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*Efficient Fuel Handling and Management in Port:*  
Context Bangladesh

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Mongla



Payra



# INTRODUCTION

- ▶ Fuel handling and management at seaport (herein after “port”) is a key issue for an import based country and its importance is increased highly to mitigate the growing energy requirements of industry and people.
- ▶ In the last two decades, the supply and demand of fuel in Bangladesh increased enormously as because of her economic growth also energy and power requirements to help the industry and basic supplies to the citizens.
- ▶ Driven in particular, innovation is required in the prime ports Chittagong and Mongla, what’s more, in newly established Payra port.
- ▶ Bangladesh is a lucrative place in the Asia for doing future trade and investment where energy is a factor.
- ▶ To produce sufficient energy for the industry and people, fuel importation is essential where port facilities are great factor to supply the raw materials for power plant and finished Petroleum, Oil and Lubricants-POL to the consumer.
- ▶ Emerging opportunities, in addition of traditional fuel management at port, coal, Liquefied Petroleum Gas- LPG and Liquefied Natural Gas- LNG are the new products for Bangladesh and its neighbors as growing demand of receiving in Bangladeshi ports in a big volume progressively.
- ▶ This paper aims to explore the role of port authorities in the process of developing port and intermodal infrastructure and others to mitigate the uprising demand of fuel handling in port protected area and quick transfer of fuel to the final destination.

# RESEARCH METHODOLOGY

- ▶ Many social scientist who adopt a qualitative research method where researcher self-assessment and situating the topic in a socio-historical context along with personal beliefs that identified the topic of interest or its importance (Neuman 2011).
- ▶ Mention that advanced technological circumstances, market imperatives and efficiency are being innovative in various economic sectors, therefore, applied research and developments in logistics and supply chain management is crucial greatly ( Allate 2015).
- ▶ A key component of this study is to identify the barriers/critical success factors-CSF at ports in handling fuel and its proper management in Bangladesh. In this connection, the chosen qualitative research methodology offered to the expert in port sector by email and courier/post office.
- ▶ This research maintained the ethical matter where Kumar (2005) argued to establish an overall code of ethics during data collection and adding as reference in writing the findings in the research paper.
- ▶ This research faced extensive limitations in getting the full data of fuel import in Bangladesh where import by government statistics is available in the source of Bangladesh Petroleum Corporation-BPC and private import data is absent fully.

# SEAPORT FACILITIES IN BANGLADESH-2

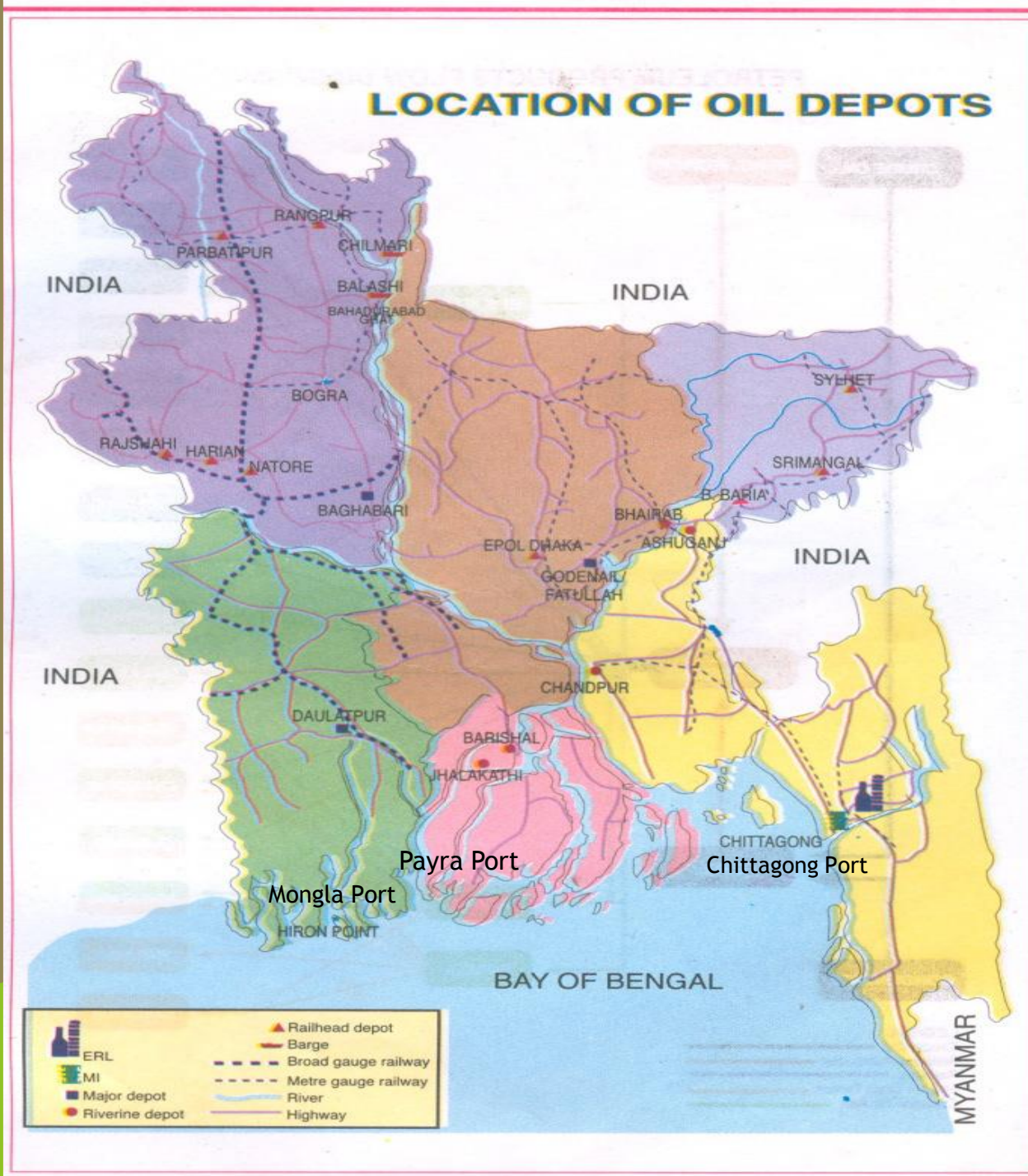
- ▶ Bangladesh has three international standard seaports Chittagong, Mongla and Payra who are playing vibrant roles in doing import-export trade that resulted economic growth of the country.
- ▶ Mention that country is renowned for readymade garments export to earn foreign exchange and fuel import to mitigate the energy demand of industry, transport and domestic household usages endlessly.
- ▶ In addition, off-docks, ICD, inland river terminal, riverine inland container terminal are available all over the country.
- ▶ To manage and operate the imported fuel oil via ports, BPC has good network of rail, road and waterways that comprises railhead depots, riverine depots also inland oil depots as integrated supply chain to serve the nation prestigiously.
- ▶ In here, most of the cargo and containers are performing for Bangladesh only with the limited edition of serving India, Nepal and Bhutan regionally.
- ▶ The Chittagong Port, is the principal port of Bangladesh who handling approx. 92% of seaborne trade of the country and mounting the great importance in the national economy



