Dated : 08 April, 2024

Subject: Submission of final Report on "Comprehensive Report on Logistics Sector of Bangladesh".

According to the TOR of the assignment, I undersigned submitted the draft Report on 18.01.2024. After submitted the draft report, I received valuable suggestions from Ms. Sharifa Khan, Adviser, SSGP & Senior Secretary (PRL), ERD & other experts of SSGP, ERD. I revised the draft report according to the experts suggestions/opinions. Then I submitted the final draft report on 08.02.24.

2.0 Then SSGP formed a Evaluation Committee. After extensive meetings of the Evaluation Committee (held on 28/03/24 & 31/03/24), I received some valuable suggestions on the final draft report from the members of the said committee. These are very much helpful for updating the report. Then I revised it accordingly.

3.0 Now, I am submitting herewith the above subject mentioned final report (5 copies) as enclosure for your kind information & necessary action from your end.

Yours faithfully

08.04.2024

(Dulal Krishna Saha)
Former Executive Chairman (Secretary) NSDA
Foundation for Socio-Economic Development Initiative (FSDI)

Encl : As Stated

Project Director
Support to sustainable Graduation project (SSGP)
Economic Relations Division (ERD)
Ministry of Finance.

Received 08.4.24

Support to Sustainable Graduation Project (SSGP)

Economic Relation Division

Ministry of Finance

Comprehensive Report on Logistics Sector of Bangladesh

FINAL REPORT

SUBMITTED BY:

Dulal Krishna Saha, Former Executive Chairman (Secretary), NSDA
Foundation for Socio-Economic Development Initiative (FSDI)
Flat no; 8/A, Selfish Plaza, 08 Shahid Sanbadik Salina Parvin Sarak
Boro Maghbazar, Ramna, Dhaka-1217

08 April 2024

TEAM COMPOSITION

Sl. No.	Team Member	Positions on the Team
1	Dulal Krishna Saha	Team Leader
2	Shabina Shakhawat	Researcher (1)
3	Dr. Md. Anwarul Hoque	Researcher (2)
4	Dibyo Joy Saha Dip	Assistant Researcher

Table of Contents

List of Tables

List of Figures

Acknowledgment

It is indeed a great honor for us that Support to Sustainable Graduation Project (SSGP) has entrusted the Foundation for Socio-Economic Development Initiative (FSDI) to carry out the "Comprehensive Report on Logistics Sector of Bangladesh". [Package No: SD-17-20 (2)/23-24].

We would like to express our deepest thanks to Mr. M Tofazzel Hossain Miah, Principal Secretary of HPM and Chairman, National Logistics Development Coordination Committee (NLDCC), and Ms. Shahida Sultana, DG, Executive Cell, PMO for continuous guidance and support.

We extend our heartfelt thanks to Ms. Sharifa Khan, Advisor, SSGP & Senior Secretary (PRL), ERD, who graciously provided her time and expertise during workshops. Her continuous strategic guidance and support have been crucial in framing this report. Special gratitude towards Mr. Md. Shahriar Kader Siddiky, Secretary, ERD; Mr. A. H. M. Jahangir, Additional Secretary & PD, SSGP; Mr. Farid Aziz, Additional Secretary & former PD, SSGP; Mr. Abul Kalam Azad, Deputy Secretary & DPD, SSGP; Ms. Farzana Ferdous Zaman, Deputy Secretary & Assistant Project Director, SSGP and other high-ranking officials who graciously provided their time and expertise during interviews and workshops.

We also extend our heartfelt thanks to the Key Informants (KIIs) and Focus Discussion Group (FDG) participants for sharing their valuable insights and experiences. Your input has been crucial in providing a nuanced understanding of the challenges and opportunities within the logistics sector. Your guidance and perspectives have significantly enriched the content of this report.Our sincere appreciation also goes to all individuals who actively took part in the workshops, contributing to fruitful discussions and exchanging ideas that have shaped the recommendations presented in this report.

We finally acknowledge the collective efforts of our team members who diligently conducted research, analyzed data, and compiled information to produce this report. Their commitment and dedication to this project have been invaluable. We look forward to further collaboration as we work towards enhancing the logistics sector in Bangladesh.

Acronyms	
3PL	**Third-Party Logistics**
8FYP	**Eighth Five-Year Plan**
a2i	**Aspire of Innovation**
ADB	**Asian Development Bank**
AEO	**Authorized Economic Operator**
AGVs	**Automated Guided Vehicles**
AI	**Artificial Intelligence**
AOAB	**Aviation Operator Association of Bangladesh**
API	**Advance Passenger Information**
ASEAN	**Association of Southeast Asian Nations**
ASYCUDA	**Automated System for Customs Data**
AVs	**Automatic Vehicles**
BAFFA	**Bangladesh Freight Forwarders Association**
BASIS	**Bangladesh Association of Software and Information Services**
BB	**Bangladesh Bank**
B2B	**Business-to-Business**
BBS	**Bangladesh Bureau of Statistics**
BCIM	**Bangladesh-China-India-Myanmar**
BCO	**Beneficial Cargo Owner**
BEPZA	**Bangladesh Export Processing Zones Authority**
BEZA	**Bangladesh Economic Zones Authority**
BFSA	**Bangladesh Food Safety Authority**
BFFEA	**Bangladesh Frozen Foods Exporter Association**
BGMEA	**Bangladesh Garment Manufacturers and Exporters Association**
BIMSTEC	**Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation**
BICDA	**Bangladesh Inland Container Depot Association**
BIDA	**Bangladesh Investment Development Authority**
BIWTA	**Bangladesh Inland Water Transport Authority**
BIWTC	**Bangladesh Inland Water Transport Corporation**
BKMEA	**Bangladesh Knitwear Manufacturers and Exporters Association**
BNQF	**Bangladesh National Qualification Framework**
BOSA	**Bangladesh Ocean Going Ship Owners Association**

Acronyms	
BPO	**Bangladesh Post Office**
BPC	**Bangladesh Petroleum Corporation**
BPS	**Bangladesh Pharmaceutical Society**
BR	**Bangladesh Railway**
BRAB	**Bangladesh Railway Advisory Board**
BRTA	**Bangladesh Road Transport Authority**
BRTOA	**Bangladesh Road Transport Owners Association,**
BRTWF	**Bangladesh Road Transport Workers Federation**
BRWTP	**Bangladesh Regional Waterway Transport Project**
BSCIC	**Bangladesh Small and Cottage Industries Corporation**
BSC	**Bangladesh Shipping Corporation**
BSCMS	**Bangladesh Supply Chain Management Society**
BSTI	**Bangladesh Standard Testing Institute**
BTC	**Bangladesh Tariff Commission**
BTCOA	**Bangladesh Truck Cargo Owners Association**
BTEB	**Bangladesh Technical Education Board**
BTOA	**Bangladesh Truck Owners Association**
BUET	**Bangladesh University of Engineering and Technology**
CAAB	**Civil Aviation Authority of Bangladesh**
CAGR	**Compound Annual Growth Rate**
CBM	**Coordinated Border Management**
CCCI	**Chittagong Chamber of Commerce & Industry**
CCIE	**Chief Controller of Imports and Exports**
CDP	**Committee for Development Policy**
CFS	**Container Freight Station**
CLAP	**Comprehensive Logistics Action Plan**
COD	**Cash-on-delivery**
CPA	**Chattogram Port Authority**
CSAB	**Courier Service Association of Bangladesh**
CTMS	**Container Terminal Management System**
DCCI	**Dhaka Chamber of Commerce & Industry**
DDS	**Development of Data-Driven systems**

Acronyms	
DHLWEBDL	**DHL Worldwide Express BD Limited**
DoS	**Department of Shipping**
DTI	**Direct Traders Input**
e-CAB	**E-Commerce Association of Bangladesh**
ECI	**Economic Complexity Index**
EDI	**Electronic Data Interchange**
ELD	**Electronic Logging Device**
EPZs	**Export Processing Zones**
ERD	**Economic Relations Division**
EVI	**Environmental Vulnerability Index**
FBCCI	**Federation of Bangladesh Chambers of Commerce and Industry**
FDI	**Foreign Direct Investment**
FFC	**Freight Forwarding Companies**
FFS	**Freight Forwarding service**
FGD	**Focus Group Discussion**
FSDI	**Foundation for Socio-Economic Development Initiative**
FICCI	**Foreign Investors' Chamber of Commerce & Industry**
GAP	**Global Animal Partnership**
GDP	**Gross Domestic Product**
GHG	**Green House Gas**
GMP	**Good Manufacturing Practice**
GPS	**Global Positioning System**
HACCP	**Hazard Analysis and Critical Control Points**
HAI	**Human Assets Index**
HSIA	**Hazrat Shahjalal International Airport**
ICD	**Inland Container Depot**
ICT	**Information and Communication Technology**
ICS	**Import Clearance System**
IFC	**International Finance Corporation**
IGM	**Import General Manifest**
IMF	**International Monetary Fund**

Acronyms	
IoT	**Internet of Things**
ISPS	**International Ship and Port Facility Security**
IWT	**Inland Water Transportation**
KII	**Key Informants Interview**
KPIs	**Key Performance Indicators**
LCL	**Less-than-Container Load**
LDC	**Least Developed Country**
LEADS	**Logistics Ease Across Different States**
LIDC	**Logistical Infrastructure Development Committee**
LPI	**Logistics Performance Index**
LSPs	**Logistics Service Providers**
MCC	**Multi-Country Consolidation**
MCCI	**Metropolitan Chamber of Commerce and Industry**
ML	**Machine Learning**
MLO	**Main Line Operator**
MoA	**Ministry of Agriculture**
MoC	**Ministry of Commerce**
MoCAT	**Ministry of Civil Aviation and Tourism**
MoDMR	**Ministry of Disaster Management and Relief**
MoDSIT	**Ministry of Development Strategies and International Trade**
MoE	**Ministry of Environment**
MoFL	**Ministry of Fisheries and Livestock**
MoI	**Ministry of Industry**
MoHFW	**Ministry of Health and Family Welfare**
MoPEMR	**Ministry of Power, Energy, and Mineral Resources**
MoPTIT	**Ministry of Posts, Telecommunications and Information Technology**
MoR	**Ministry of Railways**
MoT	**Ministry of Trade**
MPA	**Mongla Port Authority**
MTPA	**Million Tonnes Per Annum**
NAFTA	**The North American Free Trade Agreement**

Acronyms	
NII	**Non-Intrusive Inspection**
NBR	**National Board of Revenue**
NCG	**National committee on LDC graduation**
NEP	**National Enquiry Point**
NESDC	**National Economic and Social Development Council**
NGVTMS	**Next Generation Vessel Traffic Management System**
NLDCC	**National Logistics Development Coordination Committee**
NLDC	**National Logistics Development Council**
NLTP	**National Land Transport Policy**
NLTF	**National Logistics Taskforce**
NSDA	**National Skills Development Authority**
OMC	**Oil Marketing Companies**
PACMP	**Port Authorities of Chittagong, Mongla, and Payra**
PAP	**Pre-arrival Processing**
PPA	**Payra Port Authority**
PICD	**Private Inland Container Depot**
PNR	**Passenger Name Record**
POL	**Petroleum, Oil and Lubricants**
PRC	**People's Republic of China**
RFID	**Radio Frequency Identification**
RHD	**Road and Highways Department**
RTHD	**Road Transport and Highways Division**
SAFTA	**The South Asia Free Trade Agreement**
SAIA	**Shah Amanat International Airport**
SCMS	**Supply Chain Management Society**
SHED	**Secondary and Higher Education Division**
SMART	**Specific, Measurable, Achievable, Realistic, and Timely**
SMEs	**Small and Medium-size Enterprises**
SSGP	**Support to Sustainable Graduation Project**
STOL	**Short Take-Off and Landing**
TAT	**Turn Around Time**

Acronyms	
TEUS	**Twenty-foot Equivalent Units**
TFA	**Trade Facilitation Agreement**
THA	**Terminal Handling Agent**
TIN	**Taxpayer Identification Number**
TIS	**Technology and Information System**
TMED	**Technical and Madrasah Education Division**
TMS	**Transportation Management Systems**
TOS	**Terminal Operating Systems**
TVET	**Technical and Vocational Education and Training**
TVPP	**Truck Visibility and Positioning Platform**
UGC	**University Grants Commission**
ULIP	**Unified Logistics Interface Platform**
UNCTAD	**United Nations Conference on Trade and Development**
WB	**The World Bank**
WEF	**World Economic Forum**
WMS	**Warehouse Management Systems**
YMS	**Yard Management Systems**

Executive Summary

Bangladesh has shown impressive economic progress in the past decade. However, the challenges loom as the graduation of our nation from LDC status will be in 2026, only after 2.5 years. As a result, Bangladesh will lose duty-free quotas and preferential treatment. This will increase the costs of imports and exports by many folds and incur losses by businesses. Minimizing logistics costs is essential to mitigate such losses.

Logistics has been a cornerstone of Bangladesh's economic growth. It improved its global ranking to 88th out of 139 countries in Logistics Performance 2023. However, Bangladesh still faces challenges of high logistics costs, port congestion, and customs delays. It needs to reduce costs by up to 10-15% by improving its logistics performance.

This study focuses on the crucial role of logistics in national development, highlighting the challenges Bangladesh will face after the Least Developed Country (LDC) graduation in 2026. The analysis emphasizes the need for a comprehensive National Logistics Development Policy to improve infrastructure, reduce costs, and ensure economic growth and global competitiveness.

The study employed a qualitative approach based on the collection of data through desk reviews, focus group discussions (FGD), key informant interviews (KII), and consultations with stakeholders. With the help of this study, loopholes are identified and strategies are proposed accordingly to ensure future benefits for the nation.

The document discusses infrastructure challenges in Bangladesh. It includes roadways, railways, airways, and waterways. The road transportation network needs at least 8 expressways. The railway system contributes only 1% of imports/exports. The aviation industry faces insufficient infrastructure, warehouses, and scanner machines. Water transport faces challenges like insufficient dredging and other issues. The document emphasizes the need for enhanced facilities for high-value goods.

Bangladesh's sea transport is vital for trade. The interesting part is that Chattogram and Mongla ports contribute 92% of international trade and 30% of the GDP of our nation. However, concerns about port performance and rising costs need to be addressed. Considering the future perspective, it is expected that Matarbari and Payra seaports will play a crucial role in sea transportation, reducing transshipment and cost.

The logistics sector is shifting towards modern practices. The World Economic Forum predicts a $1.5 trillion global digitization value by 2025. Integration of modern technologies and sustainable practices is required for efficient logistics operations. This will ensure global competitiveness, investment attraction, manufacturing hub development, and e-commerce boom. Bangladesh's logistics industry is experiencing positive growth because of technological advancements.

The 2022 Industrial Policy encourages the effective integration of technological and environment-friendly solutions for logistics stakeholders. But proper implementation is essential which is lacking. Collaborative efforts are crucial for optimizing regional logistics networks and adopting circular economy principles for sustainability.

Challenges:
The report focuses on challenges in various sectors of Bangladesh, including road, air/aviation, rail, seaports; land ports, private logistics services, global logistics services, customs clearance, skilled workforce development, etc.

If some sectors are taken into consideration, it will be found that road transportation faces issues like limited infrastructure, connectivity, and sustainability, while air/aviation transportation faces terminal and service limitations. Rail transport requires proper gauge conversion and manual goods handling. Seaports also face limited multimodal links and ship congestion.

Customs clearance is crucial, but Bangladesh faces difficulties in implementing best business practices. Skilled workforce development is not impressive because of rule complexities and lack of skill-based education. Oil, gas, and LNG terminal services are prone to infrastructure insufficiency and safety concerns.

Besides, critical challenges are observed in other sectors as well, which need to be curbed to derive maximum benefits.

Recommendations:
The paper concludes with a comprehensive set of recommendations addressing challenges across various sectors in Bangladesh. The logistics recommendations include highway upgrades, weigh-bridge implementation, multi-axle load vehicles, congestion reduction, automation, traffic detection systems, dedicated lanes, expressways, theft prevention, AI adoption, energy-efficient vehicles, charging stations, phasing out older vehicles, and comprehensive road transportation plans for development.

Proposed measures to tackle railway issues include constructing dedicated rail lines, completing Dhirasrom ICD, using modern locomotives with cold-chain facilities, increasing freight schedules, securing extra barges for daily voyages, and integrating rail stations with roads.

The report recommends strategic improvements for seaports, including multimodal connectivity, dredging, advanced handling equipment, and scanners. Key measures include accelerating the implementation of the Matarbari deep-sea port, adopting AI-driven traffic systems, and utilizing 4iR technologies to reduce congestion and dwell time. Off-dock facilities, robotics, flexible port charges, and early adoption of 4iR tools are also crucial.

The report recommends connecting land ports to national highways and rail networks, involving private sector startups, and streamlining operations. It also suggests improving inland waterways

and port infrastructure, including identifying key routes, river navigability, vehicle tracking systems, buoy lights, modern landing stations, automated cargo handling, transitioning to energy-efficient vessels, and ensuring connectivity between seaports and inland ports. It also calls for expediting the "Private inland container depots (ICD) and container freight station (CFS) policy-2021" and centralizing the licensing process.

To improve warehouse operations, focus on infrastructure, space, and compliance issues. Adopt advanced solutions like Warehouse Management Systems and improved material handling. Address cold chain logistics challenges by facilitating perishable imports and optimizing logistics. Implement real-time visibility and proactive alerts. Address global logistics services challenges by prioritizing technology adoption, R&D, and agility. Mitigate regulatory risks through collaboration and adaptable compliance. Address logistics workforce needs by aligning education with national policies, establishing a Skills Training ecosystem, and encouraging all, especially women, to develop skilled human resources. These measures will not only enhance efficiency but also foster sustainable growth in the logistics sector.

Recommendations for addressing Main Line Operator (MLO) challenges include partnering with Feeder Vessel Operators, utilizing Container Direct Exchange, reducing berthing delays, and overcoming waiver certification issues. To improve freight forwarding services, standardize shipping documentation, establish service standards, and adopt advanced solutions. In oil, gas, and LNG tank terminal services, expand storage, ensure safety, train skilled teams, and plan emergencies.

The study highlights the importance of prioritizing customer needs, promoting user-friendly online platforms, and partnering with international e-commerce platforms to address e-commerce challenges. It also highlights the need for a Public-Private Partnership with the Bangladesh Postal Department to expand e-commerce beyond major cities. Despite challenges, Bangladesh remains an attractive logistics market, requiring technical knowledge, innovation, and infrastructure enhancement.

Implementing the recommended measures will not only address current challenges but also position Bangladesh as a competitive player in the global logistics landscape. Continuous innovation and collaboration are emphasized to ensure sustainability and adherence to global best practices in the evolving field of logistics

Chapter One: Introduction and Background of the Study

1.1 Introduction

Bangladesh is one of the fastest-growing economies in South Asia. It achieved independence in 1971 after the nine-month-long Liberation War under the undisputed and unrivaled leadership of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman.

The unprecedented growth of our country is quite impressive. Bangladesh achieved remarkable progress in almost all the socio-economic indicators over the last few years. This ultimately facilitated fulfilling the necessary criteria for LDC graduation in both 2018 and 2021. Bangladesh is now set to graduate from the Least Developed Country (LDC) category on 24 November`2026.

The father of the nation Bangabandhu Sheikh Mujibur Rahman, the greatest Bengali of all time, dreamt of a "Sonar Bangla". The visionary leadership of Prime Minister Sheikh Hasina is advancing Bangladesh towards the realization of that dream as envisioned by the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman. The foundation of this vision was laid in the election manifesto of 2008, leading to the conceptualization of Vision-2021, or Digital Bangladesh. Under the leadership of Prime Minister Sheikh Hasina, the philosophy behind Vision-2021 includes prioritizing democracy, human rights, transparency, accountability, and delivering government services to citizens with efficiency. Following Vision-2021, the government has formulated the 2nd perspective plan, Vision-2041, aiming to achieve upper-middle-income country status by 2031 and high-income, knowledge-based, smart developed country status by 2041.

"Vision 2041" has been approved to support the country's development goals, addressing challenges in trade infrastructure, such as ports, transportation, and customs administration. The Transport Sector Strategy aims to strengthen planning, improve inter-modal balance, enhance implementation capacity, and modernize facilities. Targets include shifting towards rail and inland water transport, expanding port and air traffic capacities, and introducing mass rapid transit options in urban areas.

The concept of logistics has been in practice since early civilization perhaps in different forms. But it took its modern commercial form in the 1960s after the advent of containerization and fine-tuned, later with the invention and implementation of mechanization, automation, digitization, and artificial intelligence.

Bangladesh's government has adopted a "whole of society approach" to ensure smooth and sustainable graduation since receiving the CDP's recommendation respectively in 2018 & 2021. In May 2021, the National Committee on LDC graduation was formed, with seven thematic sub-committees focusing on trade and economic loss due to the discontinuation of ISMs post-graduation.

The sub-committee recommends that Bangladesh face critical challenges after graduation, requiring strategic recommendations to identify and address potential export-oriented industries. One recommendation is to improve logistics to facilitate export diversification and ensure LDC graduation.

1.2 Objectives of the Study

The main objective of the assignment is to prepare a comprehensive base report on the logistics sector of Bangladesh, which will act as a guiding document and reference point for preparing the National Logistics Development Policy. This policy will be the base for building future logistics infrastructures in Bangladesh. The ToR of this study is attached in Annex-1.

1.3 Background of the Study

Bangladesh met all the criteria for graduation from the LDC category, namely GNI per capita, Human Assets Index (HAI), and Environmental Vulnerability Index (EVI), in three consecutive triennial reviews conducted by the UN Committee for Development Policy (CDP) in 2018 , 2021 and 2024. As a result, the CDP recommended Bangladesh for graduation with a five-year preparatory period, which was finally approved by the UN General Assembly on April 24, 2021. So, the graduation will be effective in 24 November 2026.

Table-1: Bangladesh meets all the criteria for graduation from the LDC category.

Sl. No.	Criteria	Threshold value	Bangladesh`s score in 2024 Triennial Review
1	GNI per Capita	$1,306 or above	$2684
2	Human Assets Index (HAI)	66.0 or above	77.5
3	Economic & Environmental Vulnerability Index (EVI)	32 or below	21.9

*GNI per capita income is estimated using the Atlas Method and it is the average of the previous three years' per capita income
Source: UN CDP, 2024 Triennial Review

This is a proud moment for the country. But this development also comes with some challenges. The main challenge is that LDC-specific International Support Measures (ISMs) will no longer be available after 2026 due to LDC graduation. To ensure a smooth and sustainable transition, the government of Bangladesh needs to develop time-bound strategies to address potential gaps and continue to fill up those gaps in various segments, including the economy and society.

Bangladesh has been a significant beneficiary of preferential tariffs and rules of origin in accessing markets for its products, which was strongly tapped by the garments industry. However, the loss of preferential access could have significant impacts on Bangladesh.

Currently, Bangladesh enjoys DFQF market access for almost all items in most developed countries, including the EU, Canada, and Japan, and in several developing countries. After graduation and following a three-year grace period (only in the EU), Bangladesh and other graduating LDCs will no longer be eligible for LDC-specific DFQF market access and LDC-

specific rules of origin (Bangladesh's Graduation: Challenges and Imperatives to Continued International Support Measures, National university of Singapore, 22 July 2021, Md Mustafizur Rahman).

The UN Conference on Trade and Development estimates Bangladesh's potential export losses to be between 5.5% and 7.5%, while the World Trade Organization suggests a decline of more than 14% in Bangladesh's exports due to ineligibility of LDC-specific DFQF market access. Moreover, Bangladesh generally faces high logistics costs, with inventory carrying costs being a significant share. Bangladesh needs to reduce costs by up to 10-15% by improving its logistics performance.

The study examines Bangladesh's economic and transportation landscape, focusing on economic growth, logistics challenges, trade role, policy framework, technology, innovation, stakeholder involvement, international best practices, and environmental sustainability. This comprehensive understanding forms a knowledge base for logistics policy development in Bangladesh, enabling informed policies to address specific challenges and requirements.

1.4 Purpose of the Study

The purpose of this study is to find out the loopholes in improving the logistics sector of Bangladesh and achieving smooth supply chain activities in favor of our country. This study will emphasize the following key points:

Economic Development: The analysis of this study will show that improvement of the logistics sector will eventually reduce costs, increase efficiency, and enhance competitiveness in the domestic and international markets. The objective of it is to ensure short-term, mid-term, and long-term economic gain in favor of Bangladesh.

Infrastructure Development: Infrastructural development will be monitored thoroughly. This study will be the guideline for ensuring a smooth logistics infrastructure that will serve the purpose of increasing trade, reducing transportation costs, and improving overall logistics efficiency.

Resource Management: This study will find out the impact of smooth logistics in reducing the misuse of resources, and promoting sustainability along with enhancement of operational efficiency. With proper utilization of resources, Bangladesh can ensure a long-term gateway to necessary resources and save the environment.

Global Positioning: By improving logistics, Bangladesh can strengthen its position in the global economy, form better trade relationships, and enhance its reputation in the international arena. The study will assess how these improvements can benefit our long-term geopolitical interests.

In conclusion, the main goal of this report is to provide a comprehensive analysis of the benefits and opportunities linked with the improvement of logistics systems, ultimately serving the long-

term interests of our country. The findings and recommendations of this study will inform policy decisions and investment strategies to ensure a more prosperous future for our nation.

1.5 Scope of the Study

The scope of a study on logistics policy development in Bangladesh can be quite comprehensive and multifaceted. When researching this topic, several key areas can be explored to provide a well-rounded analysis. For this, the following steps will be followed:

- Collecting all the studies and other activities already conducted by various public and private sector organizations, research organizations, development partners, and CSOs on the Logistic sector of Bangladesh.
- Compiling the studies and work, and laws, rules, and protocols on the Logistic sector of Bangladesh.
- Reviewing the studies/works and other literature on the logistics sector of Bangladesh to identify the challenges and obstacles to improving the logistics sector of Bangladesh.
- Conducting stakeholder mapping relating to the logistics sector of Bangladesh.
- Consulting with various stakeholders and experts to gather views and information for improving the logistics sector of Bangladesh.
- Comparison of best practices in providing Logistical services within the region and globally.
- Recommending possible areas and activities to be undertaken for the national logistics development policy.
- Career functions related to the logistical sector suggested by the procuring and requiring entity during that tenure of the assignment.
- Any other function for achieving the objective of the assignment.

1.6 Approach of the Study

The methodology for conducting a comprehensive report on the logistics sector in Bangladesh is a qualitative approach. To ensure a well-rounded analysis according to the scope of work, the following steps have been undertaken:

- Collected and reviewed research, studies, and work already conducted in the logistics sector.
- Developed the study tools and instruments (checklist).
- Data have been collected through Desk review, Focus Group Discussion (FGD), Key Informants Interviews (KII) consultations with stakeholder actors, etc.
- We analyzed the data collected from the different ministries and agencies/organizations.
- Analyzed and prepared a report incorporating the findings and results of the study.
- Finalized the report by incorporating comments and suggestions from SSGP.

The team conducted a literature review and desk review to identify sources and report availability for a study related to logistics in Bangladesh. Data was sourced from newspapers, government

agencies, and search engines. Experts developed semi-structured questionnaires for KIIs and FDGs and analyzed the information in collaboration with the team. They also collected studies from public and private sector organizations, research organizations, development partners, and CSOs in the logistics sector. The team used participatory tools like Focused Group Discussion, Key Informant Interviews, and consultation to capture regional and global perspectives.

1.6.1 Desk Review

Depending on the scope of the work, most of the data is obtained from secondary sources. For collecting the secondary data, the Study team conducted desk reviews. Having desk review the team identified the sources and checked the report available which is closely related to our scope of study and gathered the information. Data related to our study was obtained from various sources like newspapers, and govt. and non-govt. agencies, and scholarly articles using various search engines.

1.6.2 Focus Group Discussion

A total of 05 Focus Group Discussions (FGDs) were conducted, involving government ministries, agencies, and departments, as well as private sector organizations associated with the logistics sector, and various logistics-related associations. The checklist of FGDs, Participants of FGDs, and findings of FGDs are given in Annex 5, 6, and 7 respectively.

1.6.3 Key Informants Interview

A total of 21 KIIs were conducted. A list of the organizations, Name, and designation of the key personnel is given in Annex-3. KIIs have been conducted through interviews (in person) and also in e-mail communication. The KIIs have been conducted with key stakeholders of the government/ministries/agencies/departments, private sector organizations, and different associations in the logistics sector. KIIs checklist and guidance note have been developed by the consultation with the Project. Findings of the KIIs are attached in Annex-4.

Chapter Two: Literature Review and Compilation

Logistics management has been defined as a high priority for contemporary organizations. Excellence in performing logistics activities and capabilities is associated with superior organizational performance (Lynch et al., 2000). It is central for many organizations to achieve competitive advantage (Kenyon and Meixell, 2007). The goal of the logistics management is the efficient and effective transport of quality products to the ultimate customers at affordable price (Mentzer et al., 2004).

2.1.1 National Logistics Policy 2022 of India

The Indian government has introduced the National Logistics Policy 2022 to reduce logistics costs by 8% of GDP within 2030. The policy focuses on reducing industrial waste and environmental pollution while maintaining a strong manufacturing sector to increase the GDP. Through the policy, the Indian government is emphasizing local technology investment and firm adaptation in the logistics sector (PIB Delhi; Release ID: 1919925, National logistics policy 2022).

2.1.2 Modernization of Logistics Systems by Vietnamese Government

To address logistics challenges, Vietnam has expedited trade and related procedures, thereby increasing flexibility and reducing the likelihood of goods being held up or freight forwarding delays. Additionally, Vietnam has pursued agreements such as signing FTAs with other countries and establishing logistics centers both domestically and internationally to facilitate market connectivity. Furthermore, the country is committed to strengthening standards and harmonizing with global markets (Efficient Logistics: A Key to Vietnam's Competitiveness, World Bank).

Vietnam welcomes FDI in trade logistics, modernizing transport logistics and port systems with investments and technology. It introduced a multimodal transport architecture to enhance connectivity, minimizing redundancies and promoting efficient resource utilization. For monitoring purposes, the country will utilize the Logistics Statistics System (VLSS). (Efficient Logistics: A Key to Vietnam's Competitiveness, World Bank).

2.1.3 Rise of Bangladesh as Global Economic Icon

Report published by World Bank in 2021 states that, Bangladesh was 32nd largest economy in the world in terms of GDP (current US$), the 56th in total exports, the 48th in total imports, the 133rd economy in terms of GDP per capita (current US$) and according to Economic Complexity Index (ECI) it was 101st most complex economy in the world (Farole et al. 2017, World Bank). From FY2009 to FY2019, the country achieved continuous increase in per capita income rise from USD 754 to USD 2064, life expectancy increased from 67 years to 73 years, adult literacy expanded from 58% to 75%, poverty incidence fell from 35% to 20.5% and extreme poverty rate declined from 18% to 10.5%. Growing at an average pace of 7% per year during this period, Bangladesh is

amongst the fastest-growing countries in the world. Per capita income of Bangladesh has increased by $643 to $2,765 in the last five years (2019-2023), according to BBS, 2023. All sectors experienced growth, but the contribution of agriculture to GDP declined, as Bangladesh became an important player in the textile and ready-made garments global value chain, which accounts for more than half of manufacturing employment and 84% of all exports in the country (Farole et al. 2017, World Bank).

The story of all successful Bangladeshi entrepreneurs is almost the same. They took the advantage of growing middle-income consumer base of the country and address their present and future demands. They also took advantage of the Duty-Free Quota and Free Market Access offered to the Least Developed Countries (LDCs) by their developing and developed counterparts. In this way, Bangladeshi entrepreneurs captured considerable market shares in a few business sectors such as the RMG, the Leather and Footwear, Jute and Textile, and the Pharmaceutical industries. Few emerging exporting sectors of the country include IT, ITES and Fintech, Food Processing, Light engineering, Agriculture, and Handicrafts industries.

Though the sustainability of this growth model is now being challenged, as Bangladesh's competitiveness based on low wages is eroding. Rising wage demands from workers, intensifying global price competition, and inefficient logistics are putting significant cost pressure on Bangladeshi producers. Since 2010 average annual employment growth in textile and ready-made garment sector has dropped to only 1.5%, and the rest of the economy has not been able to pick up the slack. Vietnam is doing a better job than Bangladesh taking advantage of China's shift away from garments (Bangladesh Development Update: Building on Resilience, World Bank, 2018). Bangladesh needs to increase its competitiveness to safeguard its comparative advantage in ready-made garments, diversify its exports basket, improving logistics performance compared with business competitive countries (Moving Forward Connectivity and Logistics to Sustain Bangladesh's Success, The World Bank, 2020).

2.1.4 Bangladesh Logistics Performance Index 2023

The Logistics Performance Index was reported by the World Bank every two years from 2010 to 2018 with a break in 2020 due to the COVID-19 pandemic and a restructuring of the index methodology, eventually coming out only in 2023. According to the latest one, Singapore and Finland are in the lead with scores of 4.3 and 4.2, respectively. Denmark, Germany, the Netherlands, and Switzerland scored 4.1 to rank third jointly.

Bangladesh has climbed 12 notches in the World Bank's Logistics Performance Index 2023. It has now moved to 88th rank from 100th in 2018 out of 139 countries. With a score of 2.6 on a 5-point scale, Bangladesh came in 3rd among the five South Asian economies assessed in the 2023 index, behind India (38th) and Sri Lanka (73rd). The detailed picture of the position of Bangladesh in World Logistics Performance Index 2023 is shown below:

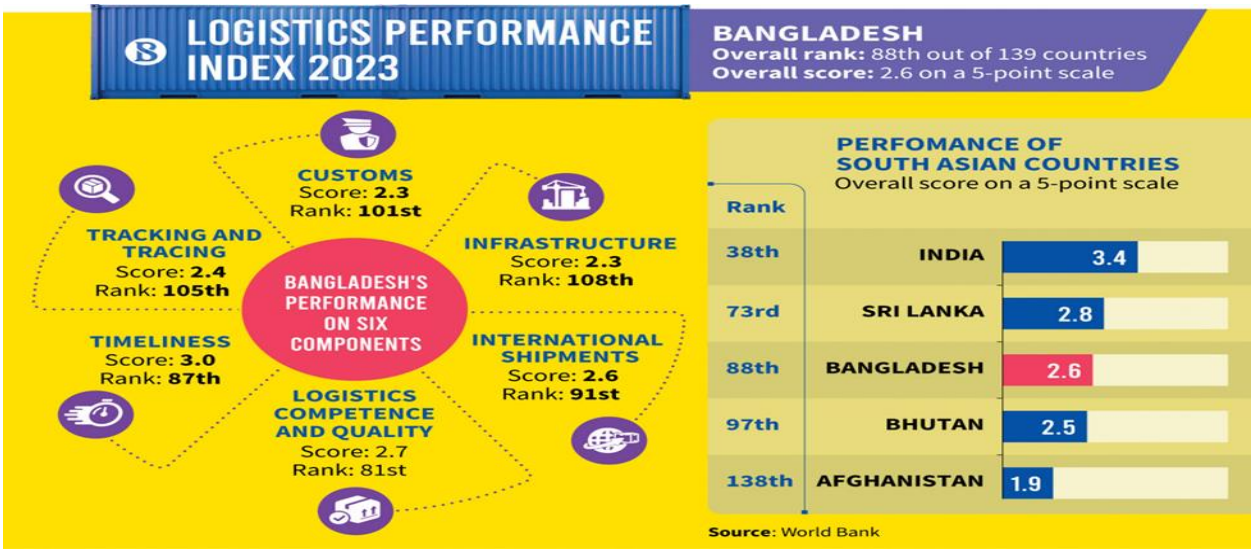

Fig-1: Logistics Performance Index, 2023

2.1.5 Unrecognized Logistics Industry of Bangladesh and its implications

Bangladesh's economic success is unevenly distributed, with greater Dhaka and Chattogram being the backbone. Its export development is hindered by the unrecognized logistics industry urging for a national strategy to address its complexities and issues. Here are some of the arguments behind it:

i) Bangladesh's logistics costs are high across sectors, ranging from 4.5% for leather footwear to 47.9% for horticulture. Inventory carrying costs and road transport are the largest direct costs, higher than many developing countries (Moving Forward, The World Bank, 2020).

ii) Bangladesh is missing out on at least 20% of its export potential due to poor logistics and clearance services in the country's ports and highways, according to various experts (Moving Forward, The World Bank, 2020).

iii) If the time taken to secure clearance for goods at local ports is shortened by a day, overall exports would increase by 7.4 % (Moving Forward, The World Bank, 2020).

iv) Road transport rates in Bangladesh are high. Average trucking rates in per ton per kilometer range from $0.06 for a 16-ton truck to $0.12 for a trailer. The most commonly used truck in Bangladesh is a seven-ton truck, the average rate for which is $0.095 per ton per kilometer. These rates are higher than in many developing and developed countries (Moving Forward, The World Bank, 2020).

v) Currently, the average speed of goods-laden trucks plying the Dhaka-Chattogram highway, which handles 95 % of the movement of export and import goods, is 19 kilometers per hour. But if the average speed can be increased to 40 kilometers per hour, it would boost exports by some 3.5% (Moving Forward, The World Bank, 2020).

vi) Export-oriented and import-dependent industries require higher inventories ranging from 17-56% of logistics costs (Moving Forward, The World Bank, 2020).

vii) Bangladesh faces congestion and unreliability due to inadequate transport and logistics

infrastructure, inefficient operation, high incidents of vehicle overloading, and country's exposure to natural disaster. The study found that congestion and delays double trucking costs (Moving Forward, The World Bank, 2020).

viii) Bangladesh's logistics system is fragmented, lacking intermodal facilities and poorly operated (Moving Forward, The World Bank, 2020).

ix) Trade in eastern south Asia is paper-heavy, requiring physical submission of documents for regulatory requirements by different jurisdictions, can account for as much as 3% of the total cost of trade (The MVA, the BD-IN Protocol).

x) Delays and complex clearance procedures for shipments hinder small traders, particularly women-led enterprises. It is found that in Bangladesh about 80% of women entrepreneurs face concerns about number of forms required for trade license and lack of knowledge about regulations, licensing, and online services (Livani et al.; Empowering South Asian Women Entrepreneurs through Trade and Technology, WTO; Nora et al.; WBG, 2020).

xi) 91% of service providers focus on one service category, with low skills, poor asset quality, and limited IT tools. Poor driving skills contribute to road crashes which contributing 11% of trucking cost. Shippers report inability to track and trace shipments, leading to manufacturing firms providing their logistics needs in-house (Moving Forward, The World Bank, 2020).

A national strategy is required to address these above complexities and issues. However, implementing a national logistics policy can address addressable issues by introducing short-term, mid-term and long-term priorities and measures.

2.1.6 Bangladesh and Regional Trade

Bangladesh mainly exports to United States ($8.72B), Germany ($8.36B), Spain ($3.6B), United Kingdom ($3.29B), and Poland ($2.94B) whereas it majorly imports from China ($24.1B), India ($14.1B), Singapore ($3.53B), Indonesia ($2.92B), and United States ($2.3B).

Bangladesh has opportunities to flourish in regional trade and transport in coming days. The deepening relationship among the countries of eastern South Asia (Bangladesh, Bhutan, India, and Nepal; in following also referred to as "Region") on regional trade and transport is reflected by the increasing number of regional and bilateral connectivity agreements (Bangladesh Development Update: Building on Resilience, World Bank, 2018). However, although trade between them increased from US$3 billion in 2005 to over US$18 billion in 2019, opportunities for growth in this regard remain largely untapped (The MVA, the BD-IN Protocol).

The regional trade within South Asia is around 5% of total trade, whereas that within East Asia and Sub-Saharan Africa is 50% and 22% of total trade, respectively. The unexploited potential for regional trade is estimated at 93% for Bangladesh, 9% for Bhutan, 50% for India, and 76% for Nepal. South Asia has the highest trade restrictiveness index (Doing Business 2019, World Bank) (UNESCAP, 2016).

It is observed that India's global imports averaged USD 451.5 billion annually over the 2018-2020

period, but only USD 1.0 billion per year originated from Bangladesh. Similarly, China's annual imports over the same period averaged USD 2086.5 billion, of which only USD 0.94 billion annually was sourced from Bangladesh (Regional Integration as a Strategic Avenue for Bangladesh, UNCTAD, 2022). Bangladesh sources 75% of its imports from Asia but sources only 16% of its exports to it. Trade of India with Brazil or Germany is 15-20% cheaper than that with Bangladesh due to factors like inadequate infrastructure, cumbersome regulations, and protective tariffs (Regional Integration as a Strategic Avenue for Bangladesh, UNCTAD, 2022). Exports from Bangladesh to Nepal via India incurs 1.56 times higher trade costs than exporting to Brazil (Rahman, et. al., 2015 & Kathuria and Arenas, 2018).

Regional partners have successfully exploited Bangladesh's market, but the reverse has not been the case. Lack of supply-side capacities, low competitiveness, longer lead time, quality issues, disproportionate trade and transport costs, tariff and non-tariff barriers, and limited FDI mobilization are all factors contributing to this outcome (Herrera Dappe, M. and C. Kunaka. 2021). This highlights the need for stronger productive and trade integration within the region.

This situation could worsen for Bangladesh after LDC graduation as competitors are pursuing aggressive trade liberalization strategies intensifying competition. "Impact Assessment and Coping up Strategies of Graduation from LDC Status" published by ERD that LDC graduation may attract investment and stimulate economic activity but it may also pose challenges due to phasing-out of preferential market access, potentially reducing exports by 11%. The government of Bangladesh has implemented initiatives to strengthen relations with neighboring countries, including reducing transit restrictions, expanding transportation infrastructure, establishing warehouses, and easing customs procedures.

2.1.7 Regulatory issues of Bangladesh

There are some regulatory issues which are hindering the smoothness of logistics performance. These are:

i) Nine ministries and over twenty government agencies are involved in policy-setting, infrastructure planning, and service provision for logistics development. This fragmented governance leads to coordination issues, silos in transport modes, and mismatches in standards.
ii) Bangladesh's logistics service markets are uncompetitive, with thousands of operators using small fleets. Drivers' unions and brokers control prices and cargo access, hindering competition.
iii) Truck accidents and road and bridge infrastructure damage from truck overloading are significant externalities. Regulations aim to reduce accidents, but weak enforcement leads to unskilled drivers, substandard trucks, and overloading.
iv) Limited financing access, informality, and lack of a centralized property registry hinder logistics service providers' growth and modernization.
v) The logistics sector of Bangladesh faces outdated policies and regulations, dating back to

pre-independence periods. These policies primarily focus on infrastructure development, while modern national-level policies aim to improve infrastructure, transport integration, and service quality.

vi) Bangladesh's infrastructure provision paradigm gives the private sector a minor role in financing, management, and operation of infrastructure.

2.1.8 Developing the Logistics Sector: The Role of Public Policy

The Role of Public Policy emphasizes the importance of data collection, monitoring logistics activities, and using key performance indicators to assess the effectiveness of logistics policies and improve the efficiency of the national economy (Developing the Logistics Sector: The Role of Public Policy, Jean-Paul Rodrigue, 2018). Its aim is to reduce logistics costs, promote trade, exports, and foreign investments in logistics and related sectors. Some of the suggestions of the report are given below:

i) Creation of special customs zones and the expansion of ease to move cargo between customs entities within the same country.
ii) Need for data-driven decision-making in logistics and the use of key performance indicators to assess the effectiveness of logistics policies.
iii) Need for extending the governance and regulation of logistics, including cross-border agreements to develop cross-border logistics and improve coordination in hinterland transport chains.
iv) Reduction of the number of inspections for imported cargo and improving the level of service for customs can enhance the efficiency of logistics operations.
v) Arrangement of technical training programs in logistics to improve managerial capabilities.

2.1.9 Exploring the Logistics Sector in Bangladesh Opportunities, Threats and Practical Information

Nyenrode Business Universiteit (2014) published a research report titled "Exploring the Logistics Sector in Bangladesh Opportunities, Threats and Practical Information" highlights the following stuffs:

i) There is a lack of facilities for container handling in Bangladesh, indicating a need for investment in infrastructure for improving the transport services of the country.
ii) It is required to build more capacity in the railway system, as it offers relatively low costs compared to transportation by road.
iii) There are sufficient storage and warehousing facilities for food across the country. This means that the existing infrastructure can support the storage and distribution of food products effectively. But these facilities are vulnerable to natural disasters. So, there is a need of resilience measures for disaster management in this regard.
iv) The installation of facilities for receiving and separating oil waste from ships is mentioned as an example of efforts to improve the environment.

v) Future efforts should focus on attracting Dutch exports and investments to Bangladesh. It depends on the country's ability to position itself effectively in the global market.
vi) There is a potential of China and India in becoming important export markets in the future.

2.1.10 Workforce Management

"Do More with the Same in Logistics and Distribution" mention that the workforce management function has a significant impact on employee engagement and customer service. It highlighted strategies such as building a culture of trust, empowering employees, and leveraging intelligent automation can optimize the workforce, reduces costs and outperform the market. So, logistics and distribution companies are focusing on employee retention, workforce productivity, and operational efficiency to stay competitive and profitable.

2.1.11 Apparel in South Asia

Gladys Lopez-Acevedo and Raymond Robertson, (2016) published a research named "Apparel in South Asia" based on the "Stitches to Riches" report highlights the followings:

i) Promotion of women's economic empowerment and increase female labor force participation. All countries should consider establishing "Plug and Play" industrial zones with ready-to-use industrial buildings and facilities specifically designed to support women workers.
ii) The success of apparel firms in South and East Asia, such as Vietnam and China, suggests that small firms can grow quickly through intense competition and retained earnings.
iii) Relationship between quality of apparel production in different countries and considering factors such as raw materials, sewing machine operator skills, and the effectiveness of quality control teams.

2.1.12 Importance of Sustainable Practices in Bangladesh

Sustainable, green and resilient transport services are crucial due to increasing natural disasters, such as extreme river floods in South East countries (Herrera Dappe, M. 2016). International Finance Corporation (IFC), 2021 published a paper named "Green Buildings: A Finance and Policy Blueprint for Emerging Markets" in which it suggests that non-resilient systems negatively impact socio-economic conditions. It causes Bangladesh an estimated annual utilization loss of $800 million. Resilient infrastructure investments can reduce operational costs by up to 37%. Governments must improve resilience planning, develop hydro-meteorological information infrastructure, and make infrastructure assets resilient and green to address these challenges and ensure a more resilient future.

2.1.13 Trade Facilitation Agreement (TFA)

The WTO finalized the Trade Facilitation Agreement (TFA) in December 2013 to streamline cross-border goods movement and simplify global trade procedures. Bangladesh ratified the TFA on February 22, 2017, following approval by two-thirds of WTO Members.

The agreement sets out uniform customs rules to promote transparency and efficiency in cross-border trade. It focuses on ensuring tailored support for developing nations to enhance customs compliance and reduce trade costs. So, successful TFA implementation is crucial for robust international trade between Bangladesh and other countries.

With donor assistance, the Government of Bangladesh has made substantial investments to improve cross-border goods flow by implementing the TFA and adopting measures like the National Board of Revenue's Customs Modernization Strategic Action Plan for 2019-2022, the One Stop Service Act, and other initiatives to enhance the business environment, and food safety and security. Measures introduced align with international best practices, including an enhanced Customs website, National Enquiry Point (NEP), Advanced Ruling, Authorized Economic Operators (AEO), Risk Management, Systematic Risk Management environment, Expedited shipments, de minimis enforcement, Pre-arrival Processing (PAP), Advance Passenger Information (API)/Passenger Name Record (PNR), and the enactment of the Customs Act, 2023.

Introduced in 1994 with UNCTAD's support, the Customs' automated assessment system, powered by ASYCUDA software, has been updated to meet TFA, aiming to improve automation, support trade and investment, and promote collaboration for Coordinated Border Management (CBM).

2.2 Collect Studies, Reports, and Research Papers

This study consolidates studies, initiatives, and efforts from various sectors, research organizations, development partners, and Civil Society Organizations in Bangladesh's logistics sector. It aims to analyze the knowledge, insights, and interventions from various stakeholders to understand, develop, and address challenges. The goal is to create a comprehensive repository of research, developmental efforts, and best practices, enabling informed decision-making and policy formulation, ultimately fostering growth and sustainability in Bangladesh's logistics landscape.

So far, we have collected studies, reports, and research papers listed. This list excludes presentation papers and published newspaper articles. The list is attached as an Annex-09. List of Policies for Supporting the Sub-sectors in the Logistics Sectors in Bangladesh is attached as an Annex-08.

Table 02: List of Studies, Reports and Research papers

Sl. No.	Title	Author	Year
1	Cryptocurrency Conundrum Lessons from the MTFE Scam in Bangladesh	Ahmed, Nauriin	2023
2	Bangladesh Railway EPC Track Engineering Investigation and Summary	Ming-min, Yin; Fen, Xiang; Nan-fu, Yi	2023
3	The Aspiration for Happy Train Journey: Commuters' Perception of the Quality of Intercity Rail Services	Islam, Md Rakibul; Ahmed, Md Tawkir; Anwari, Nafis; Hadiuzzaman, Md; Amin, Shohel	2022
4	Design and Concept of Renewable Energy Driven Auto-Detectable Railway Level Crossing Systems in Bangladesh	Iftekharuzzaman, Iftekharuzzaman; Ghosh, Susmita; Basher, Mohammad Khairul; Islam, Mohammad Aminul; Das, Narottam; Nur-E-Alam, Mohammad	2023

Sl. No.	Title	Author	Year
5	Impact of introducing e-commerce on small and medium enterprises – a case on logistics provider	Parvin, Morsheda; Asimiran, Soaib Bin; Ayub, Ahmad Fauzi Bin Mohd	2022
6	Enhancing Chittagong Port: Fostering a Future-Ready Supply Chain	Hasan, Ikram; Habib, Md. Mamun	2023
7	Logistics Overview of Bangladesh	Islam, Masudul; Awal, Mohammed Abdul; Saleheen, Ferdoush; Rahman, Dewan S; Kabir, Saad Aadnan	2019
8	Public food grain storage facilities in Bangladesh: An assessment of functionality, repair needs, and alternative usage	Research Institute (Ifpri), International Food Policy	2019
9	Exploring the Logistics Sector in Bangladesh	Nyenrode Business Universiteit	January 2014
10	Bangladesh Railway EPC Track Engineering Investigation and Summary	Ming-min, Yin; Fen, Xiang; Nan-fu, Yi	2023
11	Smart Railway Operation Aid System for Facilities With Low-Safety Requirements	Torralba, Antonio; Garcia-Castellano, Maria; Hernandez-Gonzalez, Miguel; Garcia-Martin, Juan Pablo; Perez-Mira, Ventura; Fernandez-Sanzo, Roberto; Jacome-Moreno, Antonio; Gutierrez-Rumbao, Francisco Javier	2021
12	Improving logistics performance by reforming the pillars of Global Competitiveness Index	Önsel Ekici, Şule; Kabak, Özgür; Ülengin, Füsun	2019
13	A framework for analysing supply chain performance evaluation models	Estampe, Dominique; Lamouri, Samir; Paris, Jean-Luc; Brahim-Djelloul, Sakina	2013
14	Bangladesh Railway EPC Track Engineering Investigation and Summary	Ming-min, Yin; Fen, Xiang; Nan-fu, Yi	2023
15	Developing Integrated Multimodal Transportation Networks in Bangladesh with Regional Connectivity: Key Issues and Challenges	Chowdhury, Md. Shoaib	2016
16	Visualization of Renewable Energy Powered Automatic Railway Crossing Systems in Bangladesh	Rifat, Iftekharuzzaman; Ghosh, Susmita; Basher, Mohammad Khairul; Islam, Mohammad Aminul; Das, Narottam; Nur-E-Alam, And Mohammad	2022
17	Resilient mobility and logistics systems for future: Bangladesh Perspective	Asif Mahmud Arnob, Sunanda Majumdar	01 Jan 2022
18	Smart Railway Operation Aid System for Facilities With Low-Safety Requirements	Torralba, Antonio; Garcia-Castellano, Maria; Hernandez-Gonzalez, Miguel; Garcia-Martin, Juan Pablo; Perez-Mira, Ventura; Fernandez-Sanzo, Roberto; Jacome-Moreno, Antonio; Gutierrez-Rumbao, Francisco Javier	2021
19	Prospects of Internet of Things for Bangladesh	Parvez, Nasim; Chowdhury, Tamjidul Haque; Urmi, Shahina Sultana; Taher, Kazi Abu	2021
20	Skill and knowledge requirements of entry-level logistics professionals in the apparel industry of Bangladesh: an importance-expertise matrix analysis	Iqbal, Md Arif; Su, Jin; Hasan, Sabbir	2022
21	Leveraging E-Commerce in Bangladesh for Post-Crisis Recovery	Banga, Karishma; Parra, Max Mendez	
22	Intelligent Vehicle Scheduling and Routing for a Chain of Retail Stores: A Case Study of Dhaka, Bangladesh	Rahman, M. Azizur; Hossain, Al-Amin; Debnath, Binoy; Zefat, Zinnat Mahmud; Morshed, Mohammad Sarwar; Adnan, Ziaul Haq	2021
23	An Overview of Ship Brokering and Chartering and its Challenges in Bangladesh	Sayed, Mohammad Abdullah Abu	2022
24	Green Logistics, Green Human Capital, and Circular Economy: The Mediating Role of Sustainable Production	Cheng, Ya; Masukujjaman, Mohammad; Sobhani, Farid Ahammad; Hamayun, Muhammad; Alam, Syed Shah	2023
25	The Role of Chittagong Port Authority to Develop Other National Ports in Bangladesh to Provide Maritime Logistics Support in South Asia	Saha, Razon Chandra	2023
26	Challenges for Government Innovation in Bangladesh	Subhan, Tahrima; Don Jae, Gal	2012

Sl. No.	Title	Author	Year
27	The Challenges in Establishing Sustainable Supply Chain in Bangladesh	Uddin, Mohammad Mazbha	
28	Moving Forward: Connectivity and Logistics to Sustain Bangladesh's Success	Herrera Dappe, Matías; Kunaka, Charles; Lebrand, Mathilde; Weisskopf, Nora	2019
29	Emerging Blue Economy for Bangladesh: Opportunities, Challenges and Way Forward	Sharwar, M Golam; Alamgir, M Ziauddin; Mahmud, Arif	
30	Logistics management research collaboration in Asia	Wu, Yen-Chun; Goh, Mark; Yuan, Chih-Hung; Huang, Shan-Huen	2017
31	Green Supply Chain Management: The Effect of Procurement Sustainability on Reverse Logistics	Letunovska, Nataliia; Offei, Felix Amoako; Junior, Prince Amoh Junior; Lyulyov, Oleksii; Pimonenko, Tetyana; Kwilinski, Aleksy	2023
32	Traffic Problems in Dhaka City: Causes, Effects, and Solutions (Case Study to Develop a Business Model)	Ali, Yasin; Rafay, Muhammad; Khan, Raja Danish Akbar; Sorn, Meng Kheang; Jiang, Hailing	2023
33	Water Governance in Bangladesh: An Evaluation of Institutional and Political Context	Chan, Ngai; Roy, Ranjan; Chaffin, Brian	2016
34	Development of Port Logistics Center: Bangladesh Perspective	Md ibrahim, Wang Xuefeng	22 Feb 2023
35	Humanitarian supply chain management: How crucial is proper warehousing?	Mohammad Ashraful Islam Khan	11 Nov 2023
36	Understanding the usage patterns, practices and decision process of third party logistics outsourcing in Bangladesh	Nasrin Akter, Prem Chhetri, Shams Rahman	01 Nov 2019
37	The role of logistics strategy on firm performance of garment industry in Bangladesh	Md. Sazzadur Rahman Khan1, Vichayanan Rattanawiboonsom1•Institutions (1) Naresuan University1	11 Dec 2020
39	Skill Requirements for Logistics Professionals in the Apparel Industry of Bangladesh: An Importance-Expertise Matrix Analysis	Arif Iqbal1, Jin Su1, Sabbir Hasan2•Institutions (2) University of North Carolina at Greensboro1, Bangladesh University of Textiles	28 Dec 2020
41	Supply chains are breaking. They'll rebuild stronger	Tim Culpan	27 Dec 2023
42	Bangladesh's Trade Logistics cost highest among the peers	FHM HUMAYAN KABIR	18 Apr 2021
43	Impact of Logistics Performance on Trade with Specific Reference to Garment Sector in Cambodia, Bangladesh and India	Areej Aftab Siddiqui1, San Vita1•Institutions (1) Indian Institute of Foreign Trade1	31 Jan 2019
44	A dynamic policy in freight and logistics sector necessary to boost growth	Kabir Ahmed	28 Aug 2022
45	Logistics Industry in Bangladesh Size & Share Analysis - Growth Trends & Forecasts (2024 - 2029)		
47	Addressing supply chain gaps in Bangladesh	Mohammad Ashraful Islam Khan	2024
48	Supply Chain Alliance: Bridging the gap between industry professionals and supply chain enthusiasts	Ahmed Hasam Rabbi	05 Dec 2021
49	How Pathao stays the lone profitable start-up	Mahfuz Ullah Babu	25 Oct 2023
50	Foreign investment in cold-chain infrastructure: Bangladesh needs a sound logistics policy	Jebun Nesa Alo & Shawkat Ali	23 Oct 2023
51	Workshop on Potentials and Challenges of Leather Sector in Bangladesh: Points to Ponder	Economic Relations Division	22 Oct 2023

2.3 Recent initiatives for the Development of the Logistics Policy in Bangladesh

Bangladesh will clear the LDC graduation in 2026. By this time, it wants to achieve a goal of 100-billion-dollar exports, while it wants to become a middle-income country and developed country status in 2031 and 2041 respectively. To achieve these goals, logistics improvement is the key for the country.

To fulfill these goals, the Government of Bangladesh has formed a National Logistics Development and Co-ordination Committee (NLDCC) on 22 January, 2023 under the chairmanship of Principal Secretary to the Honorable Prime Minister Mr. M. Tofazzel Hossain Miah, to ensure comprehensive and holistic growth of the logistics sector in Bangladesh.

Under this committee, 05 (Five) Sub-Committees were also formed to achieve this goal.
These committees are:

1. Policy & Regulatory Framework Sub-committee led by the Ministry of Commerce
2. Infrastructure Sub-Committee led by Road Transport & Highway Division
3. Institutional and Skills Development Sub-Committee led by Ministry of Industry
4. Technology and Digitalization Sub-Committee led by ICT Division
5. Investment Attraction Sub-Committee led by PMO and BIDA

NLDCC has published a draft 'National Logistics Development Policy 2024' on 30th January 2024. The primary objective of this draft policy is to lower logistics expenses and improve efficiency to boost both domestic and international trade, as well as to attract investments, will be achieved by establishing technology-driven, cost-effective, efficient, and environmentally sustainable logistics infrastructure.

