to Nepal, Bhutan, and parts of India 	ADB Subregional Railway Bangladesh Subproject 4 – Construction of single-line, meter gauge railway from Dohazari–Cox's Bazar and Ramu to Gundum (100% FS, 48% DD, Tendering 5%) but open to JICA assistance
Bangladesh– India– (Myanmar)– (Thailand) RA2	 India is extending the railway to Imphal by 2016 and to Moreh (+60 km); the Jiribam to Imphal missing link is currently under construction and early reconnaissance studies and surveys have been undertaken for the Imphal to Moreh missing link by the Government of India Corridor includes single track meter and dual gauge gauge sections in Bangladesh constraining regional connectivity 	 ADB Tongi-Bhairab Bazar Double Track Project (completion expected in October 2014) complementing investments in the Dhaka-Chittagong Corridor by JICA and Indian Credit Alternate Route: New TAR missing link – ADB Subregional Railway Bangladesh Subproject 1 – Dhaka-Bhanga-Jessore through Padma Bridge (FS 44% complete, DD 35% complete) ADB Subregional Railway Bangladesh Subproject 3 – Construction of railway bridge parallel to Bangabandhu Bridge with provision of dual-gauge double track over the Jamuna River (FS 95%) ADB Subregional Railway Bangladesh Subproject 5 – FS for double-line Joydebpur–Ishurdi sections (FS 28%) ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening / reconstruction of Hardinge Bridge (FS 80%)
Bangladesh– India–Nepal RA3	 Bangladesh Railway currently has one yen loan project (Dhaka–Chittagong Railway Development Project) – doubling between Laksam and Chinki Astana under JICA Rohanpur–Singhabad: a project being completed with Government of Bangladesh financing Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep seaport and has future capacity/expansion constraints The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along the India–Nepal border The corridor includes single-track dual gauge sections in Bangladesh constraining regional connectivity The India–Nepal Birgunj railway connection is already complete 	 ADB Subregional Railway Bangladesh Subproject 2 – Double line and upgrade Akhaura–Laksam (FS 100% complete, DD 48% complete, tendering 17% complete) ADB Subregional Railway Bangladesh Subproject 3 – Construction of railway bridge parallel to Bangabandhu Bridge with provision of dual-gauge double track over the Jamuna River (FS 95%) ADB Subregional Railway Bangladesh Subproject 5 – FS for double line Joydebpur–Ishurdi sections (FS 28%) ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening / reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)

Table 6.8: Review of Regional Railway Corridors – Additional Information

Countries/	<u> </u>	
Bangladesh– India–Nepal RA4	 Mongla Port has similar constraints as Kolkata Port, e.g., it not a deep-sea port and has future capacity/expansion constraints The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along India– Nepal border The corridor includes single track meter and dual gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of Khulna–Mongla Port Rail Line Birol–Radhikapur: track gauge 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
Bangladesh– India–Nepal RA5	 conversion funded by JDCF is ongoing Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep sea port and has future capacity/expansion constraints The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along India– Nepal border The corridor includes single track meter and dual gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of Khulna – Mongla Port Rail Line Birol–Radhikapur: track gauge conversion funded by JDCF is ongoing 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
Bangladesh– India–Nepal RA6	 The Kakarbhitta–Chittagong corridor is important for Nepal as an alternative supply chain to Kolkata–Birgunj Currently, Chittagong–Kakarbhitta is of minor importance (high costs, cumbersome border procedures) The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along the India–Nepal border Potential rail connection (technical and political impediments should be examined) 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
Bangladesh– India–Nepal RA7	 Nepal Railways has aspirations to complete the TAR network across Nepal The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along the India–Nepal border 	 Nepal Trans-Asian Railway East-West Connection (Mechi–Mahakali Railway); JICA could consider the busiest section of the east-west route for trade and industry: Simara to Bardibas (180 km); a detailed design has been completed and Nepal is looking into funding possibilities (perhaps cofinancing with ADB, the World Bank, and/or other development partners); the Republic of Korea is discussing an MOU with Nepal for the Bardibas–Kakarbhhitta sections

Countries/		
Corridor Ref	Comments	Other Development Partner Projects
Bangladesh-	Bangladesh Railway currently has one	ADB Subregional Railway Bangladesh
India	yen loan project (Dhaka–Chittagong	Subproject 2 – Double line and upgrade
	Railway Development Project) –	Akhaura–Laksam(FS 100% complete, DD
RA3	doubling between Laksam and Chinki	48% complete tendering 17% complete)
10.0	Astana under IICA	ADB Subragional Pailway Bangladesh
	Astalia under JICA	• ADD Subregional Kallway Daligiduesh
	• Konanpur – Singnabad, a project being	Subproject 5 – Construction of failway
	completed with GoB financing	bridge parallel to Bangabandhu Bridge with
	• Being completed with GoB financing	provision of dual-gauge double track over
	 Mongla Port has similar constraints as 	the Jamuna River (FS 95%)
	Kolkata Port, e.g., it is not a deep sea	 ADB Subregional Railway Bangladesh
	port and has future capacity/expansion	Subproject 5 – FS for double line
	constraints	Joydebpur–Ishurdi sections (FS 28%)
	 The Governments of India and Nepal 	 ADB Subregional Railway Bangladesh
	agreed to cooperate in the development	Subproject 6 – FS for strengthening /
	of necessary railway infrastructure at	reconstruction of Hardinge Bridge (FS
	five border crossing points along the	80%)
	India Nenal border	ADB Subregional Railway Bangladesh
	The consider includes single treated and	• ADD Subregional Ranway Dangladesh
	 The contraor includes single track dual 	bridge over Jamung Diver neer Divisit
	gauge sections in Bangladesh	Diluge over Jamuna River near Phulchan-
	constraining regional connectivity	Banaduradad Gnat (FS 95%)
	• India–Nepal Birgunj railway connection	
	already complete	
Bangladesh–	 Mongla Port has similar constraints as 	 ADB Subregional Railway Bangladesh
India	Kolkata Port, e.g., it is not a deep-sea	Subproject 6 – FS for strengthening /
RA4	port and has future capacity/expansion	reconstruction of Hardinge Bridge (FS
	constraints	80%)
	 The Governments of India and Nepal 	ADB Subregional Railway Bangladesh
	agreed to cooperate in the development	Subproject 7: Construction of railway
	of necessary railway infrastructure at	bridge over Jamuna River near Phulchari–
	five border crossing points along India	Bahadurahad Ghat (FS 95%)
	Nepal border	Dunuduluoud Ghut (159576)
	• The corridor includes single track	
	mater and dual gauge sections in	
	Dangladash constraining regional	
	The Grant Challer of C	
	• The Government of India is financing	
	construction of Khulna – Mongla Port	
	Rail Line	
	 Birol–Radhikapur: track gauge 	
	conversion funded by JDCF is ongoing	
Bangladesh-	Mongla Port has similar constraints as	ADB Subregional Railway Bangladesh
India	Kolkata Port, e.g., it is not a deep-sea	Subproject 6 – FS for strengthening/
RA5	port and has future capacity/expansion	reconstruction of Hardinge Bridge (FS
	constraints	80%)
	 The Governments of India and Nepal 	ADB Subregional Railway Bangladesh
	agreed to cooperate in the development	Subproject 7: Construction of railway
	of necessary railway infrastructure at	bridge over Jamuna Diver near Dhulcheri
	five border crossing points along the	Bahadurahad Chat (ES 050/)
	Internet crossing points along the	Danauuravau Onat (FS 9370)
	mana-nepai border	
	Corridor includes single track meter-	
	and dual- gauge sections in Bangladesh	
	constraining regional connectivity	
	• The Government of India is financing	
	construction of Khulna – Mongla Port	
	Rail Line	
	 Birol–Radhikapur: track gauge 	
	conversion funded by JDCF is on-going	

Countries/ Corridor Ref	Comments	Other Development Partner Projects
Bangladesh– India RA8	 Onward connection from Bangladesh at Akharua to the North East India network An agreement signed between India and Bangladesh in May 2013 to construct the missing link between Akhaura and Agartala ensures that this part of the network will be is completed although with meter gauge 	• N/A
Bangladesh– India RA9	 Bangladesh Railway currently has one yen loan project (Dhaka–Chittagong Railway Development Project) – doubling between Laksam and Chinki Astana under JICA The corridor includes single-track, meter-gauge sections in Bangladesh constraining regional connectivity 	 Alternate Route: New TAR missing link – ADB Subregional Railway Bangladesh Subproject 1 – Dhaka–Bhanga–Jessore over the Padma Bridge (FS 44% complete, DD 35% complete) ADB Subregional Railway Bangladesh Subproject 2 – Double line and upgrade Akhaura–Laksam (FS 100% complete, DD 48% complete, tendering 17% complete) ADB Subregional Railway Bangladesh Subproject 3 – Construction of railway bridge parallel to Bangabandhu Bridge with provision of dual-gauge double track over the Jamuna River (FS 95%) ADB Subregional Railway Bangladesh Subproject 5 – FS for double line Joydebpur–Ishurdi sections (FS 28%) ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening / reconstruction of Hardinge Bridge (FS 80%)
Bangladesh– India RA2	 India is extending the railway to Imphal by 2016 and to Moreh (+60 km); the Jiribam to Imphal missing link is currently under construction and early reconnaissance studies and surveys have been undertaken for the Imphal to Moreh missing link by the Government of India The corridor includes single-track meter- and dual-gauge sections in Bangladesh constraining regional connectivity 	 ADB Tongi–Bhairab Bazar Double Track Project (completion expected in October 2014) complementing investments in the Dhaka–Chittagong Corridor by JICA and Indian Credit Alternate Route: New TAR missing link – ADB Subregional Railway Bangladesh Subproject 1 – Dhaka–Bhanga–Jessore over the Padma Bridge (FSR 44% complete, DD 35% complete) ADB Subregional Railway Bangladesh Subproject 3 – Construction of railway bridge parallel to Bangabandhu Bridge with provision of dual-gauge double track over the Jamuna river (FS 95%) ADB Subregional Railway Bangladesh Subproject 5 – FS for double line Joydebpur–Ishurdi sections (FS 28%) ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening / reconstruction of Hardinge Bridge (FS 80%)
Bangladesh– India RA10	 Follows similar corridor as RA2 but utilizes Akhaura connection into North East India An Agreement between India and Bangladesh signed in May 2013 to construct the missing link between Akhaura and Agartala ensures that this part of the network will be completed although with meter gauge 	 ADB Subregional Railway Bangladesh Subproject 3 – Construction of railway bridge parallel to Bangabandhu Bridge with provision of dual gauge double track over the Jamuna River (FS 95%) ADB Subregional Railway Bangladesh Subproject 5 – FS for double line Joydebpur–Ishurdi sections (FS 28%) ADB Subregional Railway Bangladesh

