Regional Economic Cooperation and Integration in Asia

Inputs and Materials

Potential for Development and Cooperation in the ACPBG Region: A Study on Ports and Logistics

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List of Abbreviations

ACFTA	ASEAN-China Free Trade Agreement
ACPBG	ASEAN-China Pan-Beibu Gulf Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CAREC	Central Asia Regional Economic Cooperation
DWT	Dead Weight Tonnage (unit to measure how much weight a ship is carrying)
EU	European Union
GMS	Greater Mekong Subregion
GTI	Greater Tumen Initiative
HCMC	Ho Chi Minh City
HHLA	Hamburger Hafen und Logistik AG
HHM	Hamburg Hafen Marketing Association
ISPS	International Ship and Port Facility Security
IT	Information Technology
KMTC	Korea Marine Transport Co., Ltd.
KPC	Kuantan Port Consortium
LPI	Logistics Performance Index
MARPOL	International Convention for the Prevention of Pollution from Ships
NAFTA	North American Free Trade Agreement
PR China	People's Republic China
RCI	Regional economic cooperation and integration in Asia
RoRo	Roll-on/Roll-off
SAR	Search and Rescue
TEU	Twenty-foot equivalent unit (unit to measure cargo capacity)
THB	Thai baht (currency of Thailand)
USD	US-Dollar
VND	Vietnamese dong (currency of Viet Nam)
VSA	Vietnam Seaports Association
ZIM	Israel Navigation Co., Ltd.

About this Study

Connectivity is among the main issues for further regional integration in Asia. Given the transnational character of connectivity, a strong commitment to regional cooperation between the participating countries is the key for successful and inclusive programme development. Port efficiency through regional cooperation in that matter has been proven to have positive effects on trade for both, importers and exporters.

On behalf of the German Ministry of Economic Cooperation and Development (BMZ) the "Regional Economic Cooperation and Integration (RCI) in Asia" programme of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supports subregional integration initiatives in Asia. Among the focus topics of the programme is the support of the ASEAN-China Pan-Beibu Gulf Economic Cooperation (ACPBG) mechanism. Next to the Greater Mekong Subregion (GMS) Economic Cooperation Programme, ACPBG Economic Cooperation is one of the two major pillars of ASEAN–PR China cooperation. While GMS supports cooperation mainly in the continental part of the ASEAN–PR China region, ACPBG focuses on the oceanic part of ASEAN as well as PR China's southern coastal provinces and puts strong emphasis on maritime trade and port cooperation. This was confirmed by the Roadmap for ACPBG Cooperation which is currently being reviewed by ministries of member states and is expected to be formally endorsed in the course of this year. The Roadmap identifies two priority sectors – ports and logistics and trade finance – which will be the areas of action in the initial phase of implementation.

GIZ supported this priority sector of ports and logistics with this in-depth study on potentials of port cooperation and development in the PBG region in order to allow the project as well as the involved partner countries to evaluate and eventually realise concrete cooperation projects. The study has been commissioned to Hamburg Port Consulting (HPC) and was based on an extensive fact finding mission to the region and two workshops held in Nanning, PR China in April 2013 and in Bangkok, Thailand in October 2013. The event was the first of its kind to bring together policy makers and stake-holders from ACPBG member states engaged in port and maritime logistics to discuss future cooperation both within the sector as well as with regard to the ACPBG cooperation mechanism in general. The following pages entail the

study of Dr. Martin Schramm under the heading *"Potential for Development and Cooperation in the ACPBG Region: A Study on Ports and Logistics"*, including insights stemming from a workshop in October 2013 and the ensuing discussions.