The draft policy focuses on issues regarding different infrastructural aspects like- i) Road Infrastructure ii) Rail iii) Bridge iv) Inland waterways v) Inland ports vi) Seaports vii) Airports viii) Land ports/Toll ix) Inland Container Depot/Warehouse x) Temperature controlled Logistics xi) Economic Zones and Export Processing Zones.
Conversely, the draft policy addresses challenges regarding trade facilitation, technology management, skill development & human resource management, environment logistics and safety, security and compliances are also discussed chapter-wise separately. Additionally, the document underscores the importance of implementing the policy while emphasizing different Key Performance Indicators (KPIs).

The 'National Logistics Development Policy 2024' is a guideline of optimizing logistics practices. Further updates are required in order to make this guideline ready for comprehensive implementation in logistics arena in Bangladesh. However, stringent monitoring is essential to ensure that this policy becomes a tangible reality.

Chapter Three: Components of Logistics

3.1 Introduction

The key elements of logistics include transportation, warehousing, ports and terminals, technology and information systems, human resources and skill development, regulatory framework and policies, and sustainability and environmental considerations. The cohesive functioning of these interdependent components is essential for the effective operation of a logistics system. To enhance higher industrial growth through sector-based productivity enhancement, the Ministry of Industry (MoI) formulated The National Industry Policies 2022.

The National Industry Policies 2022 has identified 21 logistics sub-sectors are as follows:

1. Road transport and communication services
2. Air/Aviation Services
3. Rail Transportation Service
4. Sea Port Services
5. Freight Shipping Services
6. Regional feeder vessels and lighter/coastal/offshore shipping industry services
7. Main-line operator services
8. Inland Shipping Services
9. Freight Forwarding Services
10. Oil/Gas/LNG Tank Terminal Services
11. Temperature Controlled Logistics/ Cold Chain/ Cold Storage Services
12. Private Inland Container Depot and Container Freight Station Services
13. Courier and Postal Services
14. Ride-sharing services
15. Clearing and Forwarding Services
16. ICT Based logistics services
17. Financial Logistics Services
18. Deep Sea fishing industry services
19. Private Warehouse Service
20. E-Commerce Logistics Service
21. Global Logistics Services

Following the National Industry Policies 2022, major components of logistics are described below:

3.2 Transportation Infrastructure

Transportation infrastructure plays an important role in economic development and international trade. The international economy has become more globalized as a result of advancements in transportation and rapid improvement. Improvement in transportation infrastructures helps a country to domestically and globally connect Technology and Information System (TIS) trade

partners by reducing travel time and cost which facilitates the producer country to access distant markets and promote trade (Bottasso et al., 2018; Donaubauer et al, 2018, Francois et al., 2013, Ismail & Mahyideen, 2015, Nordås &Piermartini, 2004). It allows countries to lower transportation and trade expenses, boost international trade activities, and improve their competitiveness.

Over the past 50 years, Bangladesh has experienced significant changes in transport and cargo handling methods, including multimodal systems, containerization, and transhipment. As a vital sea access point for South Asia, South-East Asia, and the Southwest part of China, Bangladesh has the opportunity to enhance its transport services, develop a comprehensive transport network, and model integrated multimodal transport networks.

Table-03: Ranking of Bangladesh in infrastructure parameters of the Global Competitiveness Index

Infrastructure Indicators	**Value**	**Score**	**Rank/140**
Road connectivity index 0-100 (best)	34.3	34.3	121
Quality of roads 1-7 (best)	3.1	35.2	111
Railroad density km of roads/square km	19.2	48.0	40
The efficiency of air transport services 1-7 (best)	3.7	45.5	109
Airport connectivity (score)	48	51.4	63
Linear Shipping Connectivity Index 0-157.1 (best)	10.8	10.88	81
Efficiency of seaport services 1-7 (best)	3.5	40.9	93

(Source: World Economic Forum, The Global Competitiveness Report, 2018)

There has been a notable upsurge in the advancement of infrastructure, resulting in a proliferation of various transportation options encompassing land, water, and air domains. However, policy support and the engagement of businessmen and investors are important to creating such a structure of multimodal transportation in Bangladesh.

According to the Bangladesh Bureau of Statistics (BBS), the contribution of the transport and communication sector to GDP is 7.34% and 7.32% at a constant price during FY 2021-22 and FY 2022-23 respectively and the rate of growth is 5.75% and 5.99% at a constant price during FY 2021-22 and FY 2022-23 respectively considering the base year 2015-16. In this context, for the implementation of the 8th Five Year Plan, Perspective Plan keeping consistency with the targets of SDG-2030, the government has taken various development initiatives over the years.

Bangladesh has 4 ministries responsible for transportation within the country. They are:

- Ministry of Road Transport and Bridges Division- responsible for road safety.
- Ministry of Civil Aviation and Tourism- responsible for civil aviation.
- Ministry of Shipping- responsible for maritime transport.
- Ministry of Railways- responsible for rail transport.

3.2.1 Roadways

A healthy transportation system is crucial for a country's economic advancement and well-being. Bangladesh, with a rapidly developing economy, has seen significant growth in road transportation over the past five decades. In 1947, the total length of paved roads in Bangladesh was 461.8 kilometers. As of 2021, the Roads and Highways Department (RHD) has expanded the network to 22,476 kilometers. The volume of passenger traffic has increased significantly, with passenger traffic reaching 46 billion tons per kilometer in 2021 and freight traffic reaching 31.0 billion tons per kilometer.

Bangladesh's road transportation is crucial for its economy and is managed by the Roads and Highways Department (RHD). The department manages approximately 22,476 km of road network, including National, Regional, and Zilla roads. Out of this highway network, 18% is National Highway, 22% is Regional Highway and the remaining 60% is Zilla roads. The RHD controls 4,404 bridges and 15,084 culverts. Although the length of the road network has not significantly increased, the standard and width of important road segments have been improved. The department operates 57 ferry ghats, with 12 receiving administrative clearance and 35 pending approvals. Ferry service is provided by 148 boats, 140 pontoons, and 114 gangways. A thirteen-year time series data on RHD road lengths is provided.

Table-04: Length of Various Categories of Road.

(Length in kilometer)

Year	National Highway	Regional Highway	Zilla Road	Total
2010	3478	4222	13248	20948
2011	3492	4268	13280	21040
2012	3538	4276	13458	21272
2013	3570	4323	13678	21571
2014	3544	4278	13659	21481
2015	3813	4247	13242	21302
2016	3813	4247	13242	21302
2017	3813	4247	13242	21302
2018	3813	4247	13242	21302
2019	3906	4483	13207	21596
2020	3906	4767	13423	22096
2021	3944	4883	13592	22419
2022	3991	4898	13545	22434
2023*	3991	4898	13587	22476

Source: Roads and Highways Department; Ministry of Road, Transport and Bridges. *Up to February 2023

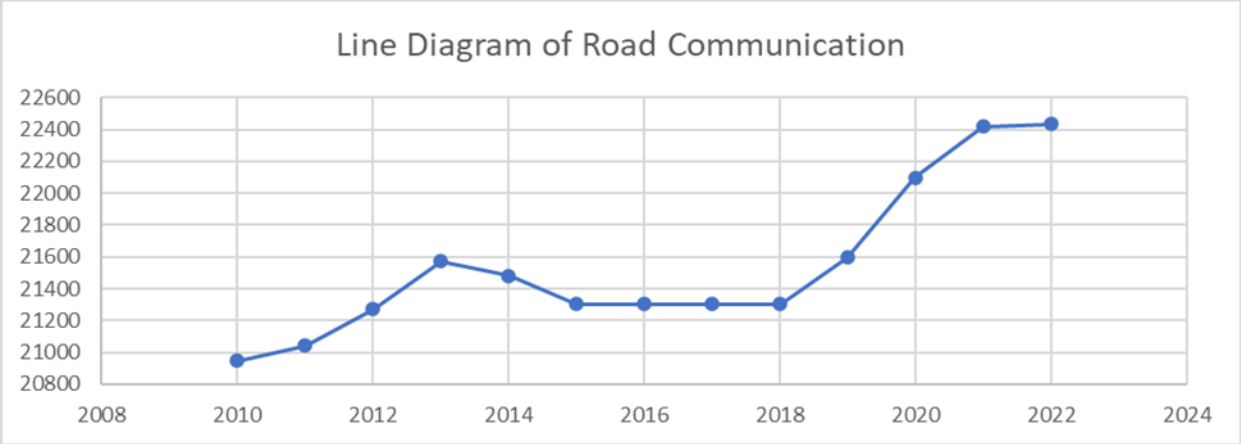

Fig-02: Line Diagram of Road Communication

Expressway is one of the landmark infrastructures for any economy for Technology and Information System (TIS) productivity. It saves the cost and time of transportation to a great extent. This type of road infrastructure has a huge contribution to the economy. The economy of the country has been growing steadily and in November 2026 the country will cross the threshold of the least developed country. By 2041, Bangladesh expects to become a developed country. For any big economy, quality road infrastructure is a must. Bangladesh has recently completed the construction of its first expressway, the 42-kilometer Dhaka-Mawa expressway. However, there is an urgent need for at least eight such expressways in all eight national corridors across the country, totaling around 3,000 kilometers. These developments have been overdue for a long time. Bangladesh is significantly behind its neighboring countries, not to mention the developed ones. India has around 23, Malaysia 37, and Sri Lanka 3 such expressways. Vietnam, since 2000, has constructed approximately 5000 kilometers of expressway.

3.2.2 Railways

Bangladesh Railway (BR) is a vital mode of transportation covering 43 districts and carrying 7.5 crore passengers and 42 lac MT of goods annually. In December 2011, the Railway Division was upgraded to the Ministry of Railways (MoR) to ensure reliable, affordable, and public transport. As per the instruction of the Honorable Prime Minister, the activities are establishing railway in 4 zones and 8 divisions. BR is guided by several documents with transport implications, including the National Land Transport Policy (NLTP) Seventh Five Year Plan, Vision 2021, the National Integrated Multi-modal Transport Policy (NIMTP) and its own Vision Statement. International agreements include the Inter-governmental Agreement on the Trans-Asian Railway Network and the SASEC policy guidelines. Initiatives include (among others) construction of new rail lines, double-tracking of existing lines, improvement of level crossing gates, purchase of new rolling stock (RS), purchase of modern maintenance equipment and upgrading of rail signalling. NIMTP-related initiatives include increasing container movements, construction of inland container depots and improving intercity service quality, timetabling and capacity (Final Report on Updating Railway Master Plan, 2017). BR has made significant progress since 2009,

including the construction of 650.11 km of new rail lines, the conversion of 280.28 km of lines to dual gauge, the construction of 126 new station buildings, and 732 new railway bridges (Bangladesh Economic review 2023). According to the Chief Planning Officer of BR, presently, railway services carry 4% of the total containers from Chattogram Port, 1% of the total imports and exports from interchange points, and 1% of internal goods transport, contributing to the overall logistics network within Bangladesh.

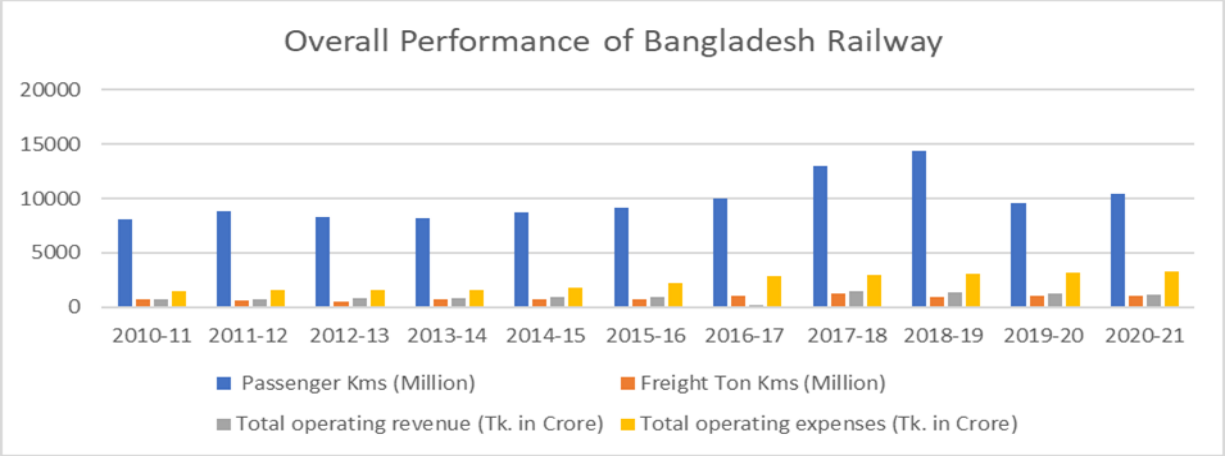

Fig-03: Overall Performance of Bangladesh Railway Source: Bangladesh Economic Review 2023

The BR operates 130 to 140 freight trains every month to bring goods from India through four interchange stations, namely Benapole, Darshana, Rohanpur, and Birol. The amount of Indo-Bangla Goods Transport by Train is given below:

FY 16-17	20.52 lakh Tones
FY 17-18	22.04 lakh Tones
FY 18-19	19.85 lakh Tones
FY 19-20	16.34 lakh Tones
FY 20-21	36.93 lakh Tones

Bangladesh Railway continues to make huge losses from its operations allegedly because of poor services and a lack of proper management of assets. However, as per the BR Information Book-2020, it made a loss of 2,063.12 crore in the 2019-20 fiscal year, up from Tk 1,644.07 crore in the previous FY.

The Bangladesh Railway (BR) faces competition from other transport modes for high-rated traffic and essential commodities like food grains, fertilizer, and petroleum products. However, negative freight traffic growth is due to poor services and road and river transportation developments. The current Inland Container Depot in Dhaka is insufficient for future loads, and a new ICD is being established in Dhirasram to handle 500,000 TEU yearly. This would allow trains carrying containers to travel without entering Dhaka, potentially benefiting transit with India, Nepal, and Bhutan. The Padma Bridge enable container trains on the Dhaka-Mongla route and will make Dhirashram an important depot for the country and international trade. Pangaon river port are

underutilized due to limited container traffic, insufficient berthing capacities, limited storage capacities, customs delays, and limited connectivity with roads and railway.

Bangladesh has the potential for goods trains though containers are carrying by road but container trucks consume road capacity, causing traffic jam and slow movement of vehicles in highways. The government needs to increase freight train contributions by 50-60% from Chattogram port to Dhaka, focusing on container trains, to ensure sustainable development.

3.2.2.1 International Corridors Leading to Bangladesh

Bangladesh has the potential to become a transport and transhipment canter for the sub-region. It borders with India and Myanmar and is geographically close to Bhutan, Nepal, and Kunming of China, the key transportation hub in the southwest People's Republic of China (PRC). With the opening of the Payra Sea port and Padma Bridge, the Dhaka-Chattogram, Dhaka-Mongla, and Dhaka-Payra transport corridor and other strategic transport corridors will facilitate trade between Bangladesh India, Myanmar, Bhutan, and Nepal including other countries in Asia, thereby attracting more foreign and domestic traffic to the country.

Table-05: Bangladesh Railway at a Glance

Activity	**Number**	**Activity**	**Number**
Founded	15 November 1862; 160 years ago,	Number of employees	27,535 (2015)
Total Length of Railway Line (km)	3,600	Total stations	498
Broad Gauge (km)	1,575	Total locomotives	302 (Usable units are 210 – 218)
Meter Gauge (km)	2,025	Total coaches	1507
Dual Gauge (km)	1,600	Total wagons	10,226
Railway Bridges	3,650 Major: 546 Minor: 3,104	Approved Manpower	40,264
Track Kilometers	4,093.15	Freight (million tons)	2.52
Number of passenger trains daily	341	Number of freight trains daily	37

3.2.2.2 Railway's 30-year master plan

A number of 230 projects at the expense of Tk. 5,53,662 crore have been included in the 30-year railway master plan. Those projects will be implemented in six stages from July 2016 to June 2045. BR already started working on this issue (Bangladesh Economic Review 2023). After the implementation of the master plan the services of railways will improve. In the financial year 2022-2023, around 33 investment projects and TA projects are being implemented. BR has on-going

efforts to add new railway capacity between Chittagong and Dhaka. These plus additional projects in this Plan mean it is possible that BR's freight traffic could increase from a mere 2 million tonnes to 18 million tonnes by 2045.

3.2.2.3 8th Five-Year Plan (8FYP)

The improvement of rail communication and transport services has been included as a priority in the national document on the 8th Five-Year Plan and Perspective Plan, Vision-2041. The targets for the 8FYP are shown below:

- Construction of 798 km new rail line.
- Implement dual gauge double tracking of 897 km to increase line capacity.
- Rehabilitate/ Upgrade the 846 km existing rail line.
- Construct 9 important railway bridges.
- Procure 160 locomotives to enhance the efficiency, ensure reliability & punctuality of running trains, and introduce new trains.
- Procure 1704 passenger coaches and 2000 wagons to improve passenger service quality.
- Procure adequate equipment to modernize railway maintenance.
- Modernize Railway Workshop and other infrastructure.
- Improvement level crossing gates, other infrastructures, and rolling stocks
- Construct new ICDs.
- Modernize the signalling system of 222 stations to ensure safety.
- Increase efficiency and improve performance of Bangladesh Railway.
- Ensure full operational cost recovery by FY2025.

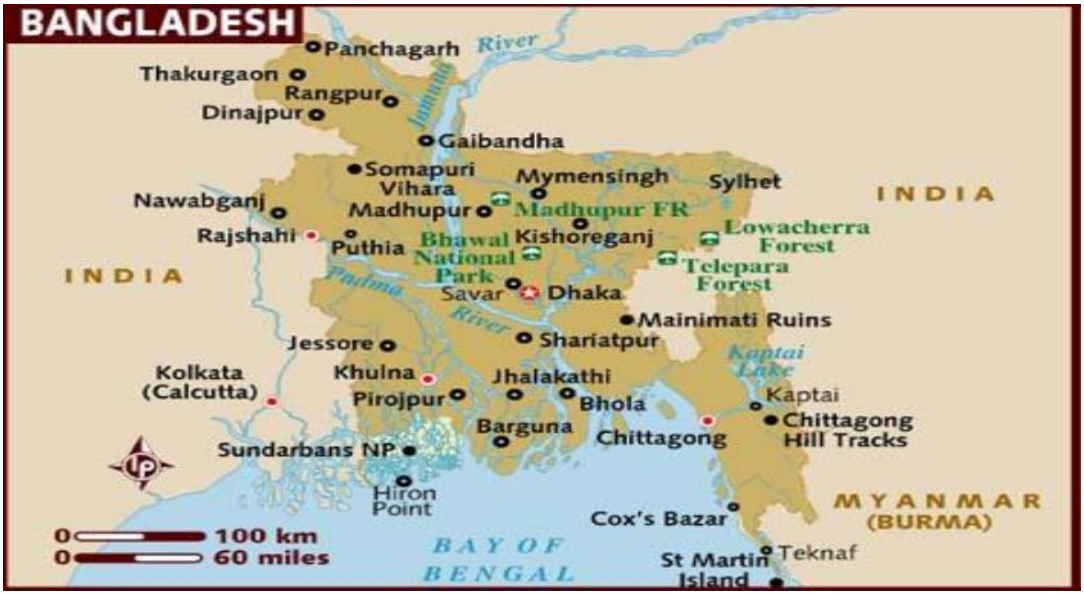

Figure-04: Train Intermodal Logistics

3.2.3 Airways

The Civil Aviation Authority of Bangladesh (CAAB) oversees aviation activities in Bangladesh, operating 3 (Three) international airports, 7 (Seven) domestic airports, and 4 short take-off and landing airport (STOL). However, due to passenger inadequacy, no flights operate at 2 (Two) other domestic airports and 4 STOL ports. Biman Bangladesh and 17 other airlines lack skilled manpower and infrastructure, leading to damage and theft in cargo handling. Insufficient warehouses, X-ray scanners, and explosive detection systems have caused major airlines to halt freighter operations due to high costs.

The following airport is directly related to the Cargo Handling procedure and Storage:

3.2.3.1 Hazrat Shahjalal International Airport

Biman Bangladesh Airlines Limited is responsible for handling all cargo, including General Service Equipment. The cargo division handles both inbound and outbound cargo, with the Import Terminal handling inbound cargo and Cargo Village for exporting through HISA. The cargo terminal capacity is 200,000 tons per annum, increasing to 500,000 tons after the completion of the third terminal. The Import Terminal has a 2 storied structure and 15,000m² warehouse, but insufficient warehousing leaves most imported cargo in the open air.

Ground Handling Agency

All airports in Bangladesh receive ground handling services from Biman, which is recognized by the Civil Aviation of Bangladesh as the only ground handler for all flights operated by foreign carriers for profit.

3.2.3.2 Osmani International Airport

Osmani International Airport currently lacks a proper warehouse or cargo village, mainly handling passenger-based luggage by Biman Bangladesh Airlines. A temporary arrangement for 1000 MT can be made at the transit cargo shed, but no imported or exported cargo is handled. A concrete area in front of the VIP lounge is designated for temporary cargo storage.

3.2.3.3 Shah Amanat International Airport

After liberation, Shah Amanat Airport was mainly used to connect Dhaka and Chattogram. In the mid-1990s, it became an international airport, capable of handling 1.5 million passengers and 6,000 tonnes of cargo annually.

Biman Bangladesh Airlines handles medium-scale SAIA cargo with private operators authorized by CAAB. The airline has GSE equipment for efficient operations. Shah Amanat International Airport has two warehouses, one 2700 m² concrete floor space, and a new 3000 m^2 cargo shed capable of accommodating 150 MT of freight. The airport also has a landside loading/offloading

area for 36 trucks, two cold storage rooms, and an airside loading area for 12 trucks simultaneously.

3.2.3.4 Domestic Airport

Besides, domestic airports play a key role in the logistics sector of the country and thus contribute to the Bangladeshi economy. Some of these airports are:

- Shah Makhdum Airport
- Jashore Airport
- Cox's Bazar Airport, etc.

3.2.4 Waterways

Bangladesh's inland waterways span 24000 km, with 6,000 km navigable during monsoon and 3,900 km during dry periods. Over 22,300 registered vessels trade, with hundreds of thousands of handmade manual boats playing a crucial role in rural transport. Inland Water Transportation (IWT) is a significant mode of transportation, providing access to 25% of rural households. The network includes 11 major inland ports, 23 coastal island ports, 133 launch stations, and over 1,000 minor landing points.

The Ministry of Shipping deals with total affairs of the Bangladesh waterways. There are 3 (Three) authorities under the Ministry of Shipping responsible for the management of this sector:

Department of Shipping (DOS)	Deals with Safety, Training, Inspection, Registration, and implementation of rules, regulations and international conventions.
Bangladesh Inland Water Transport Authority (BIWTA)	Responsible for the maintenance and development of waterways.
Bangladesh Inland Water Transport Corporation (BIWTC)	Operates govt components of the IWT i.e., Shipping, Services, etc.

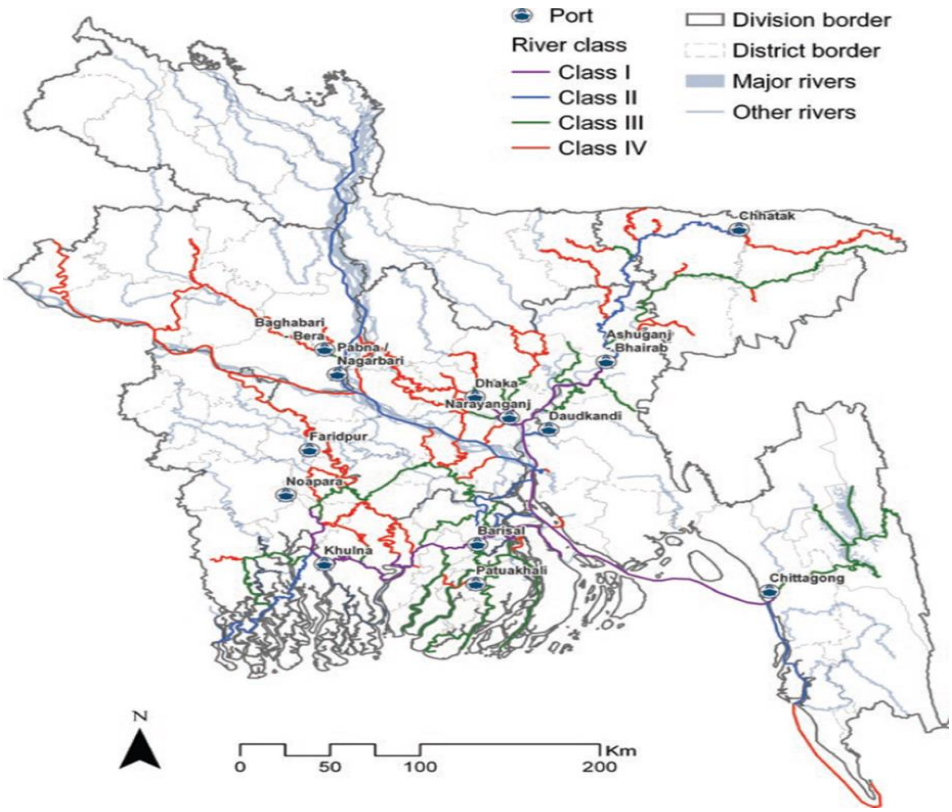

Figure-05: Bangladesh's River Network

Source: World Bank, using data from HaskoningDHV 2016.
Note: Depth is 3.66-3.96 meters in Class I, 2.10-2.44 meters in Class II, 1.52-1.83 meters in Class III, and less than 1.52 meters in Class IV

Bangladesh Inland Water Transport Authority (BIWTA) is the authority that controls the inland water transport in Bangladesh. BIWTA performs annual development and maintenance dredging for smooth transportation. The volume of development and maintenance dredging (In Lakh Cubic Meters) during the period from FY2010-11 to FY 2022-22 is presented below:

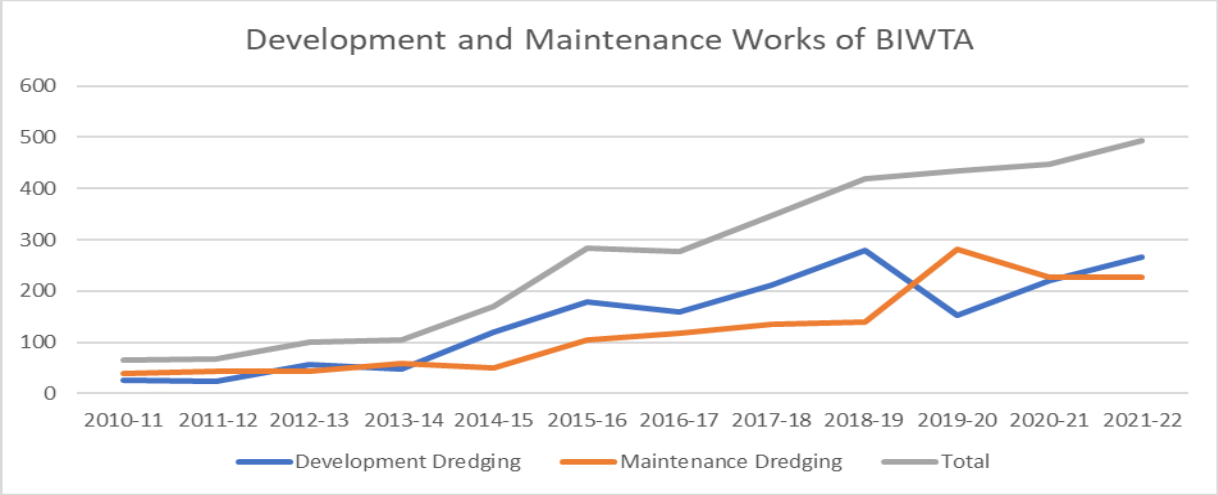

Fig-06: Development and Maintenance Works of BIWTA Source: Bangladesh Economic Review 2023

From 2009 to 2022, Bangladesh Inland Water Transport Corporation (BIWTC) built 70 vessels to enhance service quality across various sectors. The government added two Shallow Draft Oil Tankers and a floating workshop to its fleet, and eight wreckers were engaged in various ferries. In 2019, an automation system was introduced at the Paturia-Daulatdia ferry terminal, using four container vessels for container transportation. The Cargo Service Unit of BIWTC primarily transports commodities like food, food grains, cement, clinker, fuel, and petroleum from Chattogram and Mongla Port to various inland river ports and Kolkata (India) port under an inter-country transit and trade protocol agreement.

The vessels' positions under the Cargo Service Unit are:

Type of vessel	**Total**	**Type of vessel**	**Total**
Coaster	14	Bay Crossing & Inland Barge	21
Tanker	12	Bay Crossing & Inland Tug	9
Self-Propelled Barge	10	Other Auxiliary	18
Total Vessels: 84			

The inland waterway system in Bangladesh faces infrastructure issues such as inadequate dredging and berthing facilities, hindering its full potential. Improving waterways could reduce transportation costs for bulk cargo and improve access to areas like the north-western part of Bangladesh, where road access is limited.

Figure-07: Logistics Waterways Bangladesh: An Overall Glimpses
Source: Policy Exchange Bangladesh Paper 2023

Businessmen and international shipping communities are concerned about the performance of Chattogram Port, Mongla Port, and Payra Port, as they invest in Just-In-Time shipments of garments and import raw materials from Bangladesh. Heavy traffic jams and time factors increase import and export costs.

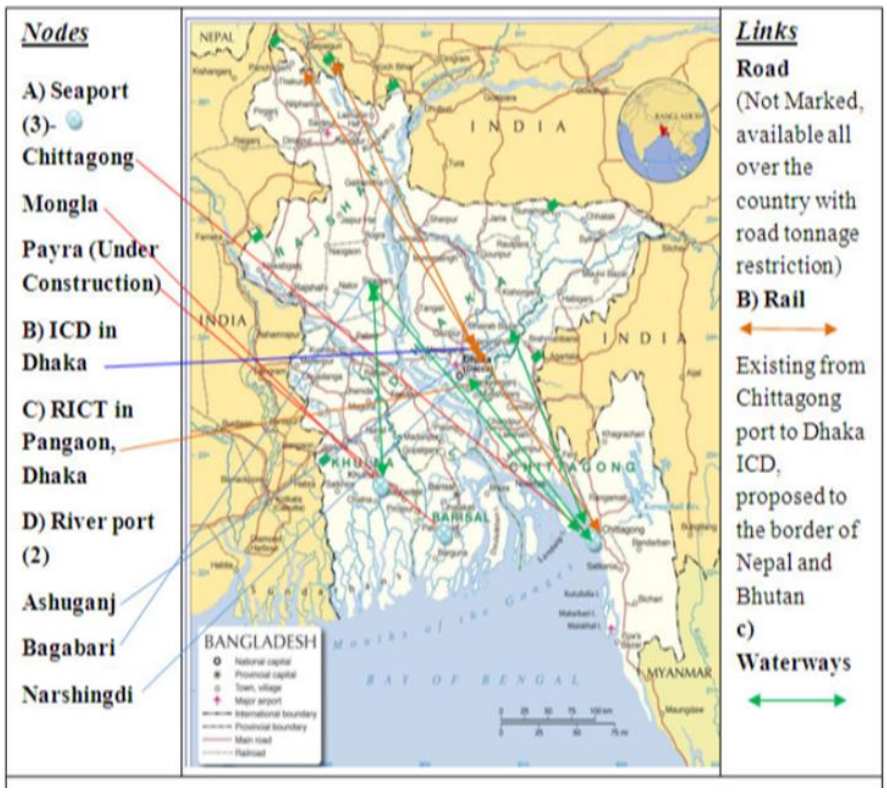

Figure-08: Map of Bangladesh with Multimodal Nodes and links

Waterways face weaknesses like limited load transfer and high-value freight, necessitating improvements like jetties and parking facilities. Navigability is a concern, with neighbouring countries like India and China re-excavating and creating canals.

3.3 Ports and Terminals

Bangladesh has significant maritime load centers, providing logistics support and conducting port transport business with India, Nepal, Bhutan, China, and Myanmar. Existing land ports serve as alternatives to dry ports, earning foreign exchange and playing a vital role in developing South Asia, China's SW region, and Myanmar.

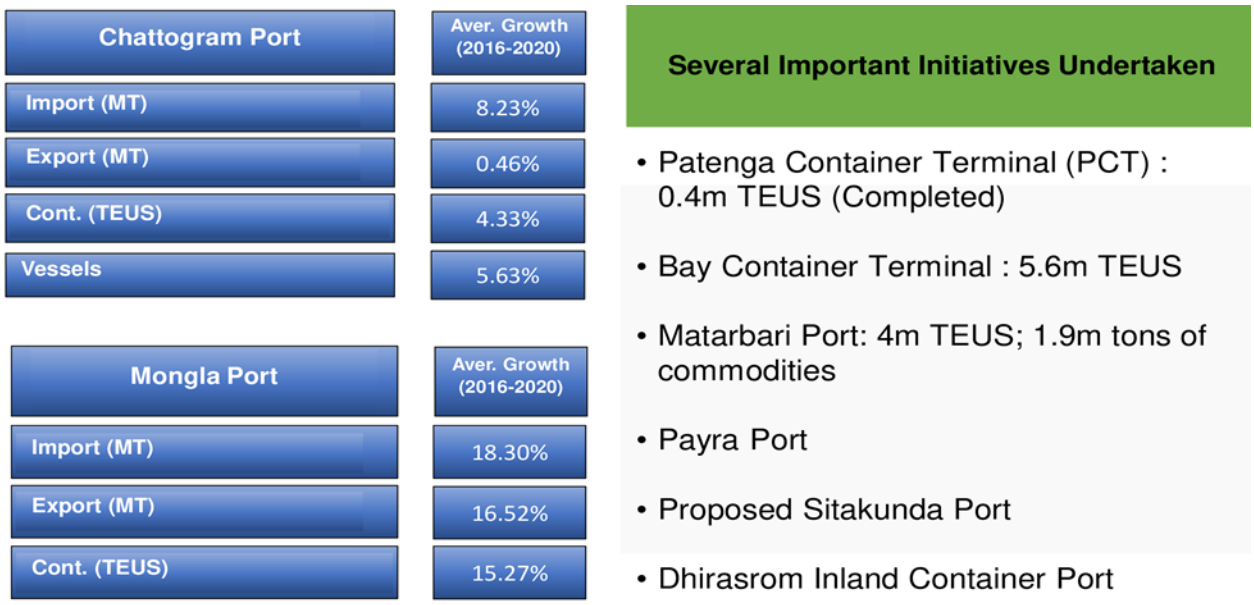

Figure-09: Performance of Chittagong & Mongla Port; (Source: Policy Exchange Bangladesh Paper 2023)

Currently, there are three seaports in Bangladesh in the operations of handling cargo and container and one riverine container port specializes in container. Details of the seaports and other port transport facilities are as below:

Port Name	Location	Type	Status	Established	Authority
Port of Chittagong	Chattogram	Large Sea Port (Major Port)	Active	1887	Chattogram Port Authority
Port of Mongla	Mongla, Khulna	Large sea Port (Major Port)	Active	1950	Mongla Port Authority
Port of Payra	Patuakhali, Barisal Division	Sea Port (Minor Port)	Partially active	2013	Payra Port Authority
Matarbari Port	Matarbari, Cox's Bazar	Deep Sea Port	Under construction		Chattogram Port Authority

3.3.1 Chattogram Port

The Chattogram Port, managed by the Chattogram Port Authority, is the main seaport in Bangladesh. It handles 92% of seaborne trade of Bangladesh. It contributes 35% of the its annual revenue in the form of import tax, duties, and VAT. Moreover, 80% of import-export is conducted through this port.

The port is a significant economic gateway especially for South Asia. However, due to its riverine location, Chattogram Port faces challenges such as draft limitations and limited vessel size capacity. The newly constructed Patenga container terminal is easing the situation. But it also faces draft and backyard space constraints similar to Chattogram Port. (MIDI Strategic Vision

Development and Economic Impact Analysis, Final Report, 2023, PMO, Bangladesh).

Bulk cargos at Chattogram Port undergo a complex lighterage process resulting delayed unloading of container cargos. Channel and draft constraints add more trouble into it. On the other hand, container cargos face delays of 1.5-2 weeks as it arrives after the transshipment by feeder vessels at ports like Singapore, Colombo, or Krishnapatnam of India. This incurs 30-40% additional costs.

Chattogram Port faces limitations in cargo handling capacity due to insufficient infrastructure, including inadequate container storage yards and rail-linked terminals. The Chattogram Port Authority provides a limited free storage period of 4 days, resulting in increased container handling times for import and export.

Chattogram Port relies on a combination of manual and mechanized cargo processing. The limited crane capacity contributes to a longer Turn Around Time (TAT) at this port compared to other ports. The TAT at Chattogram Port is 2.45 days, whereas it is an average of 0.9 days for Vietnam and Cambodia, 1.0 day for Thailand, 1.2 days for Both Malaysia and Singapore, 1.3 days for Philippines, while 1.8 and 2.0 days for Indonesia and Myanmar respectively.

On February 03, 2023, Chattogram Port hosted a maritime vessel with a 10-meter draught for the first time, allowing it to accommodate vessels with a draught of 10 meters. This development benefits shipping companies by eliminating the need for smaller vehicles to transport cargo to the port jetty.

End-to-end supply chain digitalization, especially in emerging economies, is allowing countries to shorten port delays by up to 70% compared to those in developed countries (MIDI Strategic Vision Development and Economic Impact Analysis, Final Report, 2023, PMO, Bangladesh; Logistics Performance Index 2023). In 2023, one of India's Jawaharlal Nehru Port Authority (JNPA) achieved a remarkable TAT of just 22 hours (0.9 days) on its Logistics Performance Index. This success can be attributed to measures such as reducing dwell time, enhancing operational efficiency of terminal operators, improving landside connectivity, introducing Centralized Parking Plaza (CPP), digitizing processes, optimizing berthing procedures, deploying additional tugs for vessel maneuverability, among other initiatives.

3.3.2 Mongla Sea Port

Mongla Seaport, located in Bangladesh's southwestern region, is the second busiest and eco-friendly seaport. It can handle 6.5 million Metric Tons of cargo and 50,000 TEU containers annually. The port offers river and road transport facilities at lower costs, with large channels for anchorage and loading/unloading. The construction of Khanjahan Ali and Lalon Shah Bridge has improved transportation connections to remote areas. Mongla Port has a unique opportunity for

Dhaka-Mongla-Dhaka transportation within 05 (Five) hours, with no constraints in berth and less turn-around time.

The Mongla Port Authority (MPA) is developing the port into a modern seaport and offers services to international shipping lines, including jetties, cargo handling equipment, and water depth maintenance. It charges lower landing, shipping, and river dues. It offers 15 days of free time for empty container handling and is open 24 hours.

3.3.3 Payra Seaport

Bangladesh's third seaport, Payra Seaport, was established in 2016 and is set to boost central zone economic activities. The government has developed the port through Short-Term, Mid-Term, and Long-Term Plans, with the Long-Term Plan aiming for full operationality by 2023. The port has been granted International Ship and Port Facility Security (ISPS) and UN locator codes. It has handled 1,302 vessels and is expected to double its ship flow by March 2024.

According to the Payra Port Authority (PPA), vessels with a draft of 10.5 meters and a length of 225 meters can reach Payra Port from April 2023. The anchoring of such a vessel became possible after the completion of dredging work on the 75-kilometer Rabnabad channel. This dredging increased the channel's width from 100 meters to 125 meters and its depth to 10.5 meters. Consequently, larger vessels can now directly unload goods at Payra Port, Bangladesh's third seaport. This development not only enhances the port's capacity but also reduces transportation costs by eliminating the need for big ships to stop at outer anchorages and transfer cargo to smaller vessels.

3.3.4 Matarbari Deep Sea Port

The Matarbari Port, located in Bangladesh's Moheshkhali Upazila, is being developed as a deep-sea port. With a low tide draft of 16m and an average draft of 18.5m, it will become the prime port for large and super large mother vessels, berthing directly in the country. This will eliminate the need for transhipment of Bangladesh-bound container cargo. Matarbari Port can bring 20% shipping cost savings, 16-20% total logistic cost savings, and 4 days' inventory holding cost savings. It will also increase Bangladesh's export competitiveness by reducing transport costs and export lead time by 25-30 days. By 2041, Matarbari Port can target around 25% of bulk and breakbulk traffic and 36-43% of container traffic, solidifying its position as a critical port in the region (MIDI Strategic Vision Development and Economic Impact Analysis, Final Report, 2023, PMO, Bangladesh).

Matarbari port will also cater to 15-20 Million Tonnes Per Annum (MTPA) of Petroleum, Oil and Lubricants (POL) imports, 2000 Million Standard Cubic Feet Per Day (mmcfd) of LNG imports, and 2 MTPA of LPG imports by 2041. Matarbari will enhance Bangladesh's GDP by 6-6.3% in 2041 and boost regional connectivity for Northeast Indian states. Its integration with existing urban

ecosystems in Bangladesh will be facilitated by hinterland connectivity (MIDI Strategic Vision Development and Economic Impact Analysis, Final Report, 2023, PMO, Bangladesh).

3.3.5 Pangaon Container Terminal

The Bangladesh Inland Water Transport Authority and Chattogram Port Authority have built the first River-based ICT, Pangaon Inland Container Terminal, to facilitate the transportation of goods through waterways. The terminal, funded by the Chattogram Port Authority, has a storage capacity of 3,500 TEUs and handles 116,000 TEUs annually.

3.3.6 Muktarpur River Port

Muktarpur Port, a private inland container port between Bangladesh and India, has a capacity of 120,000 TEUs annually and a 350,000 sq. ft. storage area. Despite its infrastructure, it struggles to attract business due to high transportation costs and the need for timely container delivery. Port governance plays a crucial role in driving economics, and port administration should focus on innovation to provide smooth, timely, and economically beneficial port services.

3.3.7 Container, Bulk /break bulk traffic projections

According to MIDI Strategic Vision Development and Economic Impact Analysis, Final Report, 2023, PMO, Bangladesh container, bulk /break bulk traffic projections are as follows:

Container Traffic Projections of Bangladesh

Container traffic in Bangladesh has been projected as 12.2-16.2 Mn TEUs in 2041, in line with GDP growth in the following 2-scenarios:

Table-06: Container traffic projections of Bangladesh

Sl. No.	GDP growth	Types	Total Container Traffic (Mn TEUs)		
			2021	2030	2041
1	6.3% (As per IMF)	Import	1.8	3.3	6.1
		Export, incl. empties	1.5	3.3	6.1
		Total	3.3	6.6	**12.2**
2	7.8% (As per Integrated Energy and Power Master Plan (IEPMP))	Import	1.8	3.8	8.1
		Export, incl. empties	1.5	3.8	8.1
		Total	3.6	7.6	**16.2**

Bulk /break bulk traffic projections:

Commodity-wise bulk and break-bulk traffic have been projected using 2 scenarios of GDP growth similar to container traffic:

- GDP growth scenarios at 6.3% IMF (lower range) – ~156 MTPA (2030) | ~266 MTPA (2041)
- GDP growth scenarios at 7.8% IEPMP (upper range) - ~170 MTPA (2030) | ~330 MTPA (2041)

Table-07: Bangladesh Bulk and Break-Bulk traffic projections

Commodity (MTPA)	2021	Growth	Growth - rational	2030	2041
Imports	78.2			155-170	265-330
Bulk					
Food grains	5.1	0.7	population	5.4	5.8
Cement clinker	34.9	6.9%/ 8.6%	GDP x 1.1 (elasticity)	68-80	133-180
Coal	3.0		IEPMP	24	29
Scrap	2.6	6.3%/ 7.8%	GDP x 1 (elasticity)	4.7-5.4	8.7-11.5
Stone / crushed stone	7.9	6.3%/ 7.8%	GDP	14.5-16.7	26.8-35.4
Other bulk commodities	17.4	5.0%	-	28.3	46.1
Imported bulk at Mongla/ Payra	3.0	6.3%/ 7.8%	GDP	5.5-6.4	10.2-13.5
Break Bulk					
Fertilizer	1.7	0.0%	Constant imports	1.7	1.7
Salt	0.4	0.7%	population	0.5	0.5
Sugar	2.2	0.7%	population	2.4	2.6
Exports	0.5	6.3% / 7.8%	GDP	0.8-1.0	1.5-2.0

Table-08: Bulk vs. Break Bulk splits

Commodity (MTPA)	2021	2030	2041
Bulk	73.9	151-166	260-322
Breakbulk	4.8	5.0-5.5	6.0-7.0
TOTAL	78.6	156-170	266-330

3.3.8 Other Port Facilities

Chattogram Custom House oversees 14 off-docks in Chattogram for import-export activities, including management of Dhaka ICD and shipped premises nationwide. However, the port's facilities fall short of efficiently handling domestic trade, transit, and trans-shipped cargo. Off-docks play a crucial role in providing maritime logistics support and handling export container stuffing that the port does not manage. The overall container management at these facilities lacks

efficiency, affecting the quality of service to port users. Recognizing the significant role of port governance in driving the country's trade and economic benefits, the port administration should enhance proactive logistics business, conduct research, and innovate in the maritime logistics industry to deliver smooth, timely, and cost-effective services to shippers and consignees.

3.4 Warehousing and Storage Facilities

Warehousing is the safe storage of goods, particularly condiments, in warehouses and logistics centers. It ensures a steady supply of goods, fills the gap between producers and consumers and maintains product quality. Warehousing and storage operations are crucial in Bangladesh's manufacturing sector, facilitating efficient movement of raw materials, components, and finished goods, focusing on effective inventory management and space utilization.

The different types of storage are:

Open storage systems	are used to store products that are still moist at the time of storage, the openness of the storage facility helps it to dry by the sun
Semi-open systems	The storage facility is located in semi-arid regions, using twig-shaped containers to store products exposed to the sun and protected from rain.
Closed storage systems	the produce is kept inside huts made of mud or straw which keeps all the moisture always from the food items, keeping them fresh for a long amount of time.

Different types of warehouses in use as of now are:

- **Distribution centres warehouses**: Distribution centre warehouses are customer-centric and located near the customers as the products stored in them are to sell in huge amounts.
- **Pick, pack, and ship warehouse**: Pick, pack, and ship warehouses serve the facility- and receive an order, the products are picked and packed manually or by machines and shipped to their respective destinations.
- **Smart warehouse**: Smart warehouses are modern-day warehouses that use technology and machines to increase efficiency and save time, The use of technology also reduces the chances of errors and minimizes the requirement for manpower.
- **Cold storage**: As the name suggests, cold storage is kept at a very low temperature. To keep the products safe from moisture and sun, the temperature is manually lowered to very low temperatures and acts like massive refrigerators;
- **On-demand storage**: On-demand warehouses have become popular in recent times. They help to connect the businesses that require spaces to the warehouses that require the exact space. It reduces time wasted in manually searching and also provides the businesses with their exact description of the space required.
- **Bonded warehouse**: Bonded warehouses are where the goods stored could be worked on or modified before proceeding for sales. Imported goods are usually kept in a bonded warehouse, worked on, and then sent out for sale. The import duties of goods are usually very high in value, so the product is usually sold first and then the duty is paid from the

sales of the product.

3.4.1 Storage Facilities at Road

Bangladesh currently has 820 (Local Supply Deport-793, Central Storage Depot-12, Silo-14, and Single Multi-purpose Warehouse) government warehouses and silos of food grains, with a capacity of 27,40,000 MT. This capacity is expected to increase to 3 million MT by 2025 (log cluster 2.6 Bangladesh storage Assessment). Numerous shipping agents, Cold Chain and Frozen Food (CC & FF) companies, and ICD management companies operate in the country, providing high-quality services like tracking, storage, transport, and deliveries. WFP has storage arrangements at Rohingya Camp in Cox's Bazar.

3.4.2 Storage Facilities at the Port

Mongla Port

Mongla Port was not very well equipped for bulk grain handling. A small silo of 500 MT was existing in Khulna. To have Safe Storage Facilities for Food grains recently a big modern silo with a storage capacity of 50,000 MT in 30 different bins at Joymonir Ghol (17 km south of Mongla Port) has been established. The area is fully equipped with an Independent Jetty along with all types of handling facilities. So Mongla port is now fully ready to accept any quantity of imported food grains.

Chattogram port

In the Chattogram port 13 numbers of sheds with 60650.77 Sq. Meters and handling the capacity of 29892.94 MT are available. Its baggage shed is 1789.00 Sq. Meters. There are two sheds with 18829.36 Sq. Meters and handling capacity of 8104.16 MT dedicated for tea export cargo. In the seaport, there is an Automobile shed with 2258.36 Sq. Meters with 500 MT capacity.

Converted space outside port protected area:

- The Chattogram silo having a capacity of 170,000 MT of bulk wheat is situated adjacent to Grain silo Jetty.
- Cold Storage (Sadarghat)1055 Sq. Meters to store 500 tons
- Converted 4 Godown about 6350 sq. Meters areas
- TSP complex with a storage capacity of 127500 MT adjacent to TSP Jetty. Storage of 40.80 CMT adjacent to the cement clinker jetty.

Open space within port-protected area for storage cargo

- R.C.C pavement 17366.16 sq. M
- Brick pavement 5639.00 sq. M (Sadarghat L.J)
- Container Yard: Main Jetty:161418 sq M; MPB:150,000 sq.M.

Port of Loading storage

The storage and handling of Port of Loading (PLO) are done directly by the oil companies outside

the port-protected area for which adequate tank capacity exists.

Storage of Edible Oil in Bulk

This is stored in tanks outside the port-protected area directly from the vessels. (Annual Report 2021-22; Chattogram Port Authority). Manufacturing, warehousing, and logistics play a significant role in global trade, particularly in regions with lower income levels. In Bangladesh, 24 manufacturing categories have the potential for higher productivity, faster growth, and technological advancements. Blue-chip companies like Coca-Cola, Unilever, Square Pharmaceuticals, and British American Tobacco require sector-specific warehouses tailored to their product characteristics, cold chain needs, value, sensitivity, and compliance with regulatory standards. In Bangladesh, a significant portion of warehouse operations occur in leased properties, often lacking essential infrastructure. However, a shift towards modern supply chain management practices has led to a transformation and a growing reliance on skilled professionals in these fields. Best-in-class warehousing is highly desirable for developing countries like Bangladesh, delivering outstanding customer service, high efficiency, and productivity.

3.5 Technology and Information Systems (TIS)

Digital technology and information systems are revolutionizing the logistics sector, enabling major business improvements. Digital technologies refer to a combination of information, computing, communication, and connectivity technologies. It emphasizes the integration of physical and digital systems. The benefits of the TIS application include increased safety, environmental efficiency, seamless inter-modality, and improved route and delivery planning. The rapid advancement of digital technologies has fundamentally changed the competitive dynamics of the logistics service industry and forced incumbent logistics service providers (LSPs) to digitalize (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020)

Digitalization in logistics can become a strong market worth 1.5 trillion US dollars by 2025 (World Economic Forum, 2016). The last decade, characterized as “the digital age” (Hirt and Wilmott, 2014), has fundamentally changed the competitive dynamics of the logistics service industry (Hofmann and Osterwalder, 2017). This means technology plays a critical role in logistics value differentiation (Gunasekaran et al.2017). It triggers and enables innovations (Mathauer and Hofmann, 2019), and hereby moves logistics to a higher level of efficiency and responsiveness (Gunasekaran et al, 2017). To fully exploit the opportunities established by new technologies and transform digitally, service providers logistics need to evolve their strategies, cultures, and business models.

3.5.1 TIS in Logistics: Bangladesh Perspective

Over the past years, technology has transformed logistics in Bangladesh and beyond. This transformation of logistics has changed how businesses operate. But the logistics service industry has struggled to adopt technologies (Gunasekaran et al., 2017; Mathaeur and Hofmann, 2019) and

increase their innovativeness (Wagner, 2008; Busse, 2010; Bellingkrodt and Wallenburg, 2013). A lack of technological knowledge, low educational levels of the workforce, and difficulties with innovation transfer among various (Busse and Wallenburg, 2014).

Bangladesh Government is collaborating with transport infrastructure providers to integrate existing TIS solutions, promoting transport optimization and efficiency. In recent times, it has been investing in advanced TIS capabilities and making their deployment more cost-effective. However, the government is also playing a crucial role in addressing challenges associated with TIS, such as interoperability, data exchange, privacy, and addressing disparities between developed and developing countries in terms of transport solutions.

3.5.2 Implementation of TIS Solution in Bangladesh

In Bangladesh, firms are facing increased supply chain costs, necessitating effective supply chain management to achieve corporate goals. To address these challenges, some essential solutions are proposed:

Logistic Solution: Companies can implement automation in their logistic systems, offering benefits such as first and last-mile visibility, live tracking using 4G technology, blockchain-based cloud system for data storage, automated data analytics for total pickup, delivery management system, etc.

Driver Monitoring: Managing drivers poses challenges as they may provide inaccurate information. To address this, companies can use driver monitoring services to live track drivers, assign tasks, and evaluate their performance.

Fleet Management: Companies with large fleets can automate fleet management processes. This includes vehicle management, real-time tracking, route optimization, prevention of fuel fraud, and auto fleet dispatch. This automation eliminates the challenges associated with manual management using Excel sheets.

3.5.3 Barriers regarding TIS

Generally, technology and information systems in the logistics sector face five types of barriers when implementing technological innovations within their companies. These are; (1) the complexity of the logistics system and underlying processes, (2) lack of resources including skilled resources, (3) technology adoption, (4) resistance to change, and (5) data protection (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020).

3.5.3.1 Complexity of the Logistics System and Underlying Processes

The logistics industry is complex due to the involvement of various logistics service providers, global coordination of carriers, warehouse operators, and terminal operators, and constraints

imposed by TIS and legal systems. Some countries still require paper documents and physical signatures for legal recognition, despite the adoption of digital technologies (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020).

3.5.3.2 Lack of Resources including Skilled Resources

The logistics industry struggles to incorporate technology and information systems due to a shortage of skilled human resources. The lack of digitally skilled employees hampers seamless integration, with current technology use often serving as a marketing tool rather than a practical solution to real issues. Financial constraints pose another hurdle, as digital projects require significant upfront investments, leading logistics companies to carefully evaluate business cases and calculate returns before launching. The substantial cost burdens the Technology and Information Systems (TIS) budget, causing delays or postponements of initiatives (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020).

3.5.3.3 Technology Adoption

The challenge of proper technology adoption lies in selecting the right technology at the opportune moment. Even firms with competent IT centres for technology decisions may fear that their investment in technology could prove unsuccessful. Decisions on technology adoption are often swayed by vendor hype and media influence. Digital technology projects are frequently entrusted to IT organizations, lacking substantial input from future business owners. This approach may result in prioritizing trendy and novel technological solutions rather than the most effective and efficient ones for meeting the core operational needs of a company and satisfying Technology and Information Systems (TIS) customers (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020).

3.5.3.4 Resistance to Change

The primary barrier to adopting technology and information systems in the logistics sector is resistance to change. In the logistics service industry, individuals often believe that past success factors will ensure future success, leading to a competency trap and hindering the adoption of new technologies (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020).

3.5.3.5 Data Protection

The potential threat of data protection and security breaches poses a risk to delivering sophisticated services in the logistics sector. With an increasing number of self-service functions and commercial data made available, there is a heightened focus on protecting sensitive information such as company data, transaction history, online payments, and invoices. The adoption of cloud

solutions, which offer ‘anytime, anywhere’ access to services, amplifies the importance of securing data access and preventing unauthorized breaches. Failure to manage data security properly could lead to severe consequences, including customer loss and legal repercussions.

The utilization of Digital Technology and Information Systems is recognized for generating value through various outcomes. This value encompasses operational efficiencies, enhanced customer experiences, improved business models, strategic differentiation, competitive advantage, strengthened stakeholder relationships, and cost savings. Creating values for diverse stakeholders is crucial for enhancing logistics efficiency (Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz et al., 2020).

3.6 Human Resources and Skills Development

To achieve optimal efficiency in the logistics business, it is crucial to recruit and train professionals with up-to-date skills. Infrastructural development is essential, but also having highly skilled employees is crucial. Logistics managers should possess expertise in management, business, and logistics skills (Murphy & Post, 2006). A three-factor model outlining supply chain management skills for logistics managers includes managerial/interpersonal basic skills, technological/quantitative skills, and supply chain management core skills. Effective communication skills are essential, including both downward and upward communication within the organization and across functions. Respondents perceive themselves as “managers first and then logisticians”, possessing essential skills and proficiencies (Gammelgaard & Larson , 2001). A study found that logistics professionals should enhance proficiency in areas such as demand forecasting, inventory management, warehousing and distribution, conflict management, and communication and language skills (Rahman & Yang, 2012).

Bangladesh’s logistics industry faces challenges due to a shortage of skilled labor and a misalignment between available skills and market demands. Issues like poor higher education, insufficient on-the-job training, and unclear career paths in logistics need to be addressed. ICT adoption is limited, leading to limited transport optimization visibility and poor depot management. With e-commerce and customized products, there is a need for ICT adoption for SMEs to transition into integrated supply chain services. Enhancing social recognition of logistics occupations and developing skilled workers is crucial for meeting industry demands. Vocational training is essential for personnel in customs clearance and freight operations. Capacity building is a critical issue, with a lack of comprehensive programs, skills, knowledge, and a legal framework. Inclusive skill development programs are essential for individuals, government officials, policy-making bodies, regulatory authorities, and the industry to make significant progress in Bangladesh’s logistics sector.

3.7 Cold Chain

Bangladesh heavily relies on agriculture, accounting for almost 14% of the GDP and providing employment opportunities for more than 40% of the country's workforce. Agricultural growth has accelerated from an average annual rate of less than 2% during the 1970s-1990s to around 3.0% in the 2000s and to 3.5% in the next decade. The supply chain in agriculture being more complex, and involving a significant time lag for production, the disruption causes by various reasons including pandemic would have a potential bearing on food security for a longer period (8th Five Year Plan July 2020- June 2025). Besides, the tropical climate poses challenges in preserving seasonal produce, leads to inadequate post-harvest storage and transportation facilities, causing significant wastage up to 44% of perishable food produced in the country each year. The shortage of small cold storage facilities results in substantial losses for farmers, making them susceptible to exploitation by middlemen. To mitigate these issues, the country urgently needs more Cold Chain facilities. The agro-processing industry in Bangladesh grew on an average 15% yearly rate from 2014 to 2018, reaching a market size of $4.81 billion. In Bangladesh, the Hand-in-Hand Initiative supports investments addressing post-harvest losses. While crop production has increased, storage infrastructure to reduce food loss and boost exports has been lacking. Therefore, investments focus on cold storage and agro-processing facilities to reduce post-harvest losses by 45-55% (>25% of potatoes, 30% of Mangoes, > 25% of domestically produced onions, around 40% of tomato are lost after harvest value chains) (Investment presentation, 2023, FAO).