Countries/	Commonto	Other Development Portner Projects
Corridor Kei	Comments	Subproject 6 – FS for strengthening/
		reconstruction of Hardinge Bridge (FS 80%)
Bangladesh– India RA11	 SAARC corridor serving Nepal and India. Since Kolkata Port has capacity constraints, Nepal may look to an alternative in the future. India–Nepal Birgunj railway connection already complete 	 The World Bank is developing some projects in Birgunj to Kathamandu section
Bangladesh– India RA6	 The Kakarbhitta–Chittagong corridor is important for Nepal for an alternative supply chain to Kolkata–Birgunj Currently, Chittagong–Kakarbhitta is of minor importance (high costs, cumbersome border procedures) The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along the India–Nepal border Potential rail connection (technical and political impediments should be examined) 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over Jamuna River near Phulchari– Bahadurabad Ghat (FS 95%)
Bangladesh– India–Bhutan RA12	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and has future capacity/expansion constraints Route includes single-track, dual-gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of Khulna – Mongla Port Rail Line Burimari–Chengrabandha: a project is currently being completed with GoB financing Chilahati–Holdibari: a project is currently being completed with GoB financing 	 ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity through for Bhutan road/rail intermodal transport chain ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening / reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over Jamuna River near Phulchari– Bahadurabad Ghat (FS 95%)
Bhutan–India RA12	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and has future capacity/expansion constraints Route includes single-track, dual-gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of Khulna – Mongla Port Rail Line Burimari–Chengrabandha: a project is currently being completed with GoB financing Chilahati–Holdibari: a project is currently being completed with GoB financing 	 ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
Bhutan–India RA13	 Containers from Kolkata to Bhutan are carried by rail to Hasimara, and then by truck for 50 km to Bhutan border There is a RITES feasibility study for the missing link, but there are major land acquisition issues (tea pardens in India) 	• ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain

Countries/		
<u>Corridor Ref</u> India_	• See R 42 as reviewed above	See R 42 as reviewed above
Bangladesh– India RA2	• See KA2 as reviewed above	• See KA2 as reviewed above
India– Bangladesh– India RA10	 Follows similar corridor as RA2 but utilizes Akhaura connection into North East India An Agreement between India and Bangladesh signed in May 2013 to construct the missing link between Akhaura and Agartala ensures that this part of the network will be completed although with meter gauge 	 ADB Subregional Railway Bangladesh Subproject 3 – Construction of railway bridge parallel to Bangabandhu Bridge with provision of dual gauge double track over the Jamuna River (FS 95%) ADB Subregional Railway Bangladesh Subproject 5 – FS for double line Joydebpur–Ishurdi sections (FS 28%) ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%)
India–Nepal RA11	 SAARC corridor serving Nepal and India; since Kolkata Port has capacity constraints, Nepal may look to an alternative in the future India–Nepal Birgunj railway connection already complete 	• The World Bank is developing some projects in Birgunj to Kathmandu section
India–Nepal RA4	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and has future capacity/expansion constraints The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along India– Nepal border The corridor includes single-track meter- and dual-gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of Khulna–Mongla Port Rail Line Birol–Radhikapur: track gauge conversion funded by JDCF is ongoing 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
India–Nepal RA5	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and has future capacity/expansion constraints The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along India– Nepal border The corridor includes single-track, meter- and dual-gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of the Khulna–Mongla Port Rail Line Birol–Radhikapur: track gauge conversion funded by JDCF is ongoing 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
India–Nepal	Vishakhapatnam is 500 km south of Kallasta and 2 have a have	• N/A
КА14	Kolkata and 8 hours by train	

Countries/ Corridor Ref	Comments	Other Development Partner Projects
India–Nepal RA6	 The Kakarbhitta–Chittagong corridor is important for Nepal for an alternative supply chain to Kolkata–Birgunj Currently, Chittagong–Kakarbhitta is of minor importance (high costs, cumbersome border procedures) The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along the India–Nepal border Potential rail connection (technical and political impediments should be examined) 	 ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)
India–Nepal RA7	 Nepal Railways has aspirations to complete the TAR network connecting across Nepal The Governments of India and Nepal agreed to cooperate in the development of necessary railway infrastructure at five border crossing points along the India–Nepal border 	 Nepal Trans-Asian Railway East-West Connection (Mechi–Mahakali Railway); JICA could consider the busiest section of the east-west route for trade and industry: Simara to Bardibas (180 km); a detailed design has been completed and Nepal are looking into funding possibilities (perhaps cofinancing with ADB, the World Bank, and/or other development partners); the Republic of Korean is discussing an MOU with Nepal for the Bardibas–Kakarbhitta sections
India– Bangladesh– (Myanmar)– (Thailand) RA2	• See RA2 as reviewed above	• See RA2 as reviewed above
India– Bangladesh– (Myanmar)– (Thailand)	Combination of RA8 and RA10	Combination of RA8 and RA10
India– (Thailand) RA2	• See RA2 as reviewed above	• See RA2 as reviewed above
India– (Thailand)	• Combination of RA8 and RA10	• Combination of RA8 and RA10
India– (Myanmar)– (Thailand) RA2	• See RA2 as reviewed above	• See RA2 as reviewed above
India–Bhutan RA12	 Mongla Port has similar constraints as Kolkata Port, e.g., it is not a deep-sea port and has future capacity/expansion constraints Route includes single-track, dual-gauge sections in Bangladesh constraining regional connectivity The Government of India is financing construction of the Khulna–Mongla Port Rail Line Burimari–Chengrabandha: a project is currently being completed with GoB financing Chilahati–Holdibari: a project is currently being completed with GoB financing 	 ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain ADB Subregional Railway Bangladesh Subproject 6 – FS for strengthening/ reconstruction of Hardinge Bridge (FS 80%) ADB Subregional Railway Bangladesh Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%)

Countries/		
Corridor Ref	Comments	Other Development Partner Projects
India–Bhutan RA13	• Containers from Kolkata to Bhutan are carried by rail to Hasimara, and then by truck for 50 km to Bhutan border There is a RITES feasibility study for the missing link, but there are major land acquisition issues (tea gardens in India)	ADB SASEC Connectivity – Proposed Burimari Multimodal Facility for possible connectivity for Bhutan through road/rail intermodal transport chain
Nepal-India	• See RA4, RA5, RA6, RA11, and RA14 as reviewed above	• See RA4, RA5, RA6, RA11, and RA14 as reviewed above
Nepal–India– Bangladesh	• See RA3, RA4, RA5, RA6 as reviewed above	• See RA3, RA4, RA5, and RA6 as reviewed above
Nepal–India– Bangladesh– (Myanmar)– (Thailand)	 Combination of Nepal–India– Bangladesh corridors as described above plus RA1 	Combination of Nepal–India–Bangladesh corridors as described above plus RA1

Abbreviations: DD = detailed design, FS = feasibility study, GoB = Government of Bangladesh, JICA = Japan International Cooperation Agency, JDCF = Japan Debt Cancellation Fund, MOU = memorandum of understanding, Ref = reference, SASEC = South Asia Subregional Economic Cooperation, SAARC = South Asian Association for Regional Cooperation, TAR = Trans-Asian Railway, UNESCAP = United Nations Economic and Social Development Commission for Asia and the Pacific

Note: Full evaluation scoring has been included in Appendix 6.

Source: This Survey

As shown in Table 6.9 and Figure 6.7, following the evaluation of the 14 regional railway corridors in the Stage 1 review process, six corridors were selected for further review in Stage 2 as potential JICA projects. The corridors selected for further review in Stage 2 were those that achieved a minimum of 7 points in the qualitative evaluation scoring (see Appendix 6). Therefore, the corridors not selected were those that were identified as either of less strategic importance and/or with less potential as JICA regional road projects.

Countries	Ref	Route
Bangladesh–Myanmar– (Thailand)	RA1	Chittagong–Cox's Bazar–[Teknaf]–(Myanmar)–(Thailand)
Bangladesh-India-	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benepol-Dhaka-
(Myanmar)-(Thailand)		Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)
	RA4	Biratnagar-Jogbani-Radhikapur-Birol-Khulna-Mongla Port
	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla Port
	RA6	Kakarbhitta-Phulbari (India)/Kakarbhitta-Panachagarh (Bangladesh)
Bangladesh–India	RA4	Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Ports
-	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla Port
-	RA9	Kolkata-Gedes/Darsana-Padma River crossing-Dhaka-Chittagong
-	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
		Shahbazpur-Maishashan-Imphal-Moreh-(Myanmar)
	RA6	Kakarbhitta-Phulbari (India)/Kakarbhitta-Panachagarh (Bangladesh)
India–Bangladesh–India	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
		Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)
India-Nepal	RA4	Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Port
	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla Port
	RA6	Kakarbhitta-Phulbari (India)/Kakarbhitta-Panachagarh (Bangladesh)
India-Bangladesh-	RA2	Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
(Myanmar)–(Thailand)		Shahbazpur-Maishashan-Imphal-Moreh-(Myanmar)
India–(Myanmar)– R		Delhi-Kolkata-Gede/Petrapole-Darshana/Benapole-Dhaka-
(Thailand)		Shahbazpur–Maishashan–Imphal–Moreh–(Myanmar)

Table 6.9: Shortlist of Rail Corridors for Further Review

Countries	Ref	Route
Nepal–India	RA4	Biratnagar–Jogbani–Radhikapur–Birol–Khulna–Mongla Port
	RA5	Bardibas–Inarwa–Jaynagar–Radhikapur–[Birol]–Khulna–Mongla Port
	RA6	Kakarbhitta-Phulbari (India)/Kakarbhitta-Panachagarh (Bangladesh)
Nepal–India–		See above – RA4, RA5, RA6
Bangladesh		

Abbreviations: RA = railway, Ref = referenceSource: This Survey



Source: This Survey

Figure 6.7: Shortlist of Regional Railway Corridors for Further Review

Chapter 7 Identification and Evaluation of Potential Road and Rail Projects for JICA Assistance

7.1 Purpose and Outcomes of Stage 2

Stage 2 – the identification and evaluation of potential road and rail projects – built on Stage 1 (see Figure 7.1) by including a focused review of a smaller number of regional corridors and incorporating data and perspectives from the different sectors including industry and trade, freight transport and border facilities, the "soft" sector, and environmental and social impacts. Potential road and rail projects were identified and in turn analyzed through a multi-criteria analysis (including environmental and social considerations). Therefore, the outcomes of Stage 2 included: (i) evaluation of potential road and rail projects along the shortlisted regional corridors based on available information; and (ii) identification of projects with high, medium, or low priority for JICA assistance based on the multi-criteria analysis.



Source: This Survey

Figure 7.1: Stage 2 Flow Diagram

7.2 Identification of Potential Road and Rail Projects

Potential road and rail projects for JICA assistance were identified through stakeholder consultation in each country, discussions with JICA offices, and a review of relevant reports and documents. Consultations with regional, national, state, and local stakeholders and site visits (although due to the short survey period it was not possible to visit all corridors/projects) were undertaken.