# SEAPORT FACILITIES IN BANGLADESH-2

The Chittagong Port, is the principal port of Bangladesh who handling approx. 92% of seaborne trade of the country and mounting the great importance in the national economy (CPA, 2016a)

Seaports and inland oil Depots in Bangladesh.  
Source. BPC



**Mongla port** is the 2<sup>nd</sup> largest seaport in Bangladesh. After the Chittagong port, this port has all modern facilities to handle the import export trade especially handling fuel (LPG, Coal and other POL) and supply to the power plants and industry (Mongla 2016)

In the aim of facilitating annual seaborne trade growth on average 9.2% of Bangladesh, government has established 3<sup>rd</sup> seaport **Payra** to accommodate the foreseeable trade volume and support the neighbors in accessing the port facilities in the South Asian region (Payra, 2016).

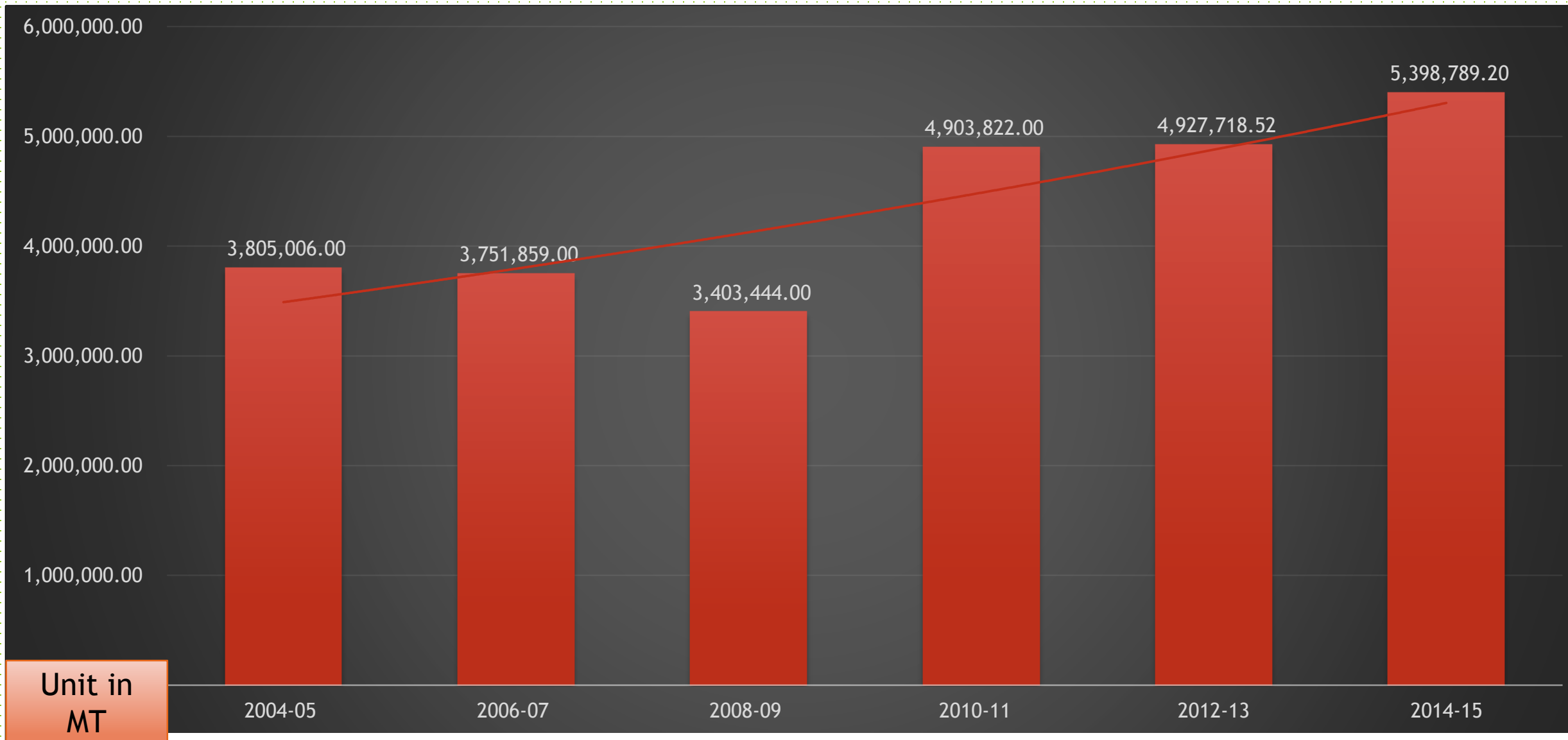
# FUEL HANDLING , MANAGEMENT AND DISTRIBUTION-1