The existing post-harvest storage infrastructure falls short, with 393 cold storages totalling 2.4 million MT, whereas the demand is 4.5 million MT. This costs farmers USD 430 million annually and hindering a USD 64 million investment in processing facilities. Bangladesh aims to achieve 10% cold storage infrastructure by 2023, requiring at least 6.5 million MT or 1,244 cold storage facilities. The estimated size of the cold chain market is projected to be around USD 1.3 billion, positioning Bangladesh as a potential leader in the Cold Chain Industry (Cold Chain Bangladesh Expo 2024, 16-18 May 2024, Dhaka, Bangladesh).

3.8 Main Line Operator

A Main Line Operator (MLO), also known as a shipping line, is a company that owns and operates vessels, managing the transportation of cargo internationally through their ships. Approximately 90% of global cargo volume is transported by sea, with shipping lines overseeing the movement of cargo from one port to another, primarily on fixed schedules.

MLOs vary in size and ownership, influencing their structure and management. Each MLO employs different strategies, but there are common activities essential for all shipping companies, requiring effective organization across continents and countries. MLOs operate various types of vessels, such as Container Vessels, Bulk Vessels, Break Bulk Vessels, reef vessels, Ba Tanker vessels, multi-purpose vessels, and ro-ro vessels.

Maritime Logistics Operators (MLOs) undertake a range of essential activities in Bangladesh, including transporting goods to export ports, facilitating customs clearance, overseeing shipping processes, and managing import procedures. Notable MLOs in Bangladesh include the Bangladesh Shipping Corporation (BSC) and private sector companies like Meghna Group of Industries (MGI - Shipping), Akij Shipping Line Ltd., and SR Shipping Ltd., among others. These companies operate ocean-going vessels, ensuring secure and efficient shipping services on international routes. Their contributions to shipping activities are pivotal in supporting national development efforts.

3.9 Oil, Gas, and LNG Tank Terminal Services

Bangladesh is set to build an "Oil and Gas Terminal" in the Bay Terminal area to improve the storage capacity of gas and fuel, addressing the fuel crisis. The terminal is expected to alleviate rising gas demand, projected to increase by over 60% by 2030. Petrobangla, Bangladesh's state-owned oil and gas company, plans to build three new LNG terminals in Payra, Moheshkhali, and Matarbari, each with a regasification capacity of 2,000 to 3,000 mcf/d. The projects aim to meet the country's growing gas demand, which is projected to grow by over 60% by 2030.

Bangladesh currently has two LNG terminals, both located near Moheshkhali and with a regasification capacity of 500 mcf/d (5.2 bcm/year) each. One was built by the US Excelerate Energy, while the other was set up by the UK's Summit Group. Bangladesh has approved the development of its third LNG terminal, with a regasification capacity of 600 mcf/d, in Moheshkhali, Cox's Bazar. The terminal, which will be operated by Summit Summit Oil & Shipping, is a subsidiary of Summit Group. Through this, country's LNG production capacity is expected to increase at 3600 mmcfd to meet the demand for 4000 mmcfd.

3.10 Currier and Postal Services

Postal and courier services have undergone significant transformation due to regulatory, operational, and technological changes. Major players like Deutsche Post DHL, Japan Post, La Poste, and the US Postal Service influence the industry's trajectory. Technological advancements have both challenges and opportunities, such as email competition and increased demand for parcel delivery. The COVID-19 pandemic had varying impacts, with parcel revenue increasing but mail revenue decreasing. Despite challenges, the postal industry's revenue reached €492.8 billion in 2022, with logistics and freight contributing over €9 billion. The global courier, express, and parcel market is valued at $400 billion.

Since 2000, postal and courier services have been part of services negotiations under the General Agreement on Trade in Services (WTO). Demand depends on transaction volume and corporate spending on direct marketing. Large companies benefit from infrastructure and diverse services, while small companies compete through specialization. Government-owned postal agencies face competition from private package delivery firms. Collaborations between competing entities are common, and privatized former postal monopolies can compete better in ancillary fields like

logistics and freight services.

Bangladesh's postal department, despite having an e-center with 8,500 post offices, is facing a decline in market share due to a decline in private-run courier services. The country's Index for Postal Development (IPD) score is 13.9, ranking it in level two, lower than Nepal and Myanmar but higher than Afghanistan and Bhutan in South Asia. The Universal Postal Union (UPU) suggests that countries in level two need significant service and business model improvements for better postal prospects in the next decade. Private-run courier services have a market size of around Tk 70 billion in 2021 (Postal Development Report 2022, UPU).

3.11 E-Commerce

E-commerce's global share of GDP rose from 3.8% in 2019 to 5.4% in 2021, projected to reach 6.4% by 2025. Evolving technologies in counterfeit detection, supply chain, and connectivity have improved safety and efficiency, boosting the Asia and Pacific's e-commerce network. These advancements are making businesses more accessible, connecting consumers globally, and enhancing online shopping experiences with faster delivery. The report identifies barriers to e-commerce, including limited internet access, challenges in adopting advanced e-payment systems, unbanked consumers, and trust issues among vendors and customers. Additionally, geographic remoteness and infrastructure gaps hinder seamless last-mile delivery services. During the pandemic, e-commerce in Asia-Pacific outperformed most other regions due to accelerated digitalization (E-Commerce Evolution in Asia and The Pacific Opportunities and Challenges, November 2023, ADB).

In Bangladesh, the e-commerce sector gained momentum in 2012, supported by improved internet connectivity and the acceptance of online payments by the Bangladesh Bank. The country's internet subscriber base reached 190.36 million in November 2023, fostering a conducive environment for e-commerce growth. The market size in 2021 was Tk 56,870 crore, with projections to reach Tk 1.5 lakh crore by 2026 (Dublin-based trade research institution ResearchAndMarkets.com).

Bangladesh has over 2,500 e-commerce platforms, with 1% being large businesses, 4% medium, and 95% small. Additionally, global discussions, such as those held by WTO members in July 2023, explore the exemption of customs duties on electronic transmissions, opening avenues for increased export opportunities through e-commerce worldwide.

3.12 Global logistics

Global logistics in Bangladesh is a crucial driver of the nation's economic development, leveraging its strategic geographical location and international trade connectivity. Major seaports like Chattogram and Mongla facilitate the seamless movement of goods, particularly supporting the export-oriented garment industry that significantly contributes to the country's GDP. The efficient management of international trade routes is paramount, connecting Bangladesh to key regions such

as the Middle East and Southeast Asia. Investments in port infrastructure, customs procedures, and technological integration have become focal points to enhance the overall efficiency of global logistics operations. The sector extends its significance to areas like freight forwarding, transportation, warehousing, and distribution, with a growing emphasis on e-commerce logistics and sustainability initiatives. As Bangladesh continues to actively participate in regional collaborations and invest in modernizing its logistics infrastructure, the sector is poised to play an increasingly pivotal role in the global supply chain landscape.

3.13 Regulatory Framework and Policies

The correlation between trade and logistics costs is evident: Reduction of costs enhances logistics performance. This results in increased trade of a more diverse range of exports, heightened appeal for Foreign Direct Investment (FDI), and economic growth (Arvis and others, 2012). The inefficiencies in logistics, particularly bottlenecks and unreliability, contribute to elevated logistics costs as these escalate direct expenses and compel firms to maintain large inventories. Bangladesh grapples with various inefficiencies that contribute to elevated logistics costs. Addressing these inefficiencies in logistics through broad policy measures is crucial.

Key Features Logistics Sector Regulatory Issues are as follows:

- Absence of National Logistics Strategy
- The entry barrier for foreign logistics operators
- Absence of real-time integration of different agencies with Customs ASYCUDA
- Complex port governance/regulatory system
- Limited private sector engagement in the port sector
- Longer dwelling times in the logistics sector.

To enhance logistics efficiency comprehensively, a system-wide approach is essential, encompassing key policy domains. This approach should be guided by a logistics strategy prioritizing infrastructure and services. The goal of boosting logistics efficiency involves four interconnected objectives:

- Developing a comprehensive system-wide strategy to enhance logistics efficiency.
- Enhancing the quality, capacity, and management of infrastructure.
- Improving the quality and integration of logistics services.
- Achieving seamless integration of regional logistics services.

3.13.1 Recommended Actions Framework for Improving and Modernizing Logistics System

Developing Holistic Long-term Strategy	Overall port masterplan important to phase-in port projects in line with demand to avoid over capacity; Aligned to National Logistics Policy
	Container port competitiveness is driven by criteria such as port costs, handling efficiency, hinterland connectivity, and the quality of infrastructure and services.
Embracing Technology in Developing 21st Century Ports	Integrating data flows between port, customs with industrial zones & ICDs through IT infrastructure to streamline documentation and reduce processing time
	A possible blueprint to enhance Bangladesh's digital connectivity for its supply chain communities.
Mainstreaming Health, Safety, Security & Environment for global compliance	Framework for HSSE management system
Increasing Competition in Logistics Services Markets	New legal framework beyond Warehouse Act of 1958; Reforming entry barriers/495 equity ceiling for FDI in several logistics sub-sectors; Simplifying ICD /CFS set up regulations and relevant bonded regulation

3.13.2 Policy Domain Possible Actions

3.13.2.1 Objective 1: Developing a system-wide strategy for increasing logistics efficiency

Coordination within the public sector and with the private sector

- Develop inclusive institutional arrangements such as logistics councils or committees to develop and implement logistics strategy.
- Involve private sector shippers and service providers in developing the strategy.
- Evidence-based decision making
- Develop an integrated transport master plan that identifies the mix of investments and policies that yield the greatest net benefits. The master plan should consider all transport modes, infrastructure and services, infrastructure maintenance costs, and the wider economic impacts of transport and logistics interventions.
- Develop a transport model for the master plan, adopt it, and maintain it to inform policy decisions.
- Define key performance indicators for logistics.
- Maintain a monitoring and evaluation system (for example, under a logistics observatory).

3.13.2.2 Objective 2: Improving the quality, capacity, and management of infrastructure

Infrastructure maintenance

- Implement maintenance policies and actions included in the infrastructure master plans.
- Allocate resources for infrastructure maintenance. Start by securing funds for the Road Maintenance Fund and making it operational.
- Prioritize maintenance over new construction.

Infrastructure capacity

- Base decisions on capacity expansion on the integrated transport master plan.
- Strengthen the capacity to implement projects.
- Strengthen governance and increase competition in infrastructure construction.
- Adopt modern practices to enhance climate resilience.
- Develop alternative nodes and links across the transport system to increase redundancy and

resilience based on robust analysis.
- Develop logistics clusters at strategic locations with intermodal terminals.

Private sector participation
- Develop a robust and effective PPP framework.
- Develop the domestic capital market and allow foreign financing of transport and logistics infrastructure.
- Strengthen contract enforcement mechanisms.
- Implement the landlord port model in Chattogram.

Design and enforcement of regulations
- Ensure that the tax system treats all transport modes equally or tilt the field in favor of cleaner modes (such as inland waterways).
- Promote inland containerization by removing constraints to clearing goods outside seaports and not treating containers as bonded goods.
- Enforce limits on axle loads.

3.13.2.3 Objective 3: Improving the quality and integration of logistics services

Market structure
- Make the Bangladesh Competition Commission functional and independent.
- Enforce competition regulations in logistics service markets, letting market forces determine prices.
- Make pricing regimes for different activities and services transparent.

Business environment
- Remove regulatory constraints that limit domestic and foreign private sector provision of logistics services.
- Create the regulatory and business environment for logistics service providers to access bank financing.
- Strengthen tax collection to create a level playing field for logistics service providers.

Design and enforcement of regulations
- Update and focus regulations on safety, the environment, and market failures in general. Refrain from interfering with market operations.
- Issue regulations that are as clear and concrete as possible, to leave little room for discretion when interpreting them.
- Make all regulations available online and easy to access for the general public.
- Implement technology solutions to improve the enforcement of regulations.

3.13.2.4 Objective 4: Achieving seamless regional connectivity

Integration agreements
- Conduct conformity assessments to determine gaps in regional and international commitments.
- Assess the economic impacts of regional and international agreements.

- Use international legal instruments to harmonize regulatory regimes.
- Integrate customs and border management systems with neighbouring countries.

Infrastructure

- Build the infrastructure needed to interconnect with the transport networks of neighbouring countries.
- Build infrastructure to at least the standards of the best performers in the region.
  Source: World Bank

3.14 Environmental and Sustainability Consideration

Sustainable logistics operations involve practices like energy efficiency, water conservation, waste reduction, last-mile delivery improvements, and green building initiatives. Achieving net zero in logistics services aim to balance greenhouse gas emissions and contribute to environmental goals.

The logistics sector of Bangladesh plays a crucial role in our daily life but also poses environmental challenges like air and noise pollution, traffic congestion, and greenhouse gas emissions. Existing regulations are not that much effective due to the lack of proper implementation, adequate resources, and public awareness. To address these issues, the government has implemented protocols like cleaner fuels and emissions standards.

A line chart is on the amount carbon emissions extracted from World Bank's open data website. is shown below:

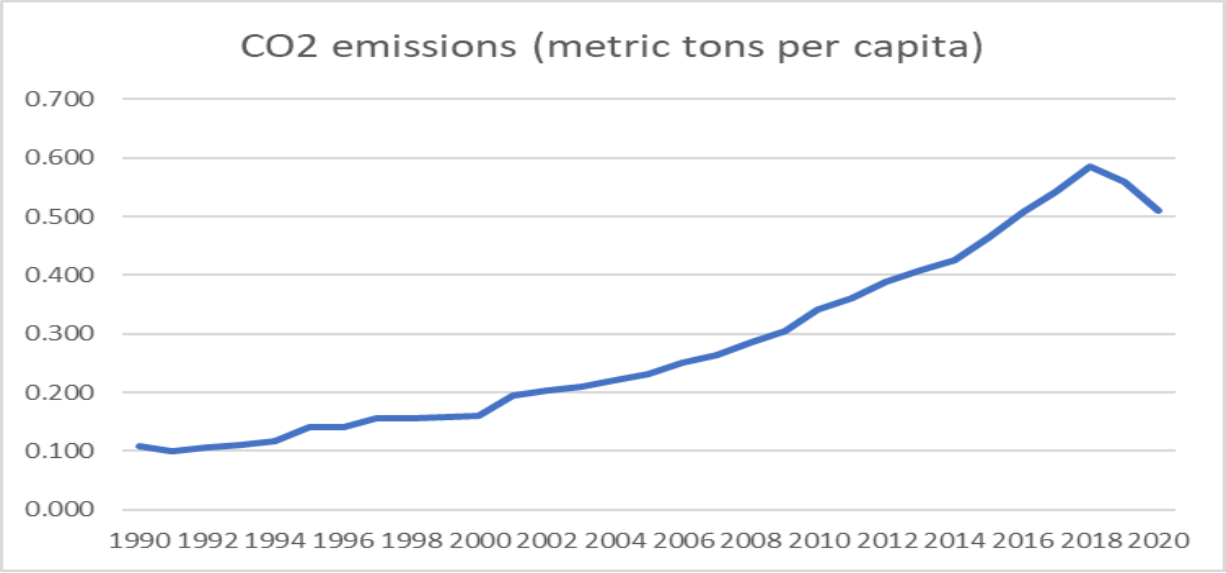

Fig. 10: Amount of Carbon emissions from 1990 to 2020

Based on the data analysis, it can be said that carbon emissions increased continuously from 1990 till now. This is due to the increase of motor vehicles in roads, waterways and airways with the passage of time. These vehicles emit excessive Carbon-di-oxide and Carbon monoxide in the atmosphere and pollute environment.

As motor vehicles are increased, it can be concluded that logistics infrastructures are improved with the passage of time. But adequate steps are not taken to curb environmental hazards. Adequate emphasis should be given in this regard.

3.15 Conclusion

Bangladesh has become a key player in the global economy, ranking 35th among the 50 most promising emerging logistics markets. Its growth is driven by export opportunities, improved infrastructure, strategic marketing, new-age technologies, and UpToDate trade policies. The country's success has led to fruitful bilateral trade and an expanded global footprint. Strategic marketing initiatives and cultural research have strengthened trade relationships, while new-age technologies like deep learning and IoT are expected to further enhance the logistics and supply chain sector.

As Bangladesh moves towards developing country status, addressing logistics challenges is crucial for maintaining export efficiency and cost-effectiveness. Strategic measures in the logistics and supply chain will help overcome obstacles and ensure sustained growth, particularly in the face of congestion and potential changes in preferential treatment.

Chapter Four: Stakeholders Mapping

4.1 Introduction

Stakeholders, both internal and external to an industry, have a significant impact on its prosperity. Stakeholder mapping is a technique used to identify and analyze stakeholders, understanding their interests, concerns, and potential influence. It helps identify risks and opportunities, develop strategies for stakeholder engagement, and manage expectations.

Although it was developed in the early 1990s and is well-conceived in the literature, stakeholders' identification theory has its roots in the 1970s (Freeman, 1984; Donaldson and Preston, 1995; Mitchell et al., 1997). A stakeholder in an organization is defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" by Freeman (1984). According to Clarkson (1995), an organization's capacity to generate enough value or satisfaction for each of the main stakeholder groups determines how satisfactorily it can grow. According to Freeman and Philips (2002), an organization's capacity to manage its relationships with primary stakeholders—such as customers, employees, suppliers, communities, and politicians—as well as secondary stakeholders—such as local activist groups, the media, and business activities—is essential to its success.

4.2 Categorization of Stakeholders

Stakeholder analysis in Bangladesh's logistics sector is essential for understanding diverse entities, identifying roles, interests, and influence levels, and enabling tailored strategies and sustainable growth policies.

Stakeholders in the logistics sector can be categorized into two groups such as:

- Primary Stakeholders:
- Secondary Stakeholders

4.2.1 Primary Stakeholders

Primary stakeholders in Bangladesh's logistics industry include entities influencing rules, regulations, and sector growth. They operate across port operations, transportation, customs clearance, warehousing, regulatory oversight, and service delivery. Understanding their roles is crucial for efficient, collaborative, and sustainable logistics operations in Bangladesh.

List of primary stakeholders is given below:

1. **Port Authorities:**
   - Chittagong Port Authority
   - Mongla Port Authority
   - Payra Port Authority
   - Inland Container Depots (ICDs) and Container Freight Stations (CFSs)
   - Bangladesh Inland Water Transport Authority (BIWTA).

2. **Government Bodies and Regulatory Authorities:**
    - Ministry of Railways,
    - Bangladesh Railway (BR),
    - Bangladesh Railway Authority (BRA),
    - Directorate General of Bangladesh Railway (DGBR),
    - Bangladesh Railway Advisory Board
    - Bangladesh Road Transport Authority (BRTA),
    - Ministry of Road Transport and Bridges,
    - Ministry of Posts, Telecommunications and Information Technology
    - Civil Aviation Authority of Bangladesh (CAAB)
    - Ministry of Civil Aviation and Tourism
    - Ministry of Shipping
    - Ministry of Commerce
    - Bangladesh Tariff Commission
    - Ministry of Fisheries and Livestock
    - Department of Fisheries (DoF)
    - Department of Shipping
    - Ministry of Power, Energy, and Mineral Resources
    - Bangladesh Railway
    - Bangladesh Inland Water Transport Authority (BIWTA)
    - Bangladesh Petroleum Corporation (BPC),
    - Department of Energy and Mineral Resources (DEMR),
    - Bangladesh Energy Regulatory Commission (BERC),
    - Ministry of Agriculture
    - Ministry of Health and Family Welfare
    - Bangladesh Pharmaceutical Society (BPS)
    - Department of Agricultural Extension (DAE),
    - Bangladesh Food Safety Authority,
    - Directorate General of Drug Administration (DGDA),
    - Public and Private Transport Companies (e.g., bus and trucking companies)
3. **Logistics Service Providers:**
    - Freight Forwarding Companies
    - Third-Party Logistics (3PL) Providers
    - **Transport Operators**
    - courier services
    - Warehousing and Distribution Centers
4. **Customs and Clearance Entities:**
    - National Board of Revenue (NBR),
    - Customs Bond Commissionerate
    - Customs Clearing Agents

- Bangladesh Customs
- Customs Bonded Warehouses
- Bangladesh Customs Intelligence and Investigation Directorate (CIID))

5. **Financial Institutions:**
   - Banks and Financial Service Providers
   - Insurance Companies
   - Leasing Companies
6. **Technology and Software Providers:**
   - IT Companies offering logistics software and solutions
   - GPS and Navigation System Providers
   - Fleet management software, and communication tools etc
7. **Trade Associations and Chambers of Commerce:**
   - Federation of Bangladesh Chambers of Commerce and Industry (FBCCI)
   - Foreign Investors' Chamber of Commerce & Industry
   - Bangladesh Freight Forwarders Association (BAFFA)
   - Bangladesh Garments Manufacturers and Exporters Association (BGMEA)
   - Bangladesh Road Transport Owners Association,
   - Bangladesh Road Transport Workers Federation (BRTWF)
   - Bangladesh Inland Container Depot Association
   - Bangladesh Ocean Going Ship Owners Association
   - Bangladesh Truck Owners Association (BTOA)
8. **E-commerce Platforms:**
   - Online Retailers and Marketplaces
   - Courier and Delivery Services supporting e-commerce logistics
9. **Energy and Fuel Suppliers:**
   - Suppliers providing fuel for transportation
   - Logistics and Shipping Companies
10. **Manufacturers and Importers/Exporters:**
    - Companies producing goods or involved in trade
    - Bangladesh Export Processing Zones Authority (BEPZA)
11. **Human Resources and Labor Organizations:**
    - Labor Unions representing workers involved in the logistics industry
12. **Environmental and Sustainability Groups:**
    - Organizations concerned with environmental impact and sustainability in logistics operations
13. **Customers and End-Users:**
    - Businesses and consumers utilizing logistics services for transportation and delivery of goods

These primary stakeholders are integral parts of Bangladesh's logistics sector, each playing vital roles in the functioning, regulation, and development of logistics operations within the country.

4.2.2 Secondary Stakeholders

Secondary stakeholders in Bangladesh's logistics sector, though not directly involved in day-to-day operations, have an indirect interest, influence, and impact on logistics decisions. These groups encompass labor unions, insurance companies, real estate developers, industry associations, financial institutions, educational institutions, media outlets, and non-governmental organizations (NGOs), contributing to policy influence, service provision, advocacy, and industry standards.

A list of secondary stakeholders involved in the logistics sector of Bangladesh is given below:

1. Consultants and Advisory Services:
   - Logistics consultants offer strategic guidance, analysis, and solutions to optimize logistics and supply chain operations, provide insights, and help clients improve efficiency, compliance, and strategic decision-making within the logistics sector.
2. Educational Institutions:
   - Universities, colleges, and training centers offering logistics and supply chain management programs, producing skilled professionals for the industry.
3. Media and Publications:
   - News agencies, journals, and publications reporting on logistics industry developments, policies, and trends.
4. Regulatory Compliance and Standards Bodies:
   - Bodies responsible for setting standards and regulations for logistics operations, ensuring compliance and safety.
5. Transportation Infrastructure Developers:
   - Entities involved in the development and maintenance of roads, bridges, and transportation infrastructure supporting logistics activities.
6. Technology Regulatory Bodies:
   - Entities overseeing regulations and standards related to technology and IT solutions used in the logistics sector.
7. Environmental and Sustainability Regulatory Bodies:
   - Agencies concerned with environmental regulations and sustainability practices within the logistics industry.
8. Investors and Financial Regulators:
   - Institutional investors and financial regulators monitoring investments and financial activities within the logistics sector.
9. Consumer Protection Organizations:
   - Groups advocating for consumer rights and interests related to logistics services.
10. Local Community and Non-Governmental Organizations (NGOs):
    - Community organizations and NGOs working on issues affecting local communities impacted by logistics operations.

11. Labor Rights Organizations:
    - Entities advocating for the rights and welfare of laborers and workers employed in the logistics sector.

These secondary stakeholders, although not directly involved in day-to-day logistics operations, contribute to shaping policies, standards, and overall development within the logistics industry in Bangladesh.

4.3 Identification of Stakeholders

The logistics sector in Bangladesh consists of 21 sub-sectors recognized by the Ministry of Industries. These sub-sectors collectively contribute to the functioning and efficiency of the logistics industry in Bangladesh, supporting the movement, storage, and management of goods and services across the supply chain.

Sub-sector wise Primary Stakeholder Engagement and its Responsibility are given below:

Table-09: Sub-sector wise Primary Stakeholder Engagement and its Responsibility

Sl. No.	Stakeholder Engaged	Responsibility	Category
1. Road transport and communication services			
1.1	Government Agencies:	Formulating transportation policies, regulations, and infrastructure, including road safety, licensing, and infrastructure development.	Primary Stakeholder
1.2	Transport Operators:	Provide the physical means of transporting goods and passengers across the country's road networks.	Primary Stakeholder
1.3	Logistics Service Providers (LSPs)	Oversee logistics operations, coordinating the transport, storage, and distribution of goods primarily via road transport.	Primary Stakeholder
1.4	Technology Providers	Contribute to optimizing logistics efficiency and road transport safety.	Secondary Stakeholder
1.5	Trade Associations and Industry Groups:	Advocating for the needs and addressing industry-related challenges.	Primary Stakeholder
1.6	Consumers and Businesses	Drive demand for transportation services and influence the logistics chain.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
2. Air/Aviation Services			
2.1	Airline Companies and Operators	Transport goods through air cargo services, facilitating quick and efficient logistics solutions.	Primary Stakeholder
2.2	Air Cargo Handling Companies	Manage and facilitate the movement of goods, ensuring efficient loading, unloading, and storage of cargo.	Primary Stakeholder
2.3	Airport Authorities	Oversee airport operations, including cargo handling facilities, customs clearance, and infrastructure development, affecting the efficiency of logistics services.	Primary Stakeholder
2.4	Freight Forwarders and Logistics Service Providers	Companies engaged in air freight forwarding, logistics, and supply chain management services. They manage the transportation, documentation, and clearance processes for air cargo.	Primary Stakeholder
2.5	Customs and Regulatory Authorities	Authorities managing customs clearance, import/export regulations, and compliance for air cargo are crucial for ensuring legal and regulatory adherence in the logistics chain	Primary Stakeholder
2.6	E-commerce Companies and Couriers	E-commerce and retail businesses rely on air cargo for swift delivery, shaping the demand for air freight services	Primary Stakeholder
2.7	Technology Providers	Technology firms providing cargo tracking, inventory management, and supply chain optimization solutions in aviation logistics are vital contributors to operational efficiency.	Secondary Stakeholders
2.8	Government Bodies and Policy Makers	Formulate policies, regulations, and infrastructure development plans influencing aviation logistics.	Primary Stakeholders
3. Rail Transportation Service			
3.1	Government Bodies and Regulatory Authorities:	Develop policies, regulations, and infrastructure development plans for the railway sector, influencing logistics operations via rail transport.	Primary Stakeholder
3.2	Bangladesh Railway (BR)	Bangladesh Railway, as the state-owned operator, manages the country's railway network, including freight services essential for logistics transportation.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
3.3	Rail Freight Forwarders and Logistics Service Providers	Rail freight forwarding and logistics entities utilize the railway network for cargo transportation, serving as vital components in the logistics chain.	Primary Stakeholder
3.4	Port Authorities and Inland Container Depots (ICDs):	Entities managing ports and ICDs are stakeholders as they often have rail connections for transporting goods between ports and inland destinations, impacting the efficiency of logistics services.	Primary Stakeholder
3.5	Customers and Shippers	Businesses and industries that dependent on rail transport for moving bulk goods are stakeholders influencing the demand for railway freight services in the logistics and transportation sector.	Primary Stakeholder
3.6	Technology Providers	Companies offering technology solutions for rail freight management, tracking, and optimization contribute to the efficiency of railway logistics services and are stakeholders in the sector.	Secondary Stakeholders
4. Sea Port Services			
4.1	Port Authorities	Key players in port infrastructure development, operations, and administration.	Primary Stakeholder
4.2	Shipping Lines and Container Terminal Operators	Manage vessel operations, container handling, and cargo movements at the ports.	Primary Stakeholder
4.3	Freight Forwarders and Logistics Service Providers.	Specialized entities in sea freight forwarding, customs clearance, and logistics services are crucial as they handle transportation, documentation, and clearance processes for sea cargo.	Primary Stakeholder
4.4	Customs and Regulatory Authorities	Entities engaged in customs clearance, import/export regulations, and compliance procedures for sea cargo are vital stakeholders. They ensure legal and regulatory adherence in sea freight operations.	Primary Stakeholder
4.5	Terminal Handling Agents (THAs) and Stevedoring Companies	These companies handle cargo operations, including loading and unloading vessels at ports, contributing significantly to efficient port operations.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
4.6	Shippers and Exporters	Export-oriented businesses heavily depend on sea port services for international transportation, making them stakeholders whose actions impact the demand for sea freight services.	Primary Stakeholder
4.7	Government Bodies and Policy Makers	Government bodies like the Ministry of Shipping formulate policies, regulations, and infrastructure plans for the sea port sector, influencing logistics operations.	Primary Stakeholder
4.8	Technology Providers:	Tech firms improving port operations and supply chain efficiency are pivotal stakeholders in sea port logistics.	Secondary Stakeholders
5. Freight Shipping Services			
5.1	Shipping Lines and Operators:	Provide container shipping services, manage vessels, and ensure the safe and timely transportation of cargo.	Primary Stakeholder
5.2	Chattogram Port Authority (CPA) and Mongla Port Authority	Manage and operate the seaport in Chattogram, overseeing cargo handling, berthing, and overall port operations	Primary Stakeholder
5.3	Freight Forwarders and Logistics Service Providers	Freight forwarders, both local and international, manage cargo logistics by overseeing tasks like booking, documentation, customs clearance, and transportation arrangements.	Primary Stakeholder
5.4	Customs Authorities	In Bangladesh, regulatory bodies oversee customs procedures, tariffs, and clearance processes for imported and exported goods at sea ports.	Primary Stakeholder
5.5	Inland Container Depots (ICDs)	ICDs like Dhaka Inland Container Depot (ICD) and Birganj Inland Container Depot play crucial roles in managing containerized cargo by offering storage, customs clearance, and inland transportation services.	Primary Stakeholder
5.6	Cargo Handling Companies	Engaged in cargo handling, stevedoring, container terminal operations, and logistics management within ports ensure efficient loading, unloading, and storage of goods.	Primary Stakeholder
5.7	Shippers and Exporters	Manufacturing, production, and exporting businesses are key stakeholders in the shipping industry, overseeing cargo shipments from Bangladesh to diverse destinations.	Primary Stakeholder
6. Regional feeder vessels and lighter/coastal/offshore shipping industry services			

Sl. No.	Stakeholder Engaged	Responsibility	Category
6.1	Bangladesh Inland Water Transport Authority (BIWTA)	Oversees and regulates inland water transport, including regional feeder vessels and lighter/coastal/offshore shipping services. BIWTA manage waterways and provide necessary permissions and regulations for maritime transport.	Primary Stakeholder
6.2	Lighterage Service Providers	Manage lighter vessels for transferring cargo between ships and ports, particularly in shallow draft areas or where larger vessels cannot access.	Primary Stakeholder
6.3	Regional Feeder Vessel Operators	Provide services linking smaller ports within Bangladesh or neighboring nations, facilitating cargo transport between regional hubs	Primary Stakeholder
6.4	Port Authorities	Oversees multiple ports in Bangladesh and collaborates with feeder vessel operators and lighterage service providers to ensure efficient maritime operations.	Primary Stakeholder
6.5	Private Shipping Companies	Involved in regional feeder, lighterage, and coastal/offshore shipping services, managing vessels and logistics operations within maritime sector.	Primary Stakeholder
7. Deep sea fishing industry services			
7.1	Government Regulatory Bodies:	Responsible for establishing regulations, issuing licenses, and monitoring the industry.	Primary Stakeholder
7.2	Fishing Trawler Owners/ Operators:	Own and operate mechanized trawlers engaged in deep-sea fishing.	Primary Stakeholder
7.4	Fisheries Associations/ Cooperatives	Representing fishermen's interests, advocating for their rights, and providing support.	Primary Stakeholder
7.5	Fish Processing and Export Companies	Engaged in purchasing, processing, packaging, and exporting fish caught by trawlers.	Primary Stakeholder
7.6	Logistics and Transportation Companies	Engaged in transporting fish from ports to processing facilities or export destinations.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
8. Main-line operator services			
8.1	Shipping Lines/Carriers	Own or operate ships and vessels for cargo transportation internationally.	Primary Stakeholder
8.2	Port Authorities	Managing port operations in Bangladesh, including infrastructure, administration, and vessel traffic.	Primary Stakeholder
8.3	Customs Authorities:	Managing customs regulations, duties, and clearances for goods at ports and border checkpoints.	Primary Stakeholder
8.4	Freight Forwarders:	Facilitating goods shipment, managing logistics, documentation, and transportation.	Primary Stakeholder
8.5	Container Terminal Operators:	Managing container terminals includes handling, loading, unloading, and storing containers. DP World, for instance, operates a terminal in Chattogram.	Primary Stakeholder
8.6	Logistics Service Providers:	Offer comprehensive logistical services, including transportation, warehousing, distribution, and supply chain management.	Primary Stakeholder
9. Inland Shipping Services			
9.1	Inland Water Transport Authority (IWTA):	Oversees and regulates inland waterway transportation in Bangladesh, managing licensing, safety, and regulations on vessels and waterways.	Primary Stakeholder
9.2	Inland Water Transport (IWT) Operators	Operate vessels for transporting goods and passengers along inland waterways in Bangladesh.	Primary Stakeholder
9.3	River Port Authorities	Manage river ports, terminals, and jetties along inland waterways to facilitate vessel loading, unloading, and berthing.	Primary Stakeholder
9.4	Cargo Owners and Shippers	Shipping goods via inland waterways using inland water transport operators.	Primary Stakeholder
9.5	Government Agencies	Engaged in policymaking, regulation, and infrastructure development for inland water transportation.	Primary Stakeholder
9.6	Freight Forwarders and Logistics Companies	Coordinating inland waterway shipments, offering logistical support including documentation, consolidation, and distribution.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
9.7	Vessel Maintenance and Repair Services	Companies or workshops provide vessel maintenance, repair, and servicing for operational readiness and safety.	Primary Stakeholder
10. Global Logistics Services			
10.1	Logistics Service Providers (LSPs)	Specialize in global logistics services, including freight forwarding, customs clearance, warehousing, distribution, and supply chain management.	Primary Stakeholder
10.2	International Transportation Companies	Providing international transportation services across air, ocean, or land routes for cross-border movement of goods.	Primary Stakeholder
10.3	Customs Authorities	Overseeing and regulating customs for goods to ensure import-export compliance.	Primary Stakeholder
10.4	Port Authorities	Managing port operations, including cargo handling and vessel movements, crucial for global logistics in trade.	Primary Stakeholder
10.5	Trade Associations and Industry Groups	Representing logistics providers, advocating standards, fostering sector collaboration.	Primary Stakeholder
10.6	Government Regulatory Bodies	Regulating, licensing, and overseeing logistics for international trade compliance and safety.	Primary Stakeholder
10.7	Suppliers, Exporters, and Importers	Engaged in international trade, relying on global logistics for goods transportation to and from Bangladesh.	Primary Stakeholder
10.8	Financial Institutions	Banks, financial service providers, and insurers offer financial and insurance services.	Secondary stakeholders
11. Freight Forwarding Services			
11.1	Freight Forwarding Companies	Expertise in logistics, transportation, customs clearance, and documentation for efficient goods movement.	Primary Stakeholder
11.3	Customs Authorities	Oversee customs clearance for import-export law compliance in freight forwarding.	Primary Stakeholder
11.4	Port Authorities	Manage port activities including loading, unloading, and cargo handling for efficient freight forwarding operations.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
11.5	Transportation and Haulage Companies	Offer inland transportation services, coordinating with freight forwarders for seamless cargo movement to and from ports or hubs.	Primary Stakeholder
11.6	Trade Associations	Industry organizations support freight forwarders, promoting standards and best practices in logistics.	Primary Stakeholder
11.7	Government Regulatory Bodies	Regulate and license logistics operations for safety compliance.	Primary Stakeholder
11.8	Suppliers and Manufacturers	Businesses utilize freight forwarding services to ship goods domestically and internationally.	Primary Stakeholder
11.9	Logistics Service Providers	Enhancing freight forwarding with supplementary services: warehousing, distribution, and supply chain management.	Primary Stakeholder
12. Oil/Gas/LNG Tank Terminal Services			
12.1	Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)	Petrobangla, the state-owned entity, oversees oil and gas exploration, production, distribution, and terminals in Bangladesh.	Primary Stakeholder
12.2	Oil Marketing Companies (OMCs)	Engaged in importing, storing, and distributing petroleum products, managing tank terminals.	Primary Stakeholder
12.3	LNG Importers and Terminal Operators	Operating LNG terminals for storage, regasification, and distribution in Bangladesh.	Primary Stakeholder
12.4	Private Terminal Operators	Private tank terminal companies are essential in the logistics chain, managing facilities for oil and gas storage and handling.	Primary Stakeholder
12.5	Port Authorities	Regulate activities at oil, gas, and LNG terminals within managed ports.	Primary Stakeholder
12.6	Government Regulatory Bodies	Responsible for setting and overseeing safety regulations in oil, gas, and LNG sectors for compliance and safety.	Primary Stakeholder
12.7	Logistics and Shipping Companies	Involved in transporting oil, gas, and LNG products to and from terminals, managing transportation logistics.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
13. Cold Chain Services			
13.1	Cold Storage Facilities and Warehouses	Operating refrigerated storage for perishables like fruits, vegetables, dairy, pharmaceuticals, and sensitive items.	Primary Stakeholder
13.2	Logistics and Transportation Companies	Specialize in refrigerated transportation with temperature-controlled trucks or containers for perishable goods.	Primary Stakeholder
13.3	Packaging and Insulation Providers	Offering specialized packaging and insulation solutions for perishable products' temperature maintenance during storage and transportation.	Primary Stakeholder
13.4	Food Processors and Manufacturers	Produce perishable food, pharmaceuticals, vaccines, and temperature-sensitive products dependent on cold chain services for storage and distribution.	Primary Stakeholder
13.5	Government Agencies and Regulatory Bodies	Responsible for setting guidelines, standards, and regulations in the cold chain industry for product quality and safety.	Primary Stakeholder
13.6	Trade Associations and Industry Groups	Representing stakeholders in the cold chain industry, advocating for standards and best practices.	Primary Stakeholder
13.7	Technology Providers	Tech companies offer cold chain monitoring solutions with temperature devices, tracking systems, and software for product integrity maintenance.	Secondary Stakeholder
14. Clearing and Forwarding Services			
14.1	Customs Clearing Agents	Licensed entities manage customs clearance, documentation, and liaise with customs authorities for importers and exporters.	Primary Stakeholder
14.2	Freight Forwarding Companies	Offering freight forwarding services, coordinating transportation, storage, and delivery of goods, often including customs clearance.	Primary Stakeholder
14.3	Port Authorities	Administer port operations, supervising cargo handling, inspections, and customs for efficient goods clearance	Primary Stakeholder
14.4	Customs Authorities:	Enforcing customs regulations, collecting duties, and ensuring compliance with import and export procedures.	Primary Stakeholder

Sl. No.	Stakeholder Engaged	Responsibility	Category
14.5	Importers and Exporters	Involved in international trade, utilizing clearing and forwarding services to streamline customs clearance and logistics for imports and exports.	Primary Stakeholder
14.6	Government Regulatory Bodies:	Establish regulations, policies, and standards governing customs clearance, trade procedures, and logistics operations.	Primary Stakeholder
14.7	Trade Associations and Chambers of Commerce	Advocating for industry standards and facilitating trade-related activities on behalf of importers, exporters, and service providers in the logistics and trade sectors.	Primary Stakeholder
15. Private Inland Container Depot and Container Freight Station Services			
15.1	Private Inland Container Depots (ICDs)	Offering container handling, storage, and customs clearance for import/export cargo transported by rail or truck.	Primary Stakeholder
15.2	Container Freight Stations (CFSs)	CFSs specialize in consolidating or deconsolidating containerized cargo, offering services like cargo examination, stuffing, stripping, and temporary storage for less-than-container-load (LCL) shipments.	Primary Stakeholder
15.3	Customs Authorities:	Monitoring customs procedures and clearance at private ICDs and CFSs for import-export regulation compliance.	Primary Stakeholder
15.4	Port Authorities:	Coordinating container movements, inspections, and cargo documentation with private ICDs and CFSs at linked ports.	Primary Stakeholder
15.5	Logistics Service Providers:	Providing logistical support, such as transportation, warehousing, and distribution services, integrated with private ICDs and CFSs.	Primary Stakeholder
15.6	Government Regulatory Bodies	Setting regulations, standards, and licensing for private ICDs and CFSs to ensure compliance with trade and logistics rules.	Primary Stakeholder
16. Courier and Postal Services			
16.1	Bangladesh Post Office (BPO)	Bangladesh Post Office, the national postal service provider, handles mail delivery, postal services, and parcel management nationwide.	Primary Stakeholder
16.2	Private Courier Companies	Private Companies offer express delivery, parcel, and document handling services globally.	Primary Stakeholder
16.3	Logistics and Express	logistics firms that offer express delivery and courier services alongside freight forwarding.	Primary Stakeholders

Sl. No.	Stakeholder Engaged	Responsibility	Category
	Delivery Companies		
16.4	Customs Authorities:	Managing customs clearance for international parcels and shipments handled by courier services.	Primary Stakeholders
16.5	E-commerce Platforms and Sellers:	Actively using courier services for online purchases, substantially boosting parcel volumes for courier companies.	Primary Stakeholders
16.6	Government Regulatory Bodies	Overseeing postal and courier services, establishing and enforcing standards and legal compliance.	Primary Stakeholders
17. Ride-sharing services (Transportation Network Companies (TNCs)			
17.1	Uber	Operates a mobile app for ride-sharing, connecting riders with drivers for diverse transportation choices.	Primary Stakeholders
17.2	Pathao	Popular ride-sharing service in Bangladesh offering bike-sharing, car-sharing, and food delivery via mobile app.	Primary Stakeholders
17.3	Bolt (formerly known as Taxify)	Provides ride-hailing services via mobile app, offering diverse transportation options for passengers and drivers.	Primary Stakeholders
17.4	Shohoz	Provides multi-modal ride-sharing services (bikes, cars, buses) through a mobile app platform	Primary Stakeholders
17.5	Government Regulatory Bodies	Regulates ride-sharing services, establishes standards, and ensures compliance with transportation laws and safety regulations.	Primary Stakeholders
17.6	Drivers	Independent contractors (individuals) offer transportation via ride-sharing platforms, enhancing urban transportation in Bangladesh.	Primary Stakeholders
18. ICT based logistics services			
18.1	Technology and Software Development Companies	Companies developing mobile apps, software, and IT infrastructure for ride-sharing platforms, facilitating their technical operation and advancement.	Secondary Stakeholders
18.2	Telecommunication Companies	Telecommunication service providers supplying network infrastructure for seamless communication between ride-sharing apps, drivers, and passengers.	Secondary Stakeholders

Sl. No.	Stakeholder Engaged	Responsibility	Category
18.3	Payment Gateway Providers	Companies providing secure payment solutions integrated into ride-sharing platforms, facilitating cashless transactions for rides.	Secondary Stakeholders
18.4	Data Analytics and Research Firms	Specialized firms in data analysis and market research, offering insights into user behavior, demand trends, and industry dynamics in the ride-sharing sector.	Secondary Stakeholders
18.5	GPS and Navigation System Providers:	Supplying GPS tech and navigation for ride-sharing apps, ensuring accurate tracking and efficient routes.	Primary Stakeholders
18.6	Cybersecurity and Data Protection Services	Prioritize user data security and privacy, safeguarding against cybersecurity risks in ride-sharing platforms.	Secondary Stakeholders
18.7	Government Regulatory Bodies	Manage regulations, policies, and compliance for IT, data protection, and telecom in ride-sharing.	Primary Stakeholders
19. E-Commerce Logistics Services			
19.1	Third-Party Logistics (3PL) Providers:	Companies specializing in logistics services tailored for e-commerce, offering warehousing, order fulfillment, packaging, and last-mile delivery services.	Primary Stakeholders
19.2	Courier and Delivery Services:	Established courier companies and delivery service providers handling parcel shipments for e-commerce platforms, ensuring prompt and efficient deliveries.	Primary Stakeholders
19.3	E-commerce Platforms and Online	Companies operating online retail platforms where goods are sold and purchased. Some prominent e-commerce platforms in Bangladesh include:	Primary Stakeholders
19.4	Technology and Software Solutions Providers	Entities offering software solutions, tracking systems, and technology infrastructure necessary for managing e-commerce logistics operations effectively.	Secondary Stakeholders
19.5	Payment Gateway Providers:	Companies offering secure payment solutions integrated into e-commerce platforms for online transactions.	Secondary Stakeholders
19.6	Packaging Suppliers:	Companies providing packaging materials and solutions suitable for e-commerce shipments, ensure the safe and secure delivery of products.	Primary Stakeholders

Sl. No.	Stakeholder Engaged	Responsibility	Category
19.7	Transportation Companies:	Entities offering transportation services for moving goods between warehouses, and distribution centers, and for last-mile delivery to customers.	Primary Stakeholders
19.8	Government Regulatory Bodies:	Entities are responsible for overseeing regulations, policies, and compliance related to e-commerce logistics operations within Bangladesh.	Primary Stakeholders
20. Private Warehouse Service			
20.1	Private Warehouse Operators:	Companies or individuals owning and managing private warehouses or storage facilities for goods and commodities. These entities offer storage space for rent or lease to businesses needing storage solutions.	Primary Stakeholders
20.2	Manufacturers and Distributors:	Companies engaged in manufacturing or distributing goods that require storage space. They often utilize private warehouses to store inventory before distribution to retailers or customers.	Primary Stakeholders
20.3	Retail Chains and Supermarkets:	Large retail chains and supermarkets may operate their private warehouses to manage inventory and store goods before stocking shelves in their stores.	Primary Stakeholders
20.4	Third-Party Logistics (3PL) Providers	Some 3PL providers offer private warehousing services as part of their logistics solutions, managing warehousing needs for multiple clients.	Primary Stakeholders
20.5	Government Regulatory Bodies:	Entities overseeing regulations, policies, and compliance for IT, data protection, and telecom in ride-sharing.	Primary Stakeholders
20.6	Technology Providers	Providing warehouse management systems (WMS) and inventory tracking for efficient warehouse operations.	Secondary Stakeholders
21.Financial Logistics Services			
21.1	Banks and Financial Institutions	Banks in Bangladesh, including Bangladesh Bank, commercial banks, and specialized financial institutions, provide services such as trade financing, letters of credit (LC), loans, and financial support for logistics operations.	Secondary Stakeholders
21.2	Insurance Companies:	Provide cargo insurance, marine insurance, and related services to mitigate risks in logistics operations, covering transportation, storage, and handling of goods.	Secondary Stakeholders
21.3	Leasing Companies	Offer leasing for logistics vehicles, equipment, and machinery.	Secondary Stakeholders

4.4 Stakeholder Analysis Using the Power-Interest Grid Model

The Power-Interest Grid Model, developed by John French and Bertram Raven, is a useful tool for analyzing stakeholder relationships based on their power (ability to influence decisions) and interest (level of concern about the issue). Applying this model to the Bangladeshi logistics sector can provide valuable insights into how different stakeholders interact and contribute to the sector's development.

4.4.1 Stakeholder Groups and their Power-Interest Levels

High Power-High Interest:

- **Government Bodies**: Holds significant power through regulatory control, infrastructure development, and policymaking. Has a high interest in efficient logistics for economic growth, trade facilitation, and revenue generation. (Ministry of Shipping, Ministry of Railways, BRTA, Bangladesh Customs Authority)
- **Major Ports and Port Authorities**: Chattogram Port Authority, Mongla Port Authority, Payra Port Authority.
- **Large Logistics Service Providers:** Dominant players in the market with strong financial resources and service networks. Have a high interest in maintaining their market position and shaping regulations (Pathao, eCourier, RedX).
- **International Shipping Lines and Airlines**: Control access to global markets and possess significant influence over freight rates. Have a high interest in efficient cargo handling and infrastructure development at ports and airports.

High Power-Low Interest:

- **Financial Institutions**: Provide funding for infrastructure projects and logistics companies. Have moderate power through their lending decisions. Have a moderate interest in the sector's stability and growth potential.
- **Regulatory Bodies**: Regulatory bodies such as the Bangladesh Standards and Testing Institution (BSTI), Environmental Agencies, and Labor Regulatory Bodies, play a crucial role in shaping regulations, policies, and standards for the logistics industry. Despite their significant influence, their inherent interest in the daily operational details of the sector may be comparatively lower.
- **Technology Providers**:
  Technology providers in the logistics sector are powerful entities that contribute sophisticated software, automation tools, and technological solutions, enhancing and simplifying logistics processes. While they may have a lower inherent interest in day-to-day operational aspects, their primary focus lies in product development and technological advancements.
- **Insurance Companies:** Insurance and risk management entities are powerful stakeholders in Bangladesh's logistics sector, playing a crucial role in providing coverage for operational risks. While they may not be deeply involved in day-to-day operational intricacies, their influence is substantial, primarily centered around risk assessment and coverage.

Low Power-High Interest:

- **Trade Associations**: Represent the interests of various logistics businesses. Have moderate power through lobbying and advocacy efforts. Have a moderate interest in sector-wide development and regulatory changes. (Bangladesh Freight Forwarders Association, Bangladesh Shipping Association)
- **Consumer Groups:** Advocate for affordable and accessible logistics services. Have moderate power through public awareness campaigns and influencing consumer choices. Have a high interest in fair pricing, efficient delivery, and environmental sustainability.
- **Environmental Groups**: Concerned about the environmental impact of the logistics sector, particularly emissions and congestion. Have moderate power through public pressure and legal action. Have a high interest in promoting green logistics practices.
- **Local Communities**: Affected by the environmental and social impacts of logistics infrastructure and operations. Have low power but can raise awareness and voice concerns. Have a high interest in sustainable practices, noise reduction, and community engagement.
- **Educational Institutions:** Universities, technical institutions, and vocational schools offering logistics, supply chain management, and related courses. Though they might not wield direct decision-making authority or significant resources within the sector, they hold considerable interest in its development and success.
- **Media Outlets**: Their high interest in the logistics sector arises from their responsibility to inform the public, businesses, and policymakers about industry happenings, challenges, and advancements. Though they might not wield direct power to influence operational decisions, their influence lies in the ability to shape public opinion, raise awareness, and highlight critical issues within the logistics domain.
- **NGOs and Social Organizations**: Concerned with sustainable logistics practices, community welfare affected by logistics operations. Their significant involvement in the logistics sector is driven by a strong commitment to social welfare, environmental sustainability, and ethical practices, despite not holding significant decision-making power.

Low Power-Low Interest:

- **Small and Medium-sized Logistics Service Providers**: Offer niche services and cater to specific market segments. Have moderate power through competition and innovation. Have a moderate interest in regulatory changes that benefit smaller players and promote a level playing field.
- **Labor Unions**: Represent the interests of workers in the logistics sector. Have moderate power through strikes and negotiations. Have a moderate interest in fair wages, safe working conditions, and skill development opportunities.
- **Individual Consumers**: Individual consumers fall under the category of Low Power-Low Interest stakeholders in Bangladesh's logistics sector. As end-users of logistics services, individual consumers have limited direct influence or decision-making power within the

industry. They typically demonstrate low interest in the intricate details of logistics operations, focusing more on the final outcome or delivery of products.

4.4.2 Analysis and Implications

- The grid reveals a complex interplay of power and interest among stakeholders.
- Strong collaboration between government, large service providers, and trade associations is crucial for driving sector development.
- Engaging with consumer groups, environmental organizations, and media can ensure transparency and address public concerns.
- Supporting small and medium players and promoting fair labor practices can foster a more inclusive and sustainable sector.
- Empowering local communities can lead to more responsible and socially acceptable logistics operations.

4.4.3 Limitations

- The model is a simplification of complex stakeholder relationships.
- Power and interest levels can be subjective and vary depending on the specific issue or context.
- Continuous monitoring and adaptation are necessary to reflect the evolving dynamics of the sector.

4.4.4 Conclusion

The Power-Interest Grid model is a valuable framework for understanding stakeholder dynamics in Bangladesh's logistics sector. This analysis emphasizes tailoring strategies for effective engagement based on varying levels of power and interest held by different stakeholders. The Power-Interest Grid underscores the importance of adapting communication, engagement, and collaborative efforts to address the unique needs of each stakeholder category. Regular review and adaptation of engagement plans are crucial to staying responsive to changing dynamics and ensuring sustained industry growth, transparency, and stakeholder satisfaction in Bangladesh's evolving logistics sector. The country, located in South Asia, is experiencing positive growth in its logistics sector, serving as a strategic regional trade hub with steady economic growth driven by trade and logistics demand. Emerging market potential is fueled by urbanization, population growth, and e-commerce, supported by government investments in infrastructure. Despite challenges in infrastructure, regulatory procedures, and technology adoption, opportunities exist in regional economic engagement, investing in advanced technologies, and diversifying services. The sector faces threats from global economic uncertainties, increased competition, security challenges, environmental awareness, and political instability. It's essential for companies to regularly reassess and adapt to the evolving economic and business environment in Bangladesh.

Chapter Five: Global Best Practices

5.1 Introduction

Efficient movement of goods and services lies at the heart of global and regional economies. In today's interconnected world, logistical services are crucial for facilitating trade, fostering economic growth, and enhancing competitiveness. As businesses expand their reach beyond borders, understanding and implementing best practices in logistics becomes crucial. This comparison aims to analyze and contrast effective strategies, technologies, and methodologies employed in providing logistical services within specific regions and globally.

The goal is to gain insights into diverse approaches used in different contexts, identifying innovative techniques and successful models that promote efficiency, sustainability, and excellence in the logistics industry.

5.2 Identify the Best Practices

In today's interconnected world, efficient and reliable logistics are the backbone of successful businesses. Whether navigating the complexities of regional trade or the vastness of global supply chains, adherence to best practices is crucial for elevating services, optimizing operations, and ensuring customer satisfaction. Key areas of focus include:

Table-10: Best Practices of several countries.