Projects identified as fully funded by other development partners or a government were not included in the project list for this Survey. Only projects highlighted by stakeholders as having potential for JICA assistance were reviewed in the Survey.

In addition to reviewing the aforementioned regional context including the various cooperation frameworks, some additional comments are set out below by country relating to road and railway project identification.

Bangladesh. Extensive discussions were undertaken with the Roads and Highways Department (RHD) to assess the progress of current projects, existing studies, and potential projects for consideration by JICA. These discussions involved particular focus on the work undertaken by ADB in their priority subregional road projects. In addition, Bangladesh Railway provided detailed information regarding regional rail priorities, projects, and progress including information on its ADB Regional Cooperation and Integration Project (RCI) – Bangladesh Regional Transport Hub. The JICA Survey Team also met with ADB (and the World Bank) to identify projects that JICA could potentially assist/collaborate on in the future. A host of other organizations and research institutions were consulted to build up the list of projects, as well as (where time permitted) site visits to corridors and potential regional project areas across Bangladesh including the example in Figure 7.2 below.



RO17-a Feni Bridge Ramgarh (Sabroom) (view looking north)



RO17-b Chittagong to Ramgarh (alt 1) via NH-1 and R152 (relatively wide section of R152)

Source: This Survey

Figure 7.2: Example JICA Survey Team Site Visits of Potential Projects in Bangladesh

Bhutan. The Department of Roads discussed with the JICA Survey Team potential assistance for projects associated with ongoing ADB SASEC studies in around Phuentsholing among others including projects on the wider strategic network. The Survey Team visited the the Phuentsholing border area and had further discussions with a range of other stakeholders. Options for rail infrastructure projects are limited, since the main potential rail corridor from Phuentsholing opening up TAR connectivity has major land acquisition issues.

India. To develop an understanding of potential regional road and rail projects, consultations with the Ministry of Road Transport and Highways (MoRTH), the Ministry of Railways (MoR), the National Highway Authority of India (NHAI), Ministry of Development of North Eastern Region (MDONER), North Eastern Council (NEC), ADB, and the World Bank, among others were undertaken. A key focus area for potential road infrastructure projects with regional connectivity significance was in the North East states. This focus included collating information on the progress of major program including the Special Accelerated Road Development Programme in the North East (SARDP-NE) summarized in the following box and also national highway and Asian Highway improvement projects. Extensive stakeholder consultation was undertaken with state governments in the North East Region where the JICA Survey Team visited six states, as follows; also, extensive site visits were made, as illustrated in Figure 7.3.

• Assam: The JICA Survey Team met with Assam Public Works Department (PWD) including the commission and engineering departments to discuss potential projects for JICA assistance and also undertook site visits to the ongoing NHAI east-west corridor development project near Guwahati.

- **Manipur:** The Manipur PWD Principal Secretary and Director for External Assistance were consulted to discuss the ongoing and proposed projects (particularly ADB orijects) as well as those that JICA could potentially assist. A site visit to the important BCIM corridor section from Imphal–Jiribam (as far as Nungba) on the NH37 was completed.
- **Mizoram:** The PWD Roads Division and Department of Transport were consulted to discuss ongoing and proposed projects including those of the World Bank. Also, the JICA Survey Team visited some sections of the NH-54 SARDP-NE Phase B project between Aizawl and Tuipang.
- **Meghalaya:** Discussions were held regarding road projects undertaken with PWD and NEC; also site visits to view existing projects such as the Shillong to Guwahati road were made.
- **Nagaland:** The PWD Department of Planning and Coordination and Department of Transport was consulted among others and site visits were undertaken to various potential projects such as Kohima–Imphal and SARDP-NE projects in/around Kohima.
- **Tripura:** Discussions were undertaken with the Chief Secretary, PWD, and the Transport Department, PWD, among others, and site visits were undertaken along NH 54 between Agartala and Sabroom and also along the the Agartala/Akhaura border route.
- West Bengal: The Department of North Bengal Development and the Highways Department were consulted to discuss potential highway projects and site visits were undertaken from Kolkata towards the Bangladeshi border along sections of NH34 and NH35

Advanced discussions also took place between JICA and MoRTH regarding around 10 priority projects focusing on improving national highways in the North East Region, to complement improvements under SARDP-NE some of which are of importance for regional connectivity.

Special Accelerated Road Development Programme in North East (SARDP-NE)

The SARDP-NE programme has been divided into 3 parts: Phase A; Arunachal Pradesh Arunachal Package; and Phase B (see map below).

Objectives: The objectives of SARDP-NE are to (i) upgrade National Highways connecting state capitals to 2/4 lanes; (ii) provide connectivity for all 88 district headquarters towns of the NER with at least 2-lane roads; (iii) improve roads of strategic importance in border areas; and (iv) improve connectivity to neighboring countries. Therefore, some of the SARDP-NE projects have strategic regional connectivity importance supporting major corridors, while others serve internal connectivity and are more peripheral to regional corridors.

Phase A: This phase is focused on linking districts with Asian Highway Standard II class (double lane) roads connecting the major arterials of the NE. It is scheduled for completion in 2017 but is delayed. The phase totals over 4,000 km, and as of the SARDP-NE Status Report of mid-2013, about 1,000 km has been completed and nearly 1,500 km is under implementation. Phase A is being delivered by State PWDs, the Border Roads Organisation (BRO), MoRTH and NHAI. MoRTH allocated NHAI 394 km of the SARDP-NE program of which 60 km is complete and112 km is currently being completed.

Phase B: Focusing more on district connectivity, Phase B is not fully approved by the Government and due to a shortage of funds it is unlikely to be given the full go-ahead to begin until Phase A is about 80% complete. The total length of Phase B is 3,723 km.

Reasons for Delay: The key reasons for delays in the Programme include: (i) slow progress in obtaining environmental/forest clearances; (ii) slow progress in land acquisition; (iii) tough, hilly terrain and difficult working conditions including a restriction of working space and an 8–9 month monsoon period; (iv) a lack of technical knowledge/capacity in state PWDs (although some training by the Ministry is being provided); and (v) slow contracting and capacity constraints of local contractors.



Source: This Survey based on information received from MoRTH, NHAI, MDONER, and NEC



RO2-d: NH37 Imphal to Jiribam (major road bridge structure)



RO2-d: NH37 Imphal to Jiribam (truck parking and relatively good road condition at section towards Imphal)



RO16-a: NH2 Imphal to Kohima



RO16-a: NH2 Imphal to Kohima



RO14-a NH-54 Aizawl to Tuipang (narrow sections on ridge towards Darlawng)



RO14-a NH-54 Aizawl to Tuipang (junction of NH-54 SARDP-NE project and route towards World Bank project at Champhai)

Source: This Survey



Nepal. Discussions with the Department of Railways were held regarding the Nepal–India Border Connection Railway project (an agreement was reached by the Government of India and the Government of Nepal to develop five border crossing points) and the long-term potential for JICA assistance for the Nepal Trans-Asian Railway East-West Connection (the Mechi–Mahakali Railway); however, this railway corridor was not shortlisted in the Survey. ADB, the World Bank, the Department of Roads, and the Nepal Intermodal Transport Development Board (among others) were consulted regarding potential road projects. The World Bank is developing the Birgunj to Kathmandu corridor and ADB is conducting wide-ranging studies for road connectivity across Nepal and have noted potential for cofinancing for road section spurs of regional routes as part of the ADB Transport Project Preparation Facility. In addition, JICA's Project for Transport Sector in Nepal (2013), which included three recommended regional road projects by the JICA resident road expert, was reviewed.

7.3 Stage 2 Evaluation Criteria

(1) Overview

A multi-criteria evaluation of potential road and rail projects was undertaken, incorporating the sector analysis. A total of 13 evaluation criteria using largely qualitative information (due to the limited time and scope of this Survey) were applied and are outlined in turn below.

The criteria were specifically selected to: (i) ensure some consistency with Stage 1 evaluation themes – connectivity, strategy/plans, economic viability, and deliverability, but add more detail and also include environmental and social criteria that are suited for this level of evaluation; (ii) provide a balanced multi-criteria evaluation utilizing the Survey Team's analysis in various sectors; (iii) best utilize the information and data that are likely to be available consistently across the survey area/modes/projects; and (iv) build upon the added value this survey brings, e.g., through a review of initiatives of other development partners and the latest regional strategy documents, and industrial sector inputs.

Due to the varied planning stages of the identified projects some of which have been the subject of detailed design while others are still only at the conceptual stage, the availability of assessable information was found to be varied but generally limited. The Stage 2 evaluation process was designed to allow consistency in evaluation and recommendations based on available information.

(2) Connectivity/Freight and Logistics

Potential Freight time Savings: This criterion evaluated whether the project is along one of the corridors considered to offer high potential from a logistics point of view (RO3, RO7, RO15, and RO17): (i) high – the project is along one of these three corridors; (ii) medium – the project is along a spur of one of these corridors; and (iii) low – the project is not on one of the the corridors.

Facilitation of Connectivity to Port(s) for Landlocked Countries: This project evaluated whether the project is along one of the key corridors serving Mongla/Chittagong from Bhutan or Nepal (RO3 or RO7): (i) high – the project is along one of the key corridors serving Mongla/Chittagong from Bhutan or Nepal (RO3 or RO7); (ii) medium – the project is along one of the secondary corridors serving Mongla/Chittagong from Bhutan or Nepal (RO3 or RO7); (ii) medium – the project is along one of the secondary corridors serving Mongla/Chittagong from Bhutan or Nepal (RO1 top section, RO9, RO15, RO5 + RO2 for Kolkata/Haldia); and (iii) low – the project is not along a corridor serving Mongla/Chittagong from Bhutan or Nepal.

(3) Strategy/Plans

Strategic Importance: This criterion evaluated whether the project is part of a major corridor that is fully included in one of the regional cooperation frameworks: (i) high – the project is part of a major corridor that is fully included in one of the cooperation framework (i.e., SAARC, SASEC, BCIM) priorities); (ii) medium – the project forms a spur to a major corridor that is fully included in one of the cooperation frameworks, or is along a corridor partly included in a cooperation framework; and (iii) low – the project is too peripheral to have an impact on a corridor.

Alignment with JICA strategy for the region: This criterion evaluated whether the project is fully, partly, or not aligned with JICA Strategy.

Expected synergies with other development partner projects: This criterion evaluated whether the project plays a significant role in delivering potential or planned projects by other development partners; for example, whether the project helps complete a route being developed by another development partner, whether the project be undertaken in collaboration with another development partner, or whether the project has already been taken up in full by another development partner.

(4) Economic/Industry

Qualitative review of traffic potential: This criterion was scored by referring in part to the (draft) output of ADB TA-7650 REG (Regional Transport Development in South Asia, June 2013), scoring of "future potential", and assumptions for additional corridors not included in that report.

