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Dry port facilities in the selected land ports of Bangladesh to promote intermodal freight transport in South Asia

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Abstract. Bangladesh is growing its maritime trade significantly and container port throughput reached to 3 mTEUs that is 6 times multiplier in the last decade. A small scale intermodal is operating in nearby of principal seaport Chittagong. In addition, less than 5% of intermodal containers are moving to one rail ICD in the Capital city Dhaka and two RICTs in nearby Dhaka. The dry port concept is not new in the shipping world that elaborated by Hanaoka and Regmi in 2011 that forwarded intermodal container to the hinterland or nearby final destination or last-mile. Now-a-day, a dry port also effective for cross-border trade and helping neighbours by providing seaport access as a part of regional connectivity or doing a transport business. To investigate the potentiality of the dry port as the first comprehensive study, this research is chosen qualitative method. The major finding is the spatial infrastructure from seaports to the proposed dry port that is very poor. The practical impact of this research is to get innovation of dry port to connect with seaports and transfer of containers easily. Overall, this paper aims to find out the potential land ports of Bangladesh for acting as a dry port to promote intermodal freight transportation system in South Asia.

1 Introduction

Bangladesh [1] is growing its maritime trade significantly and container port throughput reached to 3 mTEUs (Million Twenty-foot Equivalent Units) that is 6 times multiplier in the last decade. A small scale intermodal is operating in nearby of principal seaport Chittagong. In addition, less than 5% of intermodal containers are moving to one rail ICD (Inland Container Depot) in the Capital city Dhaka and two RICTs (Riverine Inland Container Terminal) in nearby Dhaka.

The dry port concept is not new in the shipping world that elaborated by Hanaoka and Regmi in 2011 [2] that forwarded intermodal container to the hinterland or nearby final destination or last-mile. In line with such motivation, a dry port [3] is gaining proper attention among the stakeholder because of its potentiality in freight transport management and it will improve hinterland intermodal transportation system that will generate economic benefits and reduce environmental impacts significantly. Furthermore, a dry port is a dynamic node in the hinterland that provides integrated port transportation facilities to the seaport. Now-a-days, a dry port also effective for cross-border trade and helping neighbours by providing seaport access as a part of regional connectivity or doing a transport business.

In a study, researcher [4] explored that connectivity depends on various networks of geographically scattered facilities of the ports, cities and regions. To improve the intermodal connectivity as well as expanding seaports to the maximum hinterland, a dry port establishment is a way of attraction to port users. As it is costly for a new venture, Bangladesh may convert their existing land ports into dry port. Overall, this paper aims to find out the potential land ports of Bangladesh for acting dry port to promote intermodal freight transportation system in South Asia.

2 Problem statement

There are no dry port facilities in Bangladesh where one rail ICD and two RICTs are operating as inland container terminal for supporting the intermodal freight transportation system. Less than 5% of intermodal containers that are managing by 3 ICTs and connected to the seaports dynamically but not sufficient as per port throughput of Bangladesh.

Due to container discharge at the seaport or nearest off-dock, unloaded cargo is transporting by unhealthy local truck or covered van that resulted in extra transport cost, congestion at the road and excessive CO_2 emission also affecting the passenger transportation. The same is happening for export cargo in getting a shipment in Chittagong or Mongla port. Regional container transport in South Asia is

lagging behind for poor inland connectivity and proper infrastructure of the dry port at the cross-border.

3 Scope of the work

The scope of the work is to make innovation in the freight transport system of Bangladesh by converting selected land ports into dry port at cross-border and support local industry and EPZ/SEZ (Export Processing Zone/Special Economic Zone).

It will help to support in doing cross-border trade in South Asia and serve Nepal, Bhutan and SSS (Seven Sister States) of India also industrial development of Bangladesh in the dry port perimeter. Moreover, inland intermodal connectivity between seaports and proposed dry ports will be increased and Bangladesh will upsurge their port handling capacity for doing port transport business in South Asia.

4 Research methodology

Importantly, in conducting research on the dry port, a group of researcher [5] applied a mixed research method for reassessing and reframing the data and study that collected earlier. However, to investigate the potentiality of the dry port as the first comprehensive study in Bangladesh, this research is chosen qualitative method because of field visit orientation and extensive literature review on the dry port. The application of the qualitative method is to extract related literature on dry port development especially from the existing operational land port at cross-border also how existing land port will be converted into dry port.