Sl. No.	Best Practice	Description	Used in Countries
1	Supply chain visibility	○ Supply chain visibility is enabling companies to monitor shipments, anticipate disruptions, and optimize operations. ○ Supply chain integration utilizes cutting-edge technologies like real-time tracking systems and data analytics tools to offer holistic insights into the entire supply chain network. ○ Enabling efficient inventory management and reducing excess stock optimizes warehousing and transportation, fostering agile supply chain operations, thereby enhancing overall efficiency and effectiveness.	US, Germany, Singapore, UK, Japan, Chaina, Netherlands, Canada, India, Australia, Brazil, South Korea
2	Network Optimization and Infrastructure	○ Establish a robust network optimizing transportation and warehousing infrastructure. ○ Analyze target markets for strategic insights. ○ Partner with diverse transportation providers. ○ Invest in real-time route optimization	US, Germany, Singapore, UK, Chaina, Japan, India, Malaysia, Thailand, UAE,

Sl. No.	Best Practice	Description	Used in Countries
		technology. o Establish strategically located warehouses with advanced inventory management systems. o Ensure flexibility, cost-effectiveness, and efficient door-to-door delivery. o Combine diverse transportation options with efficient warehousing for exceptional service and reliability in logistics.	Netherlands, Turkey
3	Technology and Innovation	o Adopt technology and innovation to streamline logistics operations. o Invest in digital solutions such as warehouse management systems and transportation platforms. o Explore automation technologies like robotic arms and conveyor systems. o Adopt emerging technologies such as blockchain, artificial intelligence, and autonomous vehicles. o Enhance service and demonstrate commitment to future-proofing operations. o Lead in the developing logistics environment by embracing innovation.	Singapore, UK, Germany, US, Japan, Chaina, Canada, Sweden, Australia, South Netherlands, Korea
4	Sustainability and Environmental Responsibility	o Several countries integrate "Sustainability and Environmental Responsibility" into their logistics policies to address climate change and promote eco-friendly practices. o Promotes green transportation and reduces carbon emissions through eco-friendly logistics policies especially Germany. o Prioritize efficient transportation, utilize renewable energy sources, and adopt environmentally responsible supply chain practices in its logistics policies.	Germany, UK, Sweden, Canada, Netherlands, New Zealand, Switzerland Singapore, Norway, Denmark
5	Customs and trade compliance	o Customs and trade compliance are practiced for global and regional logistics services. o Leading providers prioritize accurate documentation, tariff classifications, and compliance with import/export regulations. o Adopt advanced technology solutions such as Singapore's Networked Trade Platform, the Netherlands' automated systems, and the UAE's Dubai Trade single window platform to streamline trade processes, enhancing efficiency, reducing paperwork, and improving	Singapore, US, Germany, China, UK, Canada, Japan, Australia Netherlands, South Kore

Sl. No.	Best Practice	Description	Used in Countries
		transparency in cross-border trade.	
6	Compliance and regulatory expertise	o Compliance and regulatory expertise are essential in logistics policies globally. o Staying updated with evolving regulations, ensuring accurate documentation, and navigating local regulatory frameworks. o A robust compliance strategy adopted to prevent delays, builds trust, and enhances market credibility. o The U.S. logistics sector emphasizes compliance with federal, state, and international trade regulations. o Singapore, Germany, China, and Japan incorporate compliance and regulatory expertise into their policies. o Ensure adherence to international trade standards, smooth cross-border movements, and efficient operations. o Assist logistics firms in effectively managing risks and maintaining operational continuity.	Germany, US, Canada, Japan, UK, Australia Netherlands, South Korea,
7	Collaborative partnerships	o Collaborative partnerships and fostering alliances within the supply chain network. o Streamline operations, enhance efficiency, and facilitate information sharing, resource pooling, and joint planning. o These partnerships offer access to a wider range of expertise, enabling effective challenge addressing and prompt response to market demands. o Aim to drive technological innovation, invest in logistics infrastructure, address Brexit challenges, and modernize logistics infrastructure. o Optimize cross-border trade, invest in advanced technologies, and ensure efficient goods movement.	Germany, US, UK, Canada, China, Japan, Singapore, UK, South Korea, Australia, India, France, Sweden, Norway, Brazil, Denmark, Netherlands, Switzerland, South Africa, United Arab Emirates (UAE), Malaysia
8	Constant innovation	o Constant innovation in logistics services practiced to embrace emerging technologies and fostering a culture of improvement. o Seeking creative solutions to enhance operations is integral to this innovation. o Global best practices include adopting	Germany, US, China, Japan, Singapore, UK, Canada, South Korea, Australia, Norway, India,

Sl. No.	Best Practice	Description	Used in Countries
		blockchain for supply chain transparency, AI-driven analytics, and IoT-enabled systems for real-time tracking. o Locally, providers prioritize local innovations to address specific issues. o Fostering innovation helps logistics companies maintain a competitive edge and achieve operational excellence to meet evolving partner and customer demands. o Enables service providers to adapt to market conditions, improve offerings, and lead industry-wide transformations through innovations.	Denmark, Brazil, France, South Africa, Switzerland, Netherlands, United Arab Emirates (UAE), Malaysia
9	Circular economy principles to logistics	o Applied circular economy principles to reduce waste, improve resource efficiency, and promote recycling. o Implement reverse logistics, refurbishment, and recycling programs to minimize environmental impact and promote sustainability. o Localized solutions such as eco-friendly packaging and efficient routing meet customer expectations, enhance brand reputation, and drive cost-efficiency while contributing to environmental sustainability by minimizing environmental impact.	EU, Netherlands, Germany, China, Sweden, Japan, UK, Finland, Canada, France, Belgium, Singapore, Switzerland Denmark, Singapore,
10	cross-docking facilities and procedures	o Cross-docking facilities and procedures to optimize cargo movement, reduce handling times, reduce inventory holding times, and improve distribution within extensive transportation networks. o Integrates cross-docking into e-commerce and distribution networks.	US, Germany, China,UK, Canada, Netherlands, Singapore, Mexico, Brazil, South Korea
11	Green logistics and sustainable transportation	o Integrate green logistics and sustainable transportation into policies to reduce the ecological impact of transportation and supply chain activities. o Promotes electric vehicles, alternative fuels, optimizes transportation routes, sustainable transport modes, optimized freight transport, and implements eco-friendly practices across the supply chain.	Germany, UK, Sweden, France, Norway, China, Denmark, Brazil, Canada, Korea, Singapore, Australia, Switzerland, Netherlands, Japan, South Finland, New

Sl. No.	Best Practice	Description	Used in Countries
			Zealand, Nordic Countries, UAE, and South Africa
12	Collaborative delivery models	○ Collaborative delivery models are practiced which involves partnerships among supply chain stakeholders to optimize deliveries. ○ Globally, leading providers pool resources, share networks, and partner for combined deliveries, reducing costs and emissions. ○ Regionally, collaborations involve local businesses, shared networks, or crowd-sourced platforms, fostering efficiency, cost savings, and sustainability. ○ Integrates collaborative delivery models into its policies. ○ Emphasizes shared distribution centers and cooperative logistics networks. ○ Encourages collaboration between retailers, logistics providers, and technology platforms to optimize delivery processes and reduce environmental impact.	Germany, US, China, South Korea, Canada, Singapore, UK, Japan, Australia, France, Sweden, Denmark, India, Norway, South Africa, Brazil, Mexico, UAE, Netherlands, Nordic countries
13	Multi-modal transportation	○ Multi-modal transportation integration by improving connectivity between different modes like road, rail, air, and water aiming to optimize networks and promote sustainability. ○ Invests in infrastructure projects to enhance efficiency between railways, ports, airports, and highways for seamless freight movements. ○ Prioritize integration to create a well-connected network. ○ Focuses on efficient connections among seaports, airports, rails and land transportations.	US, China, EU, Singapore, India, Japan, Canada, Australia, UK, Germany, Brazil, Mexico, France, Netherlands, South Korea, South Africa, Nordic Countries, Russia, UAE, Switzerland.
14	Modernizing port infrastructure	○ Modernizing port infrastructure for enhancing efficiency and global competitiveness in logistics. ○ Investment in automation, digital platforms, and eco-friendly technologies improves operational efficiency, capacity, and sustainability. ○ Successful port modernizations attract major shipping lines, bolster regional trade hub development, and foster economic growth.	Germany, US, China, Japan, UK, Brazil, South Korea, India, UAE, Canada, Spain, Singapore, Italy, Netherlands, Australia, Turkey,

Sl. No.	Best Practice	Description	Used in Countries
		○ Singapore, the Netherlands, and China showcase successful port modernizations. ○ The United States, notably in Dubai and Abu Dhabi, prioritizes modernizing port infrastructure to sustain global trade competitiveness. ○ China's policies focus on expanding ports, integrating automation, and enhancing connectivity with inland transportation networks.	Malaysia, Norway, South Africa, Vietnam, Thailand, Chile, and Indonesia

5.3 Collect Policy Documents and Frameworks

Acquiring and consolidating policy documents and frameworks is an important step towards creating a strong and effective logistics ecosystem within the complex web of logistics operations. These essential documents act as a compass for organizations, helping them navigate the ever-changing world of supply chain management. As a result, the logistics sector policies of various countries have been reviewed and mentioned below:

5.3.1 National logistics policies (Policy document and Framework)

5.3.1.1 Thailand

Thailand developed 4 strategies for logistics developments are as follows:

Table-11: Thailand's logistics related strategies

Sl. No.	Strategy	Vision/Goal/Focus
1	Strategy on Logistics for the Kingdom of Thailand, 2004	Vision: Turning Thailand into the logistics hub of Southeast Asia and the Greater Mekong Region.
2	Thailand's Logistics Development Strategy for 2007-2011	Goal: Aimed to reduce logistics costs as a proportion of GDP from 19% in 2005 to 16% in 2011.
3	The second Logistics Development Strategic Plan (2013-2017)	Highlighting focus on the supply chain and the importance of facilitation.
4	The Third Thailand Logistics Development Plan (2017-2022)	Vision: Centre of Trade, service and Investment of ASEAN as a key element of the national competitiveness enhancement by upgrading Thailand's logistics system. Goal: ○ National Competitiveness ○ Efficient Trade facilitation ○ World-Class logistics Service Providers

Sl. No.	Strategy	Vision/Goal/Focus
		○ High quality of Manpower.

Activities of the above strategies are as follows:

Table-12: Activities of Thailand's logistics strategies.

Sl. No.	Thematic/ Broad Area	Activities
1	Internationalization of local logistics providers	○ Emphasizing ICT-based logistics services for enhanced efficiency and tracking capabilities. ○ Offering tailored value-added services like guaranteed delivery times and damage protection. ○ Stimulating competition among logistics providers through cost reduction strategies. ○ Cultivating partnerships among local and international logistics entities, universities, and the Thai Federation on Logistics. ○ Promoting business-matching, cost-sharing, and information exchange to strengthen an integrated logistics system. ○ Providing customized services for local industries and simplifying certification processes such as HACCP, GMP, and GAP. ○ Pursuing international collaboration, using Singapore as a benchmark for best practices.
2	Collaborative Partnership Formation	○ Forging partnerships with logistics facilities and service providers to boost collaboration. ○ Integrating with crucial export/import clients to optimize operations and meet market demands efficiently.
3	Infrastructure development	○ Establish multimodal logistics network to connect strategic routes and neighboring countries. ○ Develop feeder networks, highways, distribution hubs, container yards, and deep seaports to align with global markets. ○ Promote rail transportation for improved connectivity and efficiency. ○ Upgrade transport infrastructure to facilitate seamless movement of goods. ○ Connect major logistics centers at borders and junctions to serve as pivotal hubs for logistics firms and related industries. ○ Engage the private sector in waterways and pipeline transportation to diversify logistics options. ○ Develop key transport corridors and multimodal infrastructure for enhanced accessibility. ○ Establish warehouses and dry ports to streamline storage and distribution processes.
4	Legislative approach	○ Revised legislation to combat discrimination against global transport and logistics firms.

Sl. No.	Thematic/ Broad Area	Activities
5	Supply chain	○ Implement advanced logistics management techniques and industry best practices. ○ Integrate Information Technology (IT) solutions throughout the supply chain. ○ Foster collaborative clusters, utilize standardization tools, and optimize transport for efficiency. ○ Establish robust cold chain facilities for perishable goods. ○ Empower farmers and agri-businesses by promoting their role in the supply chain. ○ Boost competitiveness through improved supply chain management practices. ○ Stimulate trade and commerce in border town areas through targeted initiatives. ○ Elevate supply chain management standards to ensure higher efficiency and reliability. ○ Facilitate e-commerce connectivity to expand market reach and accessibility. ○ Enhance capabilities and competitiveness of logistics providers. ○ Encourage the adoption of reverse logistics for sustainability and cost-effectiveness.
6	Eco-friendly green Logistics	○ Promoting eco-friendly, sustainable and Secure Logistics Solutions
7	Reduced Transit Time	○ Minimize Transit Times on main Routes
8	Cost Reduction	○ Incentivize private sector investment in logistics center development to decrease costs relative to sales revenue.
9	Trade Facilitation	○ Implement e-logistics systems. ○ Establish paperless Customs Clearances via the National Single Window with EDI. ○ Enhance information sharing standards. ○ Streamline transportation services and logistics networks to reduce costs and time for exporting and importing goods, with gateway facilitation. ○ Lower distribution costs. ○ Expand the Logistics Service Provider (LSP) network and improve services. ○ Address tariff and non-tariff barriers through bilateral and multilateral trade agreements.
10	Capacity Building with Skills Development:	○ Improve technical training, standardize courses and career paths for human resources. ○ Strengthen service provider capacity. ○ Invest in research and development. ○ Set up a central database for national logistics assessment and monitoring.

Sl. No.	Thematic/ Broad Area	Activities
		○ Monitor international agreements impacting global business.
11	Governance	○ The Office of the National Economic and Social Development Council (NESDC), reporting directly to the Prime Minister's Office, handles logistics planning.

5.3.1.2 Malaysia

Malaysia has developed the following logistics development plans:

Table-13: Malaysia's logistics related Plans

Sl. No.	Strategy/Plan	Vision/Goal/Focus
1	The National Logistics Plan of Malaysia, integrated into the Third Industrial Plan for 2006-2020	Sets out clear targets based on the expected increase in total merchandise trade, in terms of million tonnes of total marine cargo, air cargo trade and cargo volume by rail freight from 2005 to 2020.
2	Malaysia's Logistics and Trade Facilitation Masterplan (2015-2020)	Goal: ○ Increase transport and storage subsector's GDP from 3.6% to 4.3% by 2020, approximating a RM 22.2 billion boost. ○ Aspires to position Malaysia as the "Preferred Logistics Gateway to Asia" by 2020.

The National Logistics Plan of Malaysia overseen by the Ministry of International Trade and Industry, designates logistics as a priority industry. The Plan outlines specific objectives based on the anticipated growth in the overall merchandised trade from 2005 to 2020 via maritime cargo, air cargo, and freight. Through its plan, Malaysia improved logistics capabilities, transitioned trading practices to export on CIF and import on FOB, and attracted multinational corporations (MNCs), third-party logistics (3PLs), and fourth-party logistics (4PLs). The country pursued the merger and acquisition of fragmented logistics providers, established multimodal connectivity, adopted cost-effective transportation modes, and developed logistics infrastructure, including warehouses and an ICT-based National Single Window. Human resource development through technical training was emphasized, and The National Logistics Development Council was formed to oversee all logistics-related issues. (IMP3, Malaysia).

Activities of the above Plans are as follows:

Table-14: Activities of Malaysia's logistics plans.

Sl. No.	Thematic/ Broad Area	Activities
1	Infrastructure Development	○ Enhance Sabah and Sarawak infrastructure for regional logistics hubs.

Sl. No.	Thematic/ Broad Area	Activities
		○ Develop multimodal transport for national corridors and inland waterways. ○ Improve connectivity and transportation networks. ○ Explore inland waterways in regions with significant rivers. ○ Review and integrate rail network for enhanced intermodal linkages. ○ Enhance connectivity to entry points for smoother logistics operations. ○ Optimize existing infrastructure utilization. ○ Promote modal shift from road to rail. ○ Upgrade yard and cargo handling capacity, and expand train services in Padang Besar. ○ Explore Public-Private Partnerships (PPP) for rail infrastructure. ○ Establish integrated one-stop freight hubs. ○ Develop air and maritime cargo hubs. ○ Promote adoption of logistics technologies like voice recognition, RFID, and satellite positioning systems.
2	Internationalization of local logistics providers	○ Allow entry to foreign shipping companies and logistics providers. ○ Permit higher foreign equity in specific shipping sectors, such as intermodal integrated door-to-door services, non-vessel operating common carriers for small shippers, and 3PL/4PL companies. ○ Foster strategic alliances between domestic and foreign shipping firms. ○ Internationalize logistics services by enhancing internal capabilities and global competitiveness. ○ Encourage port and airport operators to form global alliances and expand international operations.
3	Supply Chain	○ Enhance supply chain operations for door-to-door services. ○ Offer port charge discounts to value-added service providers. ○ Support inland depots, specialized warehouses, and regional logistics operators. ○ Assist 3PLs and 4PLs in exploring export opportunities. ○ Stimulate freight demand through a 'hub and spoke' system. ○ Improve traffic management and last-mile delivery. ○ Promote e-commerce via online marketplaces. ○ Implement urban logistics solutions like Hub and spoke distribution and expanded delivery windows. ○ Continuously benchmark best practices and engage in R&D for supply chain innovation. ○ Focus on security measures to mitigate risks in the supply chain.
4	Trade facilitation	○ Shift trading practices to CIF for exports and FOB for imports.

Sl. No.	Thematic/ Broad Area	Activities
		○ Establish an ICT-based National Single Window for paperless customs, coordinating with government agencies. ○ Collaborate between customs and Permit Issuance Agencies (PIAs) for expedited cargo clearance and security. ○ Enhance trade facilitation through secure and paperless trading document procedures. ○ Utilize technology to reduce manual documentation and optimize transport movements. ○ Regulate and monitor warehouse and off-dock depots for efficiency. ○ Implement a centralized container management system and off-dock depot to decongest ports and enhance cargo operations. ○ Review trade documents for compliance with global standards.
5	Capacity Building with Skills Development:	○ Develop skilled manpower, including goods vehicle drivers, to enhance logistics capabilities. ○ Enhance human resource capabilities by attracting, nurturing, and retaining skilled talent in logistics. ○ Establish international partnerships with foreign institutions to elevate industry standards. ○ Create a professional accreditation body for the logistics sector. ○ Invest in building, repairing, and upgrading Malaysian ships. ○ Improve information management skills to position Malaysia as a regional hub. ○ Enhance road freight transport productivity by adjusting axle-load limits and examining prime mover interchangeability. ○ Establish a national freight data program to gather origin-destination data. ○ Continuously benchmark best practices and engage in R&D for supply chain innovatio
6	Eco-friendly green Logistics	○ Support green logistics initiatives.
7	Collaborative Partnership Formation	○ Facilitate domestic logistics company mergers and acquisitions
8	Cost Reduction	○ Adopt cost-effective transportation modes.
9	Legislative	○ Harmonize and streamline regulations to support framework. ○ Review safety and security regulations for the supply chain. ○ Strengthen institutional and regulatory frameworks in logistics. ○ Simplify regulations to minimize inefficiencies and duplications.
10	Governance	○ Establishment of the National Logistics Development Council (NLDC). ○ Establishment of the National Logistics Taskforce (NLTF).

Sl. No.	Thematic/ Broad Area	Activities
		○ Prime Minister-led Special Committee oversees Master Plan implementation for the service sector. ○ Ministry of Trade (MOT) leads logistics sector and coordinates government initiatives through inter-agency collaboration.

5.3.1.3 Vietnam

Vietnam's robust economic growth, primarily fueled by exports and investments, is supported by enhanced productivity, competitiveness, and increased efficiency in transport and logistics. Despite this progress, Vietnam's logistics performance falls behind that of China, Malaysia, and Thailand. This underscores the imperative for Vietnam to focus on cost reduction and enhance the reliability of its supply chain for sustained long-term economic development (Efficient logistics, A Key to Vietnam's Competitiveness, World Bank, 2014). Vietnam's logistics operations face higher costs compared to ASEAN peers, primarily due to insufficient supply chain reliability, impacting warehousing and inventory expenses. Improving reliability is deemed crucial for enhancing competitiveness. The country's logistics industry is anticipated to achieve a Compound Annual Growth Rate (CAGR) of 15-20% over the next five years, driven by its growing economy, status as a manufacturing hub, and a thriving e-commerce sector. Government policies, featuring infrastructure investments and streamlined regulations, contribute to this growth, fostering efficient local and international transportation.

Vietnam establish the National Steering Committee for Logistics, formulate standards and regulations to standardize the logistics operation process, promote logistics associations, and create performance indicators to evaluate logistics operations and prepare annual reports. Vietnam's rapid economic growth, driven by exports and investment, is bolstered by productivity improvements, competitiveness, and higher transport and logistics efficiency. However, its logistics performance underperforms China, Malaysia, and Thailand, highlighting the need for cost reduction and improved supply chain reliability for long-term economic development (Efficient Logistics A Key to Vietnam's Competitiveness, World Bank).

Vietnam has developed the action plan is as follows:

Table-15: Vietnam's logistics related Action Plan

Sl. No.	Strategy	Vision/Goal/Focus
1	Action plan for Vietnam's logistics development as per Decision No. 200/QD-TTg dated February 14, 2017, issued by the Prime Minister. Vietnam.	Goal: Enhancing competitiveness and fostering logistics development by 2025. Key objectives: ○ positioning as a significant regional logistics hub ○ Expanding the logistics service market ○ Advancing infrastructure ○ Promoting foreign and domestic investments

		○ Elevating the competitiveness of logistics service providers.

Activities of the action Plan are as follows:

Table-16: Activities of Vietnam's logistics Action Plan

Sl. No.	Thematic/ Broad Area	Activities
1	Logistics infrastructure	○ Align sector development policies with key infrastructure projects like expressways, high-speed rail networks, and sea-port development. ○ Foster investments and partnerships with foreign nations to bolster multimodal transport and cross-border transit systems. ○ Enhance traffic infrastructure, including warehouses and logistics centers, to optimize market reach and quality. ○ Modernize and upgrade the transportation system for improved efficiency. ○ Increase port capacity and streamline cargo handling processes. ○ Establish domestic and international logistics hubs to facilitate seamless market connections.
2	Supply chain	○ Promote efficient last-mile delivery services to facilitate e-commerce. ○ Implement advanced IT-enhanced supply chain management models and logistics services. ○ Integrate service providers such as 3PLs and 4PLs. ○ Provide support for both SMEs and large-scale logistics enterprises. ○ Encourage logistics providers to engage in supply chain systems with higher value-added content. ○ Utilize outsourcing for specialized logistics services.
3	Trade facilitation	○ Simplify customs procedures and streamline inspections through reform. ○ Foster bilateral and multilateral Trade Facilitation Agreements to enhance trade. ○ Assist enterprises in navigating tax rates and import/export procedures. ○ Promote domestic service providers to support local industries.
4	Internationalization of local logistics providers	○ Foster cooperation with international associations. ○ Host international logistics events and invite foreign enterprises to participate for enhanced collaboration.
5	Capacity Building	○ Provide demand-driven skills training and maintain

Sl. No.	Thematic/ Broad Area	Activities
	with Skills Development	qualification frameworks. o Collaborate with foreign training institutes to offer basic training to enterprise leaders and regulatory bodies officials. o Conduct logistics research initiatives. o Promote and support logistics associations for industry development.
6	Governance	o Establish the National Steering Committee for Logistics to formulate standards and regulations, ensuring standardized logistics operations. o Develop comprehensive logistics approaches. o Create performance indicators to evaluate logistics operations and prepare annual reports for monitoring and improvement.

5.3.1.4 India

India has made significant strides in the Logistics Performance Index (LPI), advancing six positions to rank 38 out of 139 countries in 2023. This improvement is attributed to various initiatives undertaken since 2015 aimed at enhancing logistics efficiency, resulting in positive progress across four out of six LPI indicators. In October 2021, India introduced the PM GatiShakti National Master Plan (PMGS-NMP) as a coordinated infrastructure planning and development strategy. Utilizing GIS technology, PMGS-NMP integrates existing and proposed infrastructure initiatives from various Central Ministries to ensure seamless movement of people and goods with a focus on first and last-mile connectivity. The plan encourages extensive communication and data sharing among Central and State agencies, fostering a collaborative approach. PM GatiShakti addresses evolving needs in the logistics landscape, driven by factors such as rapid urbanization, changing energy choices, e-commerce, and the necessity for resilient supply chains. (PIB Delhi, MoC, 26 APR 2023).

India has developed the following logistics development Plans:

Table-17: India's logistics related Plan, Programme, Policy

Sl. No.	Strategy/Plan/Policy	Vision/Goal/Focus
1	PM GatiShakti National Master Plan (PMGS-NMP), 2021	Aiming to coordinate the implementation of nationwide infrastructure connectivity projects, including roadways and railways.
2	The Sagarmala Programme	The vision of Sagarmala is to reduce logistics costs for both domestic and EXIM cargo with minimal infrastructure investment leveraging the coastline and waterways.
3	The Bharatmala Pariyojana	Aims to bring smoother connectivity across the nation with improved roads and infrastructure by constructing elevated

Sl. No.	Strategy/Plan/Policy	Vision/Goal/Focus
		corridors, bypasses, ring roads, lane expansion, and Logistics Park
4	National Logistics Policy (NLP) 2022	Goals: o To create a technologically enabled, integrated, cost-efficient, resilient, sustainable, and trusted logistics ecosystem to facilitate accelerated and inclusive growth. o To reducing the cost of logistics from 14-18% of GDP to global best practices of 8% by 2030. o To secure position among the top 10 in the LPI (Logistics Performance Index) by 2030. o Creating data-driven Decision Support Systems (DSS) to enable an efficient logistics ecosystem. o to ensure that logistical issues are minimized, exports grow manifold, and small industries and the people working in them benefit significantly.

The activities of the above Plan, programme and policy are as follows:

Table-18: Activities of India's logistics related Plan, Programme, Policy

Sl. No.	Thematic Area/ Broad Area	Activities
1	Logistics infrastructure	o Interconnect 550 districts with a minimum 4-lane highways. o Construct 50 traffic-curbing corridors nationwide. o Link 24 logistics parks. o Boost freight transport on national highways to 70%-80%. o Establish 9,000 Km economic corridors. o Develop 6,000 Km of inter-corridor and feeder routes. o Implement 5,000 Km of roads under the National Corridors Efficiency Program. o Build 2,000 Km of border and international connectivity roads. o Establish 2,000 Km of coastal and port connectivity roads. o Construct 800 Km of expressways. o Focus on port modernization, connectivity, and industrialization. o Enhance coastal shipping and inland water transport. o Prioritize cost-saving, eco-friendly transportation, warehousing, and multimodal connectivity. o Develop ports, logistics hubs, and cargo terminals.
2	Supply chain	o Implement RFID tags for supply chain tracking to facilitate cross-border trade. o Develop a Comparative Freight Index for mode-wise freight comparison. o Integrate current and planned infrastructure projects to ensure

Sl. No.	Thematic Area/ Broad Area	Activities
		seamless transportation, emphasizing first and last-mile connectivity. o Address evolving logistics landscape needs driven by urbanization, energy changes, e-commerce, and resilient supply chain requirements. o Ensure end-to-end connectivity for efficient transportation of people and goods.
3	Trade facilitation	o Streamline Customs procedures and reduce documentation. o Implement a risk-based Import Clearance System for PGAs online. o Utilize GIS technology and drones for efficient logistics management. o Foster extensive communication and data sharing for a collaborative approach. o Encourage private investment in warehouse development. o Promote integrated digital logistics through the Unified Logistics Interface Platform (ULIP). o Develop data-driven systems (DDS) to monitor various logistics aspects. o Implement secure logistics document exchange and digital tracking platforms like TVPP and ELD. o Standardize physical assets and benchmark service quality across logistics components. o Address infrastructure and procedural gaps in EXIM connectivity to enhance trade competitiveness. o Promote the Smart Road Enforcement app to minimize physical inspections and compliance burden.
4	Legislative	o Establishing a standardized legislative framework for digitalization.
5	Capacity Building with Skills Dev.	o Inclusion of logistics and supply chain courses at the university level to enhance skills training.
6	Eco-friendly green Logistics	o Introduction of a Greenhouse Gas (GHG) Calculator for carbon emission data.
7	Coordination	o Conducting annual performance assessments of states using the Logistics Ease Across Different States (LEADS) index. o Implementing CLAP, encompassing digital systems, standardization, human resources, and logistics park development.

Sl. No.	Thematic Area/ Broad Area	Activities

5.3.1.5 South Korea

The Korean Peninsula, situated at the crossroads of Northeast Asia, serves as a vital land bridge connecting major land and sea powers, including China, ASEAN, Japan, Russia, EU, US, and South America.

Korea's logistics development policies are given below:

Table-19: Korea's logistics related Policies

Sl. No.	Strategy	Vision/Goal/Focus
1	○ Transportation policy,1970s. (ESCAP workshop 2017, Cambodia). ○ Logistics policy before 1990s.	Logistics policy focus on one transport mode at a time: ○ Truck transportation industry policy ○ Rail transportation policy ○ Shipping policy
2	Logistics policy 2000s.	Since the 2000s, ○ focused on developing logistics as an industry, rather than a supporting function of manufacturing, and ○ developing Korea as a logistics hub. ○ The Goods Distribution Promotion Act enacted in 1991 was replaced by a comprehensive Framework Act on Logistics Policies in 2007. (ESCAP, Thailand).
3	The Framework Act on Logistics Policies in 2007	Goal: ○ The Goods Distribution Promotion Act enacted in 1991 replaced in 2007 by this framework act. ○ Every five years, a 10-year National Logistics Master Plan is developed based on the guidelines set by the Act. ○ Develop the logistics industry systematically by promoting prompt, punctual, convenient and safe logistics activities ○ Integrating the policies of the government related to logistics interconnecting harmoniously (ESCAP, Thailand) (Framework, Korea).

Sl. No.	Strategy	Vision/Goal/Focus
4	National Intermodal Transportation Plan 2001-2020.	Objectives: o Transport infrastructure expansion through construction of world-class road, railway, airport and port o Construction of integrated land-sea-air network o Reduction of socio-economic costs caused by transportation logistics activities o Implementation of sustainable green growth for future society.
5	Comprehensive Plan for Logistics Facilities Development (2013–2017)	Vision: To develop a sustainable logistics facilities system to improve national competitiveness and contribute to the nation's wealth. Goals: o Develop high-quality, high-efficiency logistics facilities to improve industry and local economy competitiveness o Develop low-carbon, green growth-promoting logistics facilities. o Develop multipurpose logistics facilities that act as the foundation for the generation of new economic values (3rd Chapter, Invest Korea).

The activities of the above policies are as follows:

Table-20: Activities of Korea's logistics related Policies

Sl. No.	Thematic Area/ Broad Area	Activities
1	Infrastructure development: Major activities: o Expand Road infrastructure from 17,596Km→ 19,854Km o Railway infrastructure from 3,378 Km → 4,955 Km	o Expanding roads and bridges. o Enhancing logistics facilities and equipment to ensure connectivity and prevent duplication. o Improving coordination and efficiency in transportation systems, including railway express and road efficiency. o Establishing multimodal connectivity among transport modes and constructing a transport system linked with logistics hubs. o Developing an integrated international network for land, sea, and air transport to address 21st-century global logistics. o Promoting modal shift to rail and coastal shipping for an integrated intermodal transport system.
2	Reduced Transit Time	o Resolving public transport congestion. o Implementing a traffic control center to manage transportation issues. o Modernizing intersections and signal systems

Sl. No.	Thematic Area/ Broad Area	Activities
3	Trade facilitation	○ Enhancing safety, security, and social equity in traffic services through advanced systems. ○ Promoting efficiency and competitiveness. ○ Encouraging logistics standardization, especially in equipment and cost calculation. ○ Engaging both public and private sectors. ○ Increasing port handling capacity from 21.86 million. ○ Preventing redundant or excessive investments in logistics facilities for efficient networks. ○ Facilitating mutual access of trailer chassis between countries to enhance logistics efficiency. ○ Implementing Sea-Land Intermodal Transportation to load and transport trucks via ships based on agreed ports, areas, or routes. Providing institutional support for the industry.
4	Eco-friendly green Logistics	○ Implementing a low-carbon, green growth transport system and supporting future transportation technology development. ○ Supporting environmentally friendly and future-oriented logistics facilities while enhancing current facility effectiveness. ○ Transitioning to a green growth transport system.
5	Cyber-structure	○ Acknowledge the importance of ICT capacity development for improving logistics efficiency.
6	Collaborative Partnership Formation	○ Establish joint logistics facilities to bolster demand and improve urban logistics accessibility

5.3.1.6 United Kingdom

The UK's logistics sector handles 1.6 billion tonnes of goods annually, employing over 2 million workers. Freight plays a significant role, contributing £127 billion to the economy and supporting £400 billion in manufacturing sales each year. The sector has experienced a 26% growth in jobs since 2010, nearly twice the rate of the broader economy.

The UK's Department of Transport, in collaboration with 24 agencies and public bodies, has formulated the Future of Freight Plan 2022, referencing the target for 2035. This plan emphasizes an enhanced partnership between the government and industry, adopting a long-term, cross-government, and cross-modal approach.

UK's logistics policy "Future of Freight Plan 2022" is given below:

Table-21: UK's logistics related Plan

Sl. No.	Strategy	Vision/Goal/Focus
1	Future of Freight Plan 2022	Vision: Developing "a freight and logistics sector that is cost-efficient, reliable resilient, environmentally sustainable and valued by society."

The activities of the plan are as follows:

Table-22: Activities of UK's logistics related Plan

Sl. No.	Thematic Area/ Broad Area	Activities
1	Infrastructure development	○ Planning infrastructure and promoting modal shift, considering geographic variations.
2	Supply chain	○ Supporting end-to-end freight journeys and ○ conducting freight valuation studies.
3	Trade facilitation	○ Engaging stakeholders, including local planning authorities, to address the evolving needs of the freight and logistics sector.
4	Eco-friendly green Logistics	○ Establishing a Freight Energy Forum. ○ Conducting regulatory reviews to overcome barriers to transitioning to zero-carbon energy infrastructure for Net Zero emissions. ○ Ensuring green logistics and support high-quality green jobs.
5	Capacity Building with Skills Development	○ Implementing skill development through a generation campaign. ○ Fostering collaboration between government and industry. ○ Reforming skills training offerings.
6	Cyber-structure	○ Fostering collaboration between technology developers and real-world freight and logistics sectors to drive innovative solutions through technology and data.
7	Governance	Department of Transport, Government of UK.
8	Initiatives (Year wise)	○ Year 1 – Build awareness of the sector's challenges that can be addressed through technology and digitalization via an innovation sub-group. ○ Years 1–3 – Accelerate adoption of commercially ready solutions into the sector. ○ Years 3–5 – Develop the future pipeline of solutions to meet the sector's real-world needs.

5.3.1.7 Sri Lanka

Sri Lanka, strategically located in South Asia, is a crucial logistics hub at the crossroads of the rapidly growing global region. Its proximity to emerging markets underscores its significance. The

logistics sector is being developed as a vital Trade Support Function within the National Export Strategy**.**

Sri Lanka has developed the following strategy for logistics development:

Table-23: Sri Lanka's logistics related strategy

Sl. No.	Strategy	Vision/Goal/Focus
1	National Export Strategy 2018-2022 includes a Logistics Strategy (Five-year Plan).	Aim: To transform Sri Lanka into South Asia's leading maritime, logistics and distribution hub to support the national economy. Objectives: 1. Establishing efficient business environment via tech and public-private coordination. 2. Ensuring adequate facilities and skilled labor force. 3. Promoting Sri Lanka as a recognized logistics hub.

The activities of the strategy are as follows:

Table-24: Activities of Sri Lanka's logistics related strategy

Sl. No.	Thematic Area	Activities
1	Trade facilitation	○ Utilizing the landlord model to foster FDI and joint ventures. ○ Implementing a paperless Customs system, integrating all stakeholders including government bodies. ○ Enforcing the Electronic Transactions Act to facilitate e-payment and e-signature solutions. ○ Encouraging investors to establish operations within port and airport zones.
2	Infrastructure development	○ Enhance infrastructure for handling Multi Country Consolidation (MCC)/ Less-than-Container Load (LCL) cargo. ○ Revamp port systems following the Singapore model. ○ Locate sites for international distribution companies along logistics corridors.
3	Cyber-structure	○ Design a trader-centric portal for swift, precise data sharing in real-time.
4	Legislative	○ Enhance maritime and logistics antitrust regulations.

5.3.1.8 Germany

The Federal Ministry of Transport and Digital Infrastructure has crafted the Logistics 2030 Innovation Programme, outlined in the master plan Logistics 2030, Germany. This strategic initiative aims to establish a sustainable and efficient logistics and freight transport system by 2030. The program addresses the evolving landscape of logistics, anticipating a paradigm shift

driven by digital transformation, including technologies like 5G, AI, robotics, and open data (Logistics 2030, Germany).

The Logistics 2030 Innovation Programme are given below:

Table-25: Germany's logistics related programme

Sl. No.	Strategy/ Progamme	Objectives
1	Logistics 2030 Innovation Programme.	Objectives: o To transport cargos through innovative, intelligent, data-based digital infrastructure design to ensure mobility, connectivity o Shift reliance from roads to railways and reduce omissions. o Safeguards employment while creating more jobs to attain futuristic transport and logistics and o Develop Germany as a competitive business location. The programme has 10 field of actions: o Digital infrastructure, data processing, and platform solutions, Digital transport management across all modes of transport – digital supply chain o The world of work of the future o Climate change mitigation through innovative freight transport o The connected world of freight transport o Smart railways, intelligent trains o Smart ports o Waterways o Innovative air cargo o The road of the future o Solutions for the last mile.

The activities of the Logistics 2030 Innovation Programme are as follows:

Table-26: Activities of Germany's logistics related programme

Sl. No.	Thematic Area	Activities
1	Infrastructure development	o Implement multimodal platforms integrating rail and waterway access with digital Combined Transport (CT) systems to reduce terminal wait times. o Modernize railways by optimizing private sidings, enhancing marshalling, electrifying, innovating freight, and refining marketing strategies. o Enhance sea and inland connectivity through digital infrastructure, automated traffic control, customized transport links, and multimodal route planning. o Introduce digital berthing and port-side cargo handling, optimize draughts for resilient inland waterway transport during climate

Sl. No.	Thematic Area	Activities
		disruptions. o Develop intelligent road infrastructure for seamless cross-border transport, compatible with rail and inland waterway systems, reducing congestion through digital connectivity.
2	Cyber-structure	o Implement a 5x5G strategy for digital infrastructure, integrating algorithms, Block chain, AI, distributed ledger technologies, and cooperative intelligent transport systems. o Foster start-ups through open data exchange and mobile communication infrastructure.
3	Supply Chain	o Design freight connectivity and transportation with AI support.
4	Capacity Building with Skills Development	o Support development, adapt technology, promote work-life balance, and offer quality training
5	Eco-friendly green Logistics	o Facilitate diverse transportation use by supporting alternative drives and low-cost renewable fuels. o Enable eco-friendly inland waterway vessels through shore-side electricity systems while in port. o Automate road construction and maintenance processes while using high-quality materials.
6	Governance	o The Federal Ministry of Transport and Digital Infrastructure oversees transportation and digital initiatives. o The Innovation Commission, comprising industry and academia experts, periodically reviews the Innovation Program.

5.3.1.9 Singapore

In 1965, Singapore, a newly independent island city-state in Southeast Asia, faced economic challenges with limited resources and lacking infrastructure. Over the years, it transformed into one of Asia's wealthiest nations, largely due to its prominence as a leading logistics hub. Singapore hosts the world's largest transshipment container port, connecting to over 600 ports globally. Changi airport, acclaimed as the best internationally, accommodates approximately 6,800 weekly flights to 330 cities. The island's trade value, being 3.5 times its GDP, underscores the pivotal role of logistics development in Singapore's remarkable economic growth.

Key characteristics of the Singapore logistics industry:

Sl. No.	Key area	Characteristics
1	Strategic location- Positions Singapore as a key player in international trade and logistics.	o Strategically emerged as a vital 'entrepôt' on the India-to-China trade route, serving as a natural node in the global logistics system. o Located at a major shipping crossroads, coupled with excellent connectivity via air and seaports.

2	World-class infrastructure- thrives with world-class infrastructure	o Advanced ports, airports, warehouses o Cutting-edge information and communications technology (ICT) systems.
3	Strong government support- government recognizes the pivotal role of the logistics industry	o Implementing supportive measures like financial incentives o Innovation promotion to bolster logistics and contribute to the country's economy.
4	Skilled workforce- possesses a skilled workforce	o Skilled workforce with expertise in supply chain management o Proficient in logistics operations o Capable in freight forwarding to meet industry demands

Singapore's success is attributed to forward-looking public policies and strong private sector involvement, with logistics playing a vital role. The key factors include the following:

- Building Connectivity
- Innovative infrastructure and processes, and
- Encouraging private sector participation.

Building Connectivity:

Activities
• Singapore expands globally despite small local market constrains. • Aviation Authority secures agreements, enhancing flight connections with 130 states and entities. • Port collaborates with shipping, forming one of the world's densest maritime transport networks. • Singapore's 30+ FTAs offer preferential trade, attracting global companies for reliable logistics and access to major markets for over 95% of trade. • Singapore's high-frequency connections offer faster deliveries than direct shipments in some cases.

Innovative Infrastructure and Processes

Over the years, Singapore's logistics industry has evolved with top-notch infrastructure and advanced processes. The nation consistently plans for the future, implementing initiatives across the entire logistics chain.

Singapore logistics development policies particularly based on sea and aviation transformation Map are as follows:

Table-27: Singapore's logistics related Transformation Maps

Sl. No.	Thematic Area	Activities
1	Infrastructure development	○ Transform Tuas Port into a technologically advanced facility for handling 65 million shipping containers annually. ○ Develop a secure and sustainable Air Hub through safety research, tech adoption, de-carbonization policies, infrastructure planning, and workforce transformation. ○ Showcase Singapore's success as a leading hub through the integration of connectivity, infrastructure, and private sector participation in the logistics ecosystem, despite resource limitations. (Yin and Karuna, 2017).
2	Cyber-structure	○ Support ship agencies and harbor craft in adopting digital technologies such as block chain and drones. ○ Introduce an AI-driven Next Generation Vessel Traffic Management System (NGVTMS) to replace VTIS. ○ The digital PORT@SG™ initiative optimizes real-time port information for stakeholders. ○ Enhance productivity by integrating robotics, automation, artificial intelligence, and digitalization. ○ Implement unmanned traffic management for safe drone operations.
3	Trade facilitation	○ In 1989, Singapore introduced the world's first National Single Window, enabling paperless customs clearances with 35 government agencies. ○ Trade permit approvals are digitized, reducing processing time to minutes with a single e-document. ○ Progress is underway to enhance the National Single Window, consolidating B2B transactions onto a digital platform. ○ The Maritime Single Window portal digitizes port-related documentation submissions, enhancing efficiency. ○ State-of-the-art cargo solutions, automated vehicles, and smart sensors address challenges like piracy. ○ Block chain adoption digitizes maritime documentation, improving information exchange and trade flows. ○ Future plans include achieving full maritime 5G coverage by mid-2025, supporting remote pilotage advisory, digital bunkering, delivery drones, and telemedicine. ○ These initiatives enhance efficiency and reduce turnaround time. ○ Foster aviation innovation by advancing Air Traffic Management and next-gen Navigation Services for more efficient air travel. ○ Revamp airport operations, leveraging technology to elevate passenger experience and boost efficiency through automation for enhanced overall performance.
4	Supply chain	○ Utilize driverless vehicles and data analytics to optimize efficiency in the supply chain, supported by strategic partnerships for reliable global goods transportation. ○ Establish a seamless supply chain infrastructure, incorporating cold-

Sl. No.	Thematic Area	Activities
		chain storage, handling dangerous goods, on-dock depots, a modern cargo distribution complex, and advanced warehousing.
5	Internationalization of local logistics providers	○ Singapore's government fosters a premier investment climate, luring 20 out of the world's top 25 logistics companies to operate globally. ○ Local adherence to international standards is promoted through government efforts, facilitating seamless integration into the global logistics network. ○ Collaborations with private entities like SATS and FedEx drive investment in air cargo facilities, ensuring commercial viability and long-term sustainability. ○ These initiatives promote complementary infrastructure development without dependence on public funds.
6	Capacity Building with Skills Development	○ Foster innovation through support for startups, technology partners, and higher learning institutes. ○ Deploy Automatic Vehicles (AVs) for airside transport and develop weather-resilient robotics to streamline aircraft handling. ○ Create jobs and boost productivity by building a future-ready workforce through automation and assistive tools. ○ Establish the 'One Aviation' community to upgrade skills and enhance competencies among aviation workers.
7	Eco-friendly green Logistics	○ Implement sustainable practices to minimize greenhouse gas emissions. ○ Shift to renewables, cleaner vehicles, and enhance air traffic management for a greener future.
8	Corporatization	○ PSA's corporatization boosts commercial agility in Singapore's logistics by enhancing transshipment, cargo volume growth, and global investments. ○ Private sector consultations precede public investments, ensuring infrastructure alignment with business needs.

5.3.1.10 Identification of Best Approaches:

Drawing from the best practices identified in Thailand, Malaysia, Vietnam, India, Sri Lanka, South Korea, the United Kingdom, Germany, and Singapore, Bangladesh could consider these approaches for the development of its logistics sector:

Table-28: Probable best approaches for logistics development in key areas.

Sl. No.	Key Areas	Probable best approaches
1	National Logistics Strategy	○ Develop a comprehensive National Logistics Strategy for transforming Bangladesh into a key logistics hub. ○ Establish long-term plans with a focus on continuous improvement and adaptability.

Sl. No.	Key Areas	Probable best approaches
		○ Reform customs procedures, simplify inspections. ○ Fostering bilateral and multilateral Trade Facilitation Agreements to reduce tariff and non-tariff barriers. ○ Monitor international agreements influencing global business. ○ Promote export diversification throughout the supply chain. ○ Upgrade country's status as manufacturing hub to diversify goods/item for enhancing exports by facilitating logistics efficiency. ○ Treat logistics as industry rather supporting services. ○ Foster international collaboration with benchmark countries like Singapore, Dubai, Denmark etc. ○ Development of Comprehensive Logistics Action Plan (CLAP). ○ Develop and strengthen antitrust laws related to maritime and logistics.
2	Business Logistics Improvement	○ Enhance business logistics through advanced management techniques, including cluster-like collaboration, standardization of physical tools, efficient transport, track and traceability, and specialized facilities (e.g., cold chain storage). ○ Implement a centralized container management system and off-dock depot. ○ Increase road freight transport productivity by raising standardized axle-load limits for container haulers and conventional trucks. ○ Focusing on upgrading and investing in infrastructure for handling Multi-Country Consolidation (MCC) instead of Less Container Load (LCL) cargo. ○ Attract investors to set up operations within the corridors of ports and airports. ○ Identify locations for international distribution companies within logistics corridors, particularly in the operating areas of international ports and airports.
3	Transport and Logistics Network Optimization	○ Optimize transportation and logistics through integrated systems connected to international markets. ○ Invest in feeder networks, highways, distribution hubs, hub-and-spoke systems, container yards, deep seaports, railroads, waterways, and advanced technologies. ○ Improve transit system among transport modes. ○ Develop traffic works to reduce congestion, achieving an average vehicle speed of 40 km/hr. on national highways. ○ Implement polarized fleet, expanded delivery windows, and first and last-mile delivery.

Sl. No.	Key Areas	Probable best approaches
		○ Mutual access of trailer chassis in linking land and maritime transportation, increasing logistics efficiency and speed. ○ Sea-Land Intermodal Transportation to load and transport trucks from each country on a ship according to the port, area or route agreed between different countries.
4	Logistics Service Internationalization	○ Promote international collaboration through joint ventures and strategic alliances between domestic and international logistics service providers. ○ Encourage the merger and acquisition of fragmented logistics providers to reduce empty truck utilization and better service at reduced cost. ○ Attract MNCs, 3PLs, and 4PLs to introduce value-added services and enhance productivity. ○ Tailor services to local industries and facilitate certification processes like HACCP, GMP, and GAP for quality standards.
5	Trade Facilitation Enhancement	○ Facilitate trade through a centralized National Single Window Entry system and integrated e-logistics. ○ Transform customs clearance into a paperless system, simplify regulations, streamline merchandise inspection, and improve cargo clearance for faster trade processes. ○ Shift trading practices from the current approach of exporting on FOB and importing on CIF to exporting on CIF and importing on FOB. This transition aims to offer seamless services to foreign buyers and create cost-saving opportunities for local importers. ○ Implement a risk-based Import Clearance System to streamline activities online. ○ Promote global convergence of cross-border transportation, customs processes, and regulations to enhance trade efficiency. ○ Assisting enterprises in navigating tax rates and import/export procedures. ○ Secure logistics document exchange, digital dashboards, Truck Visibility and Positioning Platform (TVPP), Electronic Logging Device (ELD) and Import Clearance System for PGAs.
6	Capacity Building	○ Strengthen human resources in the logistics sector under BNQF through enhanced training programs, standardized courses, research initiatives, and well-defined career paths. ○ Industry-government collaboration for apprenticeship. ○ Collaboration with foreign institutions to elevate workforce standards. ○ Establish a data system for strategic planning and monitoring of the logistics industry.

Sl. No.	Key Areas	Probable best approaches
7	Supply Chain Strengthening	○ Focus on strengthening the supply chain, with attention to key sectors like agriculture, manufacturing, and trade, encouraging public-private participation. ○ Integrate with key export/import customers for streamlined operations ○ Develop policies to enhance the competitiveness of supply chain management and streamline processes, including reverse logistics. ○ Enhance the traffic management system, polarized fleet, expanded delivery windows, and last-mile delivery. ○ Benchmark best practices and continuous improvement through research and innovation for supply-chain.
8	Infrastructure Development	○ Upgrade and extend transportation infrastructure (road, rail, waterway, and air) and develop expressways. ○ Develop traffic works, warehouses, and logistics centers. ○ Promote modal shift from road to rail and inland waterways. ○ Develop Matarbari deep-sea port with advanced facilities. ○ Implement Sea-Land Intermodal Transportation for efficient cargo handling, involves loading and transporting trucks between countries on a ship based on agreed-upon ports, areas, or routes. ○ Establish multimodal logistics networks connecting strategic routes and neighboring countries. ○ Building, repairing and upgrading of Bangladesh ships and marine vessels. ○ Develop warehouses and dry ports for efficient cargo handling and storage. ○ Enhance capacity for yard and cargo handling, and expand the frequency of train services to facilitate the transportation of goods between the sea-port and prospective industrial zones in both directions. ○ Establish sophisticated cargo hubs driven by advanced AI and robotics technology. ○ Develop comprehensive freight hubs designed as one-stop solutions, with integrated transport and logistics facilities. ○ Utilize coastal areas and waterways to improve cost-efficiency, alleviate road congestion, and reduce emissions. ○ Improve infrastructure to transform as regional logistics hub. ○ Establishing logistics centers both domestically and internationally to connect markets. ○ Smart Road Enforcement app to minimize physical inspections and reduce compliance burden.

Sl. No.	Key Areas	Probable best approaches
		○ Integration with other modes to provide end-to-end connectivity. ○ Restructure the port system based on the Singapore model. ○ Collaboration with international courier services to invest in air cargo facilities, ensures commercially viable investments in complementary infrastructure, promoting long-term sustainability without relying on public funds.
9	Tech. Integration	○ Support a technologically enabled, integrated, cost-efficient, resilient, sustainable, and trusted logistics ecosystem. ○ Integrated data driven digital Single/ Unified Logistics Interface Platform. ○ Implement digital infrastructure based on algorithms, 5G, Blockchain, AI, distributed ledger technologies, and cooperative intelligent transport systems. ○ Foster open data exchange infrastructure, mobile communication, and support startups. ○ Leverage technology for e-commerce connectivity ○ Adopt technologies such as voice recognition, RFID, and satellite positioning systems. ○ Promote digital combined transport (CT) systems to reduce waiting time at terminals.
10	Green and Safe Logistics	○ Prioritize environmentally sustainable logistics practices, including green logistics and safe transportation. ○ Transition to Net Zero cutting emission. ○ Support alternative fuel-driven vehicles and low-cost production of bio- and electricity-based renewable fuels and charging stations in different transportation modes.
11	Governance	○ Establish a National Logistics Committee or a similar body to oversee logistics strategy implementation. ○ Designate specific authorities and ministries for the execution of various aspects of the logistics development plan.
12	Monitoring and Evaluation	○ Develop performance indicators to evaluate logistics operations. ○ Develop a central database for evaluating national logistics development. ○ Regularly monitor and assess the impact of implemented policies and strategies for continuous improvement.

By adopting these best practices, Bangladesh can work towards creating a more efficient, competitive, and sustainable logistics sector, tailored to its unique context, challenges, and opportunities.

5.4 Conclusion

In conclusion, the comparative analysis of logistical service methodologies globally and regionally underscores the significance of creativity, flexibility, and collaboration in the industry. Key strategies include advanced technology adoption, risk management, port infrastructure modernization, and multi-modal transportation integration. These approaches enhance customer experiences, operational efficiencies, and overall sustainability and resilience. They set benchmarks for sector development, emphasizing the ongoing need for innovation to meet dynamic international trade demands. The logistics industry evolves through these best practices, ensuring improved connectivity, streamlined operations, and a more productive and sustainable future both locally and internationally.

Chapter Six: Challenges and barriers

For the comprehensive study on Logistics Sector of Bangladesh through desk review, KII, FGD, research paper as well as various reports of different government, non-government and developing partners the following challenges and barriers are identified based on other countries policies, strategies, action plan and best practices. The challenges of logistics according to related sub-sectors are representing below:

6.1 Road Transportation

Bangladesh encounters a myriad of challenges in its road transportation sector, hindering the development of efficient logistics crucial for supporting export-import activities and bolstering business competitiveness. These challenges can be summarized as follows:

- Limited road infrastructure with insufficient lanes and expressways poses a significant obstacle for seamless transportation.
- Limited connectivity among economic zones, industrial areas, airports, seaports, land ports, warehouses, and ICDs through national highways, rail infrastructure, and waterways hampers seamless transportation.
- Absence or scarcity of essential service centers, such as resting rooms, vehicle repair shops, fuel stations, and electric vehicle charging stations along major highways and potential economic corridors.
- Lower sustainability and frequent road damage due to overloaded vehicles, natural disasters, and extreme weather conditions.
- The slow average speed of goods-carrying vehicles, particularly 18 km/hr. on roads, impedes efficient transportation across highways.
- Lack of automation at toll plazas, congestion, and increasing theft incidents from export containers on highways, leading to losses for exporters and tarnishing Bangladesh's image.
- Low truck utilization, with approximately 35% of journeys being empty, increases business costs and contributes to environmental pollution.
- Reliance on outdated vehicles instead of modern, energy-efficient cargo vehicles results in increased fuel consumption and restricted operational speeds for goods transportation.
- Lack of mandatory adaptation of real-time vehicle tracking systems, affecting monitoring and efficiency.
- Lack of a comprehensive road-related information database with robust cybersecurity measures raises concerns about data integrity and security.
- Lack of skilled drivers and practice of widespread use of unskilled drivers with counterfeit licenses, coupled with meager wage structures and limited benefits, pose concerns about road safety and emphasizes the need for improved employment conditions in the transportation sector.

- The absence of established rules and regulations for determining transportation costs leads to high transportation expenses for goods.
- The absence of a comprehensive policy or strategy for infrastructure development addressing multifaceted issues poses a broader challenge to the advancement of logistics.

6.2 Air/Aviation Transportation

The challenges in aviation transportation for logistics developments are as follows:

- Limited air and cargo terminals impede the efficiency of logistics operations.
- Open cargo storage with limited capacity poses challenges for storing and handling goods.
- The lack of temperature-controlled reefer points (cold storage) compromises the quality and preservation of perishable items.
- Limited air freight services hinder the timely and effective transportation of goods.
- Lack of scanners, including EDS (Explosive Detection System), adds to operational challenges in cargo handling.
- Inadequate airside operations contribute to inefficiencies in the aviation sector.
- A shortage of cargo handling equipment compounds the challenges faced by the industry.
- High airport support service charges, such as terminal handling charges, screening charges, and operational charges, compared to neighboring countries like India and Sri Lanka.
- High Airport support services charges such as terminal handling charges, screening charges, and build-up or operational charges, compared to neighboring countries likeIndia and Sri Lanka.
- High screening cost and absence of green channel to facilitate perishable items including agricultural produce, medicines, fish, and food.
- Lack of intermodal connectivity and logistics hub near airport.
- Reliance on paper-based customs clearance.
- Insufficient safety and security measures in handling containers, cargo, and luggage, along with limited number of scanner machine including absence of EDS scanner with high screening expenses.
- The lack of sorting and processing centers at international airports hampers cross-border e-commerce development.
- Limited air traffic routes for transporting export-import cargos result in higher cost and time due to the need to travel more air-routes to reach the destination.
- Limited adaptation of new-generation digital technology-based solutions for air-traffic control, cargo handling and storage, screening and redemption of cargo goods.
- Lack of an integrated master plan to position Bangladesh as a regional air hub.
- Lack of dedicated rail lines linking airports, seaports, land ports, and economic zones, affecting overall intermodal connectivity.

6.3 Rail Transport Services

Bangladesh faces numerous challenges in its railway transportation infrastructure are as follows:

- Lack of progress in converting existing railway lines to uniform gauge and establishing double lanes.
- Inadequate and outdated rail-lines, coupled with a shortage of locomotive and specialized container-carrying carriage.
- Lack of automation, technology adoption and monitoring system leading to increased dwelling, Customs clearance, and loading-unloading times.
- Limited railway connectivity, with only the Dhaka to Chattogram railway line double-tracked, posing challenges for efficient transportation and hindering overall railway expansion.
- The absence of double lines on other railway tracks necessitates investments in gauge unification and double line track projects to improve overall railway infrastructure.
- Need for electric traction systems, requiring significant upgrades for enhanced efficiency and sustainability.
- Shortage of skilled manpower in the railway sector, impeding the development and operation a modern and efficient railway network.
- The absence of an integrated policy contributes to poor coordination, connectivity issues between the railway sector and other transportation modes, hindering infrastructure planning and resource allocation, thereby impeding the development of a seamless and interconnected logistics network.
- The absence of a unified signaling system poses safety risks, potentially leading to accidents and operational disruptions
- Absence of gauge unification hindering interoperability between railway lines, leading to inefficiencies, delays, and potential disruptions in cargo and passenger transport.
- Insufficient manpower and rolling stock leading to challenges in maintaining and servicing existing railway infrastructure following increased risk of breakdowns and disruptions.
- Lack of daily shipping voyages between Pangaon ICT and Chittagong Port, inconsistent timetables, and absence of pre-delivery schedules for rail transport.
- Delays in containers releases from railway depots (around 6 hours) due to slow administrative procedures compared to competitive countries.
- Absence of modern mechanized goods handling equipment instead of manual handling in railways.
- Lack of specialized refrigerated transport hampers the transportation of perishable agricultural products in railways.
- Limited average speed of locomotives significantly below the average range of 80-100 kmph.
- Lack of modernizing the rail-interchange unit to facilitate cross-border goods transportation.
- Slow progress of Dhirasram rail ICD.
- Lack of electric traction for electricity-driven locomotives.
- Absence of a comprehensive policy addressing future logistics demand.

6.4 Sea port development

Sea ports of Bangladesh encounter a range of impediments in terms of logistics development challenges are as follows:

- Lack of seamless multimodal connectivity of sea-port with road, rail and inland waterways restricts efficient movement for international trade.
- Inflexible charges on vessels for permits and port usage discourage foreign-flagged vessels, affecting their arrival to sea port.
- Limited draft in the port channel prevents mother vessels from directly accessing the port. Ships crowding at the sea port, influenced by tide, results in prolonged wait times, posing a challenge for international trade.
- Limited availability of pilots to guide ships to anchor at the port.
- Lack of modern port facilities as well as container congestion at sea port area.
- Insufficient berthing facilities, a lack of advanced container handling equipment, and deficiencies in warehouse/off-dock/ICD facilities impede temporary storage, increasing dwell time at sea ports.
- Lack of specialized reefer (Cold-Chain) points at port areas.
- Lack of a centrally controlled tracking system for sea-going vessels poses challenges.
- Lack of automation and integration with Customs hinders the smooth clearance of cargo goods at sea port.

6.5 Land Port Development

Bangladesh actively engages with regional countries through both sea and land ports, with the latter playing a crucial role in importing equipment and raw materials from India, subsequently exported to various countries. Despite having significant potential, land ports encounter various challenges, including:

- The limited connectivity of land ports to various transport modes
- A lack of land port (dry port) at important economic zones such as Syedpur and other potential economic zones.
- Limited IT-based management coupled with limited internet connectivity cause delays in customs clearance and the retrieval of goods, leading to extra costs for importers and exporters.
- Inadequate infrastructure, such as a shortage of modern warehouses, absence of rail siding facilities, and insufficient parking spaces for cargo vehicles.
- Difficulties in implementing safety, security, and compliance measures for container and lack of modern cargo handling and screening.
- Delays in issuance of permit against vehicles for inter-country transportation across borders.
- The absence of a cohesive master plan, combined with unclear action plans and their ineffective execution, intensifies the logistical difficulties for land ports.

6.6 Inland waterways and Port infrastructure development

Bangladesh, known for its extensive river network, historically leverages rivers for export-import activities, considering the most cost-effective transportation mode. Despite its immense potential, this sector encounters various challenges, including the following:

- Navigability issues, limited landing station capacity, including berthing docks, and the absence of automated cargo handling equipment and container storage pose significant challenges.
- Not issuing licenses to ships below 1500 Tons presents a significant challenge for navigating specific rivers and channels due to inadequate depth. This restriction increases vessel size and draft, underscoring the need for a solution.
- Insufficient multimodal connectivity in inland waterways.
- Inadequate utilization of vital navigation aids like buoys, lights, and GPS systems poses challenges to safe navigation, particularly in adverse weather conditions or nighttime operations.
- Lack of coordination in building bridges over waterways obstructs the movement of marine vessels.
- Inadequate capacity for constructing and maintaining water vessels, coupled with a general lack of goods transportation through waterways, adds to logistical challenges.
- The absence of a well-developed master plan creates challenges in effectively integrating maritime transport infrastructure with other transportation modes.