The analysis includes a stock taking and display of main issues relevant for the maritime industry such as cargo transport, different modes of transportation, the influence of the ASEAN-China Free Trade Area (as defined in the ASEAN-China Free Trade Agreement – ACFTA), maritime connection and points to areas of cooperation. An in-depth report on hinterland connections and a market analysis follows with a display of selected ports' capacities and prospects. Where feasible, the study includes German and European experiences to enhance the discussion with regard to ACPBG development. The second part of the report then provides detailed project proposals and road maps for port cooperation within the ACPBG framework and offers an estimation of welfare effects to properly evaluate the impact of the laid out proposals. We hope this study provides practitioners and policy makers of the ACPBG member states with a sound starting base for ensuing cooperation by laying out a number of options with regard to the ACPBG process.

Factbox ASEAN-China Pan-Beibu Gulf Cooperation	
Founded	2006
Member Countries	Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, PR China (Guangxi, Guangdong and Hainan), the Philippines, Singapore, Thailand and Viet Nam
Population	ca. 574,000,000
Goal	Complement other subregional cooperation between ASEAN and PR China by targeting focus areas that are not yet covered in order to boost regional cooperation and integration
Priority Sectors	Ports and logistics, trade finance
Serves as	A strong economic partnership within the framework of ASEAN-PR China cooperation

1. INTRODUCTION

The project "Regional economic cooperation and integration in Asia (RCI)" (07/2011 until 06/2015) supports processes of the regional economic cooperation and integration in selected regional initiatives in Asia with the People's Republic of China participating.

This includes the regional initiatives ASEAN-China Pan-Beibu Gulf (ACPBG) Economic Cooperation, Greater Tumen Initiative (GTI), Central Asia Regional Economic Cooperation (CAREC) and Greater Mekong Subregion (GMS) Economic Cooperation. The development measure should strengthen the main functions of planning, controlling, coordination and monitoring of the initiatives. Furthermore, it forwards the elaboration and implementation of strategies and action plans of selected topics and sectors (trade at the frontiers, investments, maritime industry and port cooperation amongst others.) The promotion components comprise consulting measures, workshops, conferences, professional information travels as well as regional allowances for the realisation of events and the implementation of pilot measures on a national basis.

The Pan-Beibu Gulf (PBG) cooperation mechanism was initiated in 2006 in order to strengthen the strategic alliance between the Association of Southeast Asian Nations (ASEAN) and PR China, to encourage the economic cooperation and integration as well as the ASEAN-China Free Trade Agreement (ACFTA). ACFTA came effective on January 1st, 2010. Since then, the region lists a constant growth of the corporate trade volumes. To reflect this shift, PBG has subsequently been renamed to ASEAN-China Pan-Beibu Gulf Economic Cooperation (ACPBG).

One of the sectors in which cooperation and integration should be supported is the maritime industry. The following study summarises the results of a study which analyses the development and cooperation potentials in the PBG region.

2. SUMMARY OF THE STATUS ANALYSIS

2.1 Analyses and suggestions of previous studies

ASEAN–China Free Trade Area

The cooperation between the ASEAN states and the People's Republic of China proved to be a significant factor for successful cooperation in the region. Beijing, already for some time, systematically concluded bi- and multilateral trade agreements and intensified the cooperation with countries in the region.[1] Since 2010, the formulation of the ASEAN-China Free Trade Agreement (ACFTA) played a major role in this context. The main interests of PR China are the improvement of access to raw materials and intermediate products of the region and the development of the growing ASEAN market.

[1]Greater China Day 2012 – Interview: Teil der regionalen Allianzen werden, Günther Rittner.

Rising wages and the demographic development in PR China lead to a gradual slowdown of economic growth, especially in the processing industry, which is an important economic factor.[2] The decreasing growth dynamics and demand of the western industrial countries also lead to diversification of external trade and expansion of economic relations to other important regions and countries in securing raw materials and access to new markets.[3]

Promoting and connecting the south-western Chinese province Yunnan and the autonomous region Guangxi to South and Southeast Asia and thus also their access to the Indian Ocean, is an elementary advantage of the free trade agreement for PR China. For the ASEAN states, the opening of the huge Chinese market is the main motive for the participation in the free trade agreement.[4] After the EU and NAFTA, the third biggest free trade block was created. With regard to the population, with 1.9 billion people it is the biggest. It covers an area of 14 million km^2 with a total GDP of about 4 trillion USD.[5] For the German economy, the free trade zone is a promising option for cooperation with supply and demand markets in this region as well.