Economic growth potential: Drawing on analysis from Chapter 2 on Trade, Industry, and Land Transport Requirements in the Region, this criterion evaluates whether additional growth in the relevant region (as a result of facilitating the infrastructure/project) is likely to (i) exceed the overall growth of the country; (ii) is likely to be positive, but below the overall growth of the country; or (iii) no additional growth can be expected even after facilitating the infrastructure/ project.

Importance of the project for industry: Also, drawing on analysis from Chapter 2, this criterion evaluates whether Japanese or non-Japanese companies dealing with relevant products (i) benefit significantly from the infrastructure/project, (ii) may use the infrastructure/project, or (iii) no benefit can be expected.

(5) Natural and Social Environment

In accordance with JICA's Guidelines for Environmental and Social Considerations (2010), all potential assistance projects/programs were initially examined with screening forms to understand the nature of the projects/programs and potential impacts. As per the JICA guidelines, the **natural environmental** factors for review included air quality, water quality, waste, noise and vibration, ecosystem, hydrology, topography, geology, and impacts during construction. The **social environmental** factors included resettlement, living and livelihood, heritage, landscape, ethnic minorities and indigenous peoples, working conditions, and impacts during construction. Full details and including the rationale were set out in Chapter 5 of Environmental and Social Considerations and Appendix 5. In summary, the scoring relates to the following JICA levels of impacts:

- A+/-: Significant positive/negative impact is expected;
- C+-: Extent of positive/negative impact is unknown since further examination is needed the impact could be clarified in further studies; and
- D: No impact is expected.

(6) Soft Component

Transit facilitation potential: This criterion was defined as the extent to the project may benefit from the facilitation of through/transit traffic. Transit facilitation potential was evaluated at the corridor level by mapping the corridors based on the assessment in Table 7.1.

Route/Section*	Score	Explanation
Manipur (India) –	Medium	India has committed to assist road development in Myanmar and
Myanmar Route		Myanmar has accepted the Indian offer. There are no political
		issues between India and Myanmar along this route. Discussions
		between India and Myanmar on a road transport agreement are
		ongoing.
Mizoram (India) –	Low	Although India has been developing this route including sections in
Myanmar Route		Myanmar, the route traverses the conflict-affected region of
		Myanmar (around the border area).
Bangladesh –	Low	Myanmar does not prioritize development of their transport
Myanmar Route		network of this route. Also, the border area traversed by the route
		is in a conflict-affected region. There has not been any concrete
		discussion of a transport agreement between the two countries.
Northeast States	Medium	Both the Northeast States and Bangladesh would like to develop
(India) – Bangladesh		this route for their mutual benefit, but arrangements to facilitate
Port Route		through traffic along the route have been slow to develop.
		However, discussion on the transit of Indian cargo from/to
		Chittagong Port has been ongoing.
Northeast States	Low	Bangladesh does not want traffic just to pass through its territory
(India) – Bangladesh		without benefitting the country. It has been politically difficult to
– Kolkata Route		realize transit between the Northeast States and Kolkata across
		Bangladesh by road for a long time.
Nepal – India –	Medium	Both Nepal and Bangladesh strongly wish to develop this route for
Bangladesh Route:		their bilateral trade and the transit of Nepalese cargo from/to
Nepal and		seaports in Bangladesh. They have been discussing revision of
Bangladesh Sections		their transit agreement, although India must also concur.
Bhutan – India –	High	Both Bhutan and Bangladesh strongly wish to develop this route
Bangladesh Route:		for their bilateral trade and the transit of Bhutanese cargo from/to
Bhutan sections		seaports in Bangladesh. Bhutan has received positive indications
		from India regarding this development. Bhutan and Bangladesh
		have been drafting a new transit agreement.
Bhutan – Northeast –	Medium	Basically, the development of this route will be difficult because
Bangladesh –		Bangladesh does not want traffic just to pass through its territory
Kolkata Route:		without benefitting the country. However, because Bhutan is
Meghalaya (India)		involved in this route, Bangladesh can derive some benefit.
Section		

Table 7.1: Assessment of Transit Facilitation Potential by Route/Section

Source: This Survey

(7) Deliverability

Project readiness: Based on information currently available, this criterion was scored as follows: (i) high: whether detailed design has been completed or ongoing; (ii) medium – no detailed design undertaken, but feasibility study is ongoing or completed; and (iii) low – no feasibility studies undertaken as yet.
Ease of infrastructure implementation: This criterion was scored as follows: (i) high – the project utilizes existing infrastructure without missing links and without major constraints; (ii) medium – the project utilizes existing infrastructure in part and without major constraints (although large-scale improvements may be required); and (iii) low – the project is a brand new corridor not utilizing existing infrastructure and/or has major deliverability constraints (e.g., mountainous terrain, lack of available land/major right-of-way issues).

In addition, the Stage 2 multi-criteria evaluation of potential projects applied the following weighting to the total scores for each of the six themes:

- Connectivity/Freight and Logistics: 20%;
- Strategy/Plans: 20%;
- Economic/Industry: 20%;
- Social and Natural Environment: 10%;
- Soft Component: 10%; and
- Deliverability: 20%.

7.4 Stage 2 Evaluation Results

Tables 7.2 to 7.5 present a short summary of the Stage 2 evaluation results by country. As mentioned, the purpose of this evaluation is to set out the results of the data collection process in terms of the long list of projects identified for potential JICA assistance in a regional connectivity context, noting which projects may be assigned low, medium, or high priority based on the multi-criteria analysis. As a reminder, only projects identified by stakeholders as having potential for JICA assistance and only projects on shortlisted regional corridors were included. Appendix 7 provides further details regarding the Stage 2 project scoring.¹

	_	-	
Corridor/ Project		Indicative Priority for JICA Assistance (multi-criteria scoring	
Ref	Project Name	shown in Appendix 7)	Summary Comment
RO1-a	AH-41 Chittagong	Medium	ADB studying section but noted potential
	to Cox's Bazar		for JICA assistance.
RO1-b	AH-41 Cox's	Low	This connection to the Myanmar border is
	Bazar to Teknaf		seen as longer term due to a number of
			geopolitical constraints and other issues.
RO2-a	AH-1 Benapole to Jessore	High	Strategically scores high. Dependent on corridor being developed (e.g., Padma Bridge). ADB studying section but noted potential for JICA assistance. Current traffic does not justify major upgrading.
RO2-b	AH-1 Jessore to Bhatiapara	High	Strategically scores high, but dependent on corridor being developed (e.g., Padma Bridge). ADB studying section but noted potential for JICA assistance.

Table 7.2: Review of Potential Road and Rail Projects for JICA Assistance in Bangladesh along Shortlisted Corridors

¹ It should be noted that projects with less regional significance, e.g., more local state road projects, more peripheral to an international economic corridor, may score low in the evaluation in this Survey, but could potentially score higher in the context of a national or state evaluation/review.

с · і /		Indicative Priority	
Corridor/		for JICA Assistance	
Ref	Project Name	shown in Appendix 7)	Summary Comment
RO2-c	Padma Bridge	High	Strategic significance. Previously included
	C	C	JICA funding until shelved. Currently off
			the table but the World Bank is still
			interested if the Government can meet its
			terms.
RO3-a	AH-2 Rangpur to	Medium	Since it is currently not in any study or
	Belualiga		studies are required
RO3-b	AH-2 Beldanga to	Medium	Since it is currently not in any study or
	Panchagarh		program, further work and feasibility
			studies are required.
RO3-c	AH-2 Panchagarh	Low	ADB has been developing this section but
	to Banglabandha		RHD noted it as having potential for
			further upgrading in the long term pending
RO17-a	Feni River Bridge	Medium	While this project scored medium priority
KO17 u	Ramgarh	Wiedrum	in the evaluation, it has since been learned
	(Sabroom)		that it is not suitable for JICA funding; it
			will be Government funded and therefore
			was not shortlisted.
RO17-b	Chittagong to	Medium	No studies have been undertaken as yet;
	Ramgarh		the project would help unlock a new
	(Sabroom) alt 1: via NH 1 (AH 41)		and India and make use of the National
	R151 then R152		Highway 1 with ongoing improvements
RO17-c	Chittagong to	Low	Major land acquisition required (among
	Ramgarh		other constraints). Not viable.
	(Sabroom) alt 2:		
	via R160, R151		
	then R152	Madium	ADD DCI project but ADD has noted the
KAI-a	Bangladesn Regional Transport	Medium	ADB RCI project but ADB has noted the possibility of IICA assistance
	Hub. Dohazari to		possibility of FICA assistance.
	Cox's Bazar		
	Railway		
RA1-b	Regional Transport	Low	Projects include: (i) Comilla-Chittagong-
	Hub: Long-term		Sonadia; (ii) Comilla-Chord Line-
	subprojects		Fatullah-ICD-Dhaka; (111) ICD (Dhaka
	Sonadia		South)-Jessore-Benapole-India (Including double tracking of Padma Bridge); and
	Soliadia		(iv) Dhaka-Akhaura-India Potential to
			score high/medium priority in the future if
			Sonadia port and associated proposals
			gain momentum.
RA1-c	Other ADB RCI	Medium	In addition to Dohazari to Cox's Bazar
	Projects across the		there are six other RCI subprojects across
	Bangladesh rail		Bangladesh. ADB has not noted these for
	Incluoik		recommended that further discussions be
			held.

Corridor/ Project		Indicative Priority for JICA Assistance (multi-criteria scoring	
Ref	Project Name	shown in Appendix 7)	Summary Comment
RA9-a	Loan Assistance for the Dhaka- Chittagong Railway Development Project	High	Ongoing JICA assistance in an important corridor.