6.7 Private Inland Container Depot and Container Freight Station Services

Private Inland Container Depot (ICD) and Container Freight Station (CFS) services play a crucial role in managing cargoes and expediting the swift clearance of goods in export-import processes involving various modes of transportation. However, these services encounter challenges such as:

- The need for a robust Management Information System, investment in handling equipment and infrastructure, and the development of inter-modal facilities.
- Address concerns related to management, labor productivity, and the limited coordination among government policies.

6.8 Private Warehouse Services

Private Warehouse Services encounter the following challenges:

- Infrastructure challenges, including inadequate space, compliance issues, and reliance on manual labor.
- Lack of adaptation to digital technology and 4iR tools (robotics, AI, Block Chain).
- Power and water disruptions, road connectivity issues, regulatory complexities, and safety concerns.

6.9 Cold Chain Logistics

Cold chain logistics in Bangladesh are evolving beyond mere storage to encompass the broader concept of the cold chain, which involves storage, transportation, distribution, and value-added services. Despite its potential, the cold chain is still in its early stages of development in Bangladesh. Challenges regarding cold chain are given below:

- Infrastructure including mobile units such as specialized freezer trucks, freezer containers, reefer vans/trucks, carriers, merchandising carts, etc. are highly cost sensitive and complex in nature.
- Perishable imports items are not sending to ICDs hindering cold chain development,
- Lack of cross-dock facilities at ICDs.
- High operating cost driven by fuel prices.
- Potential breakdowns of cooling systems due to power outages or electricity fluctuations.
- Coolant failures and poor cooling circulations can result in higher expenses for maintenance and the loss of perishable goods due to prolonged exposure to heat. This can lead to a decline in product quality and profitability.
- Lack of specialized trained workforce.
- Risk of damaged goods due to improper placement or failure to maintaining the appropriate temperature within the trailer.
- Exposure to excessive heat could occur during the loading and unloading phase of the temperature-controlled goods, can degrade the goods.
- Difficulties in maintaining swift and efficient handling.
- The cold supply chain is at an increased risk of facing logistics disruptions due to unpredictable weather conditions, transportation delays, equipment failures, and natural disasters.
- A complex licensing process involving 16 entities are required to get license.
- Lack of harmonizing import tariffs rate as the equipment for cold storage are taxed as if they are luxury products.

6.10 Global Logistics Services

Global logistics services encounter the following challenges:

- Counterfeiting issues, including brand misappropriation, false labeling, and the use of substandard components.
- Theft of goods during transit.
- Lack of real-time data on shipping conditions, allowing for falsification and impacting product quality.
- Manual processes, such as paperwork and barcode scanning, causing delays and impeding information flow.
- Limited availability of accurate data for customers purchasing goods online, who seek shipment updates.

- Compliance challenges with diverse regulations and standards across regions, leading to increased costs and complexity.
- Concerns about sustainability and social responsibility due to the environmental and social impact of logistics operations.
- Meeting growing consumer and regulatory demands requires adherence to fundamental principles, including investment in research, technology adoption, skill development, and fostering innovation, all of which are crucial for global logistics.

6.11 Customs Clearances

Customs plays a crucial role in logistics development, as all logistics aspects depend on customs rules and regulations. Simplifying these rules and practices enhances business capabilities by promoting the seamless movement of goods across countries. Nevertheless, the following challenges related to customs need to be addressed:

- Limited HS code items create customs clearance difficulties.
- Customs does not refund advance tax after the final evaluation.
- Absence of off-dock facilities at key locations including Hazrat Shahjalal International airport, Syedpur EPZ, and other promising areas hampers swift customs clearance.
- Lack of electronic document submission, coupled with the complex customs documentation process leading to unnecessary redundant submissions, the current Customs risk profiling system, and the lack of real time digital integration between Customs ASYCUDA World and related entities such as ports, certifying agencies, chemical laboratories, banks, and others, are key contributors to delays in customs clearance.
- The lack of scanners for container inspection without opening, the failure to embrace non-intrusive inspection (NII) over physical examinations and the reliance on manual entry practices during cargo examination.
- Deficiencies in customs infrastructure, including the absence of a proper chemical laboratory, necessitate sending samples to Dhaka's BSTI, BUET, and Dhaka University. This results in an additional average 21 days for getting test results which again send to customs through hard copies.
- Underutilization of Pre-Arrival Processing (PAP), and non-receipt of Import General Manifest (IGM) notifications cause logistics delays.
- Limited availability of provisions for online corrections of errors/mistakes in the IGM submission pose challenges for industrial growth, delaying customs clearance of cargo goods.
- Absence of round-the-clock RTGS payments and redundant document checks at the delivery gate compound challenges.
- Misalignment of operational hours in the Customs Brokers' Association's Direct Traders Input (DTI) coupled with incomplete declarations, and limited scope of the Authorized Economic Operator (AEO) program create obstacles for logistics efficiency.
- Lack of high-speed internet connectivity.
- Absence of a procedure for initiating advance customs clearance well in advance of goods

reaching the port, a practice observed in the United States and other developed nations.

- Delays in implementing the National Single Window (NSW) hinder real-time document and data transactions, challenging logistics development.
- Cumbersome customs procedures and clearance mechanisms lead to substantial delays in cargo movement and vessel turnaround times, hindering logistics development.

6.12 Human Resource and Skills development

A proficient workforce is a crucial factor in advancing logistics, acting as the driving force for operational processes. In Bangladesh, the logistics sector faces diverse challenges concerning skilled manpower in its various sub-sectors. The following challenges are identified to enhance employability and reduce logistics costs:

- Limited data regarding the demand and supply of the workforce required at entry-level, mid-level, and higher-level positions for the advancement of logistics.
- Limited integration with Education and ICT policy regarding logistics development.
- Lack of technical and vocational educational institutes and also skills training providers
- Lack of linkage of industry with educational institutes and skills training providers.
- Lack of additional courses on logistics at university and diploma level.
- Lack of industry participation or engagement in skilled workforce development as per Bangladesh National Qualification Framework (BNQF).
- Lack of teaching and training materials development for logistics related education and training.
- Limited engagement of private sectors in education and skills development activities.
- Limited capacity of the implementation of National Skills Development Policy 2022 and National Skills Development Action Plan 2022-27.

6.13 Main Line Operator

Main Line Operators (MLOs) play a crucial role in international trade, managing 90% of cargo containers throughout the country. Attracting MLOs to utilize our ports for the transportation of goods between our country and others is vital for economic development. Despite our advantageous geographical location, MLOs encounter various challenges that need to be addressed, including:

- Lack of common carrier agreements or container direct interchange deals between Main Line Operators (MLOs) and Feeder Vessel Operators, which is hampering smooth transportation of exportable goods.
- Limited use of Container Direct Exchange process.
- The berthing delay of a vessel at Chattogram port’s outer anchorage is around 2-3 days, while ships visiting the ports of Singapore, Sri Lanka and Malaysia face a delay of 8-10 days.
- MLOs faces waiver certificate complications at the Chittagong port and left Ctg. Port with empty cargo space.
- Limited Cut-off time to load and unload container at ctg. Port.

- The lack of advanced technological systems for cargo management and tracking hinders their capacity to provide real-time data and streamline processes, impacting logistics development.
- Lack of trained and skilled labor in the specialized logistics services.

6.14 Freight Forwarding Services

Freight forwarding services are essential for the progression of logistics, offering a wide array of services such as various transportation modes, documentation and customs clearance, consolidation services, and customized solutions. These collectively enhance global trade efficiency, reduce costs, and optimize supply chains. However, these services encounter the following challenges:

- Insufficient expertise in document handling for customs clearances, managing diverse shipping documents for various locations, and overseeing last-mile delivery, coupled with the absence of third-party logistics (3PL).
- The lack of well-defined service level standards regarding the time taken from the arrival of goods to their delivery intensifies logistical challenges.
- Freight forwarders are responsible for safe cargo handling at ports per licensing regulations, but port authorities ultimately oversee the process. Inconsistencies in licensing rules pose challenges for cargo handling at port areas.
- The absence of bonded warehouse facilities operated by freight forwarders leads to delays in effectively managing newly arrived cargoes at sea and airports, ultimately resulting in delays and increased costs in managing cargo goods.
- The licensing process for freight forwarders, not simplified, is cumbersome, and it offers limited scope for new entrants, hindering efforts to break monopolies.
- The absence of classification of freight forwarders' services necessitates categorizing these entities based on the services offered. This hinders domestic companies engaged in specialized services.

6.15 Oil, Gas, and LNG Tank Terminal Services

In Bangladesh's logistics sector, oil, gas, and LNG tank terminal services face several challenges:

- Insufficient infrastructure for storage facilities and terminals constrains the ability to handle and store significant quantities of oil, gas, and LNG. This shortage of infrastructure can result in congestion, delays, and inefficiencies in managing these commodities, posing a challenge to logistics.
- Limited capacity to ensure safety measures and compliance in storing and transporting hazardous materials like oil and gas presents a considerable challenge.
- The need for skilled personnel to manage these terminals, along with continuous monitoring for environmental safety.

- Moreover, lack of robust contingency plans for emergencies and unpredictable market fluctuations in oil and gas supply, complicates efficient operations within the tank terminal services in Bangladesh.

6.16 Courier and Postal Services

Postal services have extensive nationwide network the postal service is grappling with a decline in business to courier companies due to the following challenges:

- Lack of reliability, delivery delays, poor communication between senders and receivers.
- Lack of tracking information, incorrect or incomplete addresses, damage, undeliverable packages.
- Fail to adopt new business model along with new-generation digital technologies.
- Lack of private sector involvement.

Private-run courier services however faces challenges as follows:

- Non availability of single, uniform licensing for courier service agencies.
- The annual renewal fees for licenses range from Tk50,000 to Tk5 lakh, with various tiers for renewal and collateral fees for courier service companies, contributing to the development of unhealthy competition.
- Provision of compensation fees paid to postal department.
- The engagement of non-licensed courier service companies in business leads to fraudulent activities, particularly in e-commerce deliveries, and fosters unhealthy competition in markets.
- The Postal and Telecommunication division conducts limited stakeholder consultation regarding penalty provisions contained in the proposed draft courier act.
- Delays in delivery, poor communication between senders and receivers, lack of tracking information, incorrect or incomplete addresses, undeliverable packages
- Absence of scanning machines, CC camera in all stations.
- Recently, the Department of Narcotics Control has made mandatory to procure metal detectors and scanners by courier services, imposing an extra financial burden, especially for small operators.
- Limited ability in handling the complex processes involved in international logistics, such as customs clearance and international regulations, and ensure the timely delivery of packages to destinations worldwide
- The onboard currier service activities with India are currently stalled due to customs problems as Customs authorities do not permit couriers to travel to India with bags containing documents.
- Courier service activities by road with India is also halted.
- Limited space facilities at air-port for receiving documents, parcels for domestic currier services while international currier services have ample space at air-port.

- Venture capital-backed courier services that attract foreign direct investment (FDI) initially provide services at lower prices but eventually exit the market within 3 to 4 years. This leads to disruptions in courier services and a negative perception of Bangladesh.
- 15% VAT on various currier services which was previously 4.5%.
- The 1.5% processing fee for each online transaction is a significant challenge for payment gateway entities, hindering both courier service companies and e-commerce growth.
- Courier services still not declared as Industry.
- Lack of consultation regarding different issues in Currier service regarding proposed currier service act.
- Penalties for courier services and e-commerce are not consistent with the price of the goods handled.
- Lack of capacity to operate in foreign countries.
- Limited ability to embrace new business models and cutting-edge digital technologies.

6.17 E-Commerce

E-commerce has revolutionized the landscape of logistics, presenting both unprecedented opportunities and intricate challenges. The surge in online retail has significantly impacted the development of logistics systems, demanding innovative solutions to ensure efficient and timely deliveries. As the e-commerce sector continues to expand, logistics faces challenges such as:

- Lack of initiatives to facilitate e-commerce expansion in domestic and foreign markets through resolving issues including shipping difficulties, abandoned carts, payment failures, distrust in online transactions, unreliable payment systems, limited transportation modes other than road transport for delivery, slow adaptations of rules and regulations facilitate e-commerce and promotion.
- Lack of efficient last-mile delivery, inventory management, and sustainable practices.
- Lack of dynamic intersection of e-commerce and logistics for seamless integration to address the complexities of a rapidly evolving digital marketplace.
- Slow adaptations of rules and regulations facilitate e-commerce growth such as laws governing online contracts and dispute resolution.
- Concerns about customer data security.
- Inability to explore the potential exemption of customs duties on electronic transmissions and opening avenues for increased global export opportunities through e-commerce

Chapter Seven: Way Forward

For the comprehensive study on Logistics Sector of Bangladesh through desk review, KII, FGD, research paper as well as various reports of different government, non-government and developing partners the following challenges and barriers are identified based on other countries policies, strategies, action plan and best practices. The recommendations of logistics according to related sub-sectors are representing below:

7.1 Road Transportation

To address challenges in road transportation the following recommendation can be adapted:

- Need to build new roads and expand the existing ones with service lane facilities, connecting economic zones, industrial areas, airports, seaports, land ports, warehouses, and ICDs.
- Upgrade national highways to four lanes and designate dedicated cargo lanes to achieve a 40 km/hr. speed target.
- To achieve a 40 km/hr. average speed, relocate nearby hut/bazar to a safer distance, deploy highway police, automate toll plazas with RFID technology, and implement traffic detection systems to address congestion.
- Open database with AI for real-time data transactions is crucial for efficient vehicle movement.
- Establish standardized rules and regulations for uniform trucking to streamline transportation costs.
- Reducing truck underutilization involves consolidating companies, establishing distribution centers, adopting new-generation digital solutions, and enhancing storage capacity at sea ports, warehouses, and ICDs.
- Ensure road sustainability with highway weigh-bridges and promote the adoption of multi-axle load vehicles for enhanced economic efficiency and road preservation.
- Combatting theft requires enforcing mandatory vehicle tracking systems, utilizing CC cameras, designating dedicated lanes, and collaborating with security agencies.
- Construct expressways linking major business hubs and ports, targeting speeds of 80-100 km/hr to streamline export-import logistics.
- Private sector investments in energy-efficient vehicles and EV charging stations are vital to address fuel costs and supply disruptions.
- Government should incentivize private sector investment in domestic Electric Cargo Truck production, coupled with phased-out older vehicle policies via taxes or relevant measures.
- Encourage the private sector to establish service centers along major highways and economic corridors, offering resting areas, vehicle repair services, fuel, and electric vehicle charging stations.
- Research on road infrastructure development, coupled with private sector involvement, enhances passenger and goods safety.
- Cross-country permit acceptance is vital for international trade, enabled by MoUs for digital permits on inter-country corridors.

- Develop skilled drivers and workforce through training institutes and structured salary schemes.
- Implementing comprehensive short, medium, and long-term road transportation plans is imperative for development.

7.2 Air Transportation

To tackle issues in air transportation, the following suggestions can be implemented:

- Deploy advanced cargo scanners, including EDS, to comply with EU and US regulations for cargo and passenger baggage.
- Establish enclosed cargo warehouses with reefer points to bolster cargo handling capabilities.
- Embrace state-of-the-art cargo handling equipment over limited automation.
- Implement a streamlined 'Green Channel' for quick clearance of perishables, live fish, and medicines.
- Implement advanced container locking system for top-notch security.
- Construct off-dock facilities near Dhaka airport to reduce customs delays.
- Boost airport capacity by expanding cargo services, building terminals, upgrading airside operations, and establishing freight stations with cold-chain facilities, prioritizing private-sector involvement.
- Replace paper-based customs and airport clearance with paperless electronic data transfer for efficiency.
- Establish airport sorting centers to boost e-commerce, engaging renowned private sector e-business or courier services globally.
- Adjust high airport support service charges, including terminal handling, screening, and operational fees, to align with those of India and Sri Lanka.
- Establish multimodal connectivity with airport.
- Building financially viable airports in Payra and Khulna
- Revitalizing disused airports in Ishwardi
- Sign MoUs with countries such as Argentina, Brazil, and Russia to expand market presence through new routes.
- Embrace renewable energy and cleaner vehicles, improve air traffic management with innovative advancements, and enhance delivery efficiency through technology and automation, mirroring Singapore's air travel model.
- Implementing automation and assistive tools is essential for creating high-quality jobs and enhancing worker productivity, preparing the workforce for the future.
- Establish a cloud ecosystem integrated with ground operations to enhance digital capabilities, monitoring real-time cargo dimensions and images, integrating data into warehouse management systems seamlessly.
- Emphasize private sector involvement in infrastructure development and encourage startups for app-based solutions in cargo handling and customs clearances.
- Develop a Master Plan to leverage Hazrat Shahjalal and Cox's Bazar airports as global

refueling and cargo hubs, aiming to establish regional logistics air hubs like Hong Kong, Singapore, and Dubai.

7.3 Rail Transport Services

Globally, rail transport is crucial for affordable cargo movement, yet faces challenges in Bangladesh due to expanding road networks impacting its market share. To tackle issues regarding railway are given below:

- Fast-track completion of the Dhirasrom Inland Container Depot (ICD).
- Digitize and automate railway depots to expedite container release, replacing time-consuming administrative procedures with digital solutions.
- Facilitate modern locomotives for container transport between Kamalapur ICD and Chittagong Port, and vice versa.
- Arrange extra barges for daily voyages between Pangaon ICT and Chittagong Port, and vice versa.
- Increase freight rail schedule frequency for efficient goods transportation within set timeframes.
- Dedicated rail lines for container transport are needed to maintain schedules with 80 km/hr speeds.
- Essential to provide dedicated cooling cars or reefer points on trains for perishable and specialized item transport.
- Construct standardized rail lines nationwide, linking key locations such as airports, seaports, industrial zones, ICDs, and international economic corridors to support seamless transportation.
- Install modern mechanized goods handling instead of manual methods.
- Integrate railway stations with road transport to facilitate last-mile cargo delivery.
- Procure mechanical repair vehicles for rail-line repair and adopt digital signaling systems promptly.
- Implementing electric traction for freight transport to reduce costs and emissions.
- Expand interchange stations with skilled workforce to enhance rail interchange efficiency, reducing operation time.
- Develop a comprehensive logistics strategy to meet business demand with customized and innovative solutions.

7.4 Sea Port Development

The sea port, serving as the lifeline of international trade and managing nearly 90% of global transactions, is a cornerstone for trade facilitation. To bolster its role, the following recommendations are proposed:

- Enhance multimodal connectivity with modern infrastructure integrating road, rail, and waterways.
- Regular dredging to remove siltation, prevent solid waste dumping, and conduct hydrological

assessments to increase channel draft for mother vessel anchorage.

- AI-driven digital traffic systems optimize transportation modes.
- Ample advanced equipment and effective facility management are vital for improved goods handling.
- Flexible fee structures for permits and port usage on vessels attract international liner shipping companies.
- Encourage foreign-flagged vessels at Chattogram Sea Port by reducing anchoring and cargo handling time, and addressing waiver-related issues for goods transportation.
- Private sector collaboration is key for developing off-dock facilities and Inland Container Depots (ICDs) with robotics and tracking. Implementing 4iR tools-based tracking systems boosts efficiency and safety.
- Enhance container storage capacity by improving yard space, evaluating performance, and establishing off-dock/private container yards.
- Develop reefer points with electricity charging to facilitate temperature-controlled cold-chain supply.
- To tackle congestion and reduce dwell time, advanced Terminal Operating Systems (TOS) and Yard Management Systems (YMS) are crucial, coupled with Customs ASYCUDA World portal.
- Initiate training for ample ship pilots to increase port anchorage capacity.
- A master plan for future technological changes, incorporating 4iR tools and a Maritime Single Window (MSW), is crucial for advancing sea port operations and logistics development.

7.5 Land Port Development

To address issues related to land port development, the following recommendations are provided:

- Connect all land ports to national highways and rail networks, bypassing local markets and urban areas to ease congestion.
- Construct new land ports in economic zones like Mirsarai, Syedpur, requiring direct rail connectivity for efficient goods transportation.
- Boost adoption of digital IT systems with high-speed internet and modern infrastructure, integrating customs ASYCUDA World for streamlined clearances, reducing costs, and enhancing competitiveness.
- Modernizing land ports entails reducing dwell times, increasing throughput, minimizing wastage, and enhancing cargo handling capacity.
- Rail siding facilities expedite goods transportation significantly.
- Enhance cross-border trade facilitation by enabling online issuance of permits for inter-country transportation, utilizing email or electronic notifications for driver permit approval.
- Implement advanced screening tech for security and efficiency, rationalizing costs, and embracing digital data transactions.
- Private sector involvement, particularly startups, in developing app-based solutions further streamlines operations.

- Timely implementation of planning by land port authorities is crucial for improving cross-border trade and logistics.
- A comprehensive master plan integrating connectivity, technology, modernization, advanced screening, and private sector involvement is crucial for logistics efficiency.

7.6 Inland waterways and Port Infrastructure Development

To address issues related to Inland waterways and Port infrastructure development, the following recommendations are provided:

- Identify key routes, explore new ones, and construct modern landing stations with advanced automated cargo handling equipment and container scanners.
- Establish connectivity between seaports and inland ports, streamline international river port permits, set competitive port usage fees, and modernize customs.
- Ensure river navigability through routine hydrographic surveys, effective dredging management, and robust governance.
- Optimizing laden draughts enables inland waterway transport during disruptions.
- Considering the lower draft in the river channel, propose reevaluation of restrictions on ships under 1500 tons based on technical reports.
- Implementing vehicle tracking, buoy lights, and safety gear will improve operational oversight and safety.
- To strengthen logistics capacity, development of a centralized digitized control system, multimodal connectivity, reduced trans-loading, optimized warehouses, and enhanced sea port connectivity is needed.
- Develop modern infrastructure along riverbanks, implementing height policies for bridges, and fostering an investment-friendly atmosphere for construction and maintenance of inland water transport are essential.
- Facilitate river marine vessel construction and maintenance through private sector engagement and policy support.
- Policy-backed support for gradual adoption of energy-efficient vessels and charging stations.
- Formulating a logistics master plan entails setting goals and integrating digital infrastructure designs for short, medium, and long-term development.

7.7 Private Inland Container Depot and Container Freight Station Services

To address issues related to Private Inland Container Depot and Container Freight Station Services, the following recommendations are provided:

- Private sector needs to expedite “The Private Inland Container Depot (ICD) and Container Freight Station (CFS) Policy-2021” which enables private entrepreneur to set up Private Inland Container Depot and Container Freight Station.
- Need to address all the licenses and permission from single point.

7.8 Private Warehouse Services

To overcome challenges in private warehouse services, the following recommendations are provided:

- Overcoming infrastructure, space, compliance, and labor challenges demands modern warehouses, strategic investments, training, safety protocols, and regulatory cooperation.
- Adapting to tech changes means embracing advanced tools like Warehouse Management Systems (WMS) and cutting-edge handling equipment.
- Prioritize energy efficiency, sustainable transportation, carbon offsetting, and waste reduction to enhance supplier sustainability.
- Additionally, aim for net-zero warehouse operations to minimize environmental impact, meet customer and regulatory expectations, and boost organizational reputation and competitiveness.

7.9 Cold Chain Logistics

To overcome challenges in Cold Chain logistics, the following recommendations are provided:

- Facilitate cold chain facility licensing via streamlined centralized process, minimizing delays and requiring nominal fees.
- Harmonize import tariff rates, considering equipment serves both exporters and importers in service delivery
- Perishable imports may utilize ICDs with cross-dock facilities.
- It is proposed to prevent equipment breakdown by ensuring-
  - Regular maintenance and inspection of refrigeration units and other equipment.
  - Introducing backup power systems, like generators or alternative energy sources, to lessen the consequences of power interruptions.
  - Tracking the real-time performance of equipment through sensors and Internet of Things (IoT) technology to identify malfunctions early and promptly address them.
- It is proposed to prevent excessive heat exposure by ensuring-
  - Streamline loading and unloading to minimize goods' exposure to temperature variations.
  - Implement insulation in warehouses, trucks, and containers to reduce heat transfer.
  - Utilization of temperature-controlled loading docks and equipment for maintaining desired temperatures during goods transfer.
- It is proposed to reduce human error by ensuring-
  - Comprehensive training to cold chain logistics staff, emphasizing temperature control and protocol adherence.
  - Implement standard operating procedures (SOPs) and checklists to minimize task errors and guide employees effectively.
  - Utilization of tech solutions, such as barcode or RFID systems to automate inventory management and reduce manual errors.

- It is proposed to reduce damaged goods by ensuring-
  - Proper packaging and labeling of temperature-sensitive goods for transportation protection.
  - Utilization of temperature monitoring devices (data loggers or real-time sensors) to track temperature conditions throughout the supply chain.
  - Quality control processes to detect and eliminate damaged or compromised goods before reaching the final customer.
- It is proposed to reduce higher cost:
  - Through optimization of logistics operations to minimize transportation costs and maximize efficiency.
  - Through utilization of advanced analytics and algorithms to optimize inventory levels and reduce wastage.
  - Through explore partnerships with specialized 3PL providers for cold chain logistics expertise and infrastructure leverage.
  - Additionally, integrate logistics software for real-time visibility, analytics, and proactive alerts to manage cold chain risks.

7.10 Global Logistics Services

To overcome challenges in Global Logistics Services, the following recommendations are provided:

- Technology drives logistics innovation but poses risks. Strategic R&D, upskilling, and agile culture ensure seamless adoption.
- Continuous investment in cutting-edge solutions boosts supply chains with emerging tech for better efficiency, service, and sustainability.
- Global logistics faces regulatory risks hindering operations. Stay informed, collaborate with authorities, and use smart tools for adaptable compliance.
- Proactive preparation, education, and flexible processes empower supply chains to navigate diverse ethics, security, and sustainability regulations effectively.
- The demand for sustainable, socially responsible logistics is escalating.
- Reducing footprints, enhancing social impact, and aligning with ethics create shared value.
- This transformation enhances reputation and optimizes outcomes for people, planet, and profit. Integrating sustainability and responsibility acts as a catalyst for innovation in global supply chains.

7.11 Customs Clearance

To comprehensively modernize the export-import process, key measures are necessary:

- Full automation of Customs ASYCUDA World is essential for paperless transactions, connecting with ports, certifying agencies, labs, banks, etc., ensuring real-time data exchange to eradicate customs clearance delays.

- Implement National Single Window (NSW) without any delay.
- Introduce Bangladesh Single Window, Automated Border Management Systems and Maritime Single Window.
- It’s vital to broaden the H.S. Code list in collaboration with the private sector, adding as many items as feasible, while ensuring amendments are made efficiently, avoiding bureaucratic hurdles.
- Deploying advanced scanner and EDS technology at international seaports and airports enables non-invasive scanning of containers and cargo.
- Initiating customs clearance before goods arrive at the port is crucial. This proactive approach could reduce Bangladesh's dwell time by 5-7 days.
- Online IGM error corrections need to be readily available for faster customs clearances.
- Necessary actions include encouraging importers to adopt PAP, submit IGM notifications, and include BIN and email IDs in customs documents. Reassess risk management, establish green channels for non-sensitive products, grant AEO status, and shift from manual entry procedures. Provide real-time status updates via mobile and email. Scrutinize inputting data by the Customs Brokers' Association into DTI, as it diverges from international practices.
- It is essential to upgrade to a modern, IT-rich system with high-speed internet for real-time results.
- Electronic Data Interchange (EDI) streamlines communication among trading partners, while preferential trade agreements simplify customs processes and reduce tariffs.
- Precision and availability of vital documents like commercial invoices and certificates of origin are crucial. An electronic data input system minimizes errors, expediting Customs processes by facilitating seamless digital transfer, reducing redundant submissions at different clearance points.
- To cut dwell time, deploy advanced risk management and non-intrusive inspections, reducing reliance on manual testing.
- Enhance customs lab proficiency with equipment, reagents, and analysts. Utilize Customs ASYCUDA World for electronic report transmission, especially from Dhaka labs. BSTI should establish a lab near Chattagram port. Collaborate with public universities and BCSIR Chattogram for expedited analysis.
- The importer's excess advance tax payments need to be reconciled promptly to facilitate seamless business operations.
- Off-dock facilities are vital for Dhaka Airport, Mirsarai, and Syedpur EPZs and require prioritized establishment.
- Review the Private ICD/CFS Policy 2016, expand bonded warehouses, simplify dispute appeals, enhance transparency with technologies like Blockchain.

7.12 Human Resource and Skills Development

A skilled workforce is crucial for advancing logistics in Bangladesh, addressing challenges in different sub-sectors. To address the challenges the following suggestions can be implemented:

- A strategic and integrated approach is vital for addressing Bangladesh's logistics workforce needs.
- Embrace global digital technology adoption through education and training aligned with national ICT policies for a SMART Bangladesh and future workforce readiness.
- Conduct comprehensive job market analysis through research and surveys to inform effective skills development strategies.
- Collaborate with universities, diploma institutes, and skills training centers to introduce logistics courses across various educational and skills levels. Institutes need to focus on both workforce development and researching logistical challenges, ranging from infrastructure to digital connectivity solutions.
- To integrate youth classified as NEET into economic activities, skill training is crucial. Collaborate with stakeholders like the Logistics Sector Industry Skills Council, government bodies, private sectors, NGOs, and development partners to establish a Skills Training ecosystem aligned with BNQF under NSDA and PMO.
- Based on industry expert insights, measures include developing Competency Standards, Course Accreditation Documents, and Competency-Based Learning Materials aligned with BNQF.
- Training programs, up to 360 hours or 6 months, will focus on fresh skilling, up-skilling, and re-skilling to align with emerging technologies, with third-party assessment and certification under NSDA, PMO.
- Implement Recognition of Prior Learning, Trainer Training programs, and adopt foreign training to produce high-quality domestic trainers to enhance the skill development ecosystem.
- Establish quality training centers at demand-driven locations and create a Center of Excellence as a benchmarking institution to elevate logistics sector standards.
- Global promotion of skill development remains a priority through MRA with recognized international entities.
- Implement internship programs and apprenticeships in alignment with the National Internship Policy 2023 and Apprenticeship Guidelines 2023.
- Active efforts are needed to encourage women's participation in the logistics sector, creating employment opportunities domestically and internationally for skilled professionals.
- Effective collaboration among SHED, TMED, Ministry of Expatriates' Welfare and Overseas Employment, Road Transport and Highways Division, UGC, NSDA, BTEB, and other agencies is essential to develop skilled human resources.

7.13 Main Line Operator

To address the challenges encountered in the logistics sector of Bangladesh concerning Main Line Operator (MLO) services, the following recommendations are highlighted:

- Address port infrastructural deficiencies through upgrades and capacity expansion.
- Enhance container direct interchange through streamlined processes, formalized deals, efficiency improvements, standardization, and long-term framework establishment.
- Implement flexible measures to reduce berthing delays, ensure global berthing flexibility using nearby Chinese ports, and strengthen partnerships.
- Prioritize MLO solutions, collaborate on strategies, and maintain stakeholder dialogue to address certification challenges under the Bangladesh Flag Vessels (Protection) Rules 2023.
- Adjust cut-off times based on port capacity and industry demands for enhanced efficiency.
- Advanced technology for streamlined regulatory processes and customs clearance, ensuring sustained operational efficiency amid technological advancements.

7.14 Freight Forwarding Services

To address the challenges encountered in the logistics sector of Bangladesh concerning Freight Forwarding Services, the following recommendations are highlighted:

- Implement strategic initiatives like standardized documentation procedures for shipping documents, including invoices and certificates.
- Establishing service level standards to optimize the time taken from goods' arrival to delivery is crucial.
- Embrace advanced freight forwarding solutions like 3PL and 4PL, including customized options, to manage enterprises' products from packaging to shipping, surpassing traditional freight forwarding methods.
- Embrace international standards and streamlined pre-arrival processing for improved risk management, aligning practices with global benchmarks.
- Policy assistance is necessary to achieve seamless electronic integration with customs ASYCUDA World, facilitating smoother operations. Implementing electronic payment systems enhances financial transaction efficiency.
- Resolve inconsistencies in licensing rules for freight forwarders through stakeholder consultation, ensuring oversight access to cargo commodities.
- Provide bonded warehouse facilities to freight forwarders to efficiently manage newly arrived cargoes, reducing costs and delays.
- Simplify the licensing process for freight forwarders and broaden the scope to enhance industry competition.
- Classify freight forwarder services to develop specialized freight forwarding companies, bolstering local capabilities relative to international counterparts.

7.15 Oil, Gas, and LNG Tank Terminal Services

To address the challenges in Bangladesh's logistics sector regarding Oil, Gas, and LNG Tank Terminal Services, the following recommendations are emphasized:

- Build additional storage areas and terminals to handle more fuel, reducing delays and streamlining operations.
- Ensuring fire and safety in handling, storing, and transporting is imperative.
- Training a skilled team to manage terminals and regularly checking for environmental issues is vital, as clear strategies for emergencies like leaks or spills can minimize their impact.

7.16 Currier and Postal Services

To address the challenges in Bangladesh's logistics sector regarding Currier and Postal Services, the following recommendations are emphasized:

Postal Services

- Leveraging the postal department's network and infrastructure is essential for domestic and international goods delivery and enhancing e-commerce activities.
- Restructure management and privatize through PPP model.
- Adopt RFID for parcel tracking, digital sorting, and packaging facilities to minimize damage and enhance delivery flexibility with new digital technologies.
- Provide parcel status updates via mobile apps.
- Engaging in 3PL services is also essential.

Courier:

- Need single, uniform licensing for courier services.
- Resolve compensation fees paid to postal department.
- Uniform fees for licenses, renewals, and collaterals are necessary for all courier companies.
- Need to address the 1.5% processing fee for each online transaction charged by Payment gateway entities to foster e-commerce growth.
- To address fraudulent activities, check the engagement of non-licensed courier companies.
- Courier service providers are pivotal in supporting e-commerce expansion.
- Upgrade to advanced logistics services for multiple businesses, offering real-time parcel tracking, automated updates, warehousing, integration with e-commerce platforms, and customized solutions like dedicated fleets and route optimization
- Courier companies need to handle reverse logistics, manage returns and exchanges, and provide support for customer customs clearances additionally.
- The Postal and Telecommunication division may arrange stakeholder consultation on penalty provisions in the proposed draft courier act.
- The Department of Narcotics Control may review the mandatory requirement for courier services to procure metal detectors and scanners based on their financial capabilities or provide financial support for acquiring these devices.

7.17 E-Commerce

To address the challenges in Bangladesh's logistics sector regarding Currier and Postal Services, the following recommendations are given below:

- Understanding and prioritizing customer needs, involving e-commerce in promotions and campaigns to generate income, is crucial.
- Establishing a user-friendly online platform with reliable payment systems is necessary. Building trust in product quality, facilitating easy returns, and ensuring efficient delivery are crucial aspects.
- Enable sellers and small businesses to expand their product range, enhancing their potential for exporting through online platforms.
- Partnering with internationally recognized e-commerce websites or business entities.
- Exploring alternative methods like air-freight for enhanced e-commerce efficiency.
- Expand e-commerce beyond major cities such as Dhaka, Chattogram, and Gazipur by leveraging the Bangladesh Postal Department's network through a Public-Private Partnership (PPP).
- Encourage private sector investment in e-commerce to tap into its substantial potential for exporting domestic goods internationally.
- To boost e-commerce exports, utilize digital tools like AI and big data for ongoing innovation, ensure data security, and leverage 5G networks.
- Regular updates to policies, rules, and regulations are essential in e-commerce to create a level playing field for all stakeholders. This prevents market monopolization and ensures consumer interest protection.

Conclusion

The logistics industry of Bangladesh is emerging expeditiously and during this transition phase now it is the interplay of infrastructure, technology and value-added services that will exemplify whether the industry is able to support its customers to reduce their logistics cost and time and provide effective services.

This in-depth examination of Bangladesh's logistics sector has meticulously scrutinized various essential aspects crucial for comprehension and enhancement. The study initiated by closely examining diverse elements of transportation, such as roads, ports, warehouses, regulations, and the workforce. Throughout the investigation, it was uncovered that the logistics costs in Bangladesh are notably high, constituting 19-20% of the country's GDP, surpassing figures in developed nations like India (13-14%), Europe (9%), and Japan (11%). Multiple ministries and government agencies play a role in overseeing transport and logistics affairs, underscoring the significance of coordination and collaboration. The excessive logistics costs detrimentally impact Bangladesh's export competitiveness, prompting the government's objective to reduce costs for enhanced competitiveness. The study juxtaposed logistics practices in Bangladesh with those in other countries, revealing strengths, areas for improvement, and factors influencing progress. The

efficiency, effectiveness, and cost of logistics services significantly influence the pricing of goods at their final destination, considering costs incurred at each logistics stage. With the rising levels of technological advancement and infrastructural development, Bangladesh's logistics sector is anticipated to make a substantial impact, contributing to ultimate efficiency. The sector represents a promising market for technical expertise, innovation, and clean technology, offering investment opportunities in various logistics aspects, including warehousing, information technology, e-freight services, customs clearance, and more. Additionally, the prospects for clean technology, green transportation, electric vehicles, renewable energy, and natural resources are also deemed attractive.

We also looked at important people and groups involved in logistics and how they can work together better. By gathering and studying different policies, laws, and research, we found areas where Bangladesh can make its rules better by following global ideas. We found some big challenges and ways to fix them by learning from other countries. The biggest threats to the sector including bureaucracy and limited infrastructure. However, Bangladesh can be an attractive market for logistics companies, especially when selecting a reliable local partner after conducting due diligence and feasibility studies. Familiarity with logistics technical knowledge and innovative technology is a competitive advantage for investors in the sector. Local partners can provide knowledge about the industry, market, clients, and advise on navigating local requirements. To make things better, we suggest everyone work together, use new ideas, improve how things are built, make rules better, train people better, and focus on long-term success while taking care of the environment. If everyone works together, Bangladesh's logistics can become much more efficient, competitive, and sustainable, reaching the same level as other countries around the world.

Annex: 1 Terms of References

Description of the Services for preparing a "Comprehensive Report on Logistics Sector of Bangladesh". [Package No: SD-17-20 (2)/23-24]

1. Background

Bangladesh met all the criteria for graduation from the LDC category, namely GNI per capita, Human Assets Index (HAI), Economic and Environmental Vulnerability Index (EVI) in two consecutive triennial reviews conducted by the UN Committee for Development Policy (CDP) held in 2018 and 2021. As a result, the CDP recommended Bangladesh for graduation with a five- year preparatory period, which was finally approved by the UN general Assembly on 24 November 2021. So, the graduation will be effective in November 2026.

While graduation from the LDC category is a remarkable achievement and great pride for the nation, it will also entail some challenges mainly due to the withdrawal of the LDC-specific International Support Measures (ISMs) once the graduation becomes effective in 2026. In order to ensure smooth and sustainable graduation, the Government of Bangladesh needs to develop appropriate strategies and measures for overcoming the probable impacts of graduation as well as maintaining the development momentum in various socio-economic sectors.

With this end in view, the Government has already formed a National Committee and seven sub-committees to deal with all the graduation-related issues and devise appropriate ways forward. In addition, the Government is also trying to enhance the competitiveness of the economy by increasing productivity and reducing the cost of doing business. The Logistics sector plays a crucial role in this regard. Various studies reveal that the cost of the logistics sector of Bangladesh is significantly high compared to other countries. The studies and experts are of the view that improvement of the logistics sector of the country will decrease the cost of doing business & production as it will reduce the cost and time of business transactions. Improvement of the logistic sector will not only contribute to ensuring smooth and sustainable graduation but also facilitate achieving other development goals, such as Vision-2041 and SDGs.

Given this context, in order to ensure achieving the national target of growth, enhancing the capacity of trade & investment, and establishing efficient goods transportation and services, a high-powered committee, "National Logistics Development and Coordination Committee", headed by Principal Secretary to the Hon'ble Prime Minister was formed for the overall development of the logistics sector. One of the main objectives of the National Committee is to formulate a National Logistics Development Policy.

Economic Relations Division (ERD) has been implementing a project, titled "Support to Sustainable Graduation Project (SSGP)" funded by Japanese Grant Assistance (DRGA-CF), to provide necessary support to ensure smooth and sustainable graduation. Being requested by the concerned authority, the Project has initiated the process of engaging an Individual Consultant for preparing a report on the logistics sector of Bangladesh for facilitating the formulation of the National Logistics Development Policy. So, the SSGP of ERD (the client) intends to apply a portion of the grant fund (DRGA-CF) for procuring an Individual Consultant.

2. Objective and scope of the assignment

The main objective of the assignment is to prepare a comprehensive base report on the logistics sector of Bangladesh, which will act as a guiding document for preparing the National Logistics Development Policy. An experienced Individual Consultant will be appointed for the proposed assignment.

2.1 Scope of Work

- Collect all the studies and other activities already conducted by various public and private sector organizations, research organizations, development partners, and CSOs on the logistics sector of Bangladesh;

- Compile all the studies and works, and laws, rules, and protocols on the logistics sector of Bangladesh mentioned above;
- Review the studies/works and other literature on the logistics sector of Bangladesh to identify the challenges and obstacles to improving the logistics sector of Bangladesh;
- Conducting stakeholder mapping relating to the logistics sector of Bangladesh;
- Consult various stakeholders and experts for gathering views and information for improving the logistics sector of Bangladesh;
- Comparison of best practices in providing logistical services within the region and globally;
- Recommending possible areas and activities to be undertaken for the National Logistics Development Policy;
- Carry out functions related to the logistical sector suggested by the procuring or requiring entity during the tenure of the assignment; and
- Any other function for achieving the objective of the assignment.

3. Methodology

A mixed methods approach may be employed for the assignment:

- Desk review
- Collecting already conducted studies and works on the logistics sector of Bangladesh by various public and private sector entities, research organizations, development partners, and CSOs.
- Stakeholder consultations
    - Key Information Interview (KII)
    - Focused Group Discussions (FGD)

The above methodology is indicative and relevant instruments should be adjusted in consultation with the requiring body and will be finalized before implementation.

4. Duration of the Assignment

The duration of the assignment is for 4 (four) months commencing on the date of contract signing. The Individual Consulted shall report to the project Authority /project Director for any clarification with regard to the assigned responsibilities or any issues that need to be mitigated.

5. Institutional Arrangement

The consultant will report directly to the project Director with close collaboration with other officials of the project. The Consultant shall be accountable to the project Director for his day-to-day activities.

6. Expected Deliverable

The Consultant will at least submit the following reports for the study to the project authority/Project Director:

(i) Inception Report
(ii) Draft Report of the study
(iii) Final Report of the Study

7. Qualification and Experiences of the Individual Consultant

The interest Individual Consultant should have at least a master's degree from a reputed university. He/ She must have at least 10 (Ten) years of experience in the government system and policies. He / She must have the ability to work efficiently and effectively in a multidisciplinary team.

8. Payment

Payments shall be made in line with agreed-on- outputs according to the following schedule

- **Draft Report:** Fifty percent (50%) lump-sum of contract price shall be paid upon submission of the Draft Report duly accepted by the Client.

- **Final Report:** Fifty percent (50%) lump-sum of contract price shall be paid upon submission of the Final Report duly accepted by the Client.

All relevant taxes and VAT shall be deducted at source at the applicable rates by the Government of Bangladesh.

9. Confidentiality and Proprietary Interests

The consultants shall not, either during the term or after termination of the assignment, disclose any proprietary or confidential information related to the Service Provider or the Government without prior written consent. Proprietary interests in all materials and documents prepared by the consultants under the assignment shall become and remain properties of ERD. This assignment will be administrated by the Support to Sustainable Graduation Project (SSGP) and all relevant rules, policies and procedures will be applied. The use of logo for any items/events/labeling must be coordinated with the SSGP and written approval must be obtained prior to use. All data gathered and produced under this contract and all deliverables of this contract are to be considered of propriety nature. The use, copy, publication and distribution of the entire or any portion of such deliverables without the expressed written consent of the Client is forbidden.

10. Miscellaneous

The project will provide to the Individual Consultant all key program documents & reports such as:

- Providing timely feedback to the Individual Consultant draft report and on any other issues relevant to the assignment.
- Any logistic Support such as transportation as well as office space will not be provided by the client; and
- The individual consultant will keep the client informed of the progress of the assignment time to time and consult the client as and when necessary.

Annex- 2: Checklist for Key Informants Interview

ID Number: Date:

Person Being Interviewed

QN.	Question	Answer
1	Name	
2	Gender	
3	Designation	
4	Organization	
5	Address of Organization	
6	Phone number	
7	Cell phone number	
8	E-mail	

Cold Chain Services

Sl. No.	Questions	Ans.
1	Please mention the present status of Cold Chain services facilities for logistics.	
2	Please mention your opinion regarding Policies, Rules, and regulations to enhance the capabilities of logistics to address present and future challenges.	
3	How the number of paper/documents required for Customs Declaration and Clearance can be reduced, like in Singapore or any other advanced country.	

Sl. No.	Questions	Ans.
4	Please give your opinion how the digital automated single point system can adjust/enhance Customs Declaration and Clearance and transportation, warehousing, and cargo goods testing to reduce lead time, dwell time, and congestion to make logistics cost-effective, seamless, and real-time.	
5	Please mention the challenges and ways forward to use 4iR tools for implementing seamless, cost-effective, time-saving logistics with tracking cargo goods.	
6	What steps can be taken to strengthen the coordinated activities of the Customs House with other agencies regarding export, import, and transit?	
7	How can the government enhance Cross-Border Cooperation in Monitoring and Clearing cargo?	
8	Please mention the challenges and way-forwards of special carriers and containers needed for cold-chain-related supply.	
9	What are the causes responsible for delays in port areas, final destination, and shippers' addresses? What can be done to overcome the causes of delays?	
10	How can multi-modal connectivity be used for logistics development?	
11	Please mention the major barriers and what can be done to establish ICDs warehouse facilities through govt. and private sector engagement?	
12	How can road transportation be improved for improved logistics services?	
13	Please mention the challenges and their possible ways to reduce the dependency on Road transportation by using increased usage of Rail and waterways transportation.	
14	Please mention the challenges and how to improve Air transportation for improved logistics services. (Please mention infrastructure, warehouse facilities, and other issues considering congestions for competitive-timely- smooth transportation along with Security and safety of Cargo Goods)	
15	What steps would be taken to establish/strengthen various laboratories for receiving goods inspection certificates?	
16	Please mention what are the challenges and way-forwards to introduce Third Party Logistics (3PL) and Fourth Party Logistics(4PL)	
17	Please mention what trades and occupations now exist in your area and what kinds of skilled workforce based on occupations are needed. Please mention levels (basic/semi-skilled/skilled/high skilled/supervisor/Mid-level Manager) of workers needed in these trades and occupations (Trade and Occupation wise Provide) (transportation, loading-unloading, customs clearances, warehousing, inventory management, handling of dangerous, toxic, flammable, explosive, cold-chain maintenance of goods)	
18	Please mention the challenges of developing a skilled workforce and their way-forwards.	
19	Please mention what steps would be required to equip business community/logistics employees for Logistics related issues. (If they required a hand-book in this regard)	

Sl. No.	Questions	Ans.
20	Any other suggestions (if any)	

KII for Freight Forwarding Services, Clearing and Forwarding Services

Sl. No.	Questions	Ans.
1	What is the present status of facilitating logistics regarding infrastructure, institutions, and human resources?	
2	Please mention your opinion regarding Policies, Rules, and regulations to enhance the capabilities of logistics to address present and future challenges	
3	How can the number of paper/documents required for Customs Declaration and Clearance be reduced like in Singapore or any other advanced country?	
4	Please give your opinion on how the digital automated single point system can adjust/enhance Customs Declaration and Clearance and transportation, warehousing, and cargo goods testing to reduce lead-time, dwell time, and congestion to make logistics cost-effective, seamless, and real-time.	
5	Please mention the challenges and ways forward to use 4iR tools for implementing seamless, cost-effective, time-saving logistics with tracking cargo goods.	
6	What steps can be taken to strengthen the coordinated activities of the Customs House with other agencies regarding export, import, and transit?	
7	Please mention what can be done by the government to enhance Cross-Border Cooperation in Monitoring and Clearing cargo.	
8	Please mention the causes for delays in transporting goods cargo, especially in port areas, as well as the final destination and the shippers' address. What can be done to overcome the causes of delays?	
9	Please mention the major barriers and what can be done to establish ICDs and warehouse facilities through government and private sector engagement.	
10	What are the challenges and possible ways to reduce the dependency on road transportation by using increased usage of rail and waterways transportation?	
11	What are the challenges, and how can air transportation be improved for improved logistics services? (Please mention infrastructure, warehouse facilities, and other issues considering congestions for competitive-timely- smooth transportation along with Security and safety of Cargo Goods)	
12	How can the multi-modal connectivity for logistics development be enhanced?	
13	What can be done to use the container vehicles optimally and reduce trips of unloaded/ partially loaded containers?	
14	What are the challenges and way-forwards to introduce Third Party Logistics (3PL) and Fourth Party Logistics(4PL)	
15	Please mention what trades and occupations now exist in your area and what kinds of skilled workforce based on work are needed.	
16	Please mention the challenges of developing a skilled workforce and their way forward.	

Sl. No.	Questions	Ans.
17	What steps would be required to equip business community/logistics employees for logistics-related issues? (If they required a hand-book in this regard)	
18	Do you think a separate logistics division/authority would be established for effective coordination and better management?	
19	Any other suggestions (if any)	

KII for Main-line Operator Services

Sl. No.	Questions	Ans.
1	What are the primary challenges faced by main-line operator services in Bangladesh's logistics sector in terms of infrastructure, efficiency, and connectivity?	
2	How do main-line operators contribute to the overall logistics ecosystem in Bangladesh, particularly in terms of international trade and cargo movement?	
3	What are the critical factors influencing the growth and competitiveness of main-line operator services within Bangladesh's logistics landscape?	
4	How is the current infrastructure for cold storage and transportation compliant with international standards and what improvements are needed?	
5	What initiatives or investments should be taken to modernize or expand cold chain facilities in different regions of Bangladesh?	
6	What kind of services will main-line operators operate to meet the demands of different industries and cargo types in Bangladesh?	
7	What should main-line operators do to improve market position or meet the needs of specific customers?	
8	How will major line operators ensure reliability, timeliness, and cost-effectiveness in their operations, especially in the context of global shipping networks?	
9	Who are the key stakeholders collaborating with main-line operator services in Bangladesh, and how do these partnerships impact the efficiency and reach of their services?	
10	What role do government agencies or regulatory bodies play in supporting or regulating main-line operator services in the country?	
11	How do collaborative efforts or alliances among main-line operators or with other logistics entities influence the industry's competitiveness and growth?	
12	What role should government agencies or regulatory agencies play in supporting or regulating the country's main-line operator services?	
13	What kind of relationship do you think should exist between main-line operators or other logistics companies to influence industry competition and growth?	
14	Who are the key stakeholders collaborating with main-line operator services in Bangladesh and how do these partnerships affect the efficiency and breadth of their services?	
15	What role should government agencies or regulatory agencies play in supporting or regulating the country's main-line operator services?	
16	What kind of relationship do you think should exist between main-line operators or other logistics companies to influence industry competition and growth?	

Sl. No.	Questions	Ans.
17	Considering the changing business patterns and global economic trends, how do you think the demand for main line operator services in Bangladesh can be developed?	
18	Which specific industries or sectors do you think contribute significantly to the demand for main-line operator services within the logistics landscape of Bangladesh?	
19	Are there any emerging trends or changes in consumer demand affecting the services provided by main line operators in Bangladesh?	
20	What are the major challenges faced by main-line operators in Bangladesh concerning port infrastructure, customs procedures, or regulatory constraints?	
21	How do you think main line operators should deal with issues related to container traffic congestion, ship schedules, or efficient cargo handling between ports?	
22	What are the expected trends or future developments in main-line operator services within the logistics industry?	
23	How can main-line operators leverage technological advancements or strategic partnerships to enhance their services and competitiveness?	
24	What are the opportunities for cooperation between main-line operators and other logistics players to enhance the overall efficiency of the logistics ecosystem in Bangladesh?	
25	Do you think a separate logistics division/authority would be establish for effective coordination and better management? If yes, give the possible way out.	
26	What initiative would be taken to established Bangladesh Logistics Statistics System (BLSS) for better management and monitoring the sector	
27	Do you think additional charges should be imposed for environmental pollution and noise	
28	Do you think the manpower of the logistic sector is sufficient. If not, what should be taken for recruitment of the efficient man power.	
29	Do you think Multimodal transport should be increase in our country? If yes, what should be done. Please specify	
30	What steps would be taken for policy of fair of goods transportation according to appropriate price, distance and loads?	
31	What steps would be implemented for reducing the logistics cost compared to other countries?	
32	What strategies can be implemented to address congestion, traffic management, and safety concerns on roads to improve the effectiveness of road transport in the logistics sector of Bangladesh?	
33	What types of security measures are needed to enhance the security of logistics sector?	

Oil/Gas/LNG Tank Terminal Services

Sl. No.	Questions	Ans.
1	Please mention the port facilities for the import of Oil/Gas/LNG unloading, gasification, and transportation.	
2	Please give your opinion regarding Policies, Rules, and regulations to enhance the capabilities of logistics to address present and future challenges.	

Sl. No.	Questions	Ans.
3	How can the number of paper/documents required for Customs Declaration and Clearance be reduced, like in Singapore or any other advanced country?	
4	Please mention how the digital automated single point system can adjust/enhance Customs Declaration and Clearance and transportation, warehousing, and cargo goods testing to reduce lead time, dwell time, and congestion to make logistics cost-effective, seamless, and real-time.	
5	Please mention the challenges and ways forward to use 4iR tools for implementing seamless, cost-effective, time-saving logistics with tracking cargo goods.	
6	What steps can be taken to strengthen the coordinated activities of the Customs House with other agencies regarding export, import, and transit?	
7	What can the government do to enhance Cross-Border Cooperation in Monitoring and Clearing cargo?	
8	Please mention the major barriers to establishing a Depot for Oil/Gas/LNG storage and the steps needed to overcome the obstacles to handle Oil/Gas/LNG storage effectively.	
9	What are the major barriers to establishing a depot for oil/gas/LNG storage, and what steps would be needed to overcome the obstacles to effectively handling oil/gas/LNG storage?	
10	Please mention the causes responsible for delays in handling and transportation of Fuel (Oil, coal, LNG), especially in port areas, as well as the final destination and the shippers' address. What can be done to overcome the causes of delays?	
11	What are the challenges and possible ways to reduce the dependency on road transportation by using increased rail and waterways transportation?	
12	How can the multi-modal connectivity for logistics development be enhanced?	
13	How can Cross-Border Cooperation in Monitoring and Clearing cargo be enhanced?	
14	Please mention what are the challenges and way-forwards to introduce Third Party Logistics (3PL) and Fourth Party Logistics (4PL)	
	What types of trades and occupations exist in your area, and what kinds of skilled workforce based on work are needed?	
13	Please mention levels (basic/semi-skilled/skilled/high skilled/supervisor/Mid-level Manager) of workers needed in these trades and occupations (Trade and Occupation wise Provide) (transportation, loading-unloading, customs clearances, warehousing, inventory management, handling of dangerous, toxic, flammable, explosive, cold-chain maintained goods)	
14	What are the challenges of developing a skilled workforce and their way forward	
15	Please mention what steps would be required to equip business community/logistics employees for Logistics related issues. (If they required a hand-book in this regard)	
16	Please mention what steps would be required to equip business community/logistics employees for Logistics related issues. (If they required a hand-book in this regard)	
17	Any other suggestions (if any)	

Private Inland Container Depot and Container Freight Station Services, Private Warehouse

Sl. No.	Questions	Ans.
1	What role do Private ICDs and CFS services play in facilitating the connectivity between different modes of transportation, such as road, rail, and maritime routes?	
2	Please mention the border/port facilities for cargo handling.	
3	Please mention your opinion regarding Policies, Rules, and regulations to enhance the capabilities of logistics to address present and future challenges.	
4	How do Private ICDs and CFS services contribute to improving the efficiency and timeliness of cargo clearance processes for importers and exporters in Bangladesh?	
5	How can the amounts of paper/documents required for Customs Declaration and Clearance be reduced like in Singapore or any other advanced country?	
6	Please give your opinion on how the digital automated single point system can adjust/enhance Customs Declaration and Clearance and transportation, warehousing, and cargo goods testing to reduce lead-time, dwell time, and congestion to make logistics cost-effective, seamless, and real-time.	
7	What are the challenges and ways forward to use 4iR tools for implementing seamless, cost-effective, time-saving logistics with tracking cargo goods?	
8	What steps can be taken to strengthen the coordinated activities of the Customs House with other agencies regarding export, import, and transit?	
9	How can the government enhance Cross-Border Cooperation in Monitoring and Clearing cargo?	
10	What can be done to overcome the causes of delays?	
11	Please mention the major barriers and what can be done to establish ICDs and warehouse facilities through government and private sector engagement.	
12	How can road transportation be improved for improved logistics services? (Please mention infrastructure and other issues considering congestions/traffic jams for competitive-timely- smooth transportation along with Security and safety of Cargo Goods)	
13	What are the challenges and possible ways to reduce the dependency on road transportation by using increased rail and waterways transportation?	
14	How to improve Air transportation for improved logistics services. (Please mention infrastructure, warehouse facilities, and other issues considering congestions for competitive-timely- smooth transportation along with Security and safety of Cargo Goods)	
15	How can the multi-modal connectivity for logistics development be enhanced?	
16	What can be done to use the container vehicles optimally and reduce trips of unloaded/ partially loaded containers?	
17	Please mention what are the challenges and way-forwards to introduce Third Party Logistics (3PL) and Fourth Party Logistics(4PL)	
18	Please mention what trades and occupations exist in your area and what kinds of skilled workforce based on occupations are needed.	