The ASEAN-China Free Trade Agreement will create new opportunities for division of labour in the region, and thus lead to an intensified exchange of goods between the participating countries. In a two-step procedure, the first was the abolishment of customs tariffs for the most actively traded goods of the higher developed countries of the ASEAN member states in 2010. For the less developed ASEAN member states (e.g. Viet Nam) the trade barriers in relation to PR China will only be removed starting from 2015.[6]

The PBG region is significantly influenced by the free trade agreement, particularly as PR China and Viet Nam are closely related both in cultural as well as in geographical terms. Through this cooperation the PBG region could become an important connection between the ASEAN states and PR China, and next to research and development take a leading role also in production and manufacturing. Maritime cooperation plays an especially important role, particularly against the background of maritime access of the markets and increase of private investments.[7] Depending on the production cost level and quality profile, it will come to regional shifting of production sites. Generally, in this cooperation bureaucratic and cumbersome processes still have to be reduced.

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[2]Chinas steigende Lohnkosten: Motor des Strukturwandels?, Deutsche Bank Research.
[3]Greater China Day 2012 – Netze werden enger geknüpft, Margot Schüler, Jari John.
[4]Greater China Day 2012 – Netze werden enger geknüpft, Margot Schüler, Jari John.
[5]Beibu Gulf: Emerging Sub-regional Integration between China and ASEAN – Gu Xiaosong and Li Mingjiang, Singapore, January 2009.
[6]Greater China Day 2012 – Netze werden enger geknüpft, Margot Schüler, Jari John.
[7]Evaluation of the programme "Regionale wirtschaftliche Kooperation und Integration Asien-China"2010 – Prof. Dr. Hans-Dietrich Haasis.

Cargo transport and cooperation models in the region

Over the past years in particular, the Greater Mekong Sub-Region (GMS) gained crucial importance for a successful cooperation between PR China and ASEAN. Projects and cooperation in this region are mainly funded by the ADB. The countries along the Mekong River initiated cooperation projects in nine key areas: transport logistics, energy, telecommunication, agriculture, environmental protection, trade, investments, human resources and tourism.[8] The agreement concerning the PBG region trade zone is therefore a sub-regional cooperation between PR China and ASEAN on the maritime side, whereas the GMS cooperation covers the land-side.[9] Initially, the focus of cooperation between PR China and ASEAN was on the land-side cargo transport. However, the perspective is increasingly changing to maritime cooperation between both partners.

Since 2008, PR China exerts stronger influence on various international topics and focuses. The globally successful engagement in political and economic areas shows the new weight of PR China internationally. On the one hand, the main objective of PR China is to gain access to new emerging markets and on the other hand to make companies and governments invest in PR China's growing markets.[10]

The Chinese Yuan is established as the common currency for goods exchange in the region. [11] Additionally, PR China aims at achieving a counter balance to the predominance of the US-Dollar as the key currency to the International Monetary Fund. A currency agreement adopted between PR China and Japan at the end of 2011 envisages future handling of cross-border business in Chinese or Japanese currency instead of in US-Dollar.[12]

On the road to the conversion to the Chinese Yuan, the strong growth of cross-border payments leads to high expectations. There is a push towards the liberalisation of capital movements and thus the full convertibility of the Chinese currency in the near future.[13] This approach exists in the current Five-Year-Plan of the Chinese economy.