Abbreviations: ADB = Asian Development Bank, ICD = inland clearance/container depot, JICA = Japan International Cooperation Agency, RCI = Regional Cooperation and Integration, RHD = Roads and Highways Department Source: This Survey

		T 11 (1 B 1 1/ 2	
		Indicative Priority for	
Couridou/		JICA Assistance	
	D • / N	(Wutti-criteria scoring	
Project Ref	Project Name	shown in Appendix /)	Summary Comment
RO7-a	Bridge on the	High	Strategic importance in unlocking
	ADB SASEC		Bhutan-India connectivity and further
	Northern Bypass		afield. ADB developing project and
	of Phuentsholing		may require assistance. Bridge/flyover
			deliverability issues to be addressed.
RO7-b	ADB SASEC	High	Strategic importance in unlocking
	Northern Bypass		connectivity between Bhutan and
	of Phuentsholing		India and beyond. ADB is developing
	(including road		a project and may require assistance.
	section and bridge)		
RO7-c	Mao-khola Bridge	Low	Currently scored as low priority, but,
	on Southern East-		more information is required (e.g., on
	West Highway		the road alignment and river
	Corridor		channelization requirements). Also, it
			is a little peripheral to regional
			corridors.
RO7-d	Sections of	Low	Currently scores low as little
	Southern East-		information is available regarding
	West Highway		which sections would be feasible.
	6 ,		Long term.
RO7-e	Potential Rail	Low	Identified by MoIC and planning
	connection		studies have begun, but the project is
	Thimphu-Airport-		long term even if deemed viable.
	Phuentsholing		C C

Table 7.3: Review of Potential Road and Rail Projects for JICA Assistance in Bhutan on Shortlisted Corridors

Abbreviations: ADB = Asian Development Bank, MoIC = Ministry of Information and Communications, SASEC = South Asian Subregional Economic Cooperation Source: This Survey

Indicative Priority for			
		JICA Assistance	
Corridor/		(Multi-criteria scoring	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Project Ref	Project Name	shown in Appendix 7)	Summary Comment
(Assam)	2-laning of	Medium	SARDP-NE Phase B Project.DPR is
RO15-a	alternative route		pending. MoRTH will propose this
	Barak Valley		bridge project for an ODA loan from
	(Silchar) –		JICA.
	Guwanati Koad		
	Via Harangajao-		
	Pridge		
(Maninur)	NH-2 (old NH-30)	Medium	MoRTH proposing for IICA
RO16-a	Imphal to Kohima	Ivicalum	assistance. Project still needs to be
R010-a	Impliar to Komma		transferred from BRO to MoRTH
			Some sections in very poor condition
(Manipur)	State road	Low	Minor alternative route to ADB
RO2-e	between Imphal	LOW	Imphal-Moreh corridor
102 0	and Kakching		
(Manipur/	NH-37 (old NH-	Medium	MoRTH proposing for JICA
Assam)	53) Imphal to		assistance. Project to be transferred
RO2-d	Jiribam (plus		from BRO to MoRTH. Forms part of
	bridge in Silchar		key long term strategic route (BCIM).
	Assam)		However terrain is harsh.
(Meghalaya)	NH62: between	Medium	Project is partly a SARDP-NE Phase
RO9-a	Dudhanai and		B corridor. MoRTH will propose this
	Dalu and		for ODA loan from JICA. ADB is
	extension NH-51		developing a project in the vicinity.
	between Tura and		
	Dalu		
(Meghalaya)	2 laning of	Low	SARDP-NE Phase B Project but of
RO9-b	Williamnagar to		minor strategic significance.
	Nengkra		
(Meghalaya)	Dawki to Shillong	Medium	MoRTH will propose this project for
RO9-c	NH-40 and		ODA loan from JICA. Current traffic
	construction of		may not justify major upgrading
	Dawki bridge		works. However, there are links to the
Maghalara		Madium	Key border crossing point at Dawki.
(Megnalaya	NH-44 NHAI	Medium	NUAL MoDTH will propose this
PO0 d	Jowaj to Assam		hridge project for an ODA loan from
K09-u	border plus the		IICA Current traffic may not justify
	NH 11		major upgrading works. However
	Radarnurghat		there are links to the key border
	Bridge		crossing point at Dawki
(Mizoram)	NH-54 2 laning	Medium	SARDP-NE Phase B Project. This
RO14-a	from Aizawl to		project would connect Mizoram with
	Tuipang		the Kaladan Multi Modal Project.
			however the terrain is very
			mountainous and the project costs
			would be high.
(Nagaland)	NH-150 2 laning	Low	SARDP-NE Phase B Project. Lower
RO16-b	from Kohima to		regional strategic importance and hilly
	Nagaland/Manipur		terrain.
	border		

Table 7.4: Review of Potential Road and Rail Projects for JICA Assistance in India on Shortlisted Corridors

		Indicative Priority for	
		JICA Assistance	
Corridor/		(Multi-criteria scoring	
Project Ref	Project Name	shown in Appendix 7)	Summary Comment
(Nagaland)	NH-155 2 laning	Low	SARDP-NE Phase B Project. Lower
RO16-c	of Mokokchung to		regional strategic importance and hilly
	Jessami		terrain.
(Nagaland)	NH-61 2 laning	Low	SARDP-NE Phase B Project. Lower
RO16-d	from Wokha (km		regional strategic importance and hilly
	70) to Tuli (km		terrain.
	220)		
(Tripura)	Improvement of	Low	SARDP-NE Phase B Project. MoRTH
RO17-d	State road from		does not propose this project for JICA
	Kukital		assistance (it is being funded by the
	southbound		Government of India).
	towards Sabroom		
	(top section)		
(Tripura)	NH-44a 2 laning/	Medium	The SARDP-NE Phase B Project is
RO17-e	realignment from		proposed by MoRTH for JICA funding
	Manu to Serhmum		subject to transfer from the BRO to
			the state PWD.
(West	Haldia–Raichak–	Medium	Proposed by the West Bengal PWD
Bengal)	Kukrahati-east of		but the project is at the concept stage.
RO2-f	NH-117-bypass		Will be reviewed as part of ongoing
	Barasat and joins		PWD/RITES study (due March 2014).
	NH-34		
(West	Crossing of	Medium	Proposed by West Bengal PWD but
Bengal)	Proposed RO17-d		project at concept stage. Will be
RO2-g	project and		reviewed as part of ongoing
	Kolkata Basanti		PWD/RITES study (due March 2014).
	Road up to		
	Basanti-Canning-		
	Gosaba		
(West	Chakdah on NH34	Medium	Proposed by West Bengal PWD but
Bengal)	to Bongaon		project at concept stage. Will be
RO2-h	(additional		reviewed as part of an ongoing
	improvements to		PWD/RITES study (due March 2014).
	the previous ADB		
	2 laning)		

Note: After the multi-criteria analysis and review process was undertaken, two additional road section projects were proposed by stakeholders along corridors RO15/16. Further work and information would be required to develop these proposals. More information on these projects is set out in Chapter 8.

Abbreviations: ADB = Asian Development Bank, BRO = Border Roads Organization, JICA = Japan International Cooperation Agency, MORTH = Ministry of Road Transport and Highways, NH = National Highway, ODA = official development assistance, PWD = Public Works Department, SARDP-NE = Special Accelerated Road Development Programme in North East

Source: This Survey

Corridor/ Project		Indicative Priority for JICA Assistance (Multi-criteria scoring	
Ref	Project Name	shown in Appendix 7)	Summary Comment
RO3-d	ADB road section spur: Leguwaghat– Tumlingtar	Low	Peripheral to regional corridor
RO3-e	ADB road section spur: Thankot– Mlekhu tunnel (3 km) – see Project	n/a see RO3-f	n/a see RO3-f
RO3-f	Thankot– Nagdhunga–Naubise Tunnel (5 km)	Medium	Identified by JICA Road Expert in Nepal in February 2013. JICA currently looking into undertaking studies.
RO3-g	ADB road section spur Ghinaghat– Biratchowk	Medium	ADB detailed design completed and links to major corridor (although a spur). Additional information from ADB required.
RO3-h	ADB road section spur Bhedetar– Rabi–Ranke	Low	Too peripheral to significant regional corridors.
RO3-i	Nepal-India road section via Kakarbhitta	Medium	While this project scored medium priority in the evaluation, it has since been learned that the project is being progressed by ADB and subject to ongoing ADB and PWD/RITES studies; therefore it was not shortlisted.
RO3-J	Project for the Improvement of Survabinayak– Dhulikel Road	Medium	Identified by JICA Road Expert in Nepal in February 2013. More information required.
RO3-K	Kathmandu–Terai Fast Track Project	Low	The Fast Track project is already close to commencement although there have been recent delays.
RA6-a	Nepal–India rail via Kakarbhitta	Low	Scored as low pending ongoing ADB studies and additional information. Confirmation is still required whether this project is to be taken up by ADB.

Table 7.5: Review of Potential Road and Rail Projects for JICA Assistancein Nepal on Shortlisted Corridors

Abbreviations: ADB = Asian Development Bank, JICA = Japan International Cooperation Agency, Source: This Survey

Chapter 8 Potential Projects for JICA Assistance

8.1 Introduction

Appendix 8 compiles Project Profiles with additional information where available, e.g., project description, project status, social and environmental impact, economic and financial considerations (e.g., indicative costs), (v) critical success factors, and (vi) location.¹ This chapter presents a brief overview of these potential projects related to regional road and rail corridors (Section 8.2), soft transport infrastructure development projects (Section 8.3), and freight transport and border facilities (Section 8.4).²

8.2 Potential Regional Road and Rail Corridor Projects

8.2.1 Overview

As described in Chapter 6, potential road and rail infrastructure projects for JICA assistance have been identified and reviewed through a two-stage evaluation process and stakeholder consultation.

This section summarizes the road and railway projects that scored either high or medium in the evaluation and therefore are recommended for further investigation by JICA.³ It is not envisaged that JICA will provide assistance for all these projects, but having filtered out the low scoring projects it provides the basis for the next steps of JICA project formulation in regional connectivity in and around South Asia.

As mentioned, this list centers on projects identified by key stakeholders as offering potential for JICA assistance and does not include projects taken up in full by other development partners. Also, the list is based on the information available.

8.2.2 Projects along Road and Rail Corridors RO1 and RA1

Figure 8.1 presents a map of potential projects along road and rail corridors RO1 and RA1 (respectively), while the following text summarizes the projects.

¹ The Project Profiles show the country or countries involved in each project, making it easy for readers concerned with particular countries to see which projects may affect them.

² At the First Seminar for the Survey held in New Delhi on 16 January 2014, Mrs. K. Damayanthi, Joint Secretary, Ministry of Development of North Eastern Region (MDONER), India, observed that if investments are delayed, costs will increase; she stated that "we must seize the moment".

³ While projects RO3-i and RO17-a also scored medium priority in the multi-criteria evaluation, it was later learned that these projects are being covered by ADB/West Bengal and the Governments of Bangladesh and India respectively, and therefore have not been included here.



Source: This Survey

Figure 8.1: Potential Road and Rail Projects along Corridors RO1 and RA1

RO1-a: AH-41 Chittagong to Cox's Bazar

The project includes upgrading of 135 km of Asian Highway 41 (National Highway 1) between Chittagong and Cox's Bazar. It is part of a wider corridor connecting Bangladesh with Myanmar at Gundum. The 133 km section between Chittagong and Cox's Bazar is currently 2-lane through flat or gently rolling terrain traversing many towns and bazaars. ADB is studying the section but noted potential for JICA assistance. A feasibility study has been completed with detailed design and contract documents to be prepared by October 2014. Prequalification, tendering, evaluation, and contract awards are to be completed by July 2015. Cofinancing with ADB is a possibility. The onward connection from Cox's Bazar to Teknaf has not been included in the project considering that that section is in harsh terrain with a particularly difficult section near Teknaf.

RA1-a: Regional Transport Hub: Dohazari to Cox's Bazar

This project entails the constuction of a single-line, meter-gauge railway track from Dohazari to Cox's Bazar, which is a Trans-Asian Railway/TAR missing link. It is part of the ADB's Regional Cooperation and Integration Project and includes a further connection to Myanmar via Ramu and Ramu to Gundum. A single-track connection will connect from Harbang 37.5 km south of Dohazari on the mainline to Cox's Bazar. This project will mainly cater for passenger services, but if the Bangladesh Regional Port materializes the main line will be Dhaka, Comilla, Chittagong to the deep-sea port, with a branch to Cox's Bazar and beyond. ADB has noted the possibility of JICA involvement. The feasibility study (FS) has been completed, detailed design (DD) is 48% complete, and tendering is 5% complete. The project is important for the development of Bangladesh as a regional transport hub especially in view of proposals for deep-seaport development.