Sl. No.	Questions	Ans.
19	Please mention levels (basic/semi-skilled/skilled/high skilled/supervisor/Mid-level Manager) of workers needed in these trades and occupations (Trade and Occupation wise Provide) (transportation, loading-unloading, customs clearances, warehousing, inventory management, handling of dangerous, toxic, flammable, explosive, cold-chain maintained goods)	
20	Please mention the challenges of developing a skilled workforce and their way forward.	
21	Any other suggestions (if any)	

KII for Port

Sl. No.	Question	Ans.
1.	What are the border/port facilities for export and import? Please mention.	
2.	How can the border/port processing be simplified and shortened?	
3.	Is there any automated process/single-point window for customs clearing?	
4.	What problems are faced during customs clearances?	
5.	How can we strengthen the coordinated customs activities with other agencies regarding export and import?	
6.	How can integrated customs and clearance facilities reduce lead-time dwell time for export-import-transit?	
7.	What are the causes responsible for delays in transportation? What can be done to overcome the causes?	
8.	What steps should be taken to increase the facilities of road, rail, ICDs, Port, air, water and warehouse?	
9.	How can the container vehicles be used optimally and reduce unloaded/partially loaded cargo trips?	
10.	What steps would be taken for the fair of goods transportation policy according to appropriate price, distance and loads?	
11.	What steps would be implemented to reduce the logistics cost compared to other countries?	
12.	What types of security measures are needed to enhance the security of the logistics sector?	
13.	How do we reduce dwelling time, loading-unloading time, and Transit time logistics-related times?	
14.	Is the workforce of the logistics sector sufficient? If not, what should be done to recruit an efficient workforce?	
15.	What are the problems or obstacles to creating a skilled workforce in the logistics sector? What steps can be taken to build a skilled workforce?	
16.	Do you think the government's HRD and skill development initiatives will introduce a diploma/level-based skill training in logistics and supply chain management to create a pool of qualified human resources to serve the logistics sector? If yes, what steps should be taken?	
17.	Do you think the management service needs to be increased? If yes, please give your	

Sl. No.	Question	Ans.
	opinion and suggestions to improve the management.	
18.	Please give your opinion: what are the key challenges logistics sectors face, and how do they overcome them?	
19.	Any other suggestions (if any)	

Courier and postal services

Sl. No.	Questions	Ans.
1.	How would you explain the current status of courier and postal services in Bangladesh? How are these services working to improve delivery accuracy in the final stages of the delivery chain?	
2	What are the current facilities for of courier and postal services exists in Bangladesh? How does the courier and postal services impact on the existing logistics industry until now? How do courier and postal services contribute to enhancing the overall customer experience?	
3	What steps would be implemented for reducing the overall cost by Courier and Postal services compared to other countries?	
4	What regulatory challenges do courier and postal services face in the logistics sector, both domestically and internationally?	
5	What benefits and challenges are associated with the use of technologies in order to integrate courier and postal services into broader supply chain systems?	
6	How much papers/documents are now required for getting courier services licenses?	
7	Do you think performance of laboratory testing services delay the smooth operation by courier company?	
8	How are the Courier and Postal services utilized for efficient export - import management in the logistics industry? What challenges do courier and postal services face in the last-mile delivery process?	
9	How are logistics professionals trained to effectively use these above mentioned logistics services?	
10	How do Courier logistics companies ensure interoperability between different information systems and technologies?	
11	Please mention which documents need to be incorporated in the automated/single point system for Customs Declaration and Clearance by courier and postal service company?	
12	What are the causes responsible for delays in transportation especially in port areas as well as final destination along with shippers' address? What can be done to overcome the causes of delays?	
13	What are major barriers of establishing relationship between Courier and Postal services and ICDS, Warehouse facilities? What steps would be needed to overcome the barriers for the effective handling of Cargo goods by Courier and Postal services?	

Sl. No.	Questions	Ans.
14	What are the causes responsible for delays in transportation especially in port areas as well as final destination along with shippers' address? What can be done to overcome the causes of delays? What type of complain your agency received in this regard?	
15	What steps would be taken for establishing/ strengthening collaboration with internationally reputed third-party testing laboratories for quick clearance of goods at ports by Courier and Postal Services?	
16	What steps would be implemented for reducing the overall cost by Courier and Postal Services compared to other countries?	
17	Please mention levels (basic/semi-skilled/skilled/high skilled/supervisor/Mid-level Manager) of workers needed in this sector trades and occupations. What steps would be taken for developing skilled workforce for getting world class Courier and Postal services in the country? How are logistics professionals trained to effectively use these Courier and Postal services? What steps would be taken for developing skilled workforce for getting world class Courier and Postal services in the country?	
18	Any other suggestions (if any)	

KII for E-commerce services:

Sl. No.	Questions	Ans.
1.	How would you explain the current status of e-commerce services in Bangladesh? How are these services working to improve accuracy in the final stages of the delivery chain?	
2	What are the current facilities for e-commerce services exists in Bangladesh?	
3	How does the e-commerce services impact on the existing logistics industry today?	
4	What regulatory challenges do the e-commerce services face in the logistics sector, both domestically and internationally?	
5	What benefits and challenges are associated with the use of technologies in order to integrate **e-commerce** logistics services into broader supply chain systems and how can we improve it?	
6	What types of rules, regulation, policies are associated to run this industry now in Bangladesh? How much papers/documents are now required for getting **e-commerce** logistics licenses?	
7	How do these **e-commerce services** contribute to enhancing the overall customer experience in terms of logistics performance?	
8	What challenges do the **e-commerce services** face in the last-mile delivery process? How would the change in the mode of work affect workers productivity in ecommerce sector?	
9	Please mention levels (basic/semi-skilled/skilled/high skilled/supervisor/Mid-level Manager) of workers needed in these trades and occupations. What steps would be taken for developing skilled workforce for getting world class E-commerce services in the country? How are logistics professionals trained to effectively use these **e-commerce services**?	

Sl. No.	Questions	Ans.
10	How do **e-commerce** logistics companies ensure interoperability between different information systems and technologies?	
11	How are the **e-commerce services** utilized for efficient export - import management in the logistics industry?	
12	What are the causes responsible for delays in transportation especially in port areas as well as final destination along with shippers' address? What can be done to overcome the causes of delays?	
13	How **e-commerce services** can be entangled to enhance the multi-modal connectivity for logistics development?	
14	Do you think performance of laboratory testing services delay the smooth operation by **e-commerce company**?	
15	What steps would be implemented for reducing the overall cost by **e-commerce services** compared to other countries?	
16	How would the change in the mode of work affect workers productivity in ecommerce sector?	
17	Any other suggestions (if any)	

KII for Information and technological services

Sl. No.	Questions	Ans.
1.	How would you explain the current status of information and technological services in Bangladesh? How are these services working to improve delivery accuracy in the final stages of the delivery chain?	
2	How does the information and technological services impact on the existing logistics industry until now? How Information and Technology Services can contribute to enhance the multi-modal connectivity for logistics development?	
3	What regulatory challenges do information and technological services face in the logistics sector, both domestically and internationally in the last-mile delivery process?	
4	What benefits and challenges are associated with the use of technologies in order to integrate information and technological services into broader supply chain systems?	
5	How much papers/documents are now required for getting information and technological services licenses?	
6	How do information and technological services contribute to enhancing the overall customer experience?	
7	How are logistics professionals trained to effectively use information and technological services?	
9	How do information and technological services logistics companies ensure interoperability between different information systems and technologies?	
10	How are information and technological services utilized for efficient inventory and ware-housing management in the logistics industry?	

Sl. No.	Questions	Ans.
11	Please mention which documents need to be incorporated in the automated/single point system for Customs Declaration and Clearance by information and technological services?	
12	What are the causes responsible for delays in transportation especially in port areas as well as final destination along with shippers' address? What can be done to overcome the causes of delays by maximizing Information and Technology Services?	
13	Do you think laboratory testing services can be integrated with Information and Technology Services? What steps would be taken for improving various laboratories for receiving goods inspection certificates and effectively strengthening logistic operation in different ports of Bangladesh	
14	What steps would be taken for establishing/ strengthening collaboration with internationally reputed third-party testing laboratories for quick clearance of goods at ports by Information and Technology Services?	
15	Do you think introduction of Third-Party Logistics (3PL) or Forth Party Logistics(4PL) can help ensuring better logistic support by Information and Technology Services?	
16	What steps would be implemented for reducing the overall cost by Information and Technology Services compared to other countries?	
17	What types of trades and occupations are now exists in Information and Technology Services area and what types of occupations are needed? What are the problems or obstacles to creating skilled manpower in the Information and Technology Services sector in terms of logistics? What steps would be taken for developing skilled workforce for getting world class Information and Technology Services in the country?	
18	Identify the priority areas where more investments are required for ensuring best Information and Technology Services in the country?	
19	Any other suggestions (if any)	

KII for Ride-sharing services

Sl. No.	Questions	Ans.
1.	How would you explain the current status of Ride-sharing services in Bangladesh? How are these services working to improve delivery accuracy in the final stages of the delivery chain?	
2	What are the current facilities available for Ride-sharing services in Bangladesh?	
3	How does the Ride-sharing services impact on the existing logistics industry today?	
4	What regulatory challenges do Ride-sharing services face in the logistics sector, both domestically and internationally?	
5	What benefits and challenges are associated with the use of technologies in order to integrate Ride-sharing services into broader supply chain systems?	
6	How much papers/documents are now required for getting ride-sharing services licenses?	

Sl. No.	Questions	Ans.
7	How do ride-sharing services contribute to enhancing the overall customer services in terms of product export and import in the port and customs systems?	
8	What challenges do ride-sharing services face in the last-mile delivery process?	
9	How are logistics professionals trained to effectively use ride-sharing services in Bangladesh? How do you compare it with other neighboring countries?	
10	How do ride-sharing services logistics companies ensure interoperability between different information systems and technologies?	
11	How are ride-sharing services utilized for efficient inventory and ware-housing management in the logistics industry?	
12	Please mention which documents need to be incorporated in the automated/single point system for Customs Declaration and Clearance by ride-sharing services?	
13	What steps can be taken to strengthen the coordinated activities of ride-sharing services with their agencies regarding export and import?	
14	What are the causes responsible for delays in transportation especially in port areas as well as final destination along with shippers' address? What can be done to overcome the causes of delays? What type of complain your agency received in this regard?	
15	Do you think laboratory testing services performance delay the smooth operation by ride-sharing services?	
16	What steps would be implemented for reducing the overall cost by ride-sharing services compared to other countries?	
17	What are the problems or obstacles to creating skilled manpower in the ride-sharing services sector? What steps would be taken for developing skilled workforce for getting world class ride-sharing services in the country?	
18.	Any other suggestions (if any)	

KII for Road transport and communication services

Sl. No.	Questions	Ans.
1.	How would you describe the current status of road transport and communication services in the logistics sector in Bangladesh?	
2.	How does road transport and communication services in the logistics sector in Bangladesh contribute to the overall economic performance of the country?	
3.	What are the key trends and developments shaping road transport and communication services in the logistics industry in Bangladesh	
4.	What initiatives or investments are being made to improve and modernize the road network to support the growing demands of the logistics sector in Bangladesh?	
5.	Do you think intelligent transport system (ITS) needs to be introduced for traffic management and cargo tracking? If necessary, what steps should be taken?	
6.	What steps should be taken to introduce the green transportation systems (e-mobility e.g Electric Vehicle etc.) in the logistic sector of Bangladesh	

Sl. No.	Questions	Ans.
7.	What are the key challenges faced by road transport in Bangladesh and how are they affecting the logistics industry?	
8.	Do you think the government's policies and regulations need to be improved in terms of the formation of the road transport sector and its impact on the logistics industry in Bangladesh (if so, what kind of changes are needed?	
9.	Do you think a separate logistics division/authority would be establish for effective coordination and better management? If yes, give the possible way out.	
10.	What initiative would be taken to established Bangladesh Logistics Statistics System (BLSS) for better management and monitoring the sector	
11.	Do you think additional charges should be imposed for environmental pollution and noise?	
12.	Do you think the manpower of the logistic sector is sufficient? If not, what should be taken for recruitment of the efficient manpower.	
13.	What steps would be taken for policy of fair of goods transportation according to appropriate price, distance and loads?	
14.	What steps would be implemented for reducing the logistics cost compared to other countries?	
15.	What types of security measures are needed to enhance the security of logistics sector?	
16.	How to reduce dwelling time and truck loading-time times?	
17.	What are the key recommendations for improving road transport and communication services in the logistics sector in Bangladesh?	
18	Any other suggestions (if any)	

Custom Related questionnaires for KIIs

Sl. No.	Question	Ans.
1.	What are the specific customs procedures and documentation requirements for goods entering or leaving Bangladesh?	
2.	What are the key roles and responsibilities of customs authorities in regulating and facilitating international trade within Bangladesh?	
3.	What measures can Bangladesh customs authorities take to streamline and modernize their processes, reduce clearance times and facilitate trade?	
4.	How do customs regulations in Bangladesh address issues related to security, compliance, and risk management in international trade logistics?	
5.	How can strengthen the coordinated activities of customs with other agencies regarding export and import?	
6.	How can establish integrated customs and clearance facilities to reduce lead-time, dwell time for export-import-transit?	

Sl. No.	Question	Ans.
7.	What are the key factors contributing to delays or bottlenecks in the customs clearance process for imported and exported goods?	
8.	What technologies must be introduced to enhance customs operations, streamline processes, and increase efficiency in the logistics sector?	
9.	How does the customs department in Bangladesh manage and mitigate risks associated with illicit trade, smuggling, or counterfeit goods within the logistics supply chain?	
10.	What collaborative efforts exist between customs authorities and private sector stakeholders to enhance trade efficiency and reduce complexities in the logistics sector?	
11.	What initiatives are being taken to foster closer integration with neighboring countries to improve cross-border logistics operations?	
12.	How do bilateral or multilateral trade agreements influence customs procedures, duties, and trade flows within Bangladesh's logistics sector?	
13.	What efforts can be taken to ease the documentation process to reduce administrative burden and expedite trade transactions?	
14.	What are the primary challenges faced by customs authorities in Bangladesh in ensuring a seamless and efficient flow of goods within the logistics sector?	
15.	How can the amounts of paper/documents required for Customs Declaration and Clearance be reduced like in Singapore or any other advanced country?	
16.	Please give your opinion on how the digital automated single point system can adjust/enhance Customs Declaration and Clearance and transportation, warehousing, and cargo goods testing to reduce lead-time, dwell time, and congestion to make logistics cost-effective, seamless, and real-time.	
17.	Any other suggestions (if any)	

KII for Cargo Sea Shipping Services

Sl. No.	Question	Ans.
1.	How would you describe the current state of cargo sea shipping services in the logistics sector in Bangladesh?	
2.	What are the primary challenges faced by cargo sea shipping services in Bangladesh, especially concerning efficiency, capacity, and competitiveness?	
3.	What are the main factors influencing the growth and performance of cargo sea shipping services in the logistics sector in Bangladesh?	
4.	What initiative should be taken for tracking, monitoring, and security of cargo shipped via sea routes in Bangladesh	
5.	What strategies can be employed to optimize containerization and the handling of different types of cargo to improve the efficiency of sea shipping services in Bangladesh?	
6.	What are the key recommendations for improving cargo sea shipping services in the logistics sector in Bangladesh?	
7.	Any other suggestions (if any)	

KII for Air/Aviation Services

Sl. No.	Question	Ans.
1.	What role do air logistics hubs or cargo terminals play in facilitating efficient movement and handling of goods in Bangladesh?	
2.	How do customs and regulatory processes influence the speed and effectiveness of air freight logistics in Bangladesh?	
3.	What initiatives or investments are being made to expand and modernize the air cargo infrastructure to meet the growing demands of the logistics sector in Bangladesh?	
4.	What strategies can be implemented to enhance collaboration between air carriers, airports, and the logistics sector to improve the overall efficiency of air cargo services in Bangladesh?	
5.	What are the advantages and limitations of using air freight for logistics operations in Bangladesh, especially in comparison to other modes of transport?	
6.	What are the main factors influencing the growth and performance of air/aviation services in the logistics sector in Bangladesh?	
7.	What steps may be necessary to improve the performance of the cargo handling agent in Dhaka Airport?	
8.	Do you think the manpower of the logistic sector is sufficient? If not, what should be taken for recruitment of the efficient manpower.	
9.	Do you think workers have adequate knowledge to handle dangerous goods? If not, what training they should be provided and what policies would be taken	
10.	Do you think government's HRD and skill development initiatives will introduce a diploma in logistics and supply chain management with the intention of creating a pool of qualified human resources to serve the logistics sector? If yes, what steps should be taken?	
11.	What are the challenges faced by the aviation sector in Bangladesh in terms of supporting the logistics industry, and how are they being addressed?	
12.	Do you think the management service is insufficient? If yes, please, give your opinion and give suggestions to improve the management	
13.	What steps would be implemented for reducing the logistics cost compared to other countries?	
14.	What are the key recommendations for improving road transport and communication services in the logistics sector in Bangladesh?	
15.	Any other suggestions (if any)	

KII for Deep Sea fishing industry services by mechanized trawlers

Sl. No.	Question	Ans.
1	What technological advancements or innovations have influenced the efficiency and productivity of mechanized trawlers in the deep-sea fishing sector in Bangladesh?	
2	What are the environmental sustainability considerations associated with the operations of mechanized trawlers in deep-sea fishing, and how are they being addressed?	
3	What challenges do mechanized trawlers face in terms of infrastructure, regulations, or market access in Bangladesh's deep-sea fishing industry	

Sl. No.	Question	Ans.
4	What role does government policy play in regulating and supporting the deep-sea fishing industry, specifically regarding mechanized trawlers, in Bangladesh?	
5	What initiatives or investments are being made to modernize and upgrade the equipment and capabilities of mechanized trawlers for deep-sea fishing in Bangladesh?	
6	Do you think a separate logistics division/authority would be establish for effective coordination and better management? If yes, give the possible way-out.	
7	What initiative would be taken to established Bangladesh Logistics Statistics System (BLSS) for better management and monitoring the sector	
8	Do you think the manpower of the logistic sector is sufficient? If not, what should be taken for recruitment of the efficient manpower.	
9	Do you think Multimodal transport should be increase in our country? If yes, what should be done. Please specify	
10	What steps would be implemented for reducing the logistics cost compared to other countries?	
11	What types of security measures are needed to enhance the security of logistics sector?	
12	What are the key recommendations for improving deep sea fishing industry services in the logistics sector in Bangladesh?	
13	Any other suggestions (if any)	

KII for Inland Shipping Services

Sl. No.	Question	Ans.
1	What is the current status of Bangladesh's domestic shipping services, especially in terms of infrastructure, fleet size and navigable waterways?	
2	How do inland shipping services contribute to the overall logistics network within Bangladesh, connecting different regions and facilitating trade?	
3	How do you think inland shipping services can be supplemented or integrated into the country's logistics network with other modes of transportation such as roads or railways?	
4	Which industries or sectors rely heavily on inland shipping to transport goods, and which specific cargo types are usually transported via inland waterways?	
5	Do you think the regulatory framework or policy that governs domestic shipping services should be changed? If so, in what cases do we need to change?	
6	How do government policies or initiatives help in the development and development of inland waterway transport in Bangladesh?	
7	Are there any significant technological solutions or advancements adopted by inland shipping operators to improve navigation, cargo handling or operational efficiency? If so, what is it?	
8	Are there any emerging opportunities or trends that could enhance the efficiency and expansion of inland shipping operations within the country?	
9	How have technological advancements or innovations affected the efficiency and competitiveness of Bangladesh's domestic shipping services?	
10	How can stakeholders collaborate or invest in further development and modernization of	

Sl. No.	Question	Ans.
	domestic shipping infrastructure while ensuring sustainability and environmental protection?	
11	What strategies or initiatives can be taken to increase the resilience and effectiveness of domestic shipping services in the evolving logistics landscape of Bangladesh?	
12	In your opinion, what are the primary challenges of inland shipping services in Bangladesh and how can the problems be addressed?	
13	Do you think a separate logistics division/authority would be establish for effective coordination and better management? If yes, give the possible way-out.	
14	What initiative would be taken to established Bangladesh Logistics Statistics System (BLSS) for better management and monitoring the sector	
15	Do you think additional charges should be imposed for environmental pollution and noise	
16	Do you think Multimodal transport should be increase in our country? If yes, what should be done. Please specify	
17	What steps would be taken for policy of fair of goods transportation according to appropriate price, distance and loads?	
18	What steps would be implemented for reducing the logistics cost compared to other countries?	
19	Do you think the manpower of the logistic sector is sufficient? If not, what should be taken for recruitment of the efficient manpower.	
20	What strategies can be implemented to address congestion, traffic management, and safety concerns on roads to improve the effectiveness of road transport in the logistics sector of Bangladesh?	
21	What types of security measures are needed to enhance the security of logistics sector?	
22	What are the key recommendations for improving Inland Shipping services in the logistics sector in Bangladesh?	
23	Any other suggestions (if any)	

Questionnaires for KII Related to Skills

Sl. No.	Questionnaire	Ans.
1.	What specific technical skills are currently in high demand within the logistics sector in Bangladesh?	
2.	How do you assess the impact of the Fourth Industrial Revolution technologies like IoT, AI, and robotics on the skill sets required in the logistics sector of Bangladesh, and what steps can be taken to prepare the workforce for these advancements?	
3.	What strategies or initiatives would most effectively bridge the gap between the skills taught in academic settings and the practical skills needed in Bangladesh's logistics workforce?"	
4.	What special skills or knowledge are important for logistics professionals in Bangladesh to navigate environmentally friendly supply chain practices?"	
5.	What steps should stakeholders take to ensure continuous skilled workers in the logistics sector in Bangladesh?	

Sl. No.	Questionnaire	Ans.
6.	What kind of collaborative efforts can be undertaken between the public and private sectors to develop skills and increase capacity among the logistics workforce in Bangladesh?	
7.	Could you explain on the significance of soft skills (adaptability, communication, etc.) in Bangladesh's logistics industry? To what extent do these abilities play a role in daily operations?	
8.	What role does international collaboration play in influencing the skill development within the Bangladeshi logistics sector?	
9.	In your opinion, what specific strategies or initiatives would be most effective in bridging the gap between the skills taught in academic settings and the practical skills needed in Bangladesh's logistics workforce?	
10.	How do educational institutions in Bangladesh align their curriculum to meet the skill demands of the logistics sector? Are there any areas where improvement is needed?	
11.	What advanced technical or digital skills are essential for professionals in the logistics sector in Bangladesh?	
12.	In your experience, what are the key challenges faced by the logistics workforce in Bangladesh regarding skill gaps or deficiencies?	
13.	Considering the geopolitical landscape and international trade dynamics, what skills would you recommend for an effective global supply chain network?	
14.	Any other suggestions (if any)	

KII for Rail transport services

Sl. No.	Questionnaire	Ans.
1.	What is the current state of railway services within Bangladesh's logistics sector, particularly in terms of infrastructure, network coverage, and capacity?	
2.	How do railway services contribute to the overall logistics network in Bangladesh, connecting different regions and supporting the transportation of goods?	
3.	How can the railway transport network be supplemented or integrated with the roadways, inland waterways or other modes of air freight transport in Bangladesh?	
4.	Which industries or sectors heavily rely on railway services for the transportation of goods, and what types of cargo are commonly transported via rail?	
5.	What is the significance of railway services in supporting domestic transport and trade activities within the logistics ecosystem of Bangladesh?	
6.	How can the railway transport network be supplemented or integrated with roads, inland waterways or other modes of air freight transport in Bangladesh?	
7.	Do you think the regulatory framework or policies that govern railway services in Bangladesh are sufficient? If not, do we need to change?	
8.	Are there any emerging opportunities or trends that could enhance the efficiency and expansion of rail transport operations within the country?	
9.	How are technological advancements or innovations addressing issues related to the expansion of Bangladesh's rail network, technology adoption and safety standards in rail	

Sl. No.	Questionnaire	Ans.
	transport?	
10.	Do you think the manpower of the logistic sector is sufficient? If not, what should be taken for recruitment of the efficient manpower.	
11.	Do you think Multimodal transport should be increase in our country? If yes, what should be done. Please specify	
12.	Are there any notable technological solutions or advancements adopted by railway operators to improve infrastructure, scheduling, cargo handling, or operational efficiency?	
13.	What strategies or initiatives can be taken to enhance the resilience and effectiveness of rail services in the evolving logistics landscape of Bangladesh?	
14.	In your opinion, what are the primary challenges of rail services in Bangladesh and how can the problems be addressed?	
15.	Do you think a separate logistics division/authority would be establish for effective coordination and better management? If yes, give the possible wayout.	
16.	What initiative would be taken to established Bangladesh Logistics Statistics System (BLSS) for better management and monitoring the sector	
17.	Do you think additional charges should be imposed for environmental pollution and noise	
18.	What steps would be taken for policy of fair of goods transportation according to appropriate price, distance and loads?	
19.	What steps would be implemented for reducing the logistics cost compared to other countries?	
20.	How to reduce dwelling time, Customs clearance time and Load-unloading times?	
21.	What types of security measures are needed to enhance the security of logistics sector?	
22.	Do you think the management service is insufficient? If yest, please, give your opinion and give suggestions to improve the management	
23.	Any other suggestions (if any)	

KII for Regional feeder vessels and lighter/coastal/offshore shipping industry services

Sl. No	Questionnaire	Ans.
1.	What role should be play by the regional feeder vessels in connecting Bangladeshi ports to neighboring countries and facilitating trade in the region?	
2.	What are the challenges faced by regional feeder vessels and lighter/coastal/offshore shipping services in Bangladesh, and how are they being addressed?	
3.	What can be done to improve the lighterage service to improve cargo handling efficiency in Bangladesh's ports and inland waterways?	
4.	What strategies can be implemented to enhance the connectivity and reliability of regional feeder vessels in Bangladesh's logistics network?	
5.	What initiatives or investments should be taken undertaken to modernize and improve the infrastructure supporting coastal/offshore shipping in Bangladesh?	
6.	In what ways does the coastal shipping industry in Bangladesh contribute to reducing carbon emissions and promoting a more sustainable logistics ecosystem	
7.	What opportunities should be needed for further collaboration or partnerships between the	

Sl. No	Questionnaire	Ans.
	government, private sector, and international entities to enhance the capabilities and reach of these maritime logistics services in Bangladesh?	
8.	What are the key recommendations for improving regional feeder vessels and lighter/coastal/offshore shipping industry services in the logistics sector in Bangladesh?	
9.	Any other suggestions (if any)	

KII for Sea port services

Sl. No.	Questionnaire	Ans.
1.	How do sea port services in Bangladesh contribute to regional and international trade facilitation?	
2.	What are the major infrastructure developments or expansions underway or planned for sea ports in Bangladesh?	
3.	How does government policy support or hinder the development and enhancement of sea port services in Bangladesh?	
4.	Do the regulatory framework and policies governing the operations of seaports in Bangladesh need to change? If yes, what kind of policy is required in some cases?	
5.	What challenges does the maritime logistics sector face in Bangladesh, particularly concerning seaport operations and how are they being addressed?	
6.	How do customs and clearance procedures at seaports influence the speed and efficiency of cargo handling in Bangladesh?	
7.	What role do public-private partnerships play in the development and management of seaport facilities in Bangladesh?	
8.	Do you think, the integration of technology and automation improve the productivity and competitiveness of seaport services in Bangladesh? If yes how?	
9.	What initiatives or investments are being made to improve connectivity between seaports and other modes of transport within Bangladesh's logistics network?	
10.	In what ways do the strategic locations of Bangladeshi seaports contribute to their importance in regional and global supply chains, and how can this be leveraged for further growth in the logistics sector?	
11.	How to reduce dwelling time, Customs clearance time and Load-unloading times?	
12.	What can be done to enhance the connectivity between ports and transportation networks, including roads, railways, and inland waterways, to ensure smoother and efficient movement of goods in and out of ports within the logistics framework?"	
13.	What strategies can be implemented to cultivate collaborations between the government and private sector entities ensuring efficient management of ports within the logistics sector?"	
14.	What are the key recommendations for improving road transport and communication services in the logistics sector in Bangladesh?	

Sl. No.	Questionnaire	Ans.
15.	Any other suggestions (if any)	

Annex-3: KII participant list

Government:

1. Musrat Mehejabin, Additional Secretary & Member (Planning & Skills Standard), National Skills Development Authority (NSDA), Agargaon, Dhaka.
2. Md. Mahbuber Rahman, Joint Secretary, Road transport & Highways Division, Mohakhali, Dhaka.
3. Lokman Hossain Mollah, Director, BRTA, Dhaka
4. Dr. Md. Zakir Hossain, Principal Scientific Officer, Bangladesh Jute research Institute, Farmgate, Dhaka
5. Khandaker Nazmul Haque, First Secretary (Customs), National Board of Revenue (NBR), Agargaon, Dhaka.
6. Md. Khalilur Rahaman, Joint Secretary (Planning), Ministry of Civil Aviation and Tourism, Dhaka.
7. S M Salimullah Bahar, Chief Planning officer, Bangladesh Railway, Dhaka
8. Azizur Rahman, Deputy Director, Payra Port Authority, Kalapara, Patuakhali
9. Mohammad Rezaul Hoque, Manager (Deputy Secretary), Finance and Budget, Bangladesh Economic Zones Authority, Biniyog Bhaban (Level 7, 8 & 9), E-6/B, Agargaon, Dhaka.
10. Md Jobaer Rahman Rashed, Senior Assistant Secretary, Bangladesh Investment Development Authority (BIDA)
11. Abu Mukhles Alamgir Hossain, Director (Policy and Planning), Export Promotion Bureau (EPB)
12. Md Salim Ullah, Senior Assistant Secretary, Ministry of Industries
13. Md. Abdus Samad Al Azad, Joint Secretary and Chief coordinator, Central Digital Commerce Cell, Ministry of Commerce
14. Captain M Asaduzzaman, (ND), afwc, psc, BN, Member (Harbor and Marine), Mongla Port Authority, Bagerhat.
15. Md. Enamul Karim, Director (Traffic), Chattogram Port Authority, Chattogram.

Academician:

1. Ms. Afsana Haque, Professor and Head of Department, Department of Urban and Regional Planning (URP), Bangladesh University of Engineering and Technology (BUET)

Private Sector:

1. Mohamad Hatem, Executive President, BKMEA
2. Md. Shahidullah Azim, Vice President, BGMEA
3. Ferdous Ara Begum, Chief Executive Officer, Business Initiative Leading Development (BUILD)
4. Quazi Mohmud Imam (Bilu), General Secretary, Chattogram Customs Agents Association

5. Syed Md. Bakhtiar, Director-in –charge, The Federation of Bangladesh Chambers of Commerce & Industry (FBCCI)

Annex- 4: KIIs Findings

For Preparing "The comprehensive report on the logistics sector in Bangladesh" one crucial component of our research methodology involves engaging with key stakeholders through Key Informant Interviews (KIIs). These interviews serve as a valuable source of firsthand information, offering a nuanced understanding of the challenges, opportunities, and dynamics within the logistics landscape.

In our pursuit of garnering insights, we meticulously prepared 21 sets of questionnaires, each tailored to a specific sub-sector within Bangladesh's logistics domain. These sub-sectors range from transportation and warehousing to customs and border control, reflecting the diversity and complexity inherent in the logistics ecosystem.

Despite our concerted efforts, the response rate fell short of our expectations, with only 15 individuals participating in the Key Informant Interviews. While the limited number of respondents may pose a challenge, it is essential to recognize the significance of the insights provided by these key informants. Their expertise, derived from hands-on experience and in-depth knowledge, adds depth and context to our understanding of the intricacies within each logistics sub-sector.

This chapter delves into the findings derived from the Key Informant Interviews, presenting a synthesis of perspectives from those intimately involved in the day-to-day operations of Bangladesh's logistics industry. By exploring their viewpoints, we aim to extract valuable narratives that go beyond the quantitative data, providing a qualitative dimension to our comprehensive report on the state of the logistics sector in Bangladesh. Through these insights, we seek to uncover patterns, identify challenges, and illuminate potential pathways for improvement in this vital sector that underpins the nation's economic activities.

What are the border/port facilities for export and import? Please mention.

Border and port facilities for export and import are crucial to international trade infrastructure. Generally, these facilities include:

- Ports and Land Customs Station
- Customs House and land Customs Station
- Container Terminals
- Cargo Handling Equipment
- Warehousing and Storage
- Road and Rail Connectivity
- Security Measures
- Customs Bonded Warehouses

How can the border/port processing be simplified and shortened?

Streamlining and expediting border/port procedures is essential for fostering successful and economical global trade. Various measures can be put in place by governments and pertinent authorities to expedite these procedures. These are a few tactics:

- Less paper documentation and less physical examination with more non-intrusive inspection (NII) and a unified system (data-driven, Inter-connect and Interoperable);
- Implement Full Automation for customs clearance and other border processing activities. This reduces manual interventions, lowers the risk of errors, and speeds up the overall process;
- Integrating various regulatory agencies involved in trade under a Single Window System;

- Implement Advanced Cargo Information (ACI) and Pre-arrival Processing;
- Harmonize customs procedures and documentation requirements with international standards to facilitate smoother cross-border movements;
- Ensure that border and port facilities operate 24/7, allowing for continuous processing of shipments and reducing congestion during peak hours.

How can the number of papers/documents required for Customs Declaration and Clearance be reduced, like in Singapore or any other advanced country?

The following documents are required for customs declaration and clearance:

Bill of Entry; Invoice; Proforma invoice; Packing list; LC; Bill of Lading Country of Origin Certificate, etc. Among said documents, a Country-of-Origin Certificate and proforma Invoice are not necessary to submit. Also, it can be avoided hard copy submission of documents which are available online, such as LC, etc**.**

What is the present status of facilitating logistics regarding infrastructure, institutions, and human resources?

The present status of facilitating logistics regarding infrastructure, institutions, and human resources are as follows:

- The customs clearance process of the Custom House Chattogram is done through the ASYCUDA World System. However, due to the non-availability of uninterrupted internet speed, time is often well-spent while submitting bills of entry and completing the customs clearance process through the ASYCUDA World System.
- The Chemical Lab of Custom House, Chattogram, needs to be better equipped.
- Currently, the Custom House Chattogram is functioning with less than 50% of the workforce as mentioned in the Organogram of the Custom House Chattogram.

Is there any automated process/single-point window for customs clearing?

Customs has automated software for examination and assessment named ASYCUDA World. However, until now, full automation has yet to be in place as the importers or agents must submit hard copies of all documents to customs authorities.

NBR is implementing a project to introduce the National Single Window, which is expected to be in operation in June 2026.

What problems are faced during customs clearances?

- Comparatively higher rate of physical examination
- Disputes over customs classification and valuation
- Logistics, as well as insufficient human resources
- Complex and extensive documentation requirements
- Reliance on manual processes and paperwork
- Reports of corruption at various levels within the customs process can lead to delays, increased costs, and hinder the overall efficiency of customs operations.

How can integrated customs and clearance facilities reduce lead-time dwell time for export-import-transit?

- Integrated customs and clearance facilities can significantly reduce lead time and dwell time for export-import-transit processes through several mechanisms:
- Establish a Single Window System that integrates customs and other relevant government agencies

involved in trade processes.

- Promote the use of Electronic Data Interchange for the electronic exchange of information between customs, port authorities, and other regulatory bodies. Automation reduces manual processing time and minimizes errors;
- Implement pre-arrival processing and risk management systems that allow customs to assess and clear shipments before they arrive;
- Lack of human resources to run the Customs process;
- Full implementation of National Single Window (NSW) for paperless transactions;
- HS code-related dispute appeal may be submitted within 7 (seven) working days of the dispute instead of 60 days;
- Install an increased number of Scanners and weigh Bridges in port areas for Checking;
- The Customs laboratory adjacent to the port should have proper instruments along with specialized skilled human resources to check the goods efficiently and correctly;
- BSTI should establish their fledge/Modern laboratory in the port area/adjacent to port areas depending on the nature of imported goods/ goods that have demand in countries and posting an adequate number of Chemical Examiners;
- Item-wise assessment value should be the same at all Custom House and Customs Stations;
- Goods examination report to be provided on the same day of examination. Increased use of laboratories of public universities and other government agencies not limited to BCSIR for Chemical and further analysis may be evaluated to enhance the speed of Customs Clearance;
- The number of Off-Dock facilities may be increased;
- Customs duties in terms of CD, RD, SD, VAT & AT may be gradually reduced as the cumulative rate is higher than in developed countries;
- Ensuring the security of cargo and goods at port areas;
- Ensure tracking and tracing of cargo/goods to enhance supply chain visibility and responsiveness;
- Transportation fares do not maintain consistency and need to be made consistent;
- Extortion at the road should be addressed;
- Usage of rail and waterways should be increased;
- Ensuring full-time (24/7) presence of Customs Officers at Off-docks;
- Timely commencement of physical examination of goods; simplification of IGM and Bill of Entry amendment process**.**
- By incorporating these elements into an integrated customs and clearance framework, countries can significantly decrease lead time and dwell time for export-import-transit, promoting more efficient and cost-effective international trade.

What are the causes responsible for delays in transportation? What can be done to overcome the causes?

Lack of infrastructural development and automation causes delays in transportation.

- Inadequate Port handling equipment.
- Shortage of logistic facilities.

Ports and land Customs stations should be upgraded with modern technology, and equipment of the logistics sector should be enriched. A smooth and tailored clearance system should be introduced to overcome the causes. Narrow and bad roads and bad vehicle conditions cause delays.

Improvement of roads and vehicles in good condition can reduce transportation time.

How can the container vehicles be used optimally and reduce unloaded/partially loaded cargo trips?
Optimizing the use of container vehicles is crucial for reducing unloaded or partially loaded cargo trips. Here are several strategies to achieve optimal utilization:

- Dynamic Route Planning
- Collaborative Logistics
- Cargo Consolidation
- Real-Time Visibility
- Flexible Scheduling
- Multi-Modal Transportation
- Strategic Location of Warehouses
- Data Analytics and Predictive Modeling
- Incentives for Efficient Loading and
- Education and Awareness
- Containers can be used for a round trip to reduce the cost

By implementing these strategies, businesses and logistics providers can enhance the efficiency of container vehicle usage, reduce unnecessary empty or partially loaded trips, and contribute to a more sustainable and cost-effective supply chain.

What steps can be taken to strengthen the coordinated activities of the Customs House with other agencies regarding export, import, and transit?
The government is providing access to the ASYCUDA World System to the various Government Agencies involved in import-export and transit to strengthen the coordinated activities of the Customs House with them.

What steps would be implemented to reduce the logistics cost compared to other countries?
Logistics combines many infrastructure and support systems from origin to destination.

- Improvement of infrastructure, including road, rail, waterways and airports
- Mechanization and digitalization of port handling activities
- FDI in port activities to welcome world standard new technologies.
- Single window system in customs assessment.
- Installation of container and truck scanners in all sea and land ports
- Development of separate logistics hubs in all economic zones and EPZs.
- Development of a high-class technical workforce to cater for the needs of the logistics sector
- Implement advanced technologies for container tracking and management.
- Promote Intermodal Connectivity:

What steps would be taken for the fair transportation policy of goods according to appropriate price, distance, and loads?

- No syndicate in pricing
- Removal of extortion or bribing
- Reduction of traffic congestion
- Improvement of road condition
- Improvement of rail and waterways connectivity to remove sole dependency on roads
- A sound, cool chain management and supply chain management system

- Logistical support strategic steps and regular stakeholder coordination meetings can solve the issue.
- Develop a comprehensive regulatory framework that addresses pricing, distance, and load considerations. Ensure that all stakeholders understand regulations clearly, fairly, and easily.
- Conduct regular market research and cost analysis to understand the dynamics of the transportation sector. This includes fuel prices, maintenance costs, and operational expenses.
- Develop fair rate formulas considering distance, fuel costs, vehicle maintenance, and other relevant factors.

What types of security measures are needed to enhance the security of the logistics sector?

NBR must implement the Electronic Seal and Lock Service Rules, 2018 and engage service providers to render security services for imported or exportable goods. Implement access control measures/Perimeter Security at logistics facilities, including warehouses, distribution centers, and transportation hubs. The Industrial Police, District Police and other law enforcement units must be more vigilant on roads. Continuous monitoring and container scanning can be done. CCTV surveillance is needed. Strengthening RNB and GRP is essential.

How do we reduce dwelling time, loading-unloading time, and Transit time logistics-related times?

By developing world-class infrastructure, implementing a single-window system/ automation, digitalizing systems and operations, and creating a skilled workforce, scanning should be brought into force, and clearance from the authoritative departments should be made faster. Require the submission of advanced cargo information before goods arrive at ports. This allows customs authorities to pre-process information, expediting clearance upon arrival.

What specific technical skills are currently in high demand within the logistics sector in Bangladesh?

With the rapid increase in trade and commerce, the *importance of logistics skill* has also increased. There is a need for an effective and efficient method of transportation of goods and services from one place to another with minimum cost. Logistics is a fundamental component of supply chain management (SCM), which is the management of upstream and downstream relationships with suppliers and customers; thus, logistics professionals need comprehensive skills and knowledge to coordinate the interconnected functions of logistics and supply chain systems. Organizations hire trained and certified professionals who are knowledgeable in the concepts of logistics and supply chain management. These professionals can apply their knowledge and skills in improving the operations and delivering products and quality services to the customers. Here are some specific technical skills are currently in high demand within the logistics sector in Bangladesh:

- Customer service
- Inventory management
- Transport and traffic management
- Logistics information management
- Warehousing management
- Forecasting
- Logistics-related regulations
- Customs Procedure
- Proper Testing and Standard Compliance Practice
- Port Handling Methods
- International Logistics
- Order management

- Facilities location
- Production scheduling
- Tracing and Tracking System
- Return goods handling
- Materials handling
- Packaging
- Parts & service support
- Salvage & scrap disposal

What steps should stakeholders take to ensure continuous skilled workers in the logistics sector in Bangladesh?

100% participants said that the workforce of the logistics sector is not sufficient, more skilled workforce is required. Till now the students have lower interests in vocational or training sectors Moreover, the curriculum are not updated and the resources for training is not world class. To bolster the skill of the personnel' following activities is needed:

- Ensure a transparent recruitment system to attract qualified personnel.
- Modernize the logistics curriculum to align with industry needs and technological advancements.
- Organize regular training sessions, symposiums, workshops, and seminars to enhance the skills of logistics personnel.
- Conduct skills assessments and gap analyses to understand the current manpower capabilities and future needs.
- Launch specialized logistics courses in higher education institutions.
- Establish a national certification system to validate the skills acquired by logistics professionals.
- Promote skill development globally through mutual recognition agreements with internationally recognized countries and training institutes
- Form an active Logistics ISC to oversee the creation of a skilled workforce in the logistics sector.
- Implement internship programs following the National Internship Policy 2023 to provide practical experience to students.
- Establish sector-specific training institutes to cater specifically to the logistics industry.
- Collaborate with educational institutions and training providers to design and deliver relevant courses.
- Implement Recognition of Prior Learning to acknowledge and accelerate the skills of existing logistics professionals.
- Emphasize skilling, re-skilling, and up-skilling programs to adapt to industry changes and technological advancements.
- Foster close linkages between industries and training institutions to ensure the curriculum remains relevant.
- Give importance to the 4th industrial revolution, automation, and digitalization in training programs.
- Formulate an "Integrated Human Resources Development Strategy" based on the "National Skills Development Policy 2022" and "National Plan 2022-27" developed by NSDA.
- Conduct research and surveys to determine current manpower demand in logistics occupations and project future demand.
- Establish a Center of Excellence as a Benchmarking Institution for skills quality improvement in the logistics sector.

- Collaborate with organizations like the Federation of Bangladesh Chambers of Commerce, Bangladesh Freight Forwarders Association, and Employers Federation to provide safety, security, and compliance training.
- Collaborate with entities like the Ministry of Expatriate Welfare and BOESL to encourage investment and management in the skills services sector.

By implementing these measures, stakeholders can contribute to the continuous development and sustainability of skilled workers in the logistics sector in Bangladesh.

What kind of collaborative efforts can be undertaken between the public and private sectors to develop skills and increase capacity among the logistics workforce in Bangladesh?

Collaborative efforts between the public and private sectors are crucial for developing skills and increasing capacity among the logistics workforce in Bangladesh. Here are some specific collaborative initiatives that can be undertaken:

On-the-Job Training and Apprenticeships:

On-the-job training and apprenticeships are pivotal for cultivating practical skills and hands-on experience, bridging the gap between education and industry needs.

Collaborative Research and Development:

Collaborative research and development initiatives drive innovation, fostering a dynamic environment where industries and academia work together to address challenges and push technological boundaries."

Networking Events and Workshops:

Networking events and workshops serve as catalysts for knowledge exchange, professional growth, and industry advancements, creating valuable connections among stakeholders."

Public-private Training Programs:

Public-private training programs play a key role in aligning workforce skills with industry demands, promoting economic growth, and enhancing overall employability.

Industry-Academia Collaboration:

Industry-academia collaboration enhances educational relevance, encourages research-driven innovation, and prepares students with the practical skills needed for a seamless transition into the workforce.

Skill Assessment and Certification:

Skill assessment and certification programs provide a standardized measure of competence, promoting workforce quality, and ensuring industry-relevant skillsets.

Infrastructure Development:

Infrastructure development is fundamental for creating a conducive environment for economic growth, innovation, and sustainable industry practices, serving as the backbone for thriving economies.

What strategies or initiatives would most effectively bridge the gap between the skills taught in academic settings and the practical skills needed in Bangladesh's logistics workforce?

The initiatives which are effective in bridging the gaps between the skills taught in academic settings and the practical skills needed in Bangladesh's logistics workforce-

- Educators/authorities should revise the curricula regularly.
- Compulsory internship for the learners

- HR professionals should prepare fair recruitment criteria.
- Employers should be open to hiring interns and developing training plans.
- Implementation of workplace-based training (WBT)
- Involvement of industry personnel in curriculum development
- Arranging more training for the trainers, especially in the industries
- Arranging more practical-oriented short courses
- Organizing seminars and workshops for trainers and trainees by industry experts on a regular basis.
- Industry-wise, university/STP supervisors play a crucial role in implementing industry programs and balancing degree requirements with industry needs.

Do you think the government's HRD and skill development initiatives will introduce diploma/level-based skill training in logistics and supply chain management to create a pool of qualified human resources to serve the logistics sector? If yes, What steps should be taken?

Yes. The government, through National Skills Development Authority (NSDA) should create a pool of qualified human resources with industry experts, employers, and professional associations to identify current and future skill requirements to serve the logistics sector; Conduct a thorough assessment of the specific skills and competencies needed in the logistics and supply chain management sector; Collaborate with industry stakeholders, academic institutions, and logistics professionals to develop a curriculum that aligns with the industry's demands. The curriculum should cover both theoretical knowledge and practical skills.

Could you explain the significance of soft skills (adaptability, communication, etc.) in Bangladesh's logistics industry? To what extent do these abilities play a role in daily operations?

Soft skills are of paramount importance in Bangladesh's logistics industry, playing a crucial role in daily operations. The following compilation highlights the significance of specific soft skills based on the two responses:

Communication Skills:

Effective communication is vital in the logistics industry, where different stakeholders collaborate and coordinate to ensure smooth operations.

Problem-Solving Abilities:

Logistics operations frequently encounter unexpected challenges, making soft skills related to problem-solving and critical thinking essential for practical solutions.

Teamwork and Collaboration:

Collaboration among various teams and departments, both within a company and across the supply chain, relies on strong interpersonal skills and effective teamwork.

Time Management and Organization:

Given the time-sensitive nature of logistics, soft skills like time management and organization are significant for efficient and punctual operations.

Leadership Skills:

Leadership skills are crucial at various levels within the logistics industry, contributing to team motivation, informed decision-making, and overall operational success.

Negotiation Skills:

Negotiation skills are essential in logistics, particularly when dealing with suppliers, vendors, and transportation partners, ensuring favorable terms and agreements.

Stress Management:

Soft skills related to stress management, resilience, and maintaining composure under pressure contribute to employee well-being and the smooth functioning of operations, crucial in the demanding logistics environment.

Team Management and Interpersonal Skills:

Effective team management and strong interpersonal skills are essential for logistics professionals dealing with diverse stakeholders, including customers, subordinates, and various teams.

Analytical and Problem-Solving Skills:

Analytical and problem-solving skills are critical for managers in logistics, enabling them to resolve disputes, make informed decisions, and devise creative solutions.

Industry Knowledge:

Possessing industry knowledge is advantageous for logistics professionals, allowing them to make informed choices, especially in challenging situations or when managing the intricacies of the supply chain.

Attention to Detail:

Attention to detail is crucial, particularly when the job involves optimizing space, reducing resource wastage, and ensuring successful multiple-item deliveries.

Adaptability:

Effortlessly blending into various situations is key to success in supply chain management, requiring adaptability to different people and environments.

Customer Experience:

Customer management skills, aimed at offering a smooth and hassle-free experience, are fundamental for roles involving direct interaction with customers.

Innovation and Technological Aptitude:

Staying informed about innovations and having technological aptitude allows logistics professionals to leverage advancements for operational efficiency and improvement.

Organization and Project Management:

Organizational skills are crucial for managing every package delivered and accounting for all assets, facilitating efficient operations.

Coordination:

Coordination is vital for those in managerial positions, involving maintaining a healthy working atmosphere, ensuring high morale, and coordinating tasks for efficient and smooth logistics operations.

How do educational institutions in Bangladesh align their curriculum to meet the skill demands of the logistics sector? Are there any areas where improvement is needed?

Educational institutions may play a vital role, such as

- Getting affiliated with NSDA
- Developing the curriculum following the skills demand of the logistics sector
- Integrating courses on supply chain and logistics-related occupations (logistics software)
- Collaborate with industry partners for internship and job placement
- Arranging modern facilities for the students

What advanced technical or digital skills are essential for professionals in the logistics sector in Bangladesh?

Advanced technical or digital skills for the logistics sector are as follows:

- Expertise in logistics software
- Expertise in ERP (enterprise resource planning) systems

- Expertise in DATA Analysis
- Use of the Internet of Things (IoT)
- Proficiency in e-commerce operation
- Skills in cyber security, etc

What special skills or knowledge are important for logistics professionals in Bangladesh to navigate environmentally friendly supply chain practices?

Logistics professionals are crucial in supply chain management and managing relationships with suppliers and customers. They need digital competence, lifelong learning, intercultural global competence, community engagement, and professional work ethics. They should also possess quality and productivity skills like decision-making, quantitative modelling, stress management, negotiation, and self-development.

Green logistics practices in Bangladesh can boost the economy by cutting costs, enhancing competitiveness, and aligning with international sustainability standards. This reduces pollution, lowers maintenance costs, fosters innovation, and creates jobs, making Bangladesh more attractive for investment and trade. Technological advancements, such as advanced routing software and IoT devices, can drive sustainability and efficiency in the logistics industry. Blockchain technology can also enhance transparency and traceability, upholding sustainable and ethical practices in supply chains**.**

Does the management service need to be increased? If yes, please give your opinion and suggestions to improve the management.

Yes, the management service in the logistics sector needs to be improved now. Developing management service required Reform in all stages, Communication quickly and thoroughly to build trust, Speed (Consistency and honesty), Building a process to fuel continual learning for employees, Integrated logistic policy, Electrification of the track, Develop the skill of the workforce, Gauge unification; Unify communications; minimize customer touch points with your team; Strong management fosters innovation and the ability to adapt to changing market dynamics and technological advancements; Employee and Customer Satisfaction and Retention.

What are the key challenges logistics sectors face, and how do they overcome?

Bangladesh's Logistics sectors face multifaceted challenges, including reliability, traceability, lower utilization rate, lower level of service but higher cost compared to peer countries, more time, lack of predictability, lack of automation, infrastructure, online-based system, skilled workforce, etc. A faulty supply chain management system and insufficient logistic support are also challenges.

To overcome these myriad challenges, coordinated initiatives are required as logistics is the total of many sectors or sub-sectors and different ministries/divisions, departments, and authorities are in charge of other components like ports, customs, infrastructure, skilled workforce, proper automation, infrastructural development, online based system, skilled workforce, sound supply chain management system, adequate logistic support and comprehensive training program should be developed.

What initiatives or investments are being made to expand and modernize the air cargo infrastructure to meet the growing demands of the logistics sector in Bangladesh?

The following activities should be included to meet the growing demands of the logistics sector in Bangladesh: the cargo terminal infrastructure is equipped with modern facilities and technology, adequate storage space, advanced handling systems, and temperature-controlled zones, which will be available at HSIA in 2025.

In addition to the above activities, CAAB has a plan to construct a cargo complex at Shah Amanat Int'l Airport (SAIA), Chattogram, Osmani Int'l Airport (OIA), Sylhet, Cox's Bazar Airport and Saidpur Airport.

What are the Challenges faced by the aviation sector in Bangladesh in terms of supporting the logistics industry, and how are they being addressed?

Lack of skilled workforce, freight handling, storage management, insufficient multi-level connectivity, and high transportation costs are the main challenges in the aviation sector.

To mitigate the above challenges, the following initiatives are taken:

- Cargo Handling Automation.
- Cold storage facilities for agro-based clusters.
- Expanding export/import cargo facilities.
- Increase cargo aircraft parking facilities.

Please mention your opinion regarding Policies, Rules, and regulations to enhance the capabilities of logistics to address present and future challenges.

To modernize and speed up the import-export process, a new Customs Act 2023 has been formulated. It is expected that when the new Customs Act 2023 comes into effect, the customs clearance of imported goods will be expedited, and Importers will benefit.

What is the current state of railway services within Bangladesh's logistics sector, particularly regarding infrastructure, network coverage, and capacity?

The total length of the Bangladesh Railway is about 3201.38 km, and it covers 43 districts of Bangladesh. BR carries about 7.5 crore passengers and 42 lac m—-tons of goods annually. Bangladesh Railway takes 4% of total containers from chattogram port, 1% of real import and export from interchange points and 1% of internal goods transport within the country. Bangladesh Railway mainly transport garments, raw materials, cosmetics, cars and Chemicals. It also transports garments and finished products. Bangladesh Railway supports domestic transport and trade activities by transporting food grain, fertilizer, oil, cattle and Mango special trains.

Are the regulatory framework or policies that govern railway services in Bangladesh sufficient? If not, do we need to change?

Some codes and manuals operate Bangladesh Railway. It was promulgated by the British Government but needed to be updated within the time. The Railway Act of 1890 will be updated soon.

Are there any emerging opportunities or trends that could enhance the efficiency and expansion of rail transport operations within the country?

Except for the Dhaka to Chattogram railway line, all other railway lines are single lines. To enhance the efficiency and expansion of railway transport and operations, gauge unification, double line tracks, electric tractions, and an increased skilled workforce are needed.

How are technological advancements or innovations addressing issues related to expanding Bangladesh's rail network, technology adoption and safety standards in rail transport?

Rail Tracking System, Online ticketing system, Computer-based interlocked signaling system, Air-brake system, Automatic train protection, Train tracking monitoring system, Access control device, Computerized train information display system

What are the primary challenges of rail services in Bangladesh, and how can the problems be addressed?

The primary challenges of Railway services in Bangladesh are the need for gauge unification, signaling system unification, shortage of workforce and railway rolling stock, etc.

Should additional charges be imposed for environmental pollution and noise?

Additional charges for environmental pollution and noise should be imposed, and the concerned department should determine this.

Does an intelligent transport system (ITS) need to be introduced for traffic management and cargo tracking? If necessary, what steps should be taken?

Yes, ITS/VTS needs to be introduced for traffic management and cargo tracking. Centrally, Government or individual private companies may introduce the ITS system. But this should be properly implemented by the concerned authorities. In that case, there needs to be coordination.

What steps should be taken to introduce green transportation systems (e-mobility, e.g., electric vehicles) in Bangladesh's logistics sector?

A green transportation system should be introduced in our logistics sector. A refuelling station is also on the roadside to refuel electric vehicles.

What are the key challenges faced by road transport in Bangladesh, and how are they affecting the logistics industry?

The private sector fully dominates the road transportation system. A smooth system must be introduced for smooth transportation. Law enforcement agencies should be activated to implement laws properly.

Should additional charges be imposed for environmental pollution and noise?

Additional charges should be imposed in some specially identified cases, not in general.

How do you assess the impact of the Fourth Industrial Revolution technologies like IoT, AI, and robotics on the skill sets required in Bangladesh's logistics sector, and what steps can be taken to prepare the workforce for these advancements?

The rapid evolution of technology is causing a significant shift in the global workforce, particularly in Bangladesh. This shift is affecting logistics, manufacturing, and services jobs, with automation posing a risk to nearly two in five jobs. A skilled labour force, including ICT skills, is crucial to adapt. Sector-based understanding and internal assessments are essential for businesses to benefit from automation. To promote inclusive growth, four key priorities for skills policies include equipping students with basic ICT skills, literacy, numeracy, and problem-solving skills, and recognizing skills acquired outside formal channels.2) Education and training systems need to assess better and anticipate changing skills needs to adapt programs and pathways offered and guide students towards choices that lead to good outcomes. Big data can be harnessed to complement labor market information systems and monitor changing needs. By including all stakeholders in skills assessment exercises and translating the findings into practice, governments can ensure that the information collected is useful and that policies respond to actual needs.

Employers must fully utilize workers' skills in the digital economy for increased productivity and competitiveness. High-performance work practices, such as teamwork, autonomy, training, and flexible work hours, drive skill variation across countries. Training workers to keep up with new skills requirements is crucial, offering incentives for re-skilling and using new technologies to adapt job tasks. Low and medium-skilled workers are less likely to receive training, putting them at risk of job loss. Policies should strengthen initial learning, improve incentives for further learning, and reinforce active labor market

programs for the unemployed. Addressing skills mismatch and promoting flexible work organization can enhance productivity and reduce inequality.

How do sea port services in Bangladesh contribute to regional and international trade facilitation?

Sea port services in Bangladesh play a vital role in facilitating regional and international trade by serving as key gateways for the movement of goods. Here are several ways in which sea port services in Bangladesh contribute to trade facilitation:

Strategic Location: Bangladesh is strategically located in South Asia, making its ports important transit points for trade between South Asia and Southeast Asia. The country's proximity to India, China, and other major economies in the region positions its ports as critical hubs for regional trade.

Connectivity: The sea ports in Bangladesh are well-connected to major international shipping routes, allowing for efficient transportation of goods to and from global markets. This connectivity enhances trade links between Bangladesh and other countries, contributing to smoother international trade.

Trade Corridors: Bangladesh's ports are key components of various regional trade corridors, such as the Trans-Asian Railway and the Asian Highway network. These corridors facilitate the movement of goods across borders, promoting regional economic integration and cooperation.

Transshipment Hub: Some of the ports in Bangladesh, such as the Chittagong Port, serve as transshipment hubs. Goods destined for neighboring landlocked countries like Nepal and Bhutan often pass-through Bangladeshi ports. This transshipment role adds value to the country's seaport services and enhances its significance in regional trade.

Economic Growth: The overall impact of effective sea port services on trade boosts economic growth. Increased trade volumes lead to greater economic activity, job creation, and improved living standards.