Until 2015, the strategic industries "high-technology production", "new materials", "non-fossil energy sources", "clean-energy vehicles", "biotechnology & biomedicine", "environmental technology" and "modern information technology" shall be especially promoted.[14] Additionally, the programmes highlight the aspects "growing inland demand", "development of Western China", "Go-Green", "growing urbanisation" and "increasing labour costs" as a guideline for economic development of the country. The shifting of parts of the supply chain into low-wage countries like the Lao People's Democratic Republic (Lao PDR), Cambodia and partly Viet Nam, therefore plays an important role in the strategic alignment of PR China,

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[8]Beibu Gulf: Emerging Sub-regional Integration between China and ASEAN – Gu Xiaosong and Li Mingjiang, Singapore, January 2009.
[9]The Planning and Challenges of the Pan-Beibu Gulf Economic Cooperation, Gu Xiaosong, in: Minjiang Li/Chong Guang Kwa (Editor), China-Asean Sub-Regional Cooperation; Progress, Problems and Prospect, Singapore 2011.
[10]Country Report China, Economist Intelligence Unit 2013.
[11]Greater China Day 2012 – *Interview: Teil der regionalen Allianzen werden*, Günther Rittner.
[12]Greater China Day 2012 – *Netze werden enger geknüpft*, Margot Schüler, Jari John.
[13]Greater China Day 2012 – *Der lange Marsch des Renminbi*, Eberhard Brodhage.
[14]Greater China Day 2012 – Strategien anpassen, Jürgen Kracht.

especially since the increasing labour and rental costs in South China and other coastal provinces make manufacturers move to production sites further in West and Central China. Nevertheless, the manufacturing industries in the east of the country are marked by high growth rates and thus also the demand for logistics services grows.[15]

Hinterland connection of the Pan-Beibu Gulf Region

The „Roadmap for Integration of Logistics Services (RILS)", implemented in August 2008, aims at unifying and strengthening the region by focussing on logistics activities, such as liberalisation of cargo handling services, storage and logistics services, freight transport, customs clearing etc. In this respect the ban on foreign cabotage prevents carriers to develop their service offerings as well as an improvement of the competitive situation in the transport market.[16] The fast-growing inter-regional trade requires new regulation of sea, air, road and rail transport, the inland sales networks, as well as the adjustment of customs requirements and other legal framework conditions.[17]

Generally, there are still problems. Frequently slow and cumbersome procedures at the borders between the countries are additionally complicated by insufficient standardisation of customs procedures and by a lack of technical equipment. The resulting delays lead to bottlenecks in the supply chain and cause higher transport costs.

Maritime connection

Due to the dependence of the transport industry from foreign trade, logistics is of specifically high economic importance for the region. In order to strengthen this sector an efficient system of the port industry and hinterland transport is required. Until 2015, improvements of port facilities in Viet Nam (e.g. Haiphong International Gateway Port) are planned to take place and approval procedures for further state-owned ports shall be implemented. Here, the focus will be laid on improved electronic processing and on compliance to quality measures next to standardisation of customs clearing procedures. A standardised Electronic Data Interchange (EDI) is supposed to establish better communication and thus cooperation between ports in Asia.[18]

Furthermore, a harmonisation of safety and environmental standards of the ports is planned to take place primarily between the ASEAN states. A further focus will be laid on the development of deep sea ports and international container terminals, which at the same time will lead to better logistics facilities and berths. The development of special facilities for freight transport, e.g. for bulk cargoes, shall be pushed,

[15]Greater China Day 2012 – Mehr Wettbewerb erfordert effektivere Zulieferketten, Holger Stoelker.
[16]Master Plan on ASEAN Connectivity, ASEAN Secretariat, Jakarta, January 2011.
[17]Greater China Day 2012 – Mehr Wettbewerb erfordert effektivere Zulieferketten, Holger Stoelker.
[18]Report of the 25th ASEAN Maritime Transport Working Group Meeting, Mandalay, April 2013.

too. Improved links between shipping companies, freight forwarders and agents are planned to be established as well.[19]