Types of the Fuel	Details	Import-Export	Destination	Remarks
Crude Oil	SN-150, SN-500 SBS-150	Import	Eastern Refinery Ltd	Finished product
Refined Oil	Diesel, Gasoline Jet A-1, Kerosene Further transport to the selected oil depot via rail, road and waterways.	Import	Listed depot in all over the Bangladesh	
LPG	Preliminary, importing by medium type vessel and transferring to the shore by pipeline. Cylinder bottling by private company	Import	Chittagong and Mongla	PPP for households and industry.
LNG	Planned for power plant and mega vessel will bring in the specialized terminal that is under construction	Import	Selected power plants and other purposes for industry.	Under process
Coal	Planned to bring mega vessel. Currently, importing by private sector. Lighter vessels are using to unload mother vessel at outer anchorage of Chittagong and Mongla port.	Import	Selected power plants and other purposes for industry.	Deep sea terminal for coal is planned and under process
Containerized POL and Tanktainer	Import is managing in Chittagong and Mongla port.	Import	Somewhere intermodal is using to Dhaka ICD and PICT	Continuing. Expecting growth by this import.
Naptha and Natural Gas Condensate	Eastern Refinery Ltd in Chittagong is producing as by product and exporting accordingly	Export	Foreign country	

**Types of Fuel that handling in Bangladeshi Seaports**

**Source. BPC**

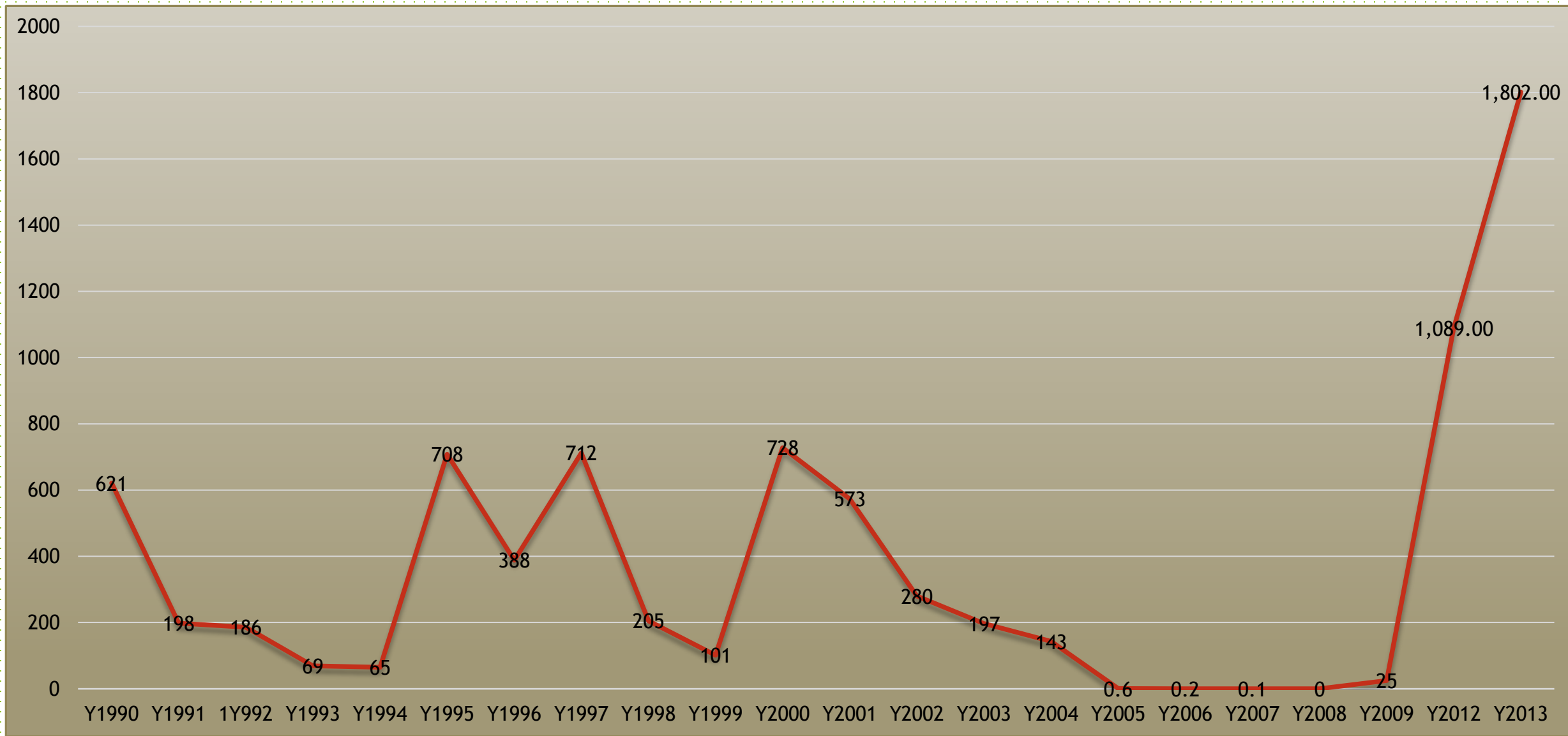
# FUEL HANDLING , MANAGEMENT AND DISTRIBUTION-2



Handling of Fuel Oil by BPC as import for Bangladesh. Source: BPC 2016



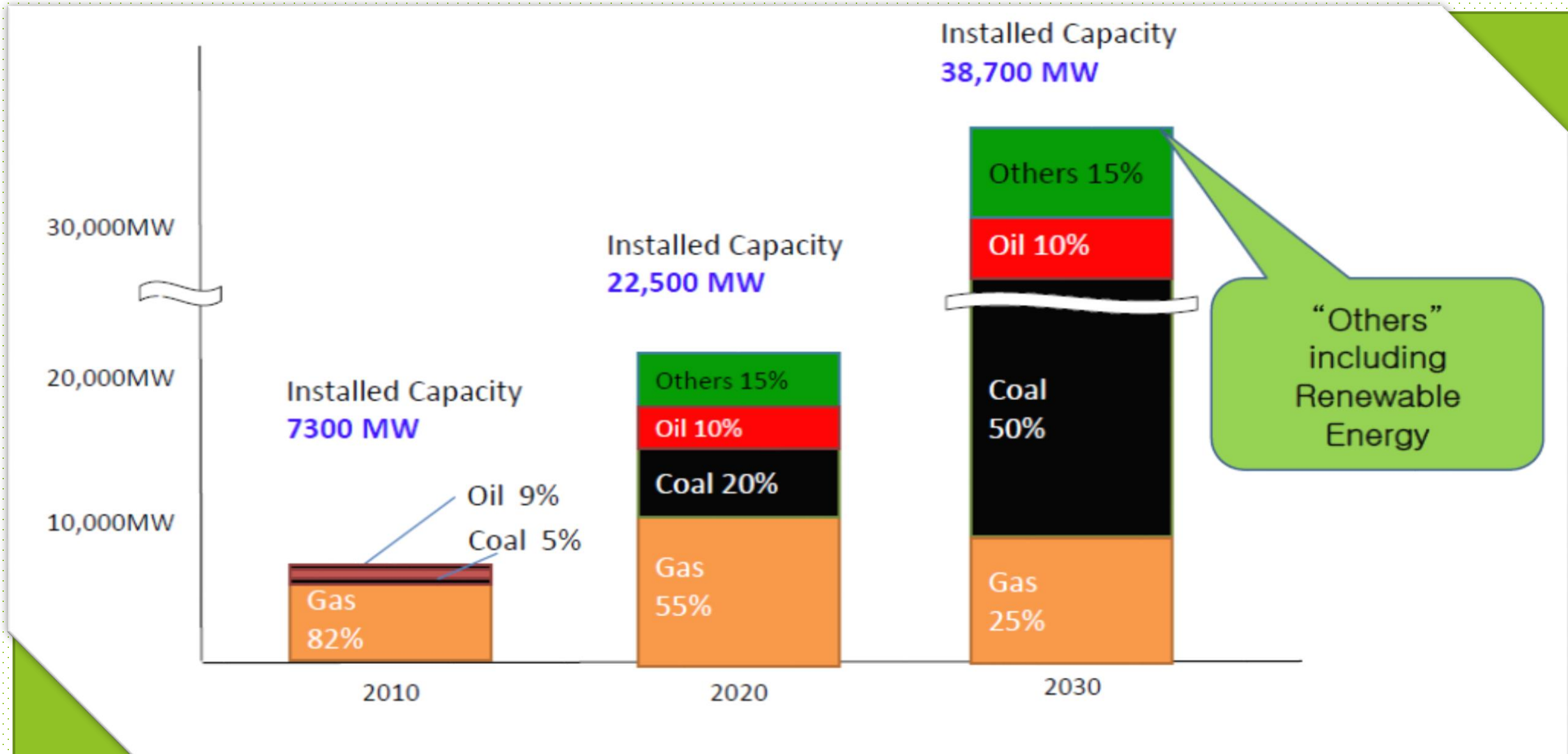
# FUEL HANDLING , MANAGEMENT AND DISTRIBUTION-3