In summary, sea port services in Bangladesh serve as vital nodes in the global trade network, facilitating the movement of goods, enhancing regional connectivity, and contributing to the economic development of both Bangladesh and its trading partners.

What are the major infrastructure developments or expansions underway or planned for sea ports in Bangladesh?

Several infrastructure developments and expansions were underway or planned for sea ports in Bangladesh. Keep in mind that the status of these projects may have evolved since then. Here are some major initiatives:

Matarbari Port Development: Matarbari, located in southeastern Bangladesh, is set to become a major deep-sea port. The project aims to enhance the country's capacity to handle larger vessels and increase trade efficiency. The port is expected to play a crucial role in accommodating the growing container traffic.

Payra Sea Port: Payra Sea Port is another significant port aimed at expanding Bangladesh's port capacity. Located in the Bay of Bengal, this sea port is expected to handle large container ships and boost the country's trade capabilities. The development includes plans for multiple terminals, container yards, and other facilities.

Chattogram Port Modernization: Chittagong Port, one of the busiest ports in Bangladesh, has been undergoing modernization and expansion efforts. This includes the deepening of the harbour to accommodate larger vessels, the development of new container terminals, and the improvement of cargo handling infrastructure.

Inland Container Depots (ICDs) and Container Freight Stations (CFSs): In addition to sea ports, the development and expansion of inland container depots and container freight stations are underway. These facilities contribute to the efficiency of cargo movement by providing storage, customs clearance, and other services away from congested port areas.

The government of Bangladesh periodically announces new initiatives to enhance port facilities and trade infrastructure.

How does government policy support or hinder the development and enhancement of sea port services in Bangladesh?

Government policies can typically support or hinder the development of sea port services in any country, including Bangladesh. Keep in mind that the information might have changed, and it's essential to check for the most recent updates.

Factors that can support sea port services development:

Infrastructure Investment: Government investments in port infrastructure, such as deepening channels, expanding terminals, and improving cargo handling facilities, can enhance the efficiency and capacity of sea ports.

Regulatory Framework: Clear and favorable regulations can attract private investment, foster competition, and streamline operations within the port sector. Transparent and consistent regulations create a conducive environment for the development of sea port services.

Customs and Trade Facilitation: Efficient customs procedures and trade facilitation measures can reduce the time and cost of moving goods through ports. Simplified and transparent customs processes contribute to the overall competitiveness of sea ports.

Technology Adoption: Governments that encourage the adoption of modern technologies, such as digital platforms for documentation, tracking, and communication, can enhance the overall efficiency and effectiveness of sea port operations.

Public-Private Partnerships (PPPs): Collaboration between the government and private sector through PPPs can bring in additional investment, expertise, and innovation, leading to the development of world-class sea port services.

Factors that can hinder sea port services development:

Bureaucratic Bottlenecks: Excessive bureaucracy and red tape can slow down decision-making processes, delaying critical infrastructure projects and hindering the development of sea port services.

Corruption: Maritime sector can increase costs, reduce efficiency, and discourage investment. A transparent and corruption-free environment is crucial for attracting domestic and foreign investment.

Inadequate Infrastructure Planning: Poor planning and lack of foresight in infrastructure development can lead to congestion, inefficiency, and limited capacity, negatively impacting sea port services.

Political Instability: Political instability can create uncertainty and discourage long-term investments in the sea port sector. Stable political environments are generally more conducive to sustained development.

Environmental and Social Concerns: Ports must comply with environmental and social regulations. Please address these concerns to avoid legal challenges, project delays, and negative public perception.

Do the regulatory framework and policies governing the operations of seaports in Bangladesh need to change? If yes, what kind of policy is required in some cases?

Efficiency and Productivity: Assess the efficiency of port operations, including vessel turnaround times, cargo handling, and customs procedures. Streamline processes to reduce delays and improve overall productivity.

Technology Integration: Explore the integration of advanced technologies such as automation, digital tracking systems, and data analytics to enhance operational efficiency and transparency.

Environmental Sustainability: Implement policies to promote environmental sustainability, including the use of cleaner technologies, waste management, and adherence to environmental standards.

Security Measures: Enhance security measures to safeguard against potential threats, including piracy and smuggling. Collaborate with international organizations to implement best practices in port security.
Stakeholder Engagement: Foster collaboration and communication among various stakeholders, including government agencies, port authorities, shipping companies, and local communities. It's important to note that any proposed changes should involve a comprehensive assessment of the specific challenges and opportunities in the context of Bangladesh's seaport operations. Engaging with industry stakeholders, conducting feasibility studies, and seeking expert opinions can contribute to the development of effective and tailored policies. Additionally, considering the dynamic nature of the shipping and logistics industry, periodic reviews and updates of policies are essential to ensure continued relevance and effectiveness.

What challenges does the maritime logistics sector face in Bangladesh, particularly concerning seaport operations, and how are they addressed?
Some general challenges that the maritime logistics sector in Bangladesh faced. It's important to note that the situation may have evolved.
Infrastructure Constraints:

- Limited capacity and outdated infrastructure at seaports can lead to congestion and delays in cargo handling.
- Inadequate road and rail connectivity to and from the ports can contribute to transportation bottlenecks.

Dredging and Channel Maintenance: Frequent silting and inadequate dredging in river channels leading to ports can restrict the entry of larger vessels, impacting overall port efficiency.
Customs and Regulatory Procedures: Lengthy and complex customs clearance procedures can lead to delays and increased transaction costs for importers and exporters.
Safety and Security Concerns: Safety and security issues, including the risk of accidents, piracy, and theft, can affect the overall reliability of maritime transportation.
Environmental and Climate Risks: Vulnerability to natural disasters such as cyclones and floods poses a threat to port infrastructure and operations.
Institutional and Governance Challenges: Issues related to governance, transparency, and bureaucratic efficiency can impact the effectiveness of port operations.
To address these challenges, Bangladesh has been undertaking various initiatives and projects, both independently and with the support of international organizations. These measures include:
Technology Integration: Adoption of modern technologies for better cargo tracking, information sharing, and overall port management.

How do seaport customs and clearance procedures influence the speed and efficiency of cargo handling in Bangladesh?
1. Top of Form
Various factors, including customs and clearance procedures influence the speed and efficiency of cargo handling at seaports in Bangladesh. Here are some key ways in which these procedures impact the process:
Documentation and Compliance: Customs and clearance procedures involve the submission and verification of various documents, such as bills of lading, invoices, and certificates of origin. Delays can occur if there are discrepancies or inaccuracies in the paperwork. Efficient customs procedures require accurate and complete documentation to facilitate smooth cargo processing.

Customs Processing Time: The time taken by customs authorities to inspect and clear cargo plays a significant role. Delays in customs clearance can lead to congestion at the ports and affect the overall efficiency of cargo handling. Streamlining customs processing through automation and efficient workflows can help reduce clearance times.

Training and Skill Development: The effectiveness of customs and clearance procedures also depends on the competency of customs officials. Regular training and skill development programs for customs personnel can improve their ability to handle procedures efficiently, reducing the likelihood of errors and delays.

Collaboration with Stakeholders: Collaboration between customs authorities, port operators, shipping lines, and other stakeholders is essential for effective cargo handling. Efficient communication and coordination can prevent bottlenecks and ensure a smoother flow of goods through the port.

Transparency and Predictability: Clear and transparent customs procedures contribute to predictability in cargo handling. Importers and exporters can plan their logistics more effectively when they clearly understand the customs and clearance processes, leading to improved overall efficiency.

In summary, customs and clearance procedures at seaports in Bangladesh significantly impact the speed and efficiency of cargo handling. Streamlining processes, embracing technology, ensuring compliance, and fostering collaboration are essential for optimizing these procedures and enhancing the overall performance of the port logistics system.

What role do public-private partnerships play in developing and managing seaport facilities in Bangladesh?

Public-private partnerships involve collaboration between government entities and private sector companies to design, finance, implement, and operate projects or services traditionally within the realm of the public sector. In the context of seaports, PPPs can be instrumental in addressing the challenges associated with port infrastructure development, modernization, and efficient operations. Here are some ways in which PPPs can play a role in the development and management of seaport facilities:

Technology Integration: Private companies often bring technological innovations and operational expertise that can enhance the efficiency and effectiveness of seaport operations. This can include the implementation of advanced container tracking systems, automated cargo handling equipment, and other technologies to improve overall port performance.

Operational Efficiency: Through PPPs, private entities may take on seaports' day-to-day management and operations. This can lead to increased efficiency, better resource management, and the implementation of industry best practices to optimize port activities.

Risk Sharing: PPPs allow for sharing risks between the public and private sectors. The financial and operational risks associated with seaport development and management can be distributed more evenly, providing a more balanced approach to project implementation.

Revenue Generation: In PPP models, private partners often have a revenue-sharing arrangement with the government. This can include revenue generated from port operations, user fees, and other income streams, providing an incentive for private entities to ensure the port's long-term success.

It's important to note that the success of PPPs depends on factors such as a clear regulatory framework, transparent procurement processes, effective risk management, and a supportive legal and institutional environment.

Do you think the integration of technology and automation improves the productivity and competitiveness of seaport services in Bangladesh? If yes, how?

Yes, integrating technology and automation can significantly improve the productivity and competitiveness of seaport services in Bangladesh, as it can enhance various aspects of port operations. Here are several ways in which technology and automation can contribute to these improvements:

Container Tracking and Management: Implementing RFID (Radio-Frequency Identification) and GPS technologies can enable real-time tracking and monitoring of containers. This enhances visibility and reduces the risk of errors and delays in cargo handling.

Automated Cargo Handling Systems: Automated cranes and cargo handling equipment can streamline the loading and unloading processes, leading to faster turnaround times for ships and increased efficiency in port operations.

Smart Traffic Management: Utilizing smart technologies to manage and optimize traffic flow within the port can reduce congestion, enhance infrastructure utilisation, and minimize waiting times for vessels.

Port Management Systems: Integrated software systems for managing various port operations, such as logistics, inventory, and workforce, can improve efficiency and decision-making.

Digital Documentation and Information Sharing: Implementing digital platforms for documentation and information sharing can reduce paperwork, enhance data accuracy, and facilitate faster documentation processing, leading to quicker customs clearance.

Security Enhancements: Technology can be leveraged to improve security through surveillance cameras, access control systems, and biometric identification. This ensures the safety of both personnel and cargo.

Remote Monitoring and Control: Automation allows for remote monitoring and control of various port activities, enabling port operators to manage operations efficiently, even from a distance.

Environmental Monitoring and Compliance: Implementing technology for monitoring environmental factors, such as air and water quality, can help ports comply with environmental regulations. This not only contributes to sustainability but also ensures compliance with international standards.

By embracing technology and automation, seaports in Bangladesh can enhance their overall competitiveness by improving efficiency, reducing operational costs, and providing better services to shipping companies and other stakeholders. However, it's crucial to consider factors such as cybersecurity, workforce training, and regulatory compliance during the implementation of these technologies.

What initiatives or investments are being made to improve connectivity between seaports and other modes of transport within Bangladesh's logistics network?

Multimodal Transport Hubs:

Establishing multimodal transport hubs that integrate different modes of transport (e.g., road, rail, and waterways) can enhance efficiency and reduce the time required for cargo transfer between different transportation modes.

Inland Waterway Transport:

Developing and modernizing inland waterway infrastructure allows for an alternative mode of transport. Utilizing rivers and canals can be cost-effective and environmentally friendly. Dredging and maintaining the navigability of waterways are critical aspects of this strategy.

Logistics Parks and Zones:

Developing logistics parks and special economic zones near seaports can attract businesses and industries. These zones often have integrated storage, processing, and transportation infrastructure, enhancing overall supply chain efficiency.

Digital Platforms and Information Sharing:

Implementing digital platforms for information sharing and coordination among different stakeholders in the logistics chain can improve overall connectivity. This includes real-time tracking, electronic documentation, and data sharing between seaports, shipping companies, and other logistics partners.

Public-Private Partnerships (PPPs):

Engaging the private sector through PPPs can bring additional resources and expertise for infrastructure development. This collaboration can help accelerate projects to improve connectivity within the logistics network.

Trade Facilitation Initiatives:

Implementing trade facilitation measures, such as single-window clearance systems and simplified documentation processes, can contribute to faster and more efficient movement of goods through the logistics network.

Capacity Building and Training:

Providing training and capacity-building programs for logistics professionals, including those involved in customs clearance and transportation management, can contribute to the overall effectiveness of the logistics network.

How do the strategic locations of Bangladeshi seaports contribute to their importance in regional and global supply chains, and how can this be leveraged for further growth in the logistics sector?

The strategic locations of Bangladeshi seaports contribute significantly to their importance in regional and global supply chains. Here are several ways in which the geographical positioning of Bangladeshi seaports is advantageous and how these advantages can be leveraged for further growth in the logistics sector:

Proximity to Key Markets: Bangladeshi seaports, such as Chittagong and Mongla, are strategically located in close proximity to major markets in South Asia and Southeast Asia. This geographical advantage facilitates efficient access to and from neighboring countries, making them key nodes in regional trade networks.

Access to the Bay of Bengal: Being situated along the Bay of Bengal provides Bangladeshi seaports with direct access to international shipping routes. This allows for efficient maritime connectivity and enhances the country's role in global trade.

Strategic Connectivity with Landlocked Countries: Bangladesh's geographical location provides a gateway for landlocked countries in the region, such as Nepal and Bhutan, to access maritime trade routes. Developing efficient transit and transport corridors can further enhance the role of Bangladeshi seaports as vital transit points.

Trade Corridor with India: The proximity and connectivity with India present bilateral trade and economic cooperation opportunities. Improved connectivity and streamlined border crossings can facilitate smoother trade flows between the two countries, leveraging the potential of the region.

Integration with Regional Initiatives: Participation in regional initiatives, such as the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and the Bangladesh-China-India-Myanmar (BCIM) Economic Corridor, can enhance the significance of Bangladeshi seaports in broader regional economic frameworks.

Potential as a Transshipment Hub: With their strategic location, Bangladeshi seaports can serve as transshipment hubs, enabling the consolidation and distribution of cargo to and from neighboring countries. This can attract shipping lines and logistics providers, boosting the overall logistics sector.

Investment in Port Infrastructure: Continued investment in port infrastructure, including expansion, modernization, and improvement of efficiency, is crucial for leveraging the strategic locations of seaports. Upgrading facilities and adopting advanced technologies can attract more shipping lines and increase cargo handling capacity.

Enhancing Port Connectivity: Strengthening connectivity between seaports and inland transportation networks, including roads and railways, is essential. Efficient transportation links can reduce transit times, lower logistics costs, and improve the overall competitiveness of Bangladeshi seaports.

Trade Facilitation Measures: Implementing trade facilitation measures, such as simplified customs procedures, digital documentation, and streamlined regulatory processes, can make Bangladeshi seaports more attractive for international trade partners and logistics operators.

Environmental Sustainability: Emphasizing environmental sustainability in port operations can enhance the image of Bangladeshi seaports. Adherence to international environmental standards and adopting green practices can attract environmentally conscious shippers and contribute to sustainable growth.

By leveraging these advantages and strategically addressing challenges, Bangladesh can position its seaports as key players in regional and global supply chains, fostering further growth in the logistics sector and contributing to the country's economic development. Continuous collaboration with neighboring countries and active participation in regional initiatives will be crucial in realizing these opportunities.

How do we reduce dwelling time, Customs clearance time and Load-unloading times?

Reducing dwelling time, customs clearance time, and load-unloading times is crucial for improving the efficiency of logistics and supply chain operations. Here are several strategies that can be employed to achieve these goals:

Reducing Dwelling Time:

Efficient Yard Management: Implement smart yard management systems to optimize the utilization of space and facilitate faster movement of containers within the port.

Pre-Arrival Information: Collect and process necessary information about incoming shipments in advance to expedite customs clearance and reduce waiting times.

Automated Gate Processes: Utilize automated systems for gate-in and gate-out processes to minimize the time trucks spend at the entrance and exit of the port.

Priority Handling for Time-Sensitive Cargo: Identify and prioritize time-sensitive cargo for faster processing and movement within the port.

Streamlined Documentation: Implement digital documentation systems to reduce paperwork and streamline the documentation process for cargo clearance.

Collaboration with Stakeholders: Foster collaboration between shipping lines, customs authorities, and other stakeholders to create a more seamless and efficient process for cargo handling. Besides it, Leverage visibility technology is important for Reducing Dwelling Time.

Reducing Customs Clearance Time:

Single-Window Clearance: Implement a single-window clearance system that integrates all relevant customs processes and reduces the need for multiple submissions of the same information.

Electronic Data Interchange (EDI): Promote the use of electronic data interchange for the exchange of information between customs authorities and businesses to expedite clearance processes.

Risk-Based Inspections: Implement risk-based inspection strategies to focus resources on high-risk shipments, allowing faster clearance for low-risk shipments.

Customs Pre-Clearance Programs: Explore customs pre-clearance programs where customs procedures are completed at the point of departure, reducing delays upon arrival.

Authorized Economic Operator (AEO) Programs: Encourage businesses to participate in AEO programs, which provide certified traders with benefits such as faster customs clearance.
24/7 Customs Operations: Extend customs operations to operate 24/7 to facilitate round-the-clock processing of cargo and reduce clearance times.
Reducing Load-Unloading Times: Advanced Planning and Scheduling:
Implement advanced planning and scheduling systems to optimize the allocation of berths and manage vessel arrivals more efficiently.
Automated Cargo Handling Systems: Invest in automated cargo handling equipment, such as cranes and conveyors, to speed up the loading and unloading processes.
Real-Time Monitoring: Utilize real-time monitoring systems to track the movement of cargo and vessels, allowing for proactive decision-making and adjustments to optimize load-unloading operations.
Training and Skill Development: Provide training programs for port personnel to enhance their skills in handling cargo and operating equipment efficiently.
Incentives for Efficient Operations: Introduce performance-based incentives for shipping lines, port operators, and other stakeholders to encourage faster load-unloading operations.
Collaboration with Shipping Lines: Collaborate closely with shipping lines to improve coordination and communication, ensuring smoother and more efficient load-unloading processes.

What can be done to enhance the connectivity between ports and transportation networks, including roads, railways, and inland waterways, to ensure smoother and efficient movement of goods in and out of ports within the logistics framework?
Enhancing connectivity between ports and transportation networks is crucial for ensuring the smoother and more efficient movement of goods. Here are several strategies that can be implemented to improve connectivity within the logistics framework:
Integrated Planning and Coordination: Develop a comprehensive, integrated plan for transportation infrastructure that considers roads, railways, and inland waterways in coordination. This plan should account for current and future cargo volumes.
Multimodal Transportation Hubs: Establish multimodal transportation hubs that integrate different modes of transport, allowing for seamless transfer of goods between road, rail, and waterway systems.
Road Infrastructure Development: Invest in the expansion and improvement of road networks connecting ports to major industrial and commercial centers. Ensure that these roads are well-maintained and capable of handling heavy cargo traffic.
Railway Connectivity: Enhance railway connectivity by investing in the development of dedicated freight corridors and modernizing existing rail links. Efficient rail connectivity can significantly reduce transit times for goods.
Inland Waterway Development: Invest in the development and maintenance of inland waterways to provide an alternative and cost-effective mode of transport. This is particularly important for countries with navigable rivers and canals.
Digital Integration and Information Sharing: Implement digital platforms for real-time information sharing between different modes of transport. This can enhance coordination and efficiency, reducing delays and improving logistics management.
Customs and Regulatory Coordination: Streamline customs and regulatory processes to ensure that goods can move seamlessly between different modes of transport. This includes harmonizing regulations and standardizing documentation.

Technology Adoption for Traffic Management: Implement advanced traffic management systems that use technology to optimize the flow of goods on roads and reduce congestion, especially in and around port areas.

Trade Corridor Development: Work on developing trade corridors that connect major economic zones and industrial hubs, ensuring that transportation networks align with key economic activities.

Investment in Intermodal Facilities: Develop intermodal facilities that allow for the smooth transfer of containers and goods between different modes of transport without significant delays.

Environmental Sustainability:

Incorporate environmentally sustainable practices in transportation infrastructure development. This includes eco-friendly technologies and green initiatives to minimize the environmental impact of transportation.

Capacity Building and Training: Provide training programs for personnel involved in transportation operations to ensure they are well-equipped to move goods efficiently.

Regular Infrastructure Maintenance: Establish regular maintenance schedules for transportation infrastructure to prevent disruptions and ensure the longevity of the networks.

By implementing these strategies, countries can create a well-connected and efficient transportation network that supports the smooth movement of goods between ports and various modes of transport within the logistics framework. Regular monitoring and updates to infrastructure planning are essential to adapt to changing economic and logistical demands.

What strategies can be implemented to cultivate collaborations between the government and private sector entities, ensuring efficient management of ports within the logistics sector?

Cultivating collaborations between the government and private sector entities is crucial for ensuring efficient management of ports within the logistics sector. Here are several strategies that can be implemented to foster effective partnerships:

Public-Private Partnerships (PPPs): Encourage Participation: Create an enabling environment to encourage private sector participation in port development and operations through well-structured PPP models.

Transparent Regulatory Framework:

Establish Clear Regulations: Develop transparent and consistent regulations that provide a clear framework for private sector involvement. This helps build trust and reduces uncertainty for private investors.

Stakeholder Engagement:

Regular Consultations: Conduct regular consultations with public and private stakeholders to gather input, address concerns, and foster collaboration.

Risk Sharing:

Allocate Risks Appropriately: Clearly define the allocation of risks between the government and private sector entities to ensure a fair distribution of responsibilities.

Incentives for Efficiency:

Performance-Based Contracts: Design contracts that include performance-based incentives for private sector entities, encouraging efficiency and innovation in port management.

Concession Agreements:

Well-Structured Concessions: Formulate well-structured concession agreements that outline government and private entities' rights, obligations, and responsibilities over the concession period.

Technology Adoption:

Encourage Innovation: Foster an environment encouraging the private sector to invest in and adopt innovative technologies for improved port management.

Capacity Building:

Training Programs: Collaborate on training programs to enhance public and private sector personnel's skills and capabilities in port operations.

Information Sharing:

Real-Time Data Sharing: Facilitate real-time data sharing between the government and private sector for better decision-making and coordination in port management.

What are the key recommendations for improving road transport and communication services in the logistics sector in Bangladesh?

Improving road transport and communication services in the logistics sector is crucial for the economic development of any country, including Bangladesh. Here are some key recommendations for enhancing these services:

Intermodal Connectivity: Develop efficient intermodal transportation systems that integrate road, rail, and waterway networks seamlessly. This integration can enhance the overall logistics efficiency and reduce transportation costs.

Technology Integration: Implement modern technology solutions such as GPS tracking, electronic toll collection, and traffic management systems to improve the efficiency of road transport. This can lead to better route planning, reduced transit times, and lower fuel consumption.

Customs and Documentation Simplification: Streamline customs procedures and documentation processes to reduce delays at checkpoints. Implement electronic data interchange (EDI) systems to facilitate faster and more accurate information exchange.

Capacity Building: Invest in training programs for drivers, logistics operators, and other stakeholders to enhance their skills and ensure safety and operational standards compliance. This can lead to improved safety records and overall efficiency.

Regulatory Reforms: Review and update regulations related to the logistics sector to remove bottlenecks and promote a more conducive business environment. This may include reviewing licensing procedures, tariffs, and other regulatory hurdles.

Safety and Security Measures: Implement measures to enhance the safety and security of transportation networks. This includes enforcing traffic rules, improving road signage, and deploying security measures to safeguard cargo during transit.

Environmental Sustainability: Introduce eco-friendly practices and technologies in the transportation sector to reduce the environmental impact. This may involve promoting the use of electric or hybrid vehicles and implementing emission control measures.

Investment in Research and Development: Encourage research and development initiatives to explore innovative solutions for the logistics sector. This could involve the use of advanced technologies like autonomous vehicles or smart logistics solutions.

Public Awareness and Education: Increase public awareness about the importance of responsible driving, road safety, and adherence to traffic rules. Educational campaigns can contribute to a safer and more efficient transportation system.

By addressing these key areas, Bangladesh can work towards building a robust and efficient road transport and communication infrastructure that supports the growth of its logistics sector and overall economy.

Annex-5: FGD Checklist

1. What are the major barriers (area-wise) to efficient logistics service?
2. What policy support needed to overcome the barriers?
3. What would you suggest improving efficiency in logistics?
4. What initiatives and program supports do you think may be undertaken for development of human resources in the logistics areas?
5. How should the different service providers be inter-connected?
6. What initiative would you suggests for capacity enhancement of Logistics service providers?
7. What are the major components of logistics costs, and what is your suggestion to minimize the costs?
8. How to reduce logistics related times including dwelling time, customs clearance time, road congestions, transit time, load-unloading time, warehouse loading and unloading, berthing delay, anchorage waiting, container loading and unloading, customs paper works, manual handling?
9. What steps may be necessary to improve the Coordination among different departments and bodies for logistics service improvement?
10. What technological support would you recommend improving overall logistics efficiency?
11. What do you think are the major bottlenecks in efficient domestic and international freight handling?
12. What steps may be necessary to improve the performance of the cargo handling agent in various seaports, inland water-ports, inland ports, airports, ICDs?
13. How would you rate the service of railway for freight movement? What are the major challenges in moving freight through Rail?
14. What supports may be helpful in improving the capacity enhancement of the market players?
15. What are the problems of customs and border management in the logistics sectors of Bangladesh?

Annex- 6: FGD Participant List

Government:

1. Ms. Sharifa Khan, Senior Secretary (PRL), ERD
2. Mr. Farid Aziz, Additional Secretary, DE Wing & PD, SSGP, ERD
3. Mr. A K Azad, Deputy Secretary & DPD, SSGP, ERD
4. Mr. Nesar Ahmed, International Trade Expert, SSGP, ERD
5. Ms. Farzana Ferdous Zaman, Deputy Secretary, SSGP, ERD
6. Mr. Mehedi M. A., SSGP, ERD
7. Dr. Md. Rezaul Basher Siddique, Component Manager, Joint Secretary, SSGP, ERD.
8. Mr. Mostafa Abid Khan, Component Manager, SSGP, ERD
9. Mr. Md. Sabbir Biswas, Sr. System Analyst, ERD

Private Sector:

1. Mr. Naquib Khan, President, Bangladesh Supply Chain Management Society
2. Mr. Reza Md. Shehab Uddin Sharawardi, Vice President, Bangladesh Supply Chain Management Society
3. Mr. Afsar Hossain, Vice President, Bangladesh Supply Chain Management Society
4. Mr. Manzur Rashid, Co-Founder & Chief Business Officer, NAMMCON, Bangladesh Supply Chain Management Society
5. Mr. M A Razzak Raju, Courier Services Association of Bangladesh.
6. Mr Nurul Islam, Courier Services Association of Bangladesh
7. Mr. A S M A Baten, Secretary General, Bangladesh Ocean Going Ship Owners Association (BOSA)
8. Mr. Khaled Saifullah, Co-Chairman, e-Commerce Alliance, E-commerce Association of Bangladesh (e-CAB)
9. Mr. Md. Mominul Islam, Research Associates, BASIS.

10. Mr. Mohammad Ruhul Amin Sikdar, General Secretary, Bangladesh Inland Container Depot. Association (BICDA)
11. Mr. Kazi Balayet Hossain, Bangladesh Frozen Foods Exporter Association (BFFEA)
12. Mr. Syed Uswat Imam, CEO, Express in Town, e-CAB.
13. Mr. Sheikh Sohel Parvez, Bangladesh Frozen Foods Exporter Association (BFFEA)
14. Mr. Hafizur Rahman Pulok, President, Courier Service Association of Bangladesh (CSAB) & Chairman, Standing Committee On Logistics & Courier Services, FBCCI
15. Mr. Ashan Habib Setu, Courier Service Association of Bangladesh (CSAB).
16. Mr. Mokhlesur Rahman, Courier Service Association of Bangladesh (CSAB).
17. Mr. Md. Tazul Isalm, Courier Service Association of Bangladesh (CSAB) & E-commerce Association of Bangladesh (e-CAB)
18. Mr. SAM Showket Hossain, Courier Service Association of Bangladesh (CSAB)
19. Mr. Md. Riyad, E-commerce Association of Bangladesh (e-CAB)
20. Mr. Shihab Ahmed Shadin, E-commerce Association of Bangladesh (e-CAB)
21. Mr. Md. Hasan Al Mamun, CEO-Express In Town Ltd. E-commerce Association of Bangladesh (e-CAB).
22. Mr. Kauser Islam, Delivery Bees, E-commerce Association of Bangladesh (e-CAB).
23. Mr. Amin Ullah, Former President, Bangladesh Frozen Foods Exporter Association (BFFEA)
24. Mr. Humayun Kabir, Joint Secretary, Bangladesh Frozen Foods Exporter Association (BFFEA)

Annex- 7: FGD findings

A total of 10 Focus Group Discussions (FGDs) are planned in the study areas, involving government ministries, agencies, and departments, as well as private sector organizations associated with the logistics sector, and various logistics-related associations. However, the occurrence of a general election and political unrest, including country-wide strikes, has created challenges in conducting FGDs with private sector stakeholders. Government officials were actively involved in election-related activities, further complicating the team's efforts to engage in FGDs with them. Additionally, private sector representatives were constrained by their participation in the general election, making it difficult to schedule FGDs with them. Consequently, to address these constraints, SSDP and ERD organized a single FGD that included all logistics-related private sector associations, allowing for the completion of two FGDs in total.

FGD findings according to FGD checklist are given below:

What are the major barriers (area-wise) to efficient logistics service?

The major barriers for efficient logistics are as follows:

- Lack of demand and supply data of cargo/goods handling with future forecasting.
- Insufficient transport infrastructure including road, rail, in-land water way, sea-port, air-port, inland-port and the absence of smooth multimodal connectivity hinder the efficient transportation of goods.
- Limited use of rail and waterways for cargo transportation.
- Container of goods are now loaded from ICD, Pangaon targeting feeder vessels in Singapore, Colombo, Malaysia. Many time it is observed that Mother vessel slot was missed due to documentation complications at customs, port or due to transportation delays. This makes transportation of goods much longer which in turn takes more time and foreign buyers demand concessions.

- Lack of reliable, cost-effective, timely delivered logistics services.
- The average speed of vehicles on the Dhaka-Chattogram highway is notably slow, at around 18 km/hr.
- Congestions, road accident, overload, manual toll system, theft from container & extortion.
- Underutilization of postal infrastructure for the optimization of e-commerce operations.
- Frequent inspection of trucks carrying cargo in various sections of the Dhaka-Chattogram highways by police.
- Inadequate implementation of road transport regulations.
- Partially loaded containers and empty containers departing from the port, as well as other locations, and vice versa.
- Limited capacity of Customs laboratory and delay in analysis as samples sent to Dhaka. In some cases, it requires around 25 days to get test report.
- It takes an extended period, up to a maximum of 15 days, to complete the clearance process for containers at Chittagong customs. This process involves obtaining signatures from various locations and delivering the containers to the ICD in Dhaka, along with providing speed money for each container to unscrupulous customs and railways personnel.
- Lack of integrated paperless Customs Clearances
- Lack of integration of Customs ASYCUDA World (Automated System for Customs Data) with Port Authorities TOS (Transport Operating System)
- Insufficient storage capacity, particularly a lack of Cold Chain facilities, to handle perishable cargos such as fish, vegetables, etc.
- Limited number of container scanner and advanced container handling equipment.
- In nearly all sections of inland waterways (excluding Pangaon ICT and Mukhterpur private ICT), there is an absence of container lifting cranes, leading to manual handling of loading and unloading operations.
- TOS (Terminal Operating System) and digital berthing systems to facilitate official functions to be done online
- Lack of Business simplification process to support FDI and domestic investment.
- Limited coordination among different agencies to facilitate export-import.
- Lack of govt. officials at different ports and customs offices and skilled lighterage pilot.
- Acute shortage of skilled manpower at operational level (Driver, mechanics, delivery man, etc.), Mid-level (Managers) and high-level.
- Limited digitization and Cash-on-delivery (COD) system restrict the growth of e-commerce and currier services. So, it needs complete digitization to get license, customs & port clearances including all facilities without providing speed money. COD may be replaced by digital transaction of money which will reduce fraudulences and robbery from delivery man.
- Payment against e-commerce from foreign countries to Bangladesh are need to be simplified as freelancing.
- The onboard currier service as well as currier service activities by road with India are currently stalled due to customs problems as Customs authorities do not permit couriers to travel to India with bags containing documents.
- Limited space facilities at air-port for receiving documents, parcels for domestic currier services while international currier services have ample space at air-port.
- Venture capital-backed courier services that attract foreign direct investment (FDI) initially

provide services at lower prices but eventually exit the market within 3 to 4 years. This leads to disruptions in courier services and a negative perception of Bangladesh. To address this, need to implement standardized charges for various services to mitigate these challenges.

- 15% VAT on various courier and e-commerce services needs to be replaced with the previous 4.5% rate (applied for service sectors)
- For e-Commerce consignment deliveries are operated by in-bound logistics. But there are limited number currier service providers to delivery consignment to customers.
- Social barrier to work as low/entry level workers such driver, delivery man etc.
- What policy support needed to overcome the barriers?

Policy support need to be taken:

- Implementation of Customs ASYCUDA World with different related government agencies including port authority's TOS to facilitate seamless documents transfer
- Container space sharing can be utilized by setting up distribution centers, where shipments are loaded based on their respective destinations.
- In order to streamline the business simplification process, it is essential to centralize the provision of all licenses necessary for establishing industries, consolidating the required formalities from a single source. The experiences of the Gujarat state government can be considered for guidance in this matter.
- Building and expanding key economic highways to a minimum of four lanes, integrating a dedicated (green channel) for vehicles transporting export-import goods, along with a service lane for local transportation.
- Multi axal truck may be imported or assembled to reduce transportation cost.
- Weigh bridge need to install at different intersections of highways to reduce road damage and accidents.
- Integrated road, rail, waterways and airways development plan and their implementation.
- To enhance e-commerce, postal department infrastructure, ground handling workforce and fleet service need to use.
- To export, exporters need to take relevant association's license at high price which need to rationalized or need to adjusted based on other countries examples. Licensing fee is a marker entry barrier for SMEs including women entrepreneur.
- To improve courier and e-commerce services, suggestions have been made to reintroduce the VAT at its previous rate of 4.5%, replacing the existing 15% on various services. Additionally, it is recommended to eliminate the compensation fee that courier service companies pay to the postal department based on the volume of handled courier.
- Need to declare Currier services, e-commerce as Industry to receive more investment facilities.
- Proposed Currier service act need to be finalized through consultation with the stakeholders.
- Penalties for courier services and e-commerce need to apply rationally.
- Limited digitization and Cash-on-delivery (COD) system restrict the growth of e-commerce and currier services.
- Lack of simplification for receiving payments for e-commerce goods from foreign countries.

What would you suggest improving efficiency in logistics?

(a) Demand-supply forecasting:

Conducting research to identify, assess, and analyze demand forecasting entails examining the quantity of cargo and goods to be handled. This process takes into account factors like manufacturing output, agricultural production, potential transshipment to hinterlands, and other relevant elements. Supply planning, in correlation, depends on this demand information to guarantee a thorough end-to-end supply process.

(b) Road Infrastructure development:

- Construction of a minimum of four lanes on each side of highways, including a dedicated lane exclusively for vessels carrying export-import goods.
- Establishment of effective connectivity with sea ports, inland-waterways landing stations, railway stations, and Inland Container Depots (ICDs).
- Creation of an expressway to connect Dhaka and Chittagong.
- Development of restrooms, canteens, and repair shops along the highways.
- Removal or relocation of congested hat-bazars along the highways.
- weigh bridge installation along Dhaka-Ctg. Highway.
- Strict enforcement of traffic rules on highways to prevent unauthorized stopping or haphazard parking of buses.
- Mandatory use of RFID sensors on vehicles and installation of CCTV cameras along highways to monitor the movement of cargo container vessels using digital technology.
- Implementation of automated toll plazas to eliminate the need for vehicles to stop for toll payments.

(c) Rail infrastructure Development:

- Increase the frequency of rail delivery from Dhaka to Ctg. And Vice-versa.
- Increase the number of containers carrying vessel to carry container from Pangaon and ensure every day voyage from Pangaon to Ctg. Sea-Port.
- Railway track need to change into Broad-gauze instead of meter-gauze.
- Double-line railway track needed
- Connectivity with sea-port for seamless container transportation without any delay and quick release of container from Dhaka ICD.
- Automated handling equipment along with pavement for loading and unloading.
- last-mile delivery.
- Automated advanced handling equipment needed.
- The completion of the Dhirasram ICD is urgently needed due to delays beyond the specified time. Fast-track priority is crucial in this regard.

(d) Inland-waterways:

- Port capacity need to enhance by developing additional terminal, private container depot. ICDs
- Port's storage capacity needs to increase via vertical expansion of port like Singapore, Hongkong
- Regular capital dredging for connecting port with sea through river to maintain draft depth.
- Automated advanced handling equipment
- Multimodal connectivity with road, rail and inland waterways.
- Skilled lighterage pilot development through academic education and training.

(e) Sea port:

- Port capacity need to enhance by developing additional terminal, private container depot. ICDs
- Port's storage capacity needs to increase via vertical expansion of port like Singapore, Hongkong
- Regular capital dredging for connecting port with sea through river to maintain draft depth.
- Automated advanced handling equipment
- Multimodal connectivity with road, rail and inland waterways.
- Skilled lighterage pilot development through academic education and training.

(f) Sea port:

- Port capacity need to enhance by developing additional terminal, private container depot. ICDs
- Port's storage capacity needs to increase via vertical expansion of port like Singapore, Hongkong
- Regular capital dredging for connecting port with sea through river to maintain draft depth.
- Automated advanced handling equipment
- Multimodal connectivity with road, rail and inland waterways.
- Skilled lighterage pilot development through academic education and training.

(g) Customs Clearances:

- Need to submit all the documents through electronic document transfer system to reduce the redundant submission of same documents at different points of customs and port authority.
- Integrate Customs ASYCUDA World with different certifying government agencies, port's TOS, Bangladesh Bank to facilitate real-time seamless document and data transaction and operate custom on-line clearances.
- For export- it requires to go to 22 spots/tables for signature and for import-requires to go to less than 20 spots/tables for signature. This may be avoided by online connectivity with Customs ASYCUDA World.
- Advanced Scanner including explosives detection system (EDS) for checking the container without opening where applicable.
- Enhancement of the capacity of Customs chemical laboratory through providing advance equipment, reagent and skilled chemist.
- Capacity enhancement of customs laboratory by upgrading equipment, providing reagent and skilled chemist for analysis.
- Need to establish BSTI laboratory at adjacent of Ctg. Sea port as well as enhancing the capacity of BCSIR laboratory, Ctg. To reduce samples for examine at Dhaka.
- Connect all the certifying agencies so that they can directly send certificates of goods to Customs.
- Need to implement NSW for real-time customs clearances.
- Moreover, need to follow the best-practices of India, Vietnam, Singapore.

(h) Airways:

- Automated handling machinery, state-of-the-art scanners including EDS, cold-chain facilities, container storage in close proximity to the port, and multimodal connectivity with both road and rail are required.

(i) Inland-port:

- Multimodal connectivity, container storage capacity, and handling equipment including lifting crane are needed at Landing stations for redemption of goods/cargoes.

(j) e-Commerce, Postal & currier services:

There is an opportunity to export goods where NRB resides through e-commerce and courier services. To enhance e-commerce, SMEs need awareness and training in export processes, including destination countries' customs rules, regulations, practices, hygiene, and food safety related issues, along with air transportation. Financial support is required to introduce scanners and sorting systems for goods transportation through postal and courier services. Additionally, there is opinion for consolidated courier services by engaging all domestics currier and improved e-postal services in migrant destination countries to facilitate e-commerce. COD may be replaced by digital transaction of money which will reduce fraudulences and robbery from delivery man. Payment against e-commerce from foreign countries are need to be simplified as freelancing.

What initiatives and program supports do you think may be undertaken for development of human resources in the logistics areas.?

Human resources in the logistics to be developed according to sub-sectors demand. Human resources can be developed mainly 3 categories.

- Operational level: Drivers, Mechanics, Marine vessel operators etc. They can be trained by different training institutes as well as TVET institutes. Here NSDA should take lead.
- Mid-level manpower: Manager, supervisor post. They are university and Diploma graduates. IT based skilled graduates. University and polytechnic institutes may open new subjects/trades based upon

discussions with industry, UGC, BTEB.

- High Level: Higher level management post. They have post graduate degree along with experiences.
- Along this for e-commerce development, Postal department's ground-staff need training for handling customers and providing reliable, quality services though they possess well connected infrastructure throughout the country as well as interconnected with other countries through world postal network.

How should the different service providers be inter-connected?

Similar service providers can connect through digital solutions, and if feasible, hubs could be established for this purpose.

What initiative would you suggests for capacity enhancement of Logistics service providers?

- Integrated training is necessary for each sub-sector.
- SMEs require training on export procedures, including the Customs rules, regulations, practices of the relevant foreign country, and packaging to boost e-commerce abroad.
- Automation is essential for gang booking at port areas to replace manual loading and unloading processes.

What are the major components of logistics costs, and what is your suggestion to minimize the costs?

- In the context of major elements of logistics cost, the absence of gantry handling equipment in Mongla port poses challenges in container handling. The solution involves implementing automated handling systems to minimize costs.

How to reduce logistics related times (dwelling time, truck loading time, customs clearance time, road congestions, transit time, loading-unloading time including warehouse loading and unloading, berthing delay, anchorage waiting, customs paper works)?

Dwell Time:

The Colombo Sea-port maintains a low average dwell time of 1.8 days per month, in contrast to Chattagram sea port, which currently has a dwell time of 8.9 days, previously recorded at 17.48 during 2014-2015. Completion of constructing the Patenga Container Terminal and Bay Terminal can be reduced dwell time. Automated container handling system named Container Terminal Management System (CTMS) reduce dwell time as it can locate containers easily.

Truck Loading time:

Reducing the truck loading time can be achieved by ensuring real-time loading confirmation within a specified timeframe and aligning it with the feeder vessel's voyage bound for the port call.

Customs Clearance: Stated earlier.

- Container scanner for checking cargos without opening the container
- Application of Advanced Ruling System
- Reduce paper works and implementation of NSW.

Road congestions:

- Reducing road congestion by providing service line with main highways.
- Traffic design need to be done
- 9 hut/bazars along Dhaka-ctg highways facilitating lower speed of cargo vehicles. There should not be any bazar within 10meters of the highway as per law should be ensured.
- Accidents have taken place when entering the main road through the feeder road; hence, designing the access point should be given the highest priority.
- Dedicated lane for cargo transportation

What steps may be necessary to improve the Coordination among different departments and bodies for logistics service improvement?

Coordination needed. It may be done by NLC committee headed by Principal Secretary to HPM.

What technological support would you recommend improving overall logistics efficiency?

4iR based AI, Block chain, Big Data, RFDI, and other digital IT based solutions are needed to improve

overall logistics efficiency

What supports may be helpful in improving the capacity enhancement of the market players?

Training and sensitization are required to improve the capacity of market players. To equip courier services with CC cameras and scanners, government assistance in the form of tax exemptions is necessary.

What do you think are the major bottlenecks in efficient domestic and international freight handling?

Major bottlenecks:

- Average slow speed of vehicles in the Dhaka-Ctg. Highway.
- The draft of the channel of karnuphuli are not suitable for handling large shipping vessels
- Cargo handling equipment
- Very limited Scanner to check the container goods without opening the container
- Limited capacity of chemical lab
- HS code related complications especially for machinery and other high valued materials
- Need to introduce an open-platform supported by government to operate e-commerce related business.

What steps may be necessary to improve the performance of the cargo handling agent in various seaports, inland water-ports, inland ports, airports, ICDs?

- Cargo handling agents face no issues when handling goods at various sea-ports, inland waterways, inland ports, and ICDs. However, challenges arise in aviation transportation due to coordination issues.
- The airport lacks closed storage facilities, forcing containers to be stored in open spaces, leading to up to 30% pilferage.
- Limited scanner facilities result in extended goods checking times, causing delays in customs clearances. Additionally, the absence of an Explosive Detection System (EDS) scanner at the airport requires export containers bound for European countries to be sent to Dubai for checking, increasing costs and causing export delays.
- The current Cold-Chain/Reefer facilities for perishable agricultural goods, such as live fish, maintain temperatures close to 30 degrees, resulting in damages.

How would you rate the service of railway for freight movement? What are the major challenges in moving freight through Rail?

Despite offering an economical and uncluttered transportation option, railways encounter issues such as insufficient speed, scheduling challenges, and theft. Moreover, courier services contend that the loading and unloading of parcels at railways are costly due to railway labor expenses. Leveraging railways to extend courier services and e-commerce parcel deliveries to remote areas is crucial, and this can be achieved through PPP model.

Annex-8: List of Policies for Supporting the Sub-sectors in the Logistics Sectors in Bangladesh

Subsectors	Policy	Administering Ministries/Agencies/ Offices and infrastructure
1. Road Transportation and Communication services 2. Air/Aviation services 3. Railway Transportation services	1. Road Transport Act 2018 2. Axle Load Control Policy 2012 3. The Tolls Act 1851 4. The Ferries Act 1885 5. Air Cargo Related Rules and Regulations 6. Panya Poribahan Bishoyok Bidhimala	1. Road Transport and Highways Division 2. Ministry of Home Affairs 3. Ministry of Civil Aviation and Tourism 4. Ministry of Railways 5. Ministry of Commerce 6. Ministry of Shipping 7. National Board of Revenue (NBR) 8. Bangladesh Road Transport Authority (BRTA)

Subsectors	Policy	Administering Ministries/Agencies/ Offices and infrastructure
4. Sea Port Services 5. Ocean-Going cargo shipping services 6. Regional feeder vessel and lighter/coastal shipping industry services 7. Inland water transport services 8. Industry (service) of fishing in deep sea with mechanized trawlers	Deep Sea Fishing: 7. Marine Fisheries Act 2020 8. Marine Fisheries Rules 2023 9. Marine Fisheries Technical Guidelines 2023 10. Regional feeder vessels Port act Ad hoc rule	○ Ministry of shipping ○ Ministry of fisheries and livestock ○ Ministry and Department of Home Affairs ○ Bangladesh Bank ○ Customs Authority ○ Port Authorities of Chattogram, Mongla, and Payra (also Matarbari to be set up) ○ C&F Agents/ Berth operators ○ Shipping agencies ○ Labor contractors
9. Freight forwarding service 10. Clearing and forwarding service 11. Global logistics service	11. Export Policy 2021-2024 12. Industrial Policy 2022 13. Civil Aviation Act, 2017 14. The Ports Act, 1908 15. Customs Act, 1969 16. The Post Office Act, 1898 17. Courier Service Rules, 2011	○ National Board of Revenue (NBR) ○ Civil Aviation Authority of Bangladesh ○ Railway Ministry ○ Port Authority ○ Road Transport and Highways Division (RTHD) ○ Bangladesh Customs ○ Bangladesh Inland Water Transport Authority ○ Ground Handling Agent
12 Temperature-controlled logistics/cold chain/cold storage service 13. Private inland container depot and freight station service 14. Private warehouse service 15. Oil/gas/LNG tank terminal service	18. Private Inland Container Depot Policy by NBR (No Policy for Temperature Controlled Logistics) 19. Oil, Gas, LNG Tank terminal Policy by Petro Bangla & Ministry of Power, Energy and Mineral Resources Regulations for Local Ownership 20. Fixed Tariff Issues (BICDA)	○ National Board of Revenue ○ Energy and Mineral Resources Division ○ Ministry of Commerce ○ Bangladesh Inland Container Depot Association
16 Courier and Postal Service 17. Information and Technological Logistics Service	19. The Post Office Act, 1898 20. Mailing Operator and Courier Service Rules, 2013	○ Ministry of Posts,Telecommunications and Information Technology ○ Post and Telecommunication Division
18. Ride Sharing Service	21. Ridesharing Service Guideline, 2017 22. Administrative ministries/ agencies/ offices Bangladesh Road	Bangladesh Road Transport Authority (BRTA)

Subsectors	Policy	Administering Ministries/Agencies/ Offices and infrastructure
	Transport Authority (BRTA) Infrastructure 23. Road Transportation 24. Motor Vehicles Ordinance (MVO) of 1983.	
19. Information and Technological logistics	No logistics policy by ICT Ministry	ICT Ministry
20. Financial Logistics service	No dedicated logistics policy	Ministry of Finance, Bangladesh Bank
21. E-commerce Logistics Service	No dedicated logistics policy yet to developed. Policy for Home Delivery (Freelancer) part is available under Ride Sharing Guideline 2017	o Road Transportation and Bridge Division o Ministry of Industries o Business Process Outsourcing (BPO) o Roads & Highway/Ministry of Home Affairs o Ministry of Commerce o Copyright Authority ICT Department

Annex-9: The list of collected Studies, Report and Research paper

Sl. No.	Title	Author	Item Type	Publication Year	Summary	ISSN	Url
1	Cryptocurrency Conundrum Lessons from the MTFE Scam in Bangladesh	Ahmed, Nauriin	webpage	2023	In an era driven by technological advancement and financial innovation, the realm of virtual assets and currencies has gained substantial attention, drawing both curiosity and apprehension.		https://www.thedailystar.net/law-our-rights/news/cryptocurrency-conundrum-lessons-the-mtfe-scam-bangladesh-3408416
2	Bangladesh Railway EPC Track Engineering Investigation and Summary	Ming-min, Yin; Fen, Xiang; Nan-fu, Yi	Journal Article	2023	Bangladesh's railway infrastructure is outdated and inadequate, and the lack of transportation capacity seriously hinders the country's economic development. In the track engineering practice of EPC projects such as the second line project of a railway Meter-Gauge addition project and the new Board-Gauge railway project in Bangladesh, according to the operation characteristics and maintenance status of the existing cable of the Bangladesh railway, the design and construction characteristics of the railway track, and the procurement of track materials, combined with the characteristics of the EPC project management in the country, suggestions on the general contracting and construction of track engineering were put forward. He also analyzed and summarized the risk factors in the design and construction of Bangladesh railway track engineering, and made some useful thoughts and explorations on how to do a good job in the general contracting of track engineering of EPC projects according to local conditions	2576-1994, 2576-1986	http://www.scholink.org/ojs/index.php/uspa/article/view/20498
3	The Aspiration for Happy Train Journey: Commuters' Perception of the Quality of Intercity Rail Services	Islam, Md Rakibul; Ahmed, Md Tawkir; Anwari, Nafis; Hadiuzzaman, Md; Amin, Shohel	Journal Article	2022	This paper assesses the perception of intercity rail passengers on station facilities at Joydebpur Railway Station in Bangladesh. The ordinal logistic regression (OLR) tool was applied to analyze 1000 responses of rail passengers on 24 selected service and 5 demographic parameters. Critical consideration from the perspective of a developing country revealed six unique factors, namely Level crossing facility, Illegal establishments, Illegal shops, Floating people, Arrival performance, and Departure performance, which have never been explored in any previous studies. The regression analysis identified that 13 service quality factors significantly affected commuters' satisfaction level, particularly the Food and drinks, Road connectivity, Sanitation, and Waiting room facility at the station. Among the five demographic factors, age, occupation, and travel frequency significantly influenced overall passenger satisfaction (OPS). The model results have also been validated through a second survey at Kamalapur Railway Station, Bangladesh. The results suggest that policymakers should focus on the elderly, financially solvent people, and frequent travelers. Additionally, refreshment facilities, road connectivity, sanitation, and waiting room facilities should be given priority, as these will heavily impact passenger satisfaction according to this study. Subsequent attributes can then be prioritized as per the attributes ranked and according to budget considerations of the authority.	2673-4109	https://www.mdpi.com/2673-4109/3/4/52
4	Design and Concept of Renewable Energy Driven Auto-	Iftekharuzzaman, Iftekharuzzaman; Ghosh,	Journal Article	2023	Bangladesh's railway system mostly uses typical manual railway crossing techniques or boom gates through its 2955.53 km rail route all over the country. Accidents frequently happen at railway crossings due to the lack of quickly operating gate systems, and to fewer safety measures at the railway crossing as well. Currently, there are very few automatic railway crossing systems available (without obstacle detectors).	2673-7590	https://www.mdpi.com/2673-7590/3/1/5

	Detectable Railway Level Crossing Systems in Bangladesh	Susmita; Basher, Mohammad Khairul; Islam, Mohammad Aminul; Das, Narottam; Nur-E-Alam, Mohammad			Additionally, all of them are dependent on the national power grid, without a backup plan for any emergency cases. Bangladesh is still running a bit behind in generating enough power for its consumption; hence, it is not possible to have a continuous power supply at all times all over the countryside. We aim to design and develop a smart railway crossing system with an obstacle detector to prevent common types of accidents at railway crossing points. We use two infrared (IR) sensors to operate the railway crossing systems, which are controlled by an Arduino Uno. This newly designed level crossing system is run with the help of sustainable renewable energy, which is cost-effective and eco-friendly, and applied under the national green energy policy towards achieving sustainable development in Bangladesh as a part of the global sustainable goal to face climate change challenges. We have summarized the simulated the results of several renewable energy sources, including a hybrid system, and optimized the Levelized Cost of Energy (LCOE) and the payback periods.		
5	Impact of introducing e-commerce on small and medium enterprises – a case on logistics provider	Parvin, Morsheda; Asimiran, Soaib Bin; Ayub, Ahmad Fauzi Bin Mohd	Journal Article	2022	Purpose Small and medium enterprises (SME) significantly alleviate poverty and generate employment to achieve sustainable economic growth. Using electronic devices, e-commerce allows an immediate and advanced communication service to accomplish business transactions. Considering logistics provider as a case, this paper aims to examine the impact of adopting an e-commerce technology on its customers' and agents' satisfaction. Design/methodology/approach The authors use the difference in difference methodology to examine these effects and find positive impacts on both customers and service providers. Findings As SMEs are widely considered as the powerhouse of an economy, the authors' findings suggest that using e-commerce not only makes an SME agent more efficient but also accelerates an SME business transaction, which ultimately helps to achieve sustainable economic growth. Originality/value A few studies are conducted in examining the impact of SME on economy. However, according to the authors' knowledge, this is the first research that examines the impact of e-commerce on SME.	1746-5680	https://doi.org/10.1108/SBR-10-2020-0131
6	Enhancing Chittagong Port: Fostering a Future-Ready Supply Chain	Hasan, Ikram; Habib, Md. Mamun	Journal Article	2023	An essential lifeline to Bangladesh's robust economy, Chittagong Port in Bangladesh, was the subject of an insightful visit in May 2023. An expert team comprising three academicians (professors) and two industry experts from the Bangladesh Freight Forwarders Association (BAFFA) embarked on an explorative journey to understand the heart of the nation's supply chain and examine the intricate operations that make this port an economic powerhouse. Key functions like cargo handling, container operations, vessel loading and unloading, ship navigation, radar, and speed log were meticulously assessed for their complex contribution to both local and global trade dynamics. A comprehensive inspection of these operations showcased their importance in the seamless flow of goods, which establishes the port as the backbone of Bangladesh's trade ecosystem. It was previously identified the port as a critical logistical hub in the region.		
7	Logistics Overview of Bangladesh	Islam, Masudul; Awal, Mohammed	Journal Article	2019	Rapid urbanization, incremental growth in trade and development with new business models like e-commerce, the blockchain, etc. unlock to accelerate the demand for efficient logistics in Bangladesh. The physical infrastructural development shields four		

		Abdul; Saleheen, Ferdoush; Rahman, Dewan S; Kabir, Saad Aadnan			modes of transportations, customs, and services. Since the independence of Bangladesh in 1971, a long term master plan on the development of logistics and its continual execution like other developed nations has been overlooked in consideration with the prospect opportunities of Bangladesh as well as with the current trend and logistics ranking by the Agility Emerging Market Logistics Index (AEMLI). The logistics sector is itself multidimensional due to its scope and its every sub-sector is regulated by different government agencies, thrashing the sector into a dense convolution as our legacy of policymaking of the past few decades demonstrates an inclination to be done piecemeal rather than an integrated while a more or less fragmented governance structure impedes implementation. This literature attempts to under stand these challenges through witnessing in Bangladesh, a new contestant from the Third World in the borderless competition. This literature is an applied study done by the country's logisticians through exploratory research, identifies five broad challenges facing logistics development in Bangladesh and proposes a schematic approach and strategies that integrate efforts of and inputs from, four sources to solve these problems.		
8	Public food grain storage facilities in Bangladesh: An assessment of functionality, repair needs, and alternative usage	Research Institute (Ifpri), International Food Policy	report	2019	The study aims to assess the economic benefits and costs of improving a facility or warehouse's physical conditions, considering factors like infrastructure, growth, poverty reduction, and social safety net program changes. It also assesses the scope of physical works, felt need for expansion, and available land for such construction. The study focuses on assessing the physical conditions of facilities, identifying necessary repairs and constructions, and categorizing repairs into major, moderate, and minor works at facility and warehouse levels.		https://ebrary.ifpri.org/digital/collection/p15738coll2/id/133106
9	Exploring the Logistics Sector in Bangladesh	Nyenrode Business Universiteit	Journal Article	January 2014	Bangladesh has risen 13 places in the Agility Emerging Market Logistics Index (AEMLI) ranking for the future logistics market. The country's export logistics, particularly food and textile, are advanced, with foreign freight forwarders and third-party logistics promoting development. The government invests in projects to support the sector, focusing on water, road, air, and postal services. Public Private Partnerships (PPPs) are recognized as strategic vehicles for financing transport infrastructure development. A survey by Bangladeshi and Dutch companies revealed the provision of goods and services as the most promising market segment for investment. Other segments include 4PL, project logistics, human resources, warehousing, distribution, and software exports. Dutch companies see business opportunities in building and trading vessels, modern warehousing, port and waterway planning, temperature-controlled transport, and innovative systems.		
10	Bangladesh Railway EPC Track Engineering	Ming-min, Yin; Fen, Xiang;	Journal Article	2023	Bangladesh's railway infrastructure is outdated and inadequate, and the lack of transportation capacity seriously hinders the country's economic development. In the track engineering practice of EPC projects such as the second line project of a railway Meter-Gauge addition project and the new Board-Gauge railway project in Bangladesh, according to the operation characteristics and maintenance status of the	2576-1994, 2576-1986	http://www.scholink.org/ojs/index.php/uspa/article/view/20498