5 Literature Review

Extensive literature was reviewed to get the necessity of dry port in the intermodal system and its role in the industrial development and improve regional connectivity. Preliminary, dry port [2] established as a rail-based inland terminal for developing hinterland of a seaport. Dry port [6] concept may increase the freight traffic volumes and shift or divert traditional road transport to more energetic and efficient traffic modes that are less negative environmental impact to the society. Research [7] explored that dry port development is the way to improve the potentiality of the less developed part of a country or region. Most [2] importantly, to stop multiple handling of cargo at various nodes of transport and use a dry port in the intermodal channel that will protect to reduce the environmental degradation positively. Dry port [7] is usually container-oriented and provides all logistics facilities required by shipping and forwarding agents in a port.

Research [2] explored three important attributes for intermodalism are transport links, transport nodes and the provision of efficient services. Among them, in terms of transport nodes, dry ports remain in early stage in Asia. However, dry port [7] is the logistics integration and helped seaport for port regionalization. In this way, researchers [2] argued for dry port development that will be promoting intermodal freight transport and improve transit and transhipment facilities in a region especially to the landlocked country. Dry port [6] is a simple inland terminal for facilitating shipping services to the hinterland timely and economically. For promoting [3] intermodal and cross-border trade, a dry port is playing a major role in the developed country and they have the integrated connection with seaports by roads, railways, inland waterways or airports. Greatly, Hanaoka and Regmi [2] explored ae rail-based dry port in their research for developing hinterland of a seaport.

Research [4] found that countries are attached in various networking forum like ASEAN (Association of South-East Asian Nations), WTO (World Trade Organization) and others. Bangladesh also connected and tag with various forum like BBIN (Bangladesh-Bhutan-India-Nepal), BCIM (Bangladesh-China-India-Myanmar) for developing transport or regional connectivity in Asia. In a study, it[6] was witnessed the seaport's challenges in getting smooth inland access in addition of terminal capacity, drafts for navigation and equipment for handing vessel and container seriously. Researchers [8] argued for such cooperation among India, Bangladesh, Nepal and Bhutan to achieve the policy goals for freight management as a part of sustainability in the region for developing easy sea access to Bangladeshi seaports. They believe that it will decrease time and cost but also not found any specific study regarding this.

However, the above works of literatures are not guiding us to get a way how to convert land port into dry port and explore the potentiality of dry port context Bangladesh.

6 Field visit reports

Bangladesh has 24 land ports at the cross-border to perform import-export trade with India, Nepal, Bhutan and Myanmar. After conducting rigorous desk work to explore the potentiality of land port for converting into dry ports, selected 7 land ports as the sample for field visit and finally selected 5 land ports (as per below Figure 1 and Table 1) where Nakugaon and Biral excluded due to infrastructural problems also not getting business exposure to connect with seaports.

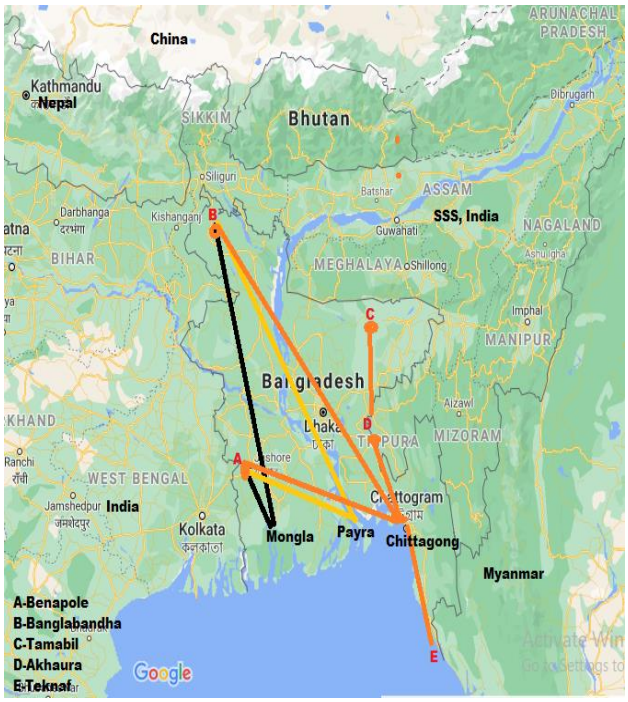

Figure 1. Prospective dry ports and seaports of Bangladesh developed by the author. Source. Google [9].