Maritime logistics is becoming more and more complex and the requirements related to customer satisfaction, cost effectiveness, security, speed and environmental protection are growing.[20] Next to cost recovery of these projects, the availability of appropriately qualified personnel has to be ensured as well.[21] Employees should be specifically qualified to handle new developments in the areas of IT, security and environmental protection.[22] Special logistics courses and training measures should be offered in this area. The ports of Fangchenggang, Qinzhou, and Beihai in the coastal area of Guangxi in PR China, as well as the ports of Haiphong and Gailing at the Vietnamese north coast, are in the focus of these plans. Here it is necessary to increase the import and export volumes. In some studies, the development of Roll-on Roll-off (RoRo) transport, connecting the mainland with the islands of the ASEAN member states, is also proposed.[23] Two studies of the ASEAN Maritime Transport Working Group elaborated in 2010 give a general overview of capacities, transport development and expansion projects of ASEAN ports. However, they do not address aspects of port cooperation.[24]

Inland waterways transport

Despite the fact that there are high saving potentials for cargo transport if inland waterways transport in this region was used, the capacity utilisation rate in this sector is rather low. Generally, in the ASEAN region, with a total of 51,000 km navigable inland waterways, it would be worthwhile to make use of this mode of transport. Admittedly, the infrastructural conditions are bad; this concerns the linking of waterway routes as well as the non-existence of port infrastructure in the inland waterways sector.[25] The improvement and maintenance of the waterways at the Lancang-Mekong-River and the improvement of navigability of the "Red River" are also fundamental projects to improve the connectivity with the sea ports.[26]

[19] Feasibility Study Report on Pan-Beibu Gulf Economics Cooperation - Joint Expert Group on Pan-Beibu Gulf, Nanning, July 2012.
[20] Bewertung des Programms "Regionale wirtschaftliche Kooperation und Integration Asien-China" 2010 – Prof. Dr. Hans-Dietrich Haasis.
[21] Bewertung des Programms "Regionale wirtschaftliche Kooperation und Integration Asien-China" 2010 – Prof. Dr. Hans-Dietrich Haasis.
[22] Report of the 25th ASEAN Maritime Transport Working Group Meeting, Mandalay, April 2013.
[23] Master Plan on ASEAN Connectivity, ASEAN Secretariat, Jakarta, January 2011.
[24] ASEAN Maritime Transport Working Group, "The Study on Project Priorities to Upgrade Performance and Capacity of ASEAN Network Ports", October 2010; ASEAN Maritime Transport Working Group, "The Study on Identifying Required Improvement Areas in ASEAN Network Port Performance and Capacity, based among others, on Regular Forecasts of Maritime Trade and requirements", August 2010.
[25] Master Plan on ASEAN Connectivity, ASEAN Secretariat, Jakarta, January 2011.
[26] Report of the 25th ASEAN Maritime Transport Working Group Meeting, Mandalay, April 2013.

Road transport

Measured by trade volume, road transport is the most important mode of transport for cargo in the region.[27] There are plans to establish a new "Silk Road", connecting PR China with ASEAN member states, the financing of which shall be ensured by the China-ASEAN Maritime Cooperation and the China-ASEAN Cooperation.[28]

High speed road connections with a total length of 500 km leading from Nanning via Qinzhou to Beihai, from Qinzhou to Fangchenggang and from Nanning to the "Friendship Pass" (chin.: 友谊关; viet.: *Hữu Nghị Quan*) at the border between PR China and Viet Nam has been completed.[29] The most important project in the ASEAN region is the ASEAN Highway Network (AHN) project. Next to linking 23 selected routes with a total length of 38,400 km, signposts and direction signs were also up-dated and improved. Until 2020 the selected roads shall correspond to certain quality standards that is, be divided into different categories.[30] Roads with special importance for cargo transport will be treated with preference.