Coal import in Bangladesh (in Thousand Short Tons)

Source. Indexmundi 2016

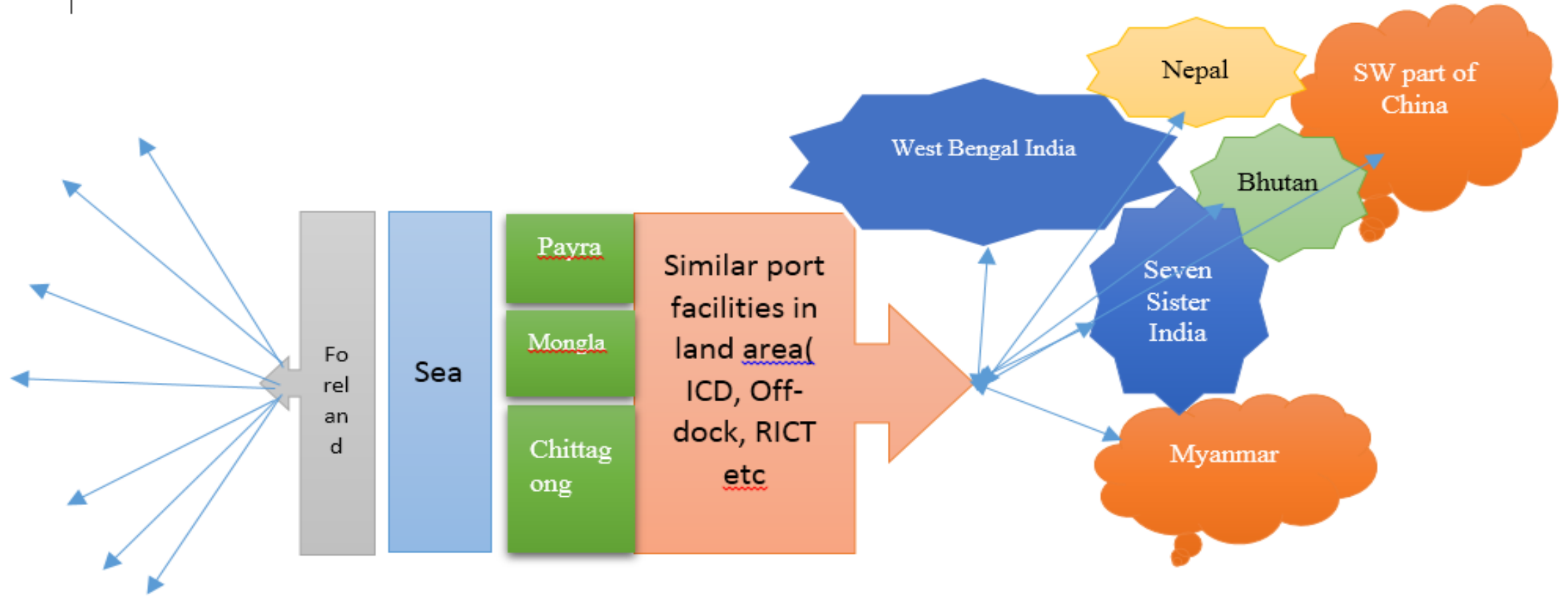
# FUEL HANDLING , MANAGEMENT AND DISTRIBUTION-4



Projection of using fuel (Coal and Oil) in generating power in Bangladesh (MOF 2016)

# Maritime Logistics Business Opportunity

Bangladesh is potential to do maritime logistics business in the region. Economic criteria prevailed over the political or territorial matters that helped to take investment decision to serve foreign trade where competitive logistics services are required inevitably.



**Foreland and Hinterland of Bangladeshi Ports (Saha 2016)**

# INNOVATIONS IN FUEL HANDLING AND INLAND TRANSPORTATION

Innovation is the most important driver of firm competitiveness in advanced world economy (Allate 2015).

From the content analysis of secondary sources and qualitative research interviews, research found some innovations for handling and management of fuel at port and further distribution by inland transportation.