Table 1 (below) and Figure 1(up0, together, showing the geographical position of land ports (Benapole, Banglabandha, Tamabil, Akhaura and Teknaf) and seaports(Chittagong, Mongla and Payra) that are potential to serve Southeast and South Asia by intermodal system. Greatly, all proposed dry port will help Bangladeshi seaports to expand their hinterland and increase port throughput significantly. Details are in the next section of major findings.

Table 1. Prospective dry ports and their hinterland.

Mark	Land port	Extended Hinterland	Remarks
A	Benapole	West Bengal (India)	. Bilateral
B	Banglabandha	India, Nepal, Bhutan, China	BCIM and BBIN
C	Tamabil	SSS(India), Bhutan	BBIN
D	Akhaura	SSS(India), Myanmar	BCIM
E	Teknaf	Myanmar	SSS(India),

7 Major findings

The below major findings are articulated from this research that developed from the qualitative data of port container port throughput, literature and field visits. All land ports are suitable for acting as a dry port to facilitate cross-border intermodal services to the neighbours. Banglabandha (Marked A in Figure 1) is potential to serve SSS (India), Nepal, Bhutan and China by Asian Highway but it required official permits from India or approve in the forum of BCIM corridor and BBIN MVA (Motor Vehicle Agreement. Inland intermodal infrastructure from seaports to the proposed dry port is very poor. In this situation, to manage additional axle load for transit or transhipment containers at road and highways, it is essential to improve the road and bridge capacity for integrated spatial connection. After that Banglabandha (B) is in a good position to serve Nepal, Bhutan and China. Tamabil(C) is exclusively suitable for SSS and Bhutan. Greatly, Akhaura (D) in the middle position of BCIM corridor and well-connected by rail, road and river (35 km from Ashuganj river port). Lastly, Teknaf (E) land port has a good connection to support SSS and Myanmar.

This research found some forums that are important for freight transport of Southeast and South Asia but not in action to support regional freight movement. In addition, BRI (Belt and Road Initiative) activities are very slow as India opted out from this initiative of China. To active regional and international forum. To facilitate freight transport service from Bangladeshi seaport through the cross-border dry port and develop domestic's industrial zone nearby dry port, Bangladesh government needs to create the business environment and collaborative action situation with the help of India and China.

8 Research Impact

The practical impact of this research is to get innovation of dry port to connect with seaports and transfer of containers easily. This research has a positive impact for increasing port throughput of Bangladeshi seaports and developing inland intermodal infrastructure to serve the region by port marketing through integrated dry port connections with seaports. Dry port [6] is the implication of placing seaports facilities at the hinterland and securing freight from the region for supporting seaports to increase freight volumes. The potential [2] environmental benefits of intermodal be contingent on the dry port development.

Rail intermodal connection with dry ports may reduce freight emissions of CO_2 and local air pollution through a modal shift that reduces the number of long-haul trucks plying on roads. Dry port always attracts port users for taking shipping facilities from the far distance of seaport as well as a way to establish an industry for well-connection to get import and exports easily. It [6] is true that developing new transport facilities like dry port always requires significant financial investment and careful

consideration of stakeholders interests, return on investment. But not to forget that this is potential and will help to get benefit from the seamless transportation system like intermodal and effective node like dry port always. The dry port is a part of the intermodal freight transportation system that is recognized as an environmentally friendly transportation system globally and will help Bangladesh to support SDGs (Sustainable Development Goals).

9 Conclusion

Freight transportation is a physical activity and needs to set physical transport nodes like dry port. Recent container port throughput growth of Bangladesh is inspiring to develop hinterland and this study examined that land ports can serve as a dry port and facilitate intermodal in the region. A dry port is an essential component or node of the intermodal freight transportation system. Regional connectivity is highly depends on the recent initiative of BRI by China and active support of India to help Bhutan and Nepal for getting seaport access of Bangladesh also solving own landlocked problem of SSS.

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