Rail transport

There are rail connections with a total length of 400 km from Nanning via Qinzhou to Beihai, from Qinzhou to Fangchenggang and from Litang to Qinzhou. Additionally, a rail connection of 4,000 km connecting Nanning via Hanoi, Ho Chi Minh City with Phnom Penh, Bangkok and Kuala Lumpur is planned. This line will cover the western coast along the Pacific Ocean starting from PR China and could be a decisive step in improving hinterland connections by rail.

Furthermore, in the PBG region a modern rail connection is being planned, leading from Guangdong via Beihai, Qinzhou and Fangchanggang, in Guanxi, to Ha Long, Haiphong and Tai Binh in Viet Nam. There, it would be linked with the Nanning-Singapore connection. Also, a further rail connection between Nanning and Singapore of 3,000 km length is being planned. This connection would include Vientiane. All of these routes will have to accommodate the requirements of the logistics sector and have to be technically equipped accordingly.[31]

Potential for Cooperation

As port cooperation could lead to a strengthening of the common competitiveness as a harbour range, cooperation between the ports in the PBG region would be appropriate. Streamlining of procedures in transport logistics, the development of joint offers for customers, harmonisation of physical land-sea interfaces, supply chain oriented marketing, occupational safety and environmental protection, profes-

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[27] Master Plan on ASEAN Connectivity, ASEAN Secretariat, Jakarta, January 2011.
[28] Report of the 25th ASEAN Maritime Transport Working Group Meeting, Mandalay, April 2013.
[29] Beibu Gulf: Emerging Sub-regional Integration between China and ASEAN – Gu Xiaosong and Li Mingjiang, Singapore, January 2009.
[30] Master Plan on ASEAN Connectivity, ASEAN Secretariat, Jakarta, January 2011.
[31] Feasibility Study Report on Pan-Beibu Gulf Economics Cooperation - Joint Expert Group on Pan-Beibu Gulf, Nanning, July 2012.

sional education and training as well as opportunities in research – all these aspects argue in favour of cooperation between competing ports.[32]

Here, it would make sense to involve shipping lines as well as operators of upstream and downstream transports (e.g. in order to agree on schedules). Also, the development of IT infrastructure to share development and operations costs and possible risks between several parties could be an option for cooperation. Looking at world-wide cooperation of terminal operators and/or container shipping lines, there are many examples for these types of cooperation. In the areas of port development and construction, port management, port logistics etc., the employees involved should be trained accordingly. Thus, harmonised port development projects could be implemented, in the course of which staff could develop technological and organisational competencies with the help of experts through continuous exchange of experience within a continuous improvement process.[33]

The cooperation opportunities described within this study can have high relevance for the project. Here, possible training and further education measures can be implemented, and in addition, the mentioned logistics challenges can be addressed

2.2 Hinterland Connections

Overview on Hinterland Connections

In the north, Viet Nam's transport system is aligned to the axis Hanoi/Haiphong and the catchment area of the Red River. In the south, Ho Chi Minh City is the commercial centre of the country and its main port is connected to the Mekong Delta by a network of roads and waterways. The National Road No. 1, a parallel railway line and short sea transport, connect the two metropolitan regions.

Due to Viet Nam's geography, transport demand is being determined by relatively short transport routes to and from the coast; this applies for both transport modes, for inland waterway transport as well as for road transport. Surveys conducted in December 2004 and January 2005 show that almost 75% of the cargo traffic between the provinces takes place within a distance of less than 200 km while only 10% of cargo are transported to destinations more than 500 km away (JICA 2005). In view of its net system, the poor state of infrastructure and the resulting investment backlogs, local railways are playing only a limited role. Interestingly, inland waterways transport is the dominating mode for transport distances of less than 300 km in the country, whereas international experience shows that normally transport by truck would mean lower cost per TEU in such short distances. This clearly reflects a road network in existence which is still not fully developed.