RA1-c: Other ADB Regional Cooperation and Integration (RCI) Projects across the Bangladesh Rail Network

In addition to Dohazari to Cox's Bazar, there are six other RCI subprojects across Bangladesh, but ADB has not noted these for JICA assistance as yet. Further discussions are required with ADB to consider each of these projects:

- ADB RCI Subproject 1 Alternate Route: New TAR missing link Dhaka–Bhanga– Jessore through the Padma Bridge (FS 44% complete, DD 35% complete);
- ADB RCI subproject 2 double line and upgrade of Akhaura–Laksam (FS 100% complete, DD 48% complete, and tendering 17% complete);
- ADB RCI Subproject 3 Construction of a railway bridge parallel to the Bangabandhu Bridge with provision of dual–gauge, double track over the Jamuna River (FS 95%);
- ADB RCI Subproject 5 FS for double line Joydebpur–Ishurdi sections (FS 28%);
- ADB RCI Subproject 6 FS for strengthening/reconstruction of Hardinge Bridge (FS 80%);
- ADB RCI: Subproject 7: Construction of railway bridge over the Jamuna River near Phulchari–Bahadurabad Ghat (FS 95%).

8.2.3 **Projects along Road Corridor RO2**

Figure 8.2 presents a map of potential projects along road corridor RO2, while the following text summarizes the projects.



Figure 8.2: Potential Road Projects along Corridor RO2

RO2-a: AH-1 Benapole to Jessore

The project entails upgrading of 38 km of AH 1 to Benapole (on the border with India). Benapole is the most important and busiest international border crossing point of Bangladesh.

The route is strategically important and part of major corridors such as SAARC Corridors 1 and 5) and the BCIM Middle Corridor. In discussions with ADB's Bangladesh Resident Mission it was noted there is an ADB TA for this route but there remains potential for JICA assistance. In addition, in 2007 UNESCAP completed a prefeasibility study of the route. The improvement of the road will lead to a reduction in travel time to Dhaka for regional transport and will have a positive impact on GDP. Strategically the route scores high, but it is dependent on the corridor being developed (e.g., development of the Padma Bridge, development of momentum with BCIM) since current traffic may not justify major upgrading works. Further studies are required.

RO2-b: AH-1 Jessore to Bhatiapara

The project involves upgrading of 59 km of Asian Highway 1 (Bhatiapara–Kalna 3 km, Kalna– Narail 24 km, and Narail–Jessore 32 km). This is a strategically important route for the future as part of it is part of major corridor plans after the Padma Bridge is constructed. Some sections are below AH Class II and AH Class III. In discussions with ADB's Bangladesh Resident Mission it was noted there is an ADB TA for this route but there remains potential for JICA assistance. Improvement of the road will lead to a reduction in travel time to/from Dhaka for regional transport and will have a positive impact on GDP. The project strategically scores high, but is dependent on a corridor being developed (e.g., the Padma Bridge, development of momentum with BCIM) as current traffic may not justify major upgrading works. Further studies are required.

RO2-c: Padma Bridge

This strategically significant bridge project was previously included for JICA funding but was shelved due to governance issues. When constructed, the Padma Multipurpose Bridge will be the second largest fixed crossing in Bangladesh, and will connect the southwest region with the rest of the country. The bridge will provide direct links between the two major seaports of the country and will form an integral part of AH 1 and the TAR network systems. The distance from Dhaka to nearly all major destinations in the southwest region will be reduced by 100 km or more with consequent reductions in transport time (World Bank Project Appraisal Document, January 2011). While it was previously ready for implementation, it is currently off the table, although the World Bank appears interested if the government can meet requested terms.

RO2-d: NH-37 (old NH-53) Imphal to Jiribam (plus a bridge in Silchar in Assam)

The project includes upgrading of NH-37 (the former NH-53) Imphal to Jiribam (plus Sadarghat Bridge over the Barak River in Silchar, Assam, also on NH-53) as well as rehabilitation of an existing bridge and constriction of a new bridge. The Imphal to Jiribam section forms part of a key long-term strategic route (BCIM). While there are some good sections towards Imphal, generally the terrain of the route is harsh. MoRTH is seeking JICA assistance for the project. There is not yet a Detailed Project Report (DPR), which would be required to address deliverability and terrain constraints. Discussions with the Ministry for Development of North Eastern Region (MDONER) are required regarding Sadarghat Bridge on NH-53.

RO2-f-g-h: West Bengal Connectivity Projects

There have been several attempts to enhance road connectivity for the Kolkata–Haldia port network and some projects are in progress. The West Bengal Highways Department has recently initiated a network prioritization study for state highways in West Bengal, which will review improvement projects (the study is due to be completed in March 2014). Concept projects include: (i) Crossing of Proposed RO17-d project and Kolkata Basanti Road up to Basanti–Canning–Gosaba; (ii) Haldia–Raichak–Kukrahati-east of NH-117-bypass Barasat and joining NH34; and (iii) Chakdah on NH-34 to Bongaon (additional improvements to the previous ADB

2-laning). Since these projects are currently at concept stage, studies are required to set out alignments and specify land acquisition requirements.

8.2.4 Projects along Road and Rail Corridors RO3 and RA9

Figure 8.3 presents a map of potential projects along road and rail corridors RO3 and RA9 (respectively), while the following text summarizes the projects.



Figure 8.3: Potential Road Projects along Corridor RO3 and RA9

RO3-a: AH-2 Rangpur to Beldanga

The project entails improvements to the AH 2 section between Rangpur and Beldanga Beldanga and Panchagarh (67 km). It forms part of SAARC Highway Corridor 4 providing access for landlocked Nepal to Bangladeshi ports. The current road condition is poor. The project would build on ADB improvements to the Panchagarh to Banglabandha AH-2 section. Since there is no current study or program, further work and feasibility studies are required. The project would unlock economic benefits by providing access between landlocked Nepal and Bangladeshi ports. Strategically the project scores well, but it is dependent on the Nepal–India–Bangladesh corridor being developed (included associated soft improvements) since current traffic may not justify major upgrading works.

RO3-b: AH-2 Beldanga to Panchagarh

The project involves improvements to the AH2 section between Beldanga and Panchagarh (76 km). It forms part of SAARC Highway Corridor 4 providing access for landlocked Nepal to Bangladeshi ports. The current road condition is poor. The project would build on ADB improvements to the Panchagarh to Banglabandha AH-2 section. Since there is no current study or program, further work and feasibility studies are required. The project would unlock economic benefits by providing access between landlocked Nepal and Bangladeshi ports. Strategically the project scores well, but it is dependent on the Nepal–India–Bangladeshi

corridor being developed (included associated soft improvements) since current traffic may not justify major upgrading works.

RO3-f: Thankot–Nagdhunga–Naubise Tunnel (5 km)

Due to the importance of connectivity for Nepal to India and the resulting traffic congestion on the Thankot–Nagdhunga–Naubise route, which is a bottleneck due to geographic constraints, the Government of Nepal has formulated a plan to construct a 2.5–3.0 km tunnel between Naghunga and Naubise to ensure smooth and safe road traffic. In addition, the JICA 2013 Project for Transport Sector in Nepal conducted by the JICA resident road expert recommended this project and JICA will commence a project formulation study.

RO3-g: ADB Road Section Spur Ghinaghat–Biratchowk

The project involves a 22-km road section spur of the RO3 corridor (SAARC Corridor 4) towards the border with India. It was identified and studied as part of the ADB Nepal Transport Project Preparatory Facility technical assistance. The project has been noted by ADB as having potential for JICA assistance and JICA will commence a project formulation study.

RO3-j: Project for the Improvement of Survabinayak–Dhulikel Road

The project entails upgrading of 16-km, 2-lane dual carriageway of a key radial route in Kathmandu. The road serves as an important gateway to eastern Nepal and forms a spur of the RO3 corridor (SAARC Corridor 4). In addition, the JICA 2013 Project for Transport Sector in Nepal conducted by the JICA resident road expert recommended this project and JICA will commence a project formulation study. The starting point of the project is the end of the Kathmandu–Bhaktapur road recently completed with grant assistance from the Government of Japan, which then continues to Dhulikel. the end point of Sindhuli Road Project, another widening grant aid project of the Government of Japan. The road is only a spur of RO3 corridor and therefore the economic impact associated with regional connectivity may be reduced.

RA9-a: Development of Dual Gauge and Double Track Sections between Dhaka and Chittagong

JICA (in association with another development partner) has been assisting the Dhaka-Chittagong Railway Development Project with a yen loan.

8.2.5 Projects along Road Corridor RO7

Figure 8.4 presents a map of a potential project along corridor RO7, while the following text summarizes the project.



Source: This Survey



RO7: Bridge on the ADB SASEC Northern Bypass of Phuentsholing / RO7-b: ADB SASEC Northern Bypass of Phuentsholing (including road section and bridge)

The project entails construction of a 4-lane bypass road 2.7 km in length including a third bridge. The project has strong strategic importance for unlocking Bhutan's connectivity to India and beyond. It forms part of SAARC Highways Corridors 3 and 8. ADB is developing the project and may require assistance. The ADB studies have been completed. Two options were proposed for the third bridge including a flyover option. Bridge/flyover deliverability issues are to be addressed. A decision is to be made whether ADB requires assistance and whether the assistance would be for the whole road section or only the bridge. The flyover option would traverse a plot of private land owned by the Tashi Group.⁴ There are numerous potential land acquisition and resettlement risks for the bypass road. The impact will mostly be experienced at the vegetable market next to the bus station near the existing bridge.

8.2.6 **Projects along Road Corridor RO9**

Figure 8.5 presents a map of potential projects along road corridors RO9, while the following text summarizes the projects.

⁴ The Tashi Group was established in 1959 to "process, manufacture and market, the best of Bhutan and to share Bhutan's bounty beyond its boundaries."



Source: This Survey

Figure 8.5: Potential Road Projects along Corridor RO9

RO9-a: NH-62: between Dudhanai and Dalu and Extension NH-51 between Tura and Dalu

The project include NH-62 between Dudhanai and Dalu and an extension of NH-51 between Tura and Dalu, two road projects in Meghalava. This includes an SARDP-NE Phase B section project (2 laning from the Assam/Meghalaya border to Dalu via Baghmara – 161 km). MoRTH is expected to propose this project for JICA assistance. The project is dependent on studies and DPR preparation for further details regarding deliverability constraints. ADB has begun a road project connecting with this scheme at NH-51 – Dalu to Garobadha (93.4 km). The ADB project facilitates connections to the SARDP-NE Phase B scheme, but the ADB project is not part of SARDP itself but instead it is part of North Eastern State Roads Investment Project (NESRIP).