	Investigation and Summary	Nan-fu, Yi			existing cable of the Bangladesh railway, the design and construction characteristics of the railway track, and the procurement of track materials, combined with the characteristics of the EPC project management in the country, suggestions on the general contracting and construction of track engineering were put forward. He also analyzed and summarized the risk factors in the design and construction of Bangladesh railway track engineering, and made some useful thoughts and explorations on how to do a good job in the general contracting of track engineering of EPC projects according to local conditions.		
11	The Aspiration for Happy Train Journey: Commuters' Perception of the Quality of Intercity Rail Services	Islam, Md Rakibul; Ahmed, Md Tawkir; Anwari, Nafis; Hadiuzzaman, Md; Amin, Shohel	Journal Article	2022	This paper assesses the perception of intercity rail passengers on station facilities at Joydebpur Railway Station in Bangladesh. The ordinal logistic regression (OLR) tool was applied to analyze 1000 responses of rail passengers on 24 selected service and 5 demographic parameters. Critical consideration from the perspective of a developing country revealed six unique factors, namely Level crossing facility, Illegal establishments, Illegal shops, Floating people, Arrival performance, and Departure performance, which have never been explored in any previous studies. The regression analysis identified that 13 service quality factors significantly affected commuters' satisfaction level, particularly the Food and drinks, Road connectivity, Sanitation, and Waiting room facility at the station. Among the five demographic factors, age, occupation, and travel frequency significantly influenced overall passenger satisfaction (OPS). The model results have also been validated through a second survey at Kamalapur Railway Station, Bangladesh. The results suggest that policymakers should focus on the elderly, financially solvent people, and frequent travelers. Additionally, refreshment facilities, road connectivity, sanitation, and waiting room facilities should be given priority, as these will heavily impact passenger satisfaction according to this study. Subsequent attributes can then be prioritized as per the attributes ranked and according to budget considerations of the authority.	2673-4109	https://www.mdpi.com/2673-4109/3/4/52
12	Smart Railway Operation Aid System for Facilities With Low-Safety Requirements	Torralba, Antonio; Garcia-Castellano, Maria; Hernandez-Gonzalez, Miguel; Garcia-Martin, Juan Pablo; Perez-Mira, Ventura; Fernandez-Sanzo, Roberto; Jacome-Moreno, Antonio;	Journal Article	2021	Rail traffic control systems are undergoing an important transformation. ERMTS/ECTS, CBTC, PTC and other train control systems based on radio communication are being deployed in different countries. These systems meet the high safety requirements for passenger traffic, and cover from congested urban areas to high-speed trains. However, there is a set of facilities, such as ports, dry ports, facilities for the repair and maintenance of trains, logistic centers, mines, etc., whose trains, that only carry freight, circulate in a controlled environment at a low speed. These facilities have low safety requirements. For them, present commercial systems become too expensive, so that, in most cases, railway traffic is still handled manually. This paper presents a system to aid in the exploitation of rail traffic for this type of facilities, called SFPS (Seville Ferro-Port System). SFPS presents many of the features of the most advanced traffic control systems, but incorporates innovations based on Information and Communications Technologies to reduce costs. To this end, train location is based on a satellite global positioning system, physical signs are replaced by virtual ones, displayed in an On-Board Unit, and communication is almost entirely wireless. SFPS has been in a trial phase since March 2016, covering part of the railway facilities of the Port Authority of Seville, with satisfactory results.	1939-1390, 1941-1197	https://ieeexplore.ieee.org/document/9055408/

		Gutierrez-Rumbao, Francisco Javier					
13	Improving logistics performance by reforming the pillars of Global Competitiveness Index	Önsel Ekici, Şule; Kabak, Özgür; Ülengin, Füsun	Journal Article	2019	The logistics performance of a country is crucial to national and international trade, and therefore has a direct effect on economic development. Owing to limited resources, policymakers need a guide for specifying the factors that need to be focused upon to bring about immediate and significant improvements in the logistics performance of their countries. This study aims to propose a methodology to develop a roadmap for policymakers in improving the logistics performance of their countries. For this purpose, we analyze the effect of the competitiveness pillars of the Global Competitiveness Index (GCI) on logistics performance (as measured by the Logistics Performance Index (LPI)), using a three-stage integrative methodology based on a tree-augmented naive Bayesian network, partial least square path model, and importance-performance map analysis. An empirical study is conducted using the GCI pillars of the World Economic Forum and the LPI of the World Bank. The results indicate that governments should focus on technological readiness, higher education and training, innovation, market size, and infrastructure to facilitate improvement in the logistics performance of their countries.	0967070X	https://linkinghub.elsevier.com/retrieve/pii/S0967070X18305456
14	A framework for analysing supply chain performance evaluation models	Estampe, Dominique; Lamouri, Samir; Paris, Jean-Luc; Brahim-Djelloul, Sakina	Journal Article	2013	Supply chain management creates value for companies, customers and stakeholders interacting throughout a supply chain. The strategic dimension of supply chains makes it paramount that their performances are measured. In today's performance evaluation processes, companies tend to refer to several models that will differ in terms of corporate organisation, the distribution of responsibilities and supply chain maturity. The present article analyzes various models used to assess supply chains by highlighting their specific characteristics and applicability in different contexts. It also offers an analytical grid breaking these models down into seven layers. This grid will help managers evolve towards a model that is more suitable for their needs.	9255273	https://linkinghub.elsevier.com/retrieve/pii/S0925527310004536
15	Bangladesh Railway EPC Track Engineering Investigation and Summary	Ming-min, Yin; Fen, Xiang; Nan-fu, Yi	Journal Article	2023	Bangladesh's railway infrastructure is outdated and inadequate, and the lack of transportation capacity seriously hinders the country's economic development. In the track engineering practice of EPC projects such as the second line project of a railway Meter-Gauge addition project and the new Board-Gauge railway project in Bangladesh, according to the operation characteristics and maintenance status of the existing cable of the Bangladesh railway, the design and construction characteristics of the railway track, and the procurement of track materials, combined with the characteristics of the EPC project management in the country, suggestions on the general contracting and construction of track engineering were put forward. He also analyzed and summarized the risk factors in the design and construction of Bangladesh railway track engineering, and made some useful thoughts and explorations on how to do a good job in the general contracting of track engineering of EPC projects according to local conditions.	2576-1994, 2576-1986	http://www.scholink.org/ojs/index.php/uspa/article/view/20498
16	Developing Integrated	Chowdhury, Md.	Conference Paper	2016	As part of the Asian Highway and Trans-Asian Railway networks, and also as a member country of the South Asian Association for Regional Cooperation (SAARC)		http://ascelibrary.org/doi/10

	Multimodal Transportation Networks in Bangladesh with Regional Connectivity: Key Issues and Challenges	Shoaib			and Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), Bangladesh can able to expand trades with neighboring countries as well as other Asian nations by developing well connected and integrated multimodal transportation networks. However, currently Bangladesh lacks well developed integrated multimodal transportation networks. Due to a disproportionately high investment in the road sector, road becomes the dominant mode of transport with a modal share of over 70 percent, while the investments in the railway and inland waterway sectors (though, they are relatively safe, cost economic and environmentally friendly modes) are consistently very minimal. Being a riverine country with nearly 700 rivers including tributaries, the waterways could be developed well. In Bangladesh, transport infrastructure projects (e.g., rail, road, and inland waterways) are identified and selected independently along modal lines through separate ministries in association with the Ministry of Planning without a comprehensive, coordinated and continuous multimodal transportation planning process and the selected projects are funded under the Annual Development Program (ADP) in each fiscal year. Due to very limited financial resources for the infrastructure development projects, Bangladesh heavily relies on international development partners (e.g., World Bank, Asian Development Bank, International Monitory Fund, etc) to bridge the fiscal gap while compromising the development priorities and needs. In light of the above discussions, this paper addresses key issues and challenges toward developing integrated multimodal national transportation networks with an emphasis to regional connectivity. Particularly, the paper addresses issues with the planning process, governance, and institutions, funding/financing, and integrated multi-modal development.		.1061/9780784479926.025
17	Visualization of Renewable Energy Powered Automatic Railway Crossing Systems in Bangladesh	Rifat, Iftekharuzzaman; Ghosh, Susmita; Basher, Mohammad Khairul; Islam, Mohammad Aminul; Das, Narottam; Nur-E-Alam, And Mohammad	report	2022	Bangladesh's railway system mostly uses typical manual railway crossing technique or boom gates through its 2,955.53 km rail route all over the country. The accidents are frequently happening in the railway crossings due to not having obstacle detectable and quickly operating gate systems, and also for fewer safety measures in the railway crossing. Currently, there are very few automatic railway crossing systems (without obstacle detectors) available, however, all of them are dependent on the national power grid without a backup plan for any emergency cases. Bangladesh is still running a bit behind in the power generation of its consumption, hence it is not possible to have a continuous power supply at all times all over the countryside. We aim to design and develop a smart railway crossing system with an obstacle detector to prevent common types of accidents in the railway crossing points. We design to use two infrared (IR) sensors to operate the railway crossing systems which will be controlled by the Arduino Uno. This newly designed level crossing system will be run with the help of sustainable renewable energy which is cost-effective, eco-friendly, and apply under the national green energy policy towards achieving sustainable development in Bangladesh as a part of the global sustainable goal to face climate change challenges. We have summarized the simulated results of several renewable energy sources including a hybrid system and optimized the Levelized Cost of Energy (LCOE), and the payback periods.		https://www.preprints.org/manuscript/202202.0060/v1
18	Resilient	Asif	International	01 Jan	Resilient mobility and logistics (RML) system is now an emerging concept in the		https://www.r

	mobility and logistics systems for future: Bangladesh Perspective	Mahmud Arnob, Su nanda Majumdar	journal of research and innovation in social science-Vol. 06, Issue: 08, pp 186-193	2022	transportation system worldwide. Developing a transportation system is now a global challenge to support the economic development of any country. RML system is now a must to satisfy the mobility needs of its people, and participate in the global economy. This paper is based on secondary data analysis. It investigates how Bangladesh can handle the challenges it is facing now in becoming a developed country by implementing a more resilient mobility and logistics system in the future. It shows the impact of the transport and storage sector on the Gross Domestic Product (GDP) and economic development of Bangladesh. Besides, it tries to find out the barriers and limitations of the activities implemented till now or accepted and might be implemented in the future. It presents the current scenario of the transportation system of Bangladesh and proposes ways forward to overcome some of these challenges and promote sustainable development in Bangladesh. Under this backdrop, the study also aims to provide some possible solutions which includes implementing smart mobility, zero-emission, smart transport, development of robust modelling for resilience and response to the impacts of COVID-19 on the transportation system of Bangladesh.		sisinternational.org/journals/ijriss/Digital-Library/volume-6-issue-8/186-193.pdf
19	Smart Railway Operation Aid System for Facilities With Low-Safety Requirements	Torralba, Antonio; Garcia-Castellano, Maria; Hernandez-Gonzalez, Miguel; Garcia-Martin, Juan Pablo; Perez-Mira, Ventura; Fernandez-Sanzo, Roberto; Jacome-Moreno, Antonio; Gutierrez-Rumbao, Francisco Javier	Journal Article	2021	Rail traffic control systems are undergoing an important transformation. ERMTS/ECTS, CBTC, PTC and other train control systems based on radio communication are being deployed in different countries. These systems meet the high safety requirements for passenger traffic, and cover from congested urban areas to high-speed trains. However, there is a set of facilities, such as ports, dry ports, facilities for the repair and maintenance of trains, logistic centers, mines, etc., whose trains, that only carry freight, circulate in a controlled environment at a low speed. These facilities have low safety requirements. For them, present commercial systems become too expensive, so that, in most cases, railway traffic is still handled manually. This paper presents a system to aid in the exploitation of rail traffic for this type of facilities, called SFPS (Seville Ferro-Port System). SFPS presents many of the features of the most advanced traffic control systems, but incorporates innovations based on Information and Communications Technologies to reduce costs. To this end, train location is based on a satellite global positioning system, physical signs are replaced by virtual ones, displayed in an On-Board Unit, and communication is almost entirely wireless. SFPS has been in a trial phase since March 2016, covering part of the railway facilities of the Port Authority of Seville, with satisfactory results.	1939-1390, 1941-1197	https://ieeexplore.ieee.org/document/9055408/
20	Prospects of Internet of Things for Bangladesh	Parvez, Nasim; Chowdhury, Tamjidul Haque;	Conference Paper	2021	This paper represents a conceptual framework model for the Prospects of Internet of Things (IoT) for Bangladesh. IoT is an enhancement of the internet that can be described as things or objects being connected anytime and anywhere with anything, so as to give seamless communications and external services. Bangladesh has recently formulated ‘National IoT Strategy’ in March 2020, mentioning that IoT is an enabler		https://ieeexplore.ieee.org/document/9396818/

		Urmi, Shahina Sultana; Taher, Kazi Abu			to the development and contributor to economic growth of a country. The prospects of IoT depends on its applications for improving agriculture, manufacturing, healthcare, transportation, education delivery, business process optimization, smart governance with public utility services, smart cities etc. Similarly, IoT is likely to have huge opportunities and positive impacts for the socio-economic development of Bangladesh. The conceptual model of the study shows that in order to implement the 'National IoT Strategy' Bangladesh, she needs to develop a set of policy 'Guidelines for the adoption of IoT. This research will primarily explore the prospects of IoT in the socio-economic development sectors. The likely outcome of this study is the introduction of IoT enabled socioeconomic development of Bangladesh.		
21	Skill and knowledge requirements of entry-level logistics professionals in the apparel industry of Bangladesh: an importance-expertise matrix analysis	Iqbal, Md Arif; Su, Jin; Hasan, Sabbir	Journal Article	2022	This paper provides an assessment of the skills needed for entry-level logistics professionals in Bangladesh's apparel industry and suggests the critical skill areas that require improvement. Two studies were conducted to get the responses from supply chain and logistics professionals who have direct interactions with entry-level logistics professionals in the workplace. In study 1, an Importance-Expertise Matrix (IEM) analysis was conducted to provide an assessment of the relative importance and expertise of 40 skill items and investigate the skill gaps. The results reveal that 27.5% of the skill items have a noticeable gap between their importance and expertise level, indicating further improvement is needed. In Study 2, a qualitative approach was used, and the findings reinforced those of Study 1 and offered new and important information about skill and knowledge requirements amid the COVID-19 pandemic. This research offers implications for the apparel industry, academia, policymakers, and training agencies in Bangladesh.	1754-3266, 1754-3274	https://www.tandfonline.com/doi/full/10.1080/17543266.2021.1992514
22	Leveraging E-Commerce in Bangladesh for Post- Crisis Recovery	Banga, Karishma; Parra, Max Mendez	Journal Article		E-commerce has become a crucial pathway to mitigate the economic effects of Covid-19, which is expected to wipe out $5-10 billion of Bangladesh's $300 billion-plus economy. The textile and garments sector in Bangladesh has been particularly hard hit, with apparel exports declining by 17% in the just-concluded fiscal year. E-commerce's contribution to gross domestic product in Bangladesh is estimated at 0.2%, with the sector focused on business-to-consumer (B2C), business-to-business (B2B), and consumer-to-consumer (C2C) business strategies. Roughly 90% of e-commerce is B2C, with f-commerce emerging as the most prominent channel. There are an estimated 2,500 e-commerce websites, selling products worth over $2 billion, with more than 300,000 stores operating through Facebook. Bangladesh is lagging behind in e-commerce, with internet and account penetration being key enablers. Despite 70-80% growth in online sales during the pandemic, Bangladesh's digital access remains low at 15%. Improvements in trade facilitation, logistics, and cross-border e-commerce policy are needed to address issues like interoperability, digital trust, data flows, privacy, and consumer protection.		
23	Intelligent Vehicle Scheduling and Routing for a	Rahman, M. Azizur; Hossain,	Journal Article	2021	Background: Retail chains aim to maintain a competitive advantage by ensuring product availability and fulfilling customer demand on-time. However, inefficient scheduling and vehicle routing from the distribution center may cause delivery delays and, thus, stock-outs on the store shelves. Therefore, optimization of vehicle routing	2305-6290	https://www.mdpi.com/2305-6290/5/3/63

	Chain of Retail Stores: A Case Study of Dhaka, Bangladesh	Al-Amin; Debnath, Binoy; Zefat, Zinnat Mahmud; Morshed, Mohammad Sarwar; Adnan, Ziaul Haq			can play a vital role in fulfilling customer demand. Methods: In this research, a case study is formulated for a chain of retail stores in Dhaka City, Bangladesh. Orders from various stores are combined, grouped, and scheduled for Region-1 and Region-2 of Dhaka City. The 'vehicle routing add-on' feature of Google Sheets is used for scheduling and navigation. An android application, Intelligent Route Optimizer, is developed using the shortest path first algorithm based on the Dijkstra algorithm. The vehicle navigation scheme is programmed to change the direction according to the shortest possible path in the google map generated by the intelligent routing optimizer. Results: With the application, the improvement of optimization results is evident from the reductions of traveled distance (8.1% and 12.2%) and time (20.2% and 15.0%) in Region-1 and Region-2, respectively. Conclusions: A smartphone-based application is developed to improve the distribution plan. It can be utilized for an intelligent vehicle routing system to respond to real-time traffic; hence, the overall replenishment process will be improved.		
24	An Overview of Ship Brokering and Chartering and its Challenges in Bangladesh	Sayed, Mohammad Abdullah Abu	Journal Article	2022	It is impossible to overstate the importance of marine support services in assisting ports and shipping. Ports and shipping cannot flourish without ancillary sectors like logistics, finance, legal, and insurance. Because Bangladesh relies largely on marine transportation for its international trade.Developing maritime support services is critical for ensuring that its maritime industry can support its expanding trade volume and improve its competitiveness as a trading nation. Even though Bangladesh has developed several maritime support services, it needs to do more to expand the scope and capacity of ship brokerage and chartering to better serve the global market and capitalize on expanding international trade volumes and demand for marine services. Bangladesh should take a strategic approach to wisely utilise available resources, nurture human capital, harness existing strength as a maritime and trade nation, and elevate its marine support services to compete with other leading maritime nations. Chartering is a sort of information exchange. Brokers participating in chartering operate as information Collectors, judges, and distributors. This paper objects to critically analyze the Challenges and prospects of ship brokering and chartering business in Bangladesh.		https://www.researchgate.net/publication/361074126
25	Green Logistics, Green Human Capital, and Circular Economy: The Mediating Role of Sustainable Production	Cheng, Ya; Masukujjaman, Mohammad; Sobhani, Farid Ahammad; Hamayun, Muhammad; Alam, Syed Shah	Journal Article	2023	Many countries worldwide have adopted a sustainable development model to strike a balance between economic progress, environmental preservation, and social protection, and one of the most effective solutions for promoting sustainable development has been the circular economy (CE). Given each country's resource restrictions, businesses must implement green manufacturing practices to establish a circular economy. Therefore, this study intends to assess the role of green logistics (GL) and green human capital (GHC) in promoting a circular economy. Additionally, the mediating role of sustainable production (SP) in the interplays between the constructs was examined. Data for this research was collected from 211 garment manufacturing firms in Bangladesh, using a standardized questionnaire. The partial least square structural equation modeling (PLS-SEM) technique was employed for inferential statistical analysis. The findings revealed that GL and GHC are significant drivers of CE. Additionally, GL and GHC were observed to have a positive linkage with the SP of firms. The findings uncovered that SP positively impacts circular economy implementation. Furthermore, SP was found to significantly mediate the	2071-1050	https://www.mdpi.com/2071-1050/15/2/1045

					linkages between GL and CE, as well as between GHC and CE. Ours is one of a limited number of research projects that address the role of GL and GHC in implementing CE through SP. Hence, this study added critical insights to the extant theory and practice while reporting several theoretical and managerial implications.		
26	The Role of Chittagong Port Authority to Develop Other National Ports in Bangladesh to Provide Maritime Logistics Support in South Asia	Saha, Razon Chandra	Journal Article	2023	Chittagong Port is the principal seaport in Bangladesh that has contributed to the national economy with the opportunity to be a world-class regional port in South Asia. Cooperation among the three national ports Chittagong, Mongla and Payra is essential to do maritime logistics business in the region after serving the nation proudly. Here, Chittagong Port Authority (CPA) has the opportunity to help others in the process of port development for increasing efficiency and productivity by providing financial and technical assistance because of its financial and technical capabilities as a pioneer seaport in the port world. This paper examines the role of CPA to bolster and develop the underutilized Mongla Port and newly established Payra Port, where qualitative research methodology is applied to explore the ways, by which CPA can assist, link and integrate with others effectively, especially in developing the port infrastructure and inland transport networks. In addition, the research found the prospectus of Mongla and Payra to supply port services to the neighbors India, Nepal, and Bhutan as well as serve the South-West part of China with the aim of increasing regional connectivity and promoting international trade in those basically landlocked areas and countries of Asia.	2661-3158	https://journals.nasspublishing.com/index.php/sms/article/view/824
27	Challenges for Government Innovation in Bangladesh	Subhan, Tahrima; Don Jae, Gal	Journal Article	2012	Innovation is not self-generating or self-sustaining. Successful innovation requires leadership to establish organizational capacity to generate ideas and to ensure prompt and effective service. If any government fails to provide these supports to the innovation process, it will not be effective. This paper seeks to identify factors that hamper government innovation in Bangladesh. It proposes a strategy for the Bangladesh government that involves political institutionalization, administrative and market decentralization, promotion of social and economic justice, and good governance in order to promote innovation processes and ensure successful innovation flows within the country.	12255017, 27652807	http://jps.snu.ac.kr/Archive/Detail/183
28	The Challenges in Establishing Sustainable Supply Chain in Bangladesh	Uddin, Mohammad Mazbha	Journal Article		In the corporate sectors, sustainable supply chain is a vital issue due to the business interest. Since 1980s it has been progressively amplified the attention of the supply chain management when the business organization showed the mutual relationship's benefits in the business organization. For this reason, researchers try hard to build up new theory for supply chain that can be helpful for business organization. The main objectives of this research are offered a literature review on sustainable supply chain management taking papers published since 1990 to till date into account. Secondly, it offers a conceptual sustainable supply chain process model in light of triple bottom line theory. The researcher takes in-depth interview for developing the model among the Poultry entrepreneurs. The sustainable supply chain management research numbers are not sustaining. Among this most of the previous research focus on environment, social and economic aspects of standalone fashion in supply chain. The most of the		

					previous studies based on dominant conceptual nature. Research on sustainable supply chain management based on comprehensive empirical is very few. This paper focused on triple bottom line sustainability like – social, economic and environment that are related to Bangladesh supply chain		
29	Moving Forward: Connectivity and Logistics to Sustain Bangladesh's Success	Herrera Dappe, Matías; Kunaka, Charles; Lebrand, Mathilde; Weisskopf, Nora	book	2019	The study aims to assess the economic benefits and costs of improving a facility or warehouse's physical conditions, considering factors like infrastructure, growth, poverty reduction, and social safety net program changes. It also assesses the scope of physical works, felt need for expansion, and available land for such construction. The study focuses on assessing the physical conditions of facilities, identifying necessary repairs and constructions, and categorizing repairs into major, moderate, and minor works at facility and warehouse levels.		https://openknowledge.worldbank.org/handle/10986/32597
30	Emerging Blue Economy for Bangladesh: Opportunities, Challenges and Way Forward	Sharwar, M Golam; Alamgir, M Ziauddin; Mahmud, Arif	Journal Article		Bangladesh's economy had been largely dependent on Ready Made Garment (RMG). Without product diversification, Bangladesh is likely face difficulties to keep up the GDP growth and to achieve vision 2041. Additionally, depletion of land-based resources made it mandatory for the nation to turn their attention towards the south for sustainable economic development. Single source dependency threatened national development, hence the call for the exploration of alternative resource arose. The primary objective of this study is to seek ways by which Bangladesh can more efficiently utilize the ocean resources in a sustainable way by examining the associated challenges and highlighting the o p p o r t u n i t i e s therein. Study adopted Document analysis method. The research findings showed a huge vista for blue economy in Bangladesh like Shipping, Sea ports, Maritime education & research etc. The analysis indicated that, Bangladesh has several challenges including absence of governance, pollution, lack of security in the maritime area, lack of maritime domain awareness, lack of coordination, weak educational base etc. Strategies were proffered which include creation of maritime domain awareness, capacity building of responsible agencies, and effective surveillance over EEZ area. The paper concluded that Bangladesh has potentials to reap benefits from the Blue Economy. However, it requires strong political willingness and commitments which already have been demonstrated in Bangladesh.	BMJ Vol 7 Issue 1 ISSN 2519-5972	
31	Logistics management research collaboration in Asia	Wu, Yen-Chun; Goh, Mark; Yuan, Chih-Hung; Huang, Shan-Huen	Journal Article	2017	This paper investigates the state of logistics management research in Asia. The study focuses on the research agenda, the topics of interest, and the extent of research collaboration in logistics theory building and knowledge specific to Asia. This study uses a mixed methods approach namely, content analysis drawn from the articles found in six well-recognized peer-reviewed logistics management related journals from 2003 to 2013, followed by social network analysis which is applied on the selected articles to provide a structure of the collaboration relationship. Initial findings suggest that there are some scholars in Asia who are instrumental in research collaboration and in building a body of knowledge on logistics management focused on Asia. More co-production of knowledge from deeper and tightly knit industry-academic collaboration	0957-4093	https://www.emerald.com/insight/content/doi/10.1108/IJLM-09-2013-0104/full/html

					is needed to progress this domain. Most of the published work use an empirical instrument drawn from the resource based view to explore firm level supply chain collaboration and strategy. This suggests a positivist research tradition within logistics. There is a shortage of studies conducted on the supply chain as a network of enterprises.		
32	Green Supply Chain Management: The Effect of Procurement Sustainability on Reverse Logistics	Letunovska, Nataliia; Offei, Felix Amoako; Junior, Prince Amoh Junior; Lyulyov, Oleksii; Pimonenko, Tetyana; Kwilinski, Aleksy	Journal Article	2023	This study investigates the impact of procurement sustainability on reverse logistics. It examines the relationship between environmental, economic, social, and government policies. Results show that sustainability positively impacts reverse logistics. Government policy moderates these relationships. The study recommends organizations collaborate with environmental protection agencies to produce environmentally friendly products, acknowledge social interventions to protect society, and promote economic policies that increase wealth. Overall, sustainable procurement is crucial for reducing environmental and economic impacts.	2305-6290	https://www.mdpi.com/2305-6290/7/3/47
33	Traffic Problems in Dhaka City: Causes, Effects, and Solutions (Case Study to Develop a Business Model)	Ali, Yasin; Rafay, Muhammad; Khan, Raja Danish Akbar; Sorn, Meng Kheang; Jiang, Hailing	Journal Article	2023	Dhaka, Bangladesh's capital, is grappling with a severe traffic problem due to population growth and inadequate infrastructure. The city's working hours have risen to eight million per day, a significant increase from 2017. The issue is exacerbated by socioeconomic factors, such as lack of public transportation and unregulated private vehicle usage. The paper suggests potential solutions, including expanding public transportation, improving road infrastructure, promoting alternative modes of transport, and implementing better traffic management strategies. However, these solutions require political will and financial investment. The paper underscores the urgency of addressing Dhaka's traffic issue.	2333-9721, 2333-9705	http://www.oalib.com/paper/pdf/6792416
34	Water Governance in Bangladesh: An Evaluation of Institutional and Political Context	Chan, Ngai; Roy, Ranjan; Chaffin, Brian	Journal Article	2016	Water crises are often crises of governance. To address interrelated issues of securing access to sustainable sources of safe water for the world’s populations, scholar and practitioners have suggested fostering improved modes of water governance that support the implementation of integrated water resource management (IWRM). Recently, implementation of an IWRM approach was announced as a target for achieving Goal 6 of the Sustainable Development Goals (SDGs). This study employs an analytical hierarchy process with a SWOT analysis to assess the current institutional and political context of water governance in Bangladesh and evaluate IWRM as a	2073-4441	http://www.mdpi.com/2073-4441/8/9/403

					means to achieve the SDGs.		
35	Development of Port Logistics Center: Bangladesh Perspective	Md ibrahim, Wang Xuefeng	International Journal of Engineering and Management Research-Vol. 13, Iss: 1, pp 68-74	22 Feb 2023	Seaports as multi-dimensional transport node and integrated logistics center are the key components of the global transport system. Logistics and supply chain processes have high efficiencies in terms of increasing port performance. With regard to ports performance, an integrated port logistics center plays an important role in promoting economic development to absorb the value-added demand of local and international customers. Seaports are developing because of its multi-functions and multi-modalities, which focuses on expanding their services. This development of seaports allows them to cope with up growing demands of the trade. This publication presents subject matter concern with the development of seaports in Bangladesh as integrated logistics center. The objective of this research is to identify existing technological issues, challenges and impacts regarding the development of seaports as logistics centers in the maritime logistics system in Bangladesh. This study is a qualitative research and both primary and secondary data have been used. Based on the findings, some strategies and actions are suggested to the port authority; local logistics service providers and other stakeholders towards developing an efficient port logistics center in Bangladesh.		https://typeset.io/papers/development-of-port-logistics-center-bangladesh-perspective-2kztmiie
36	Humanitarian supply chain management: How crucial is proper warehousing?	Mohammad Ashraful Islam Khan	Journal Article	11 November, 2023	Warehouses are vital in the humanitarian supply chain, storing, managing, and dispatching essential relief supplies to disaster-affected areas. Inventory management is crucial in addressing disasters like cyclones and floods. Private organizations, such as Walmart, can provide valuable resources and expertise. Supply chain managers play a pivotal role in these efforts. Understanding values and capabilities is essential for a partnership between humanitarian organizations and private-sector contributors. Collaboration with experts like MIT's Humanitarian Supply Chain Lab could ensure timely provision of essential goods during disasters.		https://www.tbsnews.net/thoughts/humanitarian-supply-chain-management-how-crucial-proper-warehousing-737250
37	Understanding the usage patterns, practices and decision process of third party logistics outsourcing in Bangladesh	Nasrin Akter, Prem Chhetri, Shams Rahman	Journal Article DOI: 10.1108/JGOSS-08-2018-0027	01 Nov 2019	Bangladesh is a growing destination for global outsourcing, but there is limited knowledge about third party logistics (3PL) usage patterns. A survey of 1,000 organizations revealed that 63% of them use 3PL services, with freight forwarding, order fulfilment, and shipment consolidation being the top three. However, usage varies between manufacturing and service organizations. The study suggests that logistics system performance is a key predictor of user satisfaction. Future research should focus on specific outsourcing requirements for both types of firms. Understanding 3PL usage patterns has practical and strategic implications for logistics practitioners and decision-makers.	2398-5364	https://www.emerald.com/insight/content/doi/10.1108/JGOSS-08-20
38	The role of logistics strategy on firm performance of garment industry in	Md. Sazzadur Rahman Khan1, Vichayanan Rattanawiboonsom1	International Journal of Logistics Systems and Management (Inderscience Publishers)-	11 Dec 2020	The logistics strategy has an indispensable effect on routine decision making and imminent arrangements of the firms. The objective of this study is to examine the effects of logistics strategy on firm performance, e.g., tangible and intangible benefits of garment industry in Bangladesh. The study utilised quantitative method and furthermore recognises confirmatory factor analysis (CFA) to examine the association between observed variables and latent constructs. This research exploits SPSS version 20 and structural equation model (SEM) based on AMOS version 23 to analyse the		https://typeset.io/papers/the-role-of-logistics-strategy-on-firm-performance-

	Bangladesh	•Institutions (1) Naresuan University 1	Vol. 37, Iss: 1, pp 540		data surveyed in the 120 garment factories positioned in export processing zone in addition to domestic factories of Bangladesh. The results reveal that logistics strategies are not significantly ($p \leq 0.05$) associated with tangible and intangible firm performance of garment industry. The findings emphasise about upgradation of logistics infrastructure to formulate appropriate strategy in the garment industry of Bangladesh.		of-5et2mbxjhs
39	UNIDO adopts Bangladesh-initiated resolution on sustainable supply chain	TBS Report		02 December, 2023,	The United Nations Industrial Development Organization (UNIDO) has adopted a resolution by Bangladesh on'strengthening member state's capacities in developing productive, resilient, and sustainable supply chains' at its 20th General Conference in Vienna. The resolution aims to help countries and economies promote supply chain resilience and prepare for future situations. It will foster dialogue among stakeholders and deliver concrete actions to ensure the sustainability, resilience, and productivity of global and regional supply chains, with a specific emphasis on supporting producer countries and suppliers. The resolution was the only one adopted by the General Conference, with two other resolutions not being adopted due to differences in positions among member states.		https://www.tbsnews.net/economy/unido-adopts-bangladesh-initiated-resolution-sustainable-supply-chain-750510
40	Skill Requirements for Logistics Professionals in the Apparel Industry of Bangladesh: An Importance-Expertise Matrix Analysis	Arif Iqbal1, Jin Su1, Sabbir Hasan2•Institutions (2) University of North Carolina at Greensboro 1, Bangladesh University of Textiles		28 Dec 2020	A survey of logistics professionals in Bangladesh identified ten key skills, including time management, communication, planning, and prioritizing. An importance-expertise matrix (IEM) analysis revealed 11 critical skill gaps, including communication, environmental issues, negotiation, networking, and supply chain design. The study suggests that logistics professionals need to develop their expertise and fill these gaps to prepare for future challenges. The top two expertise items were time management and planning and prioritizing. This information can help academics set curriculums and prepare future industry experts in Bangladesh. The study used a survey to collect data on the importance and expertise of 40 skill items in supply chain and logistics functions. The survey was conducted among professionals in logistics and national and multinational organizations in Bangladesh		https://typeset.io/papers/skill-requirements-for-logistics-professionals-in-the-1dsp9tx4bo
41	Bangladesh up 12 notches in WB logistics index	Star Business Report	Star Business Report	Apr 27, 2023	Bangladesh has risen 12 places in the World Bank's Logistics Performance Index (LPI) 2023, indicating improved trade and business skills. The country's ranking in the index of 139 countries has risen to 88 from 100 in 2018, with a score of 2.6 on a 5-point scale. Bangladesh secured third place among five South Asian nations assessed by the World Bank. The report, prepared by the World Bank's Global Trade and Regional Integration Team, focuses on trade logistics performance across 139 countries. Bangladesh improved its performance in four categories: customs, international shipment, logistics competence and quality, and timeliness. However, the country's business capacity deteriorated in infrastructure and tracking and tracing, with a decline of eight notches in infrastructure and 26 notches in tracking and tracing.		https://www.thedailystar.net/business/economy/news/bangladesh-12-notches-wb-logistics-index-3305406
42	Supply chains are breaking. They'll rebuild stronger	Tim Culpan	The Business Standard	27 December, 2023,	Global supply chains are fragile due to factors like climate change, decoupling from China, technological advancements, wars, rising costs, and labor shortages. The pandemic has disrupted supply chains, but weaknesses were already present. Just-in-time inventory strategies are insufficient to handle deviations. The modern economy relies on free-market principles, but the pandemic and climate change have shown the instability of marine traffic. Diversification of transport, such as from China to India,		https://www.tbsnews.net/features/panorama/supply-chains-are-breaking-

					Vietnam, and Mexico, is needed for a more balanced global trade and manufacturing framework.		theyll-rebuild-stronger-764902
43	Bangladesh's Trade Logistics cost highest among the peers	FHM HUMAYAN KABIR	WB report	Apr 18, 2021	Bangladesh's trade-GDP ratio is the lowest among low- and middle-income countries, with a 15% ratio in 2019. The trade-to-GDP ratio for Bangladesh is 25%, lower than its main competitor, Vietnam. The World Bank suggests that Bangladesh's exports could be boosted by 19% if its logistics cost could be reduced by 26%. To reduce logistics costs, Bangladesh could reduce dwell times at the Chittagong Port by one day, increase the minimum speed along national highways to 40km/hour, and implement policies to tackle low quality of logistics services, facilitation payments, and other inefficiencies. The country scored 2.6 out of 5.0 in its Logistic Performance Index, with Cambodia, Philippines, India, Vietnam, and China scoring 2.6 out of 5.0. The absence of trade openness and higher trade infrastructure (logistics costs) are key reasons for the low trade-GDP ratio. The WB identified Bangladesh's logistics system as fragmented, ineffective, and outdated, leading to inefficiencies and a lack of coordination in the sector. The need for improved logistics performance is highlighted for strengthening the post-Covid recovery through enhanced international competitiveness.		https://thefinancialexpress.com.bd/trade/bangladeshs-trade-logistic-cost-highest-among-peers-wb-report-1618719573
44	Impact of Logistics Performance on Trade with Specific Reference to Garment Sector in Cambodia, Bangladesh and India	Areej Aftab Siddiqui1, San Vita1•Institutions (1) Indian Institute of Foreign Trade1	Global Business Review (SAGE Publications Sage India: New Delhi, India)-Vol. 22, Issue: 2, pp 097215091881170	31 Jan 2019	The article focuses on the comparative analysis of the impact of logistics performance on trade in the garment sector in Cambodia, Bangladesh, and India. It highlights the importance of logistics in simplifying trade procedures and developing transportation models for holistic development of the logistics sector and enhancing trade and investment		https://typeset.io/papers/impact-of-logistics-performance-on-trade-with-specific-1yhzyw63w9
45	A dynamic policy in freight and logistics sector necessary to boost growth	Kabir Ahmed	The Business Standard	28 August, 2022	Regular curricula revision is crucial for educators and authorities. Employers should be more open to hiring interns and developing training plans. HR professionals should prepare fairer recruitment criteria. Trainees should use the training to become good managers or workers. The collaboration focuses on pre-employment skills-development across all levels of education, with research and innovation as main objectives in higher skills sectors. An industry-wise university/STP supervisor is essential for successful implementation of the industry program, balancing degree award requirements with industry needs. The supervisor ensures candidates are not torn between degree requirements and industry needs, ensuring a balance. Students feel industrial training provides them with a real-life experience and can link theoretical knowledge from universities or polytechnics/institutes.		*https://www.tbsnews.net/thoughts/dynamic-policy-freight-and-logistics-sector-necessary-boost-growth-485218*
46	Logistics Industry in Bangladesh		mordorintelligence.		The Bangladesh Freight and Logistics market, worth USD 28.7 billion in 2021, is expected to grow at a CAGR of over 6.5%. The industry is crucial to Bangladesh's economy, potentially boosting exports by 20%. However, the Bangladesh Freight		https://www.mordorintelligence.com/ind

	Size & Share Analysis - Growth Trends & Forecasts (2024 - 2029)				Forwarders Association (BAFFA) has increased freight forwarding fees by 57% since September 2022, burdening Bangladeshi firms. The e-commerce sector is thriving due to the growing mobile finance services market, with a triple-sized market predicted by 2023. The market is fragmented, with over 1,000 local and around 20 international logistics companies operating. Key players include Bolloré Logistics, DHL International GmbH, 3i Logistics Group, A.H. Khan & Co., and Agility Logistics.		ustry-reports/bangladesh-freight-and-logistics-market
47	Implement National Single Window, logistics policy: Experts	The Business Standard	Workshop Report	04 November, 2023	A workshop in Chattogram, Bangladesh, has urged for the swift implementation of the National Single Window to reduce business costs and time. The Economic Relations Division (ERD) organized the workshop, titled "Trade Facilitation for Improving Competitiveness: Challenges and Way Forward," in collaboration with the Chattogram district administration. The workshop discussed the current state of the trade facilitation system and the challenges and opportunities of improving it. ERD Secretary Sharifa Khan emphasized the importance of greater coordination between relevant agencies for improving trade facilitation measures. The workshop also highlighted the need for enhanced use of online platforms for easing export and import procedures. The workshop also aimed to sensitize local private sector representatives about the opportunities created by Bangladesh's LDC graduation. The workshop included officials from ERD and SSGP, district administration officials, private sector representatives, and civil society organizations.		*https://www.tbsnews.net/economy/speakers-call-swift-implementation-national-single-window-logistics-policy*-733150
48	Addressing supply chain gaps in Bangladesh	Mohammad Ashraful Islam Khan	The Business Standard	Jan 22, 2024	The escalation of food prices in Bangladesh has become a significant concern for 71% of households, with the government acknowledging the issue in its election manifesto. However, the government's effectiveness in curbing inflation has been compromised due to market management shortcomings and the influence of syndicates. Despite Bangladesh's rise to third position globally in vegetable production, the country still faces a critical challenge - the absence of a robust supply chain for agricultural products. This deficiency hinders the seamless flow of produce from farm to consumer, resulting in adverse implications for both farmers and end-users. The prevalence of middlemen exacerbates the issue, preventing common consumers from accessing agricultural produce and essential commodities at equitable prices. The current disconnect between declining global prices and the Bangladesh market raises concerns, with analysts suggesting ineffective government policies and market control contributing to unabated food inflation. Market monitoring institutions, including the Ministry of Commerce and the Directorate of National Consumer Rights Protection, need to vigilantly observe and address unreasonable inflation to ensure the integrity of the market system.		https://www.tbsnews.net/features/panorama/supply-chain-alliance-bridging-gap-between-industry-professionals-and-supply-chain
49	Supply Chain Alliance: Bridging the gap between industry professionals and supply chain enthusiasts	Ahmed Hasam Rabbi		05 December, 2021	Supply Chain Alliance (SCA) is a Bangladeshi platform that aims to bridge the gap between students' knowledge and supply chain management. Established in 2019, the SCA aims to equip students with the necessary knowledge for their academic and professional careers. The organization has 76 members and has collaborated with 15-20 leading supply chain professionals. The SCA has organized events like "SCA: Harbinger" to help executives learn supply chain management from leaders and apply it in case-solving. The main objective is to reach supply chain enthusiasts across the country. The club has launched SCAUpStream, a national event with competitions, seminars, and workshops. This year, around seven members of the SCA club have		

					obtained a CSCA degree, and 8-9 members have received scholarships from ISCEA. The club's executives have published three articles on supply chain management and are working on case studies, industry analysis, and content marketing to raise awareness. The SCA aims to represent Bangladesh globally and create future leaders who will impact the country's economy.		
50	How Pathao stays the lone profitable start-up	Mahfuz Ullah Babu	The Business Standard	25 October, 2023	Pathao, a start-up in Bangladesh, achieved profitability in mid-2022, despite competitors scaling down or exiting the market due to the Ukraine war. The start-up, with over one crore app users, invested in establishing a nationwide infrastructure for third-party logistics (3PL) courier services. Pathao Courier, which has grown more than six times in the last two years, now delivers around 1 lakh parcels a day, accounting for half of the 3PL market. The company has become the logistics partner of choice for lakhs of e-commerce entrepreneurs in Bangladesh, and now over two-thirds of Pathao Courier parcels are delivered outside Dhaka. Pathao's other two verticals – ride-hailing and food delivery – are also profitable, making it the only profitable operation in those segments. The company's market share in food delivery and ride-hailing has grown from 25% in 2021 to 35%. Pathao has raised $50 million so far and has logged in revenue of $14 million in 2022. The company is working on rolling out its mobile wallet, Pathao Pay, and applying for a digital bank license from the central bank.		https://www.tbsnews.net/bangladesh/how-pathao-stays-lone-profitable-start-726214
51	Foreign investment in cold-chain infrastructure: Bangladesh needs a sound logistics policy	Jebun Nesa Alo & Shawkat Ali	The Business Standard	23 October, 2023,	Bangladesh is facing challenges in developing its cold-chain infrastructure, requiring a sound logistics policy to attract foreign investors and engage the private sector. LixCap, a US-based global advisory firm, emphasized the need for a market opening for private sector investment to reduce government budget pressure and improve Bangladesh's overall logistic offer. Current policies and regulations do not give free reign to the private sector, especially in and around major trading hubs. A bonded warehouse that can handle both imports and exports could reduce pressure on ports and help Bangladesh become a regional hub in cold-chain logistics. To level the playing field, equipment imported should be used to create jobs, improve logistics, and benefit the economy.		https://www.tbsnews.net/features/panorama/foreign-investment-cold-chain-infrastructure-bangladesh-needs-sound-logistics
52	Workshop on Potentials and Challenges of Leather Sector in Bangladesh: Points to Ponder	Economic Relations Division	Workshop Report	22 October 2023	Bangladesh's leather sector is a significant export earner, but after graduation in 2026, international support measures, including Duty Free Quota Free (DFQF) market access, may be terminated. A workshop aimed to identify the sector's potential and challenges, discussing strategies for utilizing its full potential. Mr. Rabiul Islam Rabi, Consultant, ADB & Leather Sector Expert, highlighted the low tariffs on leather and leather goods in the EU market but high tariffs on leather shoes. To realize the sector's growth potential, Rabi identified eight action points: effective operationalization of the Leather Development Authority, ensuring the functioning of the Central Export Promotion Programme (CETP), preparing 15-20 factories for LWG certification, pursuing targeted FDI, fast-tracking the release of the Hazaribagh tannery plot, making the most of incentives and fiscal space prior to LDC graduation, negotiating post-graduation market access conditions, and establishing solid waste management facilities.		
53	A Network of Multi-modal	Kajal Sharda	Journal Article, Research	December	The authors have identified four locations, namely Jogighopa, Sahibganj, Tribeni (India) and Ashuganj (Bangladesh), taking into account their strategic location in the		https://www.researchgate.n

	Logistics Parks in the BBIN Sub-region Proposing a Blue Quadrilateral for Enhancing Trade	and Deepanka r Sinha	Gate	2021	sub-region 1. Trade among the Bangladesh, Bhutan, India and Nepal (BBIN) countries suffer from high logistics cost and skewed modal mix dominated by costly road transport. The region underutilizes its inland waterway connectivity, despite having an extensive network. Of late, governments of the BBIN countries have taken several initiatives to revamp the waterways routes and shift the traffic from road to water. Evidence suggests that using waterways as a mode of transportation is cheaper, greener and provides various other benefits when compared to other modes of transportation. It can also enhance the logistical competence of the region as a whole. This would, however, require establishing necessary infrastructure in the form of multi-modal logistics parks (MMLPs) with connectivity to different modes of transport to facilitate easier movement and transfer of freights from one mode to others, such as from roadways and railways to waterways, and vice versa. In view of the above, this Discussion Paper explores the possibility of setting up a network of four interlinked MMLPs in the BBIN sub-region to enhance trade among the member countries through waterways.		et/publication/ 356970337_ _

Referencing

1. Moving Forward Connectivity and Logistics to Sustain Bangladesh's Success, The World Bank, 2020.
2. Farole, T. and Y. Cho. 2017. Jobs Diagnostic Bangladesh. World Bank, Washington, DC.
3. Bangladesh Development Update: Building on Resilience, World Bank, 2018.
4. Doing Business 2019, World Bank, Washington DC. 2019.
5. The MVA, the BD-IN Protocol on Inland Water Transit and Trade, the BD-IN coastal shipping agreement.
6. Herrera Dappe, M. and C. Kunaka. 2021. Connecting to Thrive: Challenges and Opportunities of Transport Integration in Eastern South Asia. International Development in Focus. Washington DC, World Bank
7. United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). 2016. Unlocking the Potential of Regional Economic Cooperation and Integration in South Asia. New Delhi: UNESCAP)
8. Regional Integration as a Strategic Avenue for Bangladesh, UNCTAD, 2022.
9. Impact Assessment and Coping up Strategies of Graduation from LDC Status. General Economic Division (GED), GOB, 2020.
10. Accelerating Transport and Trade Connectivity in Eastern South Asia–Bangladesh Phase 1 Project, World Bank.
11. Final Report on Updating Railway Master Plan, ADB/Bangladesh Railways, 2017
12. Asian Economic Integration Report, Making Digital Platforms Work for Asia and the Pacific, ADB, 2021.
13. Livani T., N. Rizwan, and S. Kathuria. 2019. "Inclusive Regional Trade: Promoting the Economic Empowerment of Women in the BBIN Region." ANTYAJAA: Indian Journal of Women and Social Change
14. Livani T., N. Rizwan, and S. Kathuria. 2019. "Inclusive Regional Trade."
15. Empowering South Asian Women Entrepreneurs through Trade and Technology, WTO. 2021.
16. Nora, L., H. Reyes, F. Jahan, T. Livani, and A. Lonnberg. 2021. Women's Participation, Constraints, and Opportunities for Trade in Bangladesh. Washington, D.C: WBG.
17. Women and Trade: The Role of Trade in Promoting Gender Equality. WBG, Washington, DC, 2020.
18. UNESCAP. 2016. Unlocking the Potential of Regional Economic Cooperation and Integration in South Asia. New Delhi: UNESCAP.
19. Hummels, D. and G. Schaur. 2013. "Time as a Trade Barrier." The American Economic Review 103(7): 2935-59. American Economic Association.
20. Organization for Economic Co-operation and Development (OECD). 2015. Despite digitization efforts there remains large gap due to incomplete implementation.
21. Herrera Dappe, M. 2016. Moving Forward: Connectivity and Logistics to Sustain Bangladesh's Success. WBG.
22. Hummels, D. and G. Schaur. 2013. "Time as a Trade Barrier." The American Economic Review 103(7): 2935-59. American Economic Association.
23. De, P., S. Raihan, and S. Kathuria. 2012. Unlocking Bangladesh-India Trade: Emerging Potential and the Way Forward. World Bank.
24. Digital transformation at logistics service providers: barriers, success factors and leading practices, Marzenna Cichosz, Carl Marcus Wallenburg, A. Michael Knemeyer, 2020, *https://www.emerald.com/insight/0957-4093.htm.*
25. E-Commerce Evolution in Asia and The Pacific Opportunities and Challenges, 2023, ADB.
26. Business Initiative Leading Development (BUILD). 2019. Baseline Survey to Measure Time, Cost and Process Requirements Related to Export and Import for Women-Owned Enterprises.

27. Organization for Economic Co-operation and Development (OECD). 2015.
28. International Finance Corporation (IFC). 2021. Green Buildings: A Finance and Policy Blueprint for Emerging Markets.
29. Guide to Key Issues in Development of Logistics Policy, ESCAP, United Nations Economic and Social Commission for Asia and the Pacific United Nations Building, Rajadamnern Nok Avenue Bangkok 10200, Thailand
30. Based on "Strategy on Logistics for the Kingdom of Thailand", "Thailand's Logistics Development Strategy (2007-2011)" (available from http://eng.nesdb.go.th/Portals/0/tasks/dev_logis/eng/A.pdf), and "ASEAN Member Countries' Preparation for ASEAN Logistics Connectivity", presentation by Dr. Porametee Vimoisiri, NESDB, 30 July 2013.)
31. Basic Logistics Policy Act. Republic of Korea.
32. An ecosystem-centric approach to smarter maritime singapore's perspective Maritime and Port Authority of Singapore, Edition 89, page 23-25.
33. The Third Thailand Logistics Development Plan (2017-2022), Logistic Development Strategy Division, Office of the National Economic and Social Development Council, Bangkok, Thailand
34. Third Industrial Master Plan (IMP3) 2006 – 2020, Malaysia, Chapter 25
35. Ministry of Commerce & Industry, India jumps 6 places to Rank 38 in World Bank's Logistics Performance Index 2023, Posted On: 26 APR 2023 6:17PM by PIB Delhi; Release ID: 1919925
36. National Logistics Policy 2022, Ministry of Commerce and Industry (Department for Promotion of Industry and Internal Trade) Notification New Delhi, the 28th September, 2022
37. India logistics, Ministry of Commerce and Industry, Government of India, *https://logistics.gov.in/policy-regulation/national-logistics-policy/* 23 February, 2023
38. Maitra, Barnik Chitran. "REIMAGINING INDIA'S SUPPLY CHAIN." Arthur D Little and Confederation of India Industry (CII), Dec. 2020.
39. Workshop on Implementing ESCAP transport facilitation tools and strengthening the capacity to plan and achieve integrated intermodal transport among Cambodia, Lao People's Democratic Republic, Myanmar, Viet Nam and Thailand (CLMV-T), 25-26 September 2017, Phnom Penh, Cambodia
40. Korea's National Intermodal Transportation Plan (2nd revised 2001 –2020), MLIT, 2001. 1.
41. Article 3, Framework Act on Logistics Policy, The Republic of Korea
42. Chapter 3; Investment Opportunities in Korea Logistics, Invest Korea
43. Workshop on Implementing ESCAP transport facilitation tools and strengthening the capacity to plan and achieve integrated intermodal transport among Cambodia, Lao People's Democratic Republic, Myanmar, Viet Nam and Thailand (CLMV-T), 25-26 September 2017, Phnom Penh, Cambodia
44. Workshop on Implementing ESCAP transport facilitation tools and strengthening the capacity to plan and achieve integrated intermodal transport among Cambodia, Lao People's Democratic Republic, Myanmar, Viet Nam and Thailand (CLMV-T), 25-26 September 2017, Phnom Penh, Cambodia
45. Future of Freight: a long-term plan Department for Transport Great Minister House 33 Horseferry Road London SW1P 4DR Year: 2022
46. National Export Strategy of Sri Lanka 2018-2022 Logistics Strategy, Government of Sri Lanka.
47. The Logistics 2030 Innovation Programme, The Federal Ministry of Transport and Digital Infrastructure, Germany
48. World Bank Blog; Three factors that have made Singapore a global logistics hub, Yin Lam, Karuna, Ramakrishnan, January 26, 2017.
49. World Bank.(Ref: Fact Sheet , The Sea Transport Industry Digital Plans For Ship Agency And Harbour Craft, MPA, Singapore).
50. Herrera Dappe, Matías, and Charles Kunaka, eds. 2021. Connecting to Thrive: Challenges and Opportunities of Transport Integration in Eastern South Asia. International Development in Focus. Washington, DC: World Bank. doi: 10.1596/978-1-4648-1635-2. License: Creative Commons Attribution CC BY 3.0 IGO
51. *https://www.expertmarketresearch.com/reports/logistics-market*; Market Report: Historical and Forecast Market Analysis

52. *https://www.maersk.com/news/articles/2021/09/29/warehousing-the-crucial-link-in-modern-supply-chains*
53. Its Time to Rethink Your Global Logistics; by *Willy C. Shih* and *Adrien Foucault*; March 12, 2021, *Harvard Business Review*
54. *https://www.lojistic.com/blog/what-is-global-logistics*
55. *https://businesspartnermagazine.com/advantages-warehousing-storage-logistics-business/*
56. *https://smallbusiness.chron.com/importance-warehousing-logistics-system-74825.html*
57. Inventory management's role in logistics, Published by *Team Quickmovetech* at 3010/2021
58. International North-South Transport Corridor (INSTC) Website: *https://en.wikipedia.org/wiki/International_North%E2%80%93South_Transport_Corridor*
59. *The* University of Tennessee, The Importance of Inventory Management in Your Supply Chain; April 23, 2021
60. The Importance of Packaging in International Logistics, uneek-group; 25 June 2023; *https://www.uneek-group.com/the-importance-of-packaging-in-international-logistics/*
61. The Importance of Packaging in International Logistics; *Mark Bang*; June 7, 2019; *https://www.morethanshipping.com/the-importance-of-packaging-in-international-logistics/*
62. Logistics industry worldwide - statistics & facts; *Martin Placek* , Sep 21, 2023; *https://www.statista.com/topics/5691/logistics-industry-worldwide/#topicOverview*
63. *https://www.economist.com/the-americas/2023/11/23/severe-drought-is-constraining-the-panama-canal*
64. *https://www.britannica.com/topic/Panama-Canal*
65. *https://unctad.org/system/files/official-document/rmt2021ch1_en.pdf*
66. *https://www.thecooperativelogisticsnetwork.com/blog/2021/05/25/the-african-continent-free-trade-agreement-how-it-will-be-a-game-changer-for-the-transportation-and-logistics industry/*
64. Maritime Page, Author: Dmitry Shafran; Updated: November 10, 2023
65. *Panama Canal | Definition, History, Treaty, Map, Locks, & Facts;*
66. www.cargo-partner.com/trendletter/issue-13/northern-sea-route-shortcut
67. *https://www.freightwaves.com/news/how-big-is-the-logistics-industry*
68. Notice of Violation of IEEE Publication Principles Implications for Transport Systems by Emerging Global Logistics Networks; *Zhaojian Liu*1, *Guangqi Sun*, *Qing Li*; 18 Nov 2008
69. Transport and Globalization; K. O'Connor;2009; DIO: 10.1016/B978-008044910-4.01032-4
70. What is Logistics? Meaning, Processes, Function and Example; March 13, 2023
71. *https://www.dhl.com/discover/en-global/logistics-advice/import-export-advice/what-is-logistics*
72. What Is Inventory Logistics? A Comprehensive Guide; *Amrita Chakraborty*, November 2, 2023, SelectHub**;**
73. https://ecampusontario.pressbooks.pub/app/uploads/sites/1908/2021/09/product-supply-chain-1-e1644864583319.png
74. Eurasian Development Bank (EDB) Report: *https://eabr.org/en/analytics/special-reports/the-international-north-south-transport-corridor-promoting-eurasia-s-intra-and-transcontinental-conn/*
75. United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP): *https://sdgs.un.org/un-system-sdg-implementation/economic-and-social-commission-asia-and-pacific-unescap-24510*
76. *https://www.worldbank.org/en/topic/regional-integration/brief/belt-and-road-initiative*: 04 May 2018
77. Autonomous Vehicle Market Size, Share & Trends Analysis Report By Vehicle Type, By Level of Autonomy, By Application, By Region, And Segment Forecasts, 2023 – 2030 Report ID: GVR-4-68038-401-7
78. The Role of Cloud Computing in the Logistics Industry and Supply Chain Management; Sajal Nehra; 2023-04-13; Remote state
79. The Major Functions of Logistics, *Rachelle Regua*, *September 22, 2022*
80. What is sustainable aviation fuel (SAF)? June 2022, *https://www.bp.com/en/global/air-bp/news-and-views/views/what-is-sustainable-aviation-fuel-saf-and-why-is-it-important.html*

81. Developing the Logistics Sector: The Role of Public Policy, *Jean-Paul Rodrigue*, *Hofstra University*, April 2017, DOI:*10.13140/RG.2.2.20189.92645*
82. Decrypting the Belt and Road Initiative: Barriers and Development Paths for Global Logistics Networks Benjamin Nitsche Chair of Logistics, Berlin University of Technology, 10623 Berlin, Germany; nitsche@logistik.tu-berlin.de Received: 12 October 2020; Accepted: 30 October 2020; Published: 2 November 2020
83. Evaluation of Port Position for Intra-Asia Maritime Network Tomoya KAWASAKI a□, Shinya HANAOKA b, Jiang YITING c, Takuma MATSUDA, Kawasaki, T., et al. / Asian Transport Studies, Volume 5, Issue 4 (2019), 570–583.
84. MIDI Strategic Vision Development and Economic Impact Analysis, Final Report, March 2023, JICA and McKinsey & Company India LLP, MIDI Cell, Prime Minister's Office, The People's Republic of Bangladesh