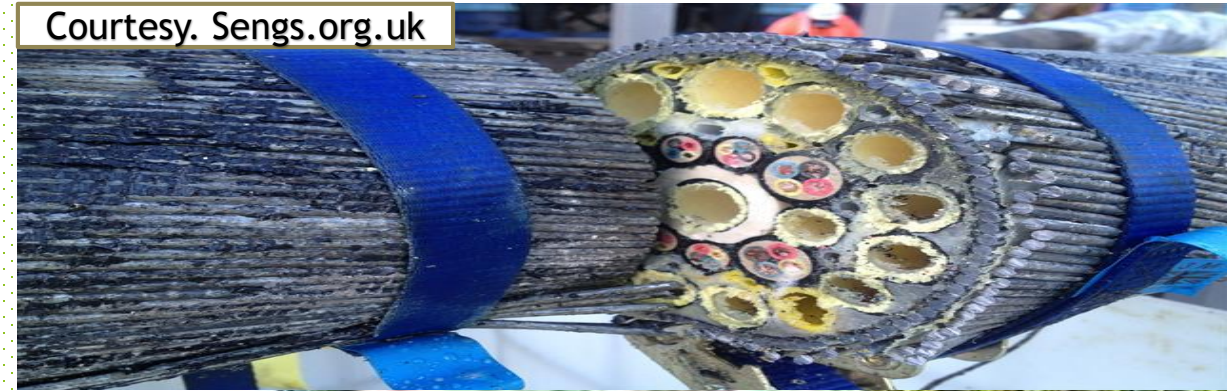
Among them, this paper discussed and analyzed four innovations which are:-

**Multi-core Pipeline (Taneja et al. 2012),**

**Coal Containerization (Yang et al. 2016),**

**Tank Container or Tanktainer and**

**Synchromodal (Zhang and Pel 2016)**





# LITERATURE REVIEW -1

**Ports are the prime element of transport management that linked with the national and global economy because of its relation with international shipping and global trade, overall, facilitator of international trade in a given supply chain.**

Ports are acting as central hubs to transport raw materials for power generation and serve metropolitan areas also characterized by the geographical concentration of high-energy demand and supply activities as a consequence of the growing relevance of energy trades, public environmental awareness and a bigger industry focus on energy efficiency ( Acciaro et al. 2014a).

**Globalization of the world trade and increased volume of cargo & container is highlighting the importance of shipping and logistics activities inevitably (Tuna and Duru 2013).**

Furthermore, Port industry is highly internationalized and combined but a larger plethora of public and private stakeholders that made an ideal field with a wide area of dynamic interaction (Dooms and Parola 2016).

**In promoting the brand as equity, ports are facing challenges because of huge competition among the ports nationally, regionally and internationally (Yip 2014).**

Historically, port (Carbone & De Martino 2003) sectors are the source or center point of maritime logistics to produce port transport, therefore, innovation in the port is the prime activity to develop the industry in a profitable way.

# LITERATURE REVIEW -2

**Boardley (2015) welcomes innovation in port sector in setting the latest equipment and technology for handling cargo and mitigate the demand to protect the environment as well as vessel discharge and loading operation in port.**

Two important International Maritime Organization-IMO (2016) resolutions that are affecting the ports, one is related to the Maritime Environment Protection that guided to protect the interest of port and its outer limits, another is Maritime Safety that ensures the safety of sea by the Maritime Environment Protection Committee and Maritime Safety Committee respectively.