RO9-c: Dawki to Shillong NH-40 and Construction of Dawki Bridge

This is a road project in Meghalaya involving Dawki to Shillong NH-40 and construction of Dawki Bridge. MoRTH is expected to propose this project for JICA assistance. However, little information is currently available. The current condition is single lane and there is a major river crossing of the Lukha River. Current traffic may not justify major upgrading works. However, the project links to key border crossing point at Dawki. ADB is looking into Mawryngkneng-Jowai (4 laning of NH-44) and Jowai-Dawki (2 laning of NH-40E). The project depends on studies and DPR preparation for further details regarding deliverability constraints, e.g., river crossings. It also depends on traffic levels building on the regional corridor and facilitation of other projects along corridor.

RO9-d: NH-44 NHAI scheme from Jowai to the Assam Border plus the NH-44 **Badarpurghat Bridge**

The project entails NH-44 improvements in Meghalaya and Assam: (i) Jowai to the Assam border along NH-44, which is currently an NHAI road but the Meghalaya PWD has indicated that NHAI may not have the funding; the current condition is double lane, but the road is in very

poor condition and the southern part of the route prone is to landslides; and (ii) the Badarpurghat Bridge over the Barak River in Badarpurghat near Silchar (Assam) – MoRTH is expected to propose this project for JICA assistance; the road section is dependent on discussions with NHAI and MoRTH and on studies and DPR preparation for further details regarding deliverability constraints; the progress of other projects such as the Jowai bypass is also relevant.

8.2.7 Projects along Road Corridors RO14, RO15, and RO16

Figure 8.6 presents a map of potential projects along road corridors RO14, RO15, and RO16, while the following text summarizes the projects.



Source: This Survey

Figure 8.6: Potential Road Projects along Corridors RO14, RO15, and RO16

RO14-a: NH-54 2 laning from Aizawl to Tuipang

This is the SARDP-NE Phase B project to provide 2-laning of 380 km of NH-54 between Aizawl and Tuipang in Mizoram. This project has some strategic significance since it connects Mizoram with the Kaladan Multi-Modal Transit Transport Project and therefore provides a regional link. However, the terrain is mountainous and the project costs are high. There are also two major river crossings. The project has been split into three detailed project reports (DPRs), which are ongoing or at the draft submission stage, although not at a stage at which they could be shared with the JICA Survey Team. The project is dependent on finalization of the DPRs for further details regarding deliverability constraints.

RO15-a: 2-laning of Alternative Route Barak Valley (Silchar) – Guwahati Road via Harangajao–Turuk Plus Tezpur Bridge

The SARDP-NE Phase B Project entails 2-laning of an alternative route linking the Barak Valley (Silchar) – Guwahati road via Harangajao–Turuk. It forms a route parallel to the East-West corridor route. It extends 234 km between Nelli and Harangajao and is broken down into five packages with an estimated 4–5 major bridges. The current condition is single lane with some sections intermediate lane, with 125 km in hilly terrain. The land acquisition for this part is complete. Land acquisition for the other 99 km is under process. A draft DPR has been prepared and submitted, but not yet approved. The project depends on DPR finalization for further details regarding deliverability constraints concerning the Harangajao–Turuk Plus Tezpur Bridge. MoRTH is expected to propose the project for JICA assistance.

RO16-a: NH-2 (old NH-39) Imphal to Kohima

The project entails upgrading of NH-2 (formerly NH-39) from Imphal to Kohima. MoRTH is proposing the road for JICA assistance. The project would provides an important route connecting Manipur and Nagaland and linking the ongoing Imphal–Moreh corridor. Some sections are in very poor condition. PWD noted that a previous MoRTH build-operate-transfer scheme for 4-laning this section failed.

Other Projects

After the multi-criteria analysis and review process was undertaken, two additional road section projects were proposed by stakeholders along corridors RO15/16, although further work and information would be required to develop these proposals. These potential projects include:

- Dhubri to Phulbari Bridge over the River Brahmaputra (along a spur of corridor RO15); and
- NH102A from Ukhurul to Tadubi, Manipur) to Peren, Nagaland (along a spur of corridor RO16).

8.2.8 **Projects along Road Corridor RO17**

Figure 8.7 presents a map of potential projects along road corridors RO17, while the following text summarizes the projects.



Source: This Survey

Figure 8.7: Potential Road Projects along Corridors RO17

RO17-b: Chittagong to Ramgarh (Sabroom) alt 1: via NH-1 (AH-41), R151 then R152

The project aims to unlock this Bangladesh–India corridor capitalizing on connectivity opportunities from Chittagong northbound through Tripura in North East India and onwards into the North East network. RO17-b utilizes ongoing national highway improvements. Since no studies have yet been completed, pending DPRs are to assess potential deliverability issues. There is a tradeoff between developing different corridors within Bangladesh to India, e.g., from Chittagong to Akhaura into the North East States or through Sabroom (Tripura). One issue is that the Brahmanbaria area near Akhaura is a politically sensitive area, which may give more weight to the Sabroom route. An alternative route via R160, R151, and R152 is not viable.

RO17-e: NH-44a 2-Laning/Realignment from Manu to Serhmum

The project entails 2-laning/realignment from Manu to the Tripura/Mizoram border (86 km). It aims to unlock Bangladesh–North East India corridors capitalizing on connectivity opportunities from both the Ramgarh/Sabroom corridor and Akhaura/Agartala through Tripura and on to Mizoram. It is an SARDP-NE Phase B Project proposed by MoRTH for JICA funding. A pending DPR is to set out any potential deliverability issues and assess whether there is sufficient traffic potential to justify a major investment.

8.3 Soft Transport Infrastructure Development Projects

8.3.1 S1: Pilot Border Crossing Efficiency Project

The project will entail the implementation of pilot border crossing efficiency improvements, with suggested sites including (i) Kakarbhitta (Nepal)/Panitanki (India) and (ii) Phulbari (India)/ Banglabandha (Bangladesh). Kakarbhitta/Panitanki and Phulbari/Banglabandha were selected because there are more constraints on through transport along the route connecting Nepal and Bangladesh than along routes between other pairs of South Asian countries. Project components will include: (i) efficient transhipment and trailer and/or container swaps, and (ii) coordinated border management to simplify and streamline procedures (and which may serve as a "stepping stone" to implementation of one-stop border posts).

Strategic Thrust 1 of the SASEC Trade Facilitation Strategic Framework 2014–2018 calls for simplified and expedited border crossing formalities. An example from another region that may serve as a model and possibly provide "inspiration" is JICA technical assistance for one-stop border posts in Africa, including the construction of facilities, facilitation of legal procedures, and capacity building. A 2012 UNESCAP study assessed the advantages and disadvantages of various operational options, i.e., trailer swap, container swap, manual transloading, and no transloading.

To implement the specific organizational changes necessary to for coordinated border management requires political support at the highest levels, i.e., a mandate from the Prime Minister or similar official with authority over the agencies concerned. Based on this mandate, an interagency taskforce can undertake the work. However, a legal review of domestic laws and regulations may be required, and a lead agency nominated to direct the process, typically the customs authority.

After implementation, a monitoring program to measure performance and efficiency, measured by reduced costs and minimized time at points of entry, should be implemented. A dialogue with the various stakeholders may productively complement such monitoring since customer satisfaction may be used to gauge the success of the program.

8.3.2 S2: Pilot Corridor Efficiency Project

The project will entail introduction of a modern transit regime and implementation of an RFID/GPS tracking system for corridor management.⁵ Strategic Thrust 6 of the SASEC Trade Facilitation Strategic Framework 2014–2018 calls for the development of (bilateral) transport facilitation arrangements for through transport. It suggests technological solutions for cargo and vehicle tracking such as the Secure Cross-Border Transport Model developed by UNESCAP, for which it has supported national workshops in the region. Also worth noting, there are a number of examples of transit transport systems in the world (e.g., under the TIR Convention, with 68 contracting parties; under the Northern Corridor Transit and Transport Agreement in East Africa).

At the First Seminar for this Survey, Dr. Prabir De, Senior Fellow, Research and Information System for Developing Countries, India, recommended a number of specific trade facilitation projects, including use of modern vehicle tracking systems. To date, such tracking systems have not been introduced for trade facilitation in South Asia.

Counterpart agencies may include the BIMSTEC Secretariat (to be established in March 2014) and/or the respective ministries of transport and/or customs authorities, depending on capacities; alternatively, the system may be operated as a public-private partnership, with the PPP acting as a trusted third party offering services to the complete spectrum of public and private stakeholders.⁶

⁵ The authorities in the region require effective systems that can provide a sufficient level of control over goods in transit, while assisting rather than obstructing the efficient flow of goods across national borders and through the major ports. New technology can assist the authorities in achieving these objectives by automating some of the processes involved in the identification, tracking, and verification of freight and freight documentation. Technology options include (i) satellite-based vehicle tracking combined with active RFID electronic seals and (ii) passive RFID.

 $^{^{6}}$ This latter approach would offer the following benefits compared to the first option: (i) the system can be designed to incorporate the needs of all government agencies as well as those of the private sector – the incentive would be to increase the market for offering services to as many customers as possible; (ii) the same concept can be extended to

Lessons learned from the implementation of trade corridor management systems elsewhere are that such systems: (i) must not only assist the operational processes of customs, ports, and road authorities, but must also enforce governance onto such processes; (ii) must be simple to operate; (iii) must provide benefits for public stakeholders (customs, ports, and roads authorities) and private stakeholders (cargo owners and logistics service providers); (iv) must be sufficiently affordable for cargo owners to voluntarily carry the cost of compliance in exchange for the expected benefit of streamlined trade corridors, in order to ensure large-scale uptake without placing any financial burden on taxpayers; and (v) must address the specific needs of customs authorities to apply control over goods from source to destination, while at the same time streamlining customs processes in order to create benefits for cargo owners by way of reduced delays at border posts and through customs gates.

8.3.3 S3: Harmonization of Maximum Gross Vehicle Mass and Axle Load Limits in the Region

Project components include: (i) examination of the relationship between/among axle loads, transport costs, and construction/rehabilitation/maintenance costs by different road standards corresponding to different axle load limits; and (ii) continuous discussion among the countries on appropriate regional axle load limits to minimize total transport costs and construction/ rehabilitation/maintenance costs. In the long term, harmonization of transport-related rules and regulations may be pursued (see below). The counterpart agency/agencies may be the BIMSTEC secretariat to be established and/or the respective ministries of transport, depending on respective capacities.

Limited efforts at harmonizing transport-related regulations and rules such as gross vehicle mass and axle load regulations have been undertaken in the region to date. An example from another region that may serve as a model and possibly provide "inspiration" is JICA technical assistance for the East African Community's agreement on overload control (2012).