In contrast to the north, there is not even a rudimentary railway network in the south (apart from the main line to the north). Until recently, in the Mekong Delta, goods with lower commercial value, e.g. bulk

[32]Bewertung des Programms "Regionale wirtschaftliche Kooperation und Integration Asien-China" 2010 – Prof. Dr. Hans-Dietrich Haasis.

[33]Feasibility Study Report on Pan-Beibu Gulf Economics Cooperation - Joint Expert Group on Pan-Beibu Gulf, Nanning, July 2012.

cargo such as rice, cement, building materials and fertilisers have been transported on the waterways, while products with a higher market value and time sensitivity, including seafood and other perishable goods as well as finished goods were carried by truck. However, only 35% of the road network is paved in the province, and only 10% of the rural roads are paved. There are large areas within the delta, which are not accessible by roads at all. Despite the dominance of road transport in the general cargo segment, multimodal inland water transport in the Mekong/Dong Nai Basin region is better developed than in the north.

Figure 1: Inland Ports in North Viet Nam

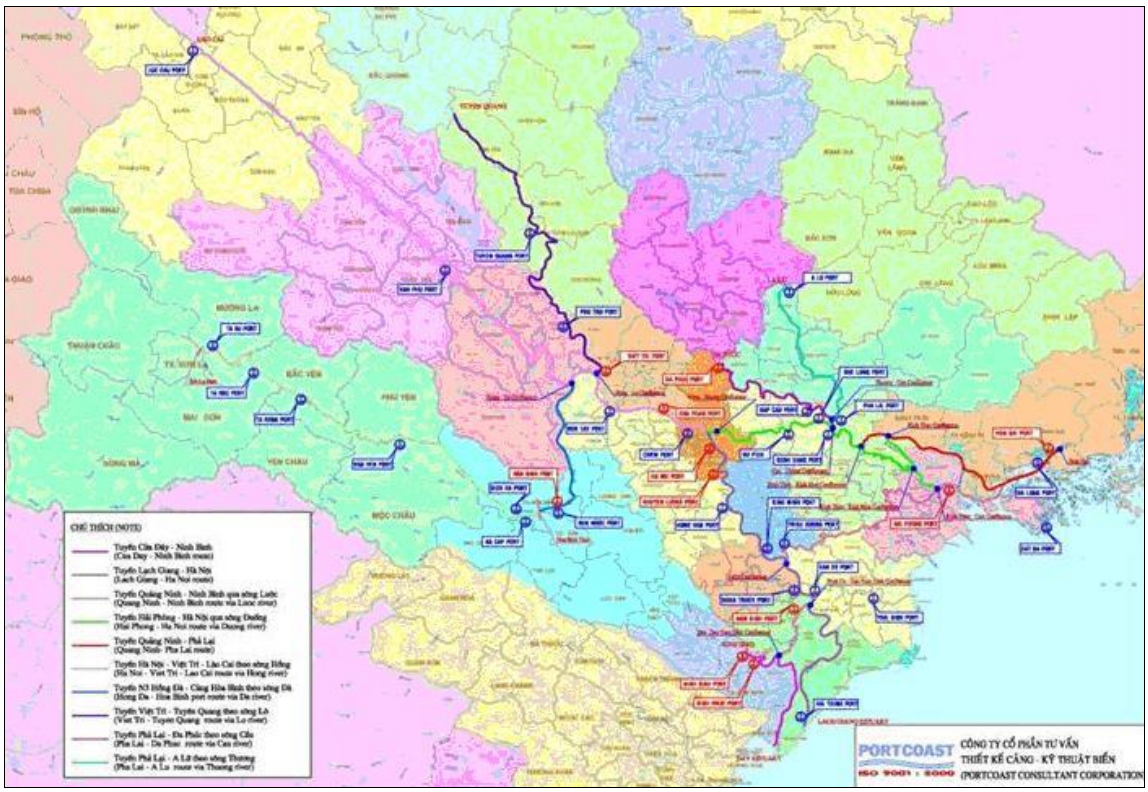