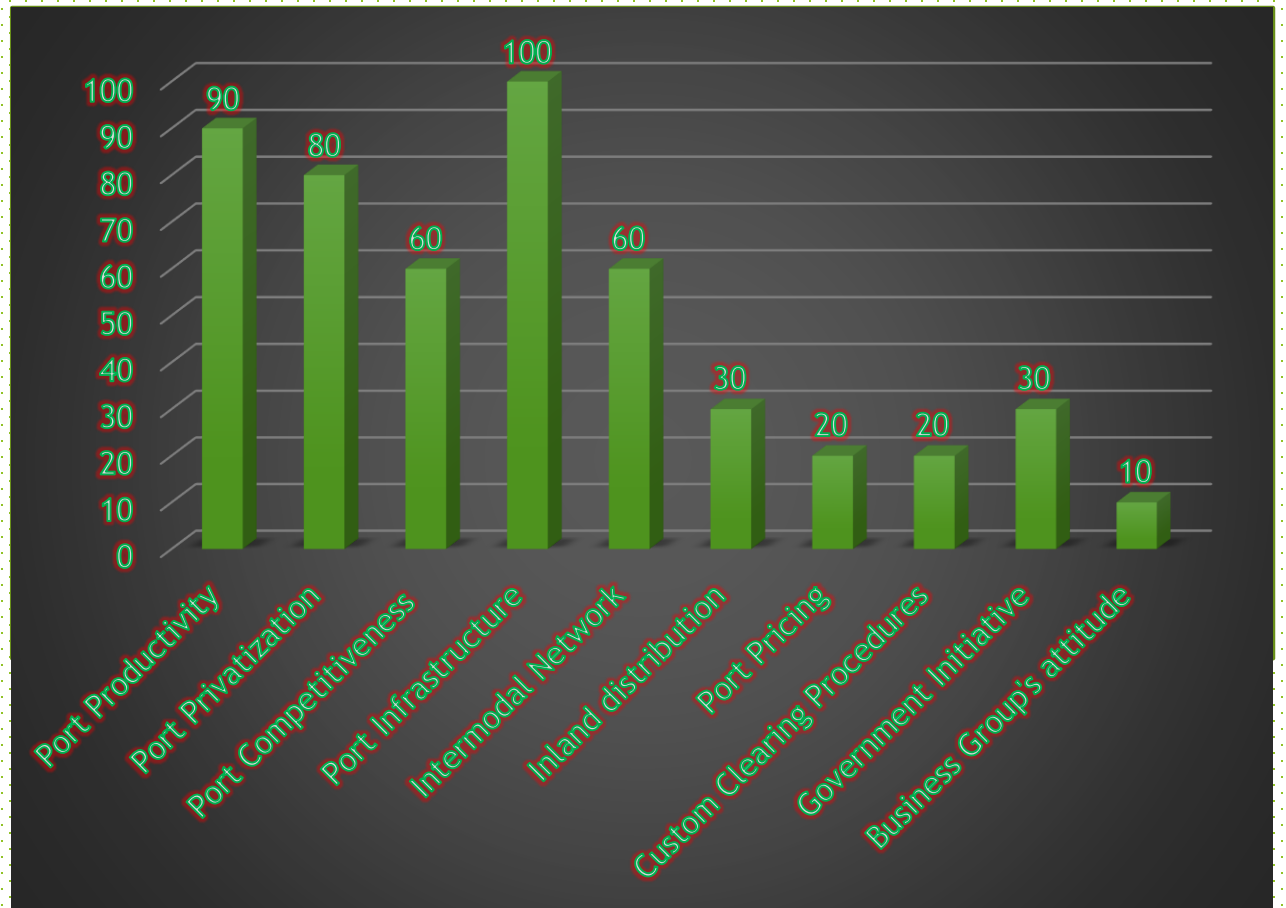
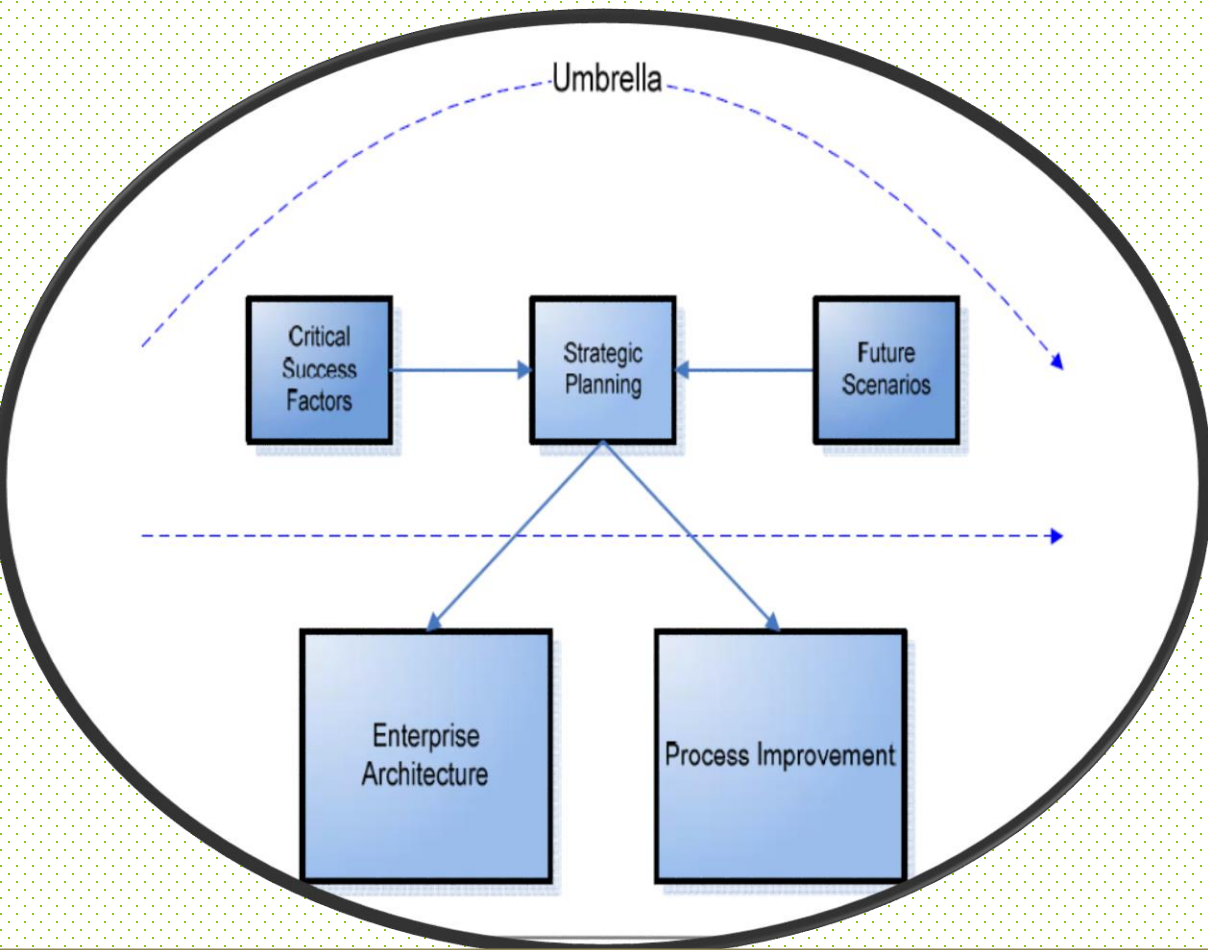
**Port competitiveness affects the regions viability, prosperity and propensity for growth because ports play an important role in the region's economic development (Munisamy and Singh 2011).**