The mutual trust and confidence between/among the countries in the reliability of each others' certificates, checks, inspections, and the like may in some cases need to be enhanced by the harmonization of the conditions and procedures for such certificates, checks, and inspections. However, it is not possible to harmonize (make uniform) between/among the countries the whole body of law/regulations/procedures/documents related to cross-border transport operations. The critical minimum required level of harmonization is to be sought so as to create enough trust between the countries. Maximum vehicle mass and axle load regulations are one such critical area.

8.3.4 S4: Determination of Appropriate Levels of Transit Charges

Drawing upon global best practices (e.g., trans-Alpine transit charges in Switzerland and Austria), the project will define transit charges to be assessed in the region. While some initial research has been undertaken in this Survey, specific tasks will include: (i) evaluating the economic and financial benefits and costs occasioned for each of the GMS countries by the opening of transit routes; (ii) developing an initial transit fee structure by route and vehicle category in accordance with agreed charging principles and proposing an adjustment mechanism for inflation – to the extent possible, the transit fee structure should take into account factors such as willingness to pay and affordability, operations and maintenance cost, cost recovery, and an equitable distribution of transport cost savings; and (iii) recommending a

other countries, at least along those trade corridors where the volumes of traffic can justify the deployment of infrastructure; (iii) the cost of infrastructure would be carried by the private partners to the PPP, hence taking the financial burden off the respective authorities and the taxpayers of the concerned countries; and (iv) the end users paying for the system would be those realizing the most direct financial benefits (i.e., the cargo owners and logistics service providers that will experience reduced delays in the transport of cargo).

charging system and transit fee structure for each route. For example, the toll rates by vehicle type could be given as factors, based on international experience (e.g., truck-trailer x times light truck) and perhaps indicative transit toll rates per km for each country be given by road standard.

The output would include a table of toll rates by vehicle class by transit route, both gross and net (i.e., gross, the total tolls payable for use of the route, and net the toll payable at customs, with the balance to be paid at the toll plazas/bridges on route).

Considering the sensitivity of the transit charge issue in the region, it will be important for the proposed project to receive political support from the highest levels.

Experience shows that: (i) transit charges should be set to cover road construction, rehabilitation, and maintenance costs imposed by the transit traffic; (ii) environmental and other external costs may be considered if they can be calculated; (iii) if there are any additional charges, they should be collected from both transit and domestic vehicles equally, and should benefit both transit and domestic transport equally; and (iv) regional studies to estimate road construction, rehabilitation, and maintenance costs per vehicle-km along the transit routes in the current survey can suggest approximate charge levels and assess costs versus benefits.

For the subject countries of this survey – Bangladesh, Bhutan, India, Myanmar, Nepal, and Thailand – BIMSTEC (depending on its capacity) may be the most suitable organization for consideration of transit charges because these countries constitute six of its seven members. Also, there may be a potential for a stronger, more autonomous secretariat in BIMSTEC compared to SAARC, especially if it is established with a permanent set of directors with sector experience and expertise.

8.3.5 S5: Comprehensive Regional Transport Agreement

The project entails development of a comprehensive regional transport agreement, covering both cross-border road and rail transport. A model agreement for the subject countries of this survey may be prepared as a first step, with the BIMSTEC secretariat and/or the respective ministries of transport as counterpart agency/agencies (depending on respective capacities). Issues to be addressed will include: (i) the degree of harmonization required, (ii) adoption of a free or regulated approach, (iii) the use of technical annexes or implementing protocols, and (iii) the choice between separate agreements and a single framework agreement. Specifically, the project will include: (i) continuous, facilitated discussion and consensus building for a regional transport agreement among the concerned countries, (ii) studies to examine and to draft an appropriate comprehensive transport agreement based on case studies of regional transport agreements in other parts in the world and legal frameworks of the member countries, and (iii) in the long term, ratification of the regional transport agreement.

In SAARC a draft framework motor vehicle agreement and a draft framework railway agreement including definition of SAARC railway corridors have been prepared and revised during negotiations among the member countries. Even assuming finalization of these framework agreements, detailed implementation annexes and protocols would need to be worked out considering that the current draft framework motor vehicle agreement does not include details such as arrangements on transit fees.

A critical issue for the countries to consider will be whether separate transport and transit agreements or a single framework agreement should be pursued. Generally, a multilateral, "big bang approach" to the removal of impediments, with simultaneous action by all countries in a region to liberalize the free flow of people, goods, and vehicles, is preferable. One important factor is that a transit operation generally (although in this region not always) involves at least

three countries, and it is difficult to organize a three-country relationship via bilateral agreements, rather than a trilateral or plurilateral (multilateral) agreement. Thus, other (sub)regions such as the Greater Mekong Subregion have opted for multi-country agreements. However, since the extent of free movement of goods and vehicles between and among the South Asian countries now varies considerably (e.g., between India and Bhutan there are very few restrictions, while between India and Bangladesh there are very substantial restrictions), adoption of a multilateral solution may prove challenging. But if a bilateral approach is chosen, it is recommended that the bilateral agreements follow a common model so as to promote harmonization in order to make the subsequent adoption of a regional agreement easier.

8.4 Potential Freight Transport and Border Facilities Projects

8.4.1 L1: Improvement of Border Crossing Points for Regional Connectivity between Landlocked Countries/Areas and Bangladesh Nepal

The project entails assistance for improvement of border crossing points (BCPs) along corridors connecting Bangladesh and landlocked countries/areas. The pilot corridor to be the focus of S1 (including Kakarbhitta (Nepal)/Panitanki (India) and Phulbari (India)/Banglabandha (Bangladesh) may be the (initial) focus of this project so as to complement soft improvements with associated facilities, as necessary. Specifically, BCP improvements may include the following: (i) administration buildings, including customs, immigration, and quarantine (CIQ) facilities for trade facilitation; (ii) warehouses; (iii) yard pavements; (iv) office space for banks and freight forwarders; (v) weighbridges and other inspection machines; (vi) living quarters for government officers; and (vii) some specific items such as a cold storage facility at Banglabandha).

Regarding project status, government authorities such as the Land Ports Authority of India (LPAI) and the Bangladesh Land Port Authority (BLPA) as well as international development partners have plans to develop border stations into integrated check posts (ICP) and/or "land ports". Along the pilot corridor, a new ICD was constructed at Kakarbhitta in 2010 with ADB assistance, with operation by the Nepal Intermodal Transport Development Board; improvement of Panitanki is to be implemented (only) in the third stage of ICP development; and Phulbari and Banglabandha, managed by the respective national land port(s) authorities, have commenced operations for trade facilitation (e.g., a cold storage facility at Banglabandha has been suggested).⁷

While no economic or financial analyses have been undertaken, the projects are aimed at facilitating trade, which should have both economic and financial benefits (i.e., to society as a whole and to the facility operator). Traffic at Karkarbhitta/Panitanki was 250,000 tons from India to Nepal and 133,750 tons from Nepal to India in 2009–10. Traffic at Phulbari/Banglabandha was 146,000 tons from India to Bangladesh and 31,000 tons from Bangladesh to India in 2011. Critical success factors include preparation of a feasibility and detailed design study for each ICP before implementation. Since many BCPs are listed as future assistance targets by the ADB and/or the World Bank, further liaison with these organizations is required.

8.4.2 L2: Pilot Unit Load System Project

The project will be implemented along all corridors where currently inland bagged cargo movement prevails, especially between "mainland India" (e.g., Delhi, West Bengal) and India's North East Region. The project entails facility improvements (e.g., decked warehouse, forklifts,

⁷ BLPA constructed a building at Bangladbandha with some associated facilities (offices, warehouse, barracks, parking yard, and boundary wall, on 5 ha).

a container handling yard) to support development of unit load system. Public support of a pilot inland container deport (ICD) at Amingaon (Guwahati) is envisaged with a capacity of 2,000 containers and 10,000 sheets/pallets. The counterpart agency would be the Ministry of Railways.

Specifically, the project would include support for unit load system assets and technical assistance (TA). The counterpart, the Ministry of Railways, would become the owner of the assets procured by the loan (e.g., ICD equipment), which would be leased to the Container Corporation of India Ltd. (CONCOR), a Category 1 Miniratna⁸ Public Sector undertaking under the Indian Ministry of Railways. CONCOR would utilize the facilities and/or sublet certain facilities to trucking companies for multimodal transport. Lease payments received by CONCOR will be applied to loan repayment. The TA would assist the Ministry of Railways and CONCOR with proper investment and implementation of 12-foot containers. It is envisaged that three experts on logistics would be dispatched for 30 months each. The Government of India would contribute land and the organization for asset management in the Ministry of Railways.

No project preparation studies have been undertaken to date. Trucking companies are aware of the system and are willing to implement it, but they are reluctant to invest without coordinated railway and ICD operation. Therefore, all stakeholders including freight forwarders and cargo owners) should be informed.

The estimated cost of the project is USD 7.0 million equivalent, including USD 1.5 million for two forklifts, USD 3.0 million for a decked warehouse, USD 2.0 million for yard pavement, and USD 0.5 million for additional hooks and improvement on chassis. At present (2011–12), an estimated 8.7 million metric tons is sent from the North East Region to mainland India, and 6.0 million metric tons moves in the opposite direction. By 2030 these flows are forecast to increase to 15.0 and 12.0 million metric tons, respectively. Not only would the project be financially feasible, but also the economic impact would be positive. Container management has positive spillover effects on the steel industry. India has the potential to be a major container manufacturer, which would create employment.

Feasibility and detailed design studies would be required before implementation. Liaison with ADB and the World Bank would also be required.

8.4.3 L3: Improvement of the Transport and Logistics System in the Bottleneck Region (the "Chicken's Neck") of North East India

The project will involve research on improvement of the transport and logistics systems in the "chicken's neck area",⁹ where neighboring countries (as well as India) are looking for better efficiency for their transit cargo. Specifically, the study will entail: (i) a detailed survey of current cargo flow and assessment of the capacity of transport infrastructure, (ii) forecasting of cargo traffic by corridor and mode, (iii) preparation of detailed project proposals for the development of logistics infrastructure.¹⁰ It is envisaged that the study will include about seven team members and a total of 40 person-months over 12 calendar months. Further assistance may follow to implement the projects or measures proposed. The chicken's neck has been attracting attention, not only for connectivity between mainland India and Northeast India, but also because the neighboring countries are looking to more efficiently transit the area. While there are have been surveys and studies examining corridors traversing this area (including the current Survey), there has not been a comprehensive strategic regional transport assessment of the area.

⁸ Has made profits continuously for the last three years or earned a net profit of INR 30 crore or more in one of the three years.

⁹ চিকেন েনকাn Bengali.

¹⁰ The project will also address issues related to the institutional framework, service providers, and shippers/consignees.

The project will provide a proper development guide for the chicken's neck area, which will be important to ensure well-balanced development of the area as well as connectivity for the neighboring landlocked countries. The counterpart agency/agencies would be the Ministry for Development of North Eastern Region and/or Ministry of Road Transport and Highways.

It will be important to complete the required research as quickly as possible, while considering the balance of interests of the neighboring countries and areas.