Raising the environmental concern, it is necessary for well-connected port infrastructure, efficient and reliable port services, in addition, to reduce the energy consumption in port (Boile et al. 2016).

**The efficient fuel handling depends on the main performance of pilotage, towing & pushing, unloading and storage and loading. Openness of a country offered to add in the global trade and economic activity where port access is important and needs to strengthen her port system in the context of sustainability (Ghosh and De 2001).**

An integral part of transport and supply chain, role of port is to manage and coordinate the materials and information flow (Carbone and De Martino 2003).

# CSFs IN PORT MANAGEMENT



Gates (2010) defined the CSFs where factors are the handful of key areas where organization must have to perform well on a consistent basis to achieve the mission & vision arguably. Under the umbrella of strategic planning, CSFs are helping to develop the strategy with future scenarios that built the enterprise and indicates the processes for development.

# QUALITATIVE RESEARCH FINDINGS AND ANALYSIS

- ▶ *Key Features of Bangladeshi Ports in Handling Fuel.*
- ▶ *Competitive Advantages of Bangladeshi Ports.*
- ▶ *Port Productivity and Enhancing the Capacity*
- ▶ *JIT and Intermodal Freight Transportation System in Bangladesh*
- ▶ **Critical Success Factors**
- ▶ *Innovation or Innovative Idea in Fuel Handling and Management*
- ▶ *Suggestions for Further Development*



# CONCLUSION

- ▶ In a given supply chain, the hustle and bustle of a port is dedicated in the aim of bringing vessels, loading and unloading cargo and containers efficiently and arrange to transfer the cargo and container as modal shift as quickly as possible.
- ▶ This research aimed to describe the current situation of Bangladeshi ports in handling imported fuel and further distribution to consignee efficiently and timely also stated the export status of fuel residues Naptha and others. Furthermore, in here, research found the innovation in managing fuel to supply the major cities/power plant/refueling points that located all over the country by multicore pipeline, intermodal container or tanktainer.
- ▶ To sum up, port governance and competitiveness are two important foresights in staying with the business rivalry of port business in the South Asian region and must be streamlined to allow flexibility to the port users in choosing ports.
- ▶ Finally, port authorities can play an important role in the process of inland distribution and found greatly from the literature of innovation regarding port, maritime logistics and port transports especially some innovations of Rotterdam port (Taneja et al. 2012) that will help to develop maritime logistics industry of Bangladesh in future to handle the fuel efficiently.

# FUTURE DIRECTIONS-1

Research brought some future directions to the reader, policy makers, government and others by which Bangladesh may develop their maritime logistics transport industry in the light of innovations and way of increasing the efficiency and productivity of ports to stay with the competition of port world. As power and energy are the main barriers in industrial development as well as to provide required daily life requirements, Bangladesh must to import fuel and need to enhance the port capacity at any cost for maritime logistics industry.

- ▶ **PPP helps to split the cost and risk in the phase of new port development. Privatization of bulk liquid and coal terminal through PPI is essential.**
- ▶ Commercial import licenses for POL to open the business and marketing by the private owner that will decrease the dependency to BPC and fuel will be available to all in a minimum rate of fuel
- ▶ **Strengthening the rail network to transfer the fuel Box, fuel wagon or tanktainer from the port to urban cities by dedicated rail track also offer the rail transit or transshipment to the neighbors as intermodal rail networks to do port transport business.**

# FUTURE DIRECTIONS-2

- ▶ To create the maritime commission to monitor the port authority, private terminal operators and related stakeholder's activities and fix the freight and expenditure as per international port pricing. In addition, commission has to fix the transit and transshipment cost for neighbors.
- ▶ Port authority has to invest in research works to find out the innovation and other factors for improving the port efficiency.
- ▶ Government may take a plan to connect the power plants with the port authorities define the supply chain for receiving the fuel from the port easily and in a reduced cost.
- ▶ Exchange the competent workforce of Chittagong Port to Mongla/Payra port and share the lesson learning & best practice of all port internally for making operation plan, marketing strategy, port pricing and future business plan.

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*-:Thanks a lot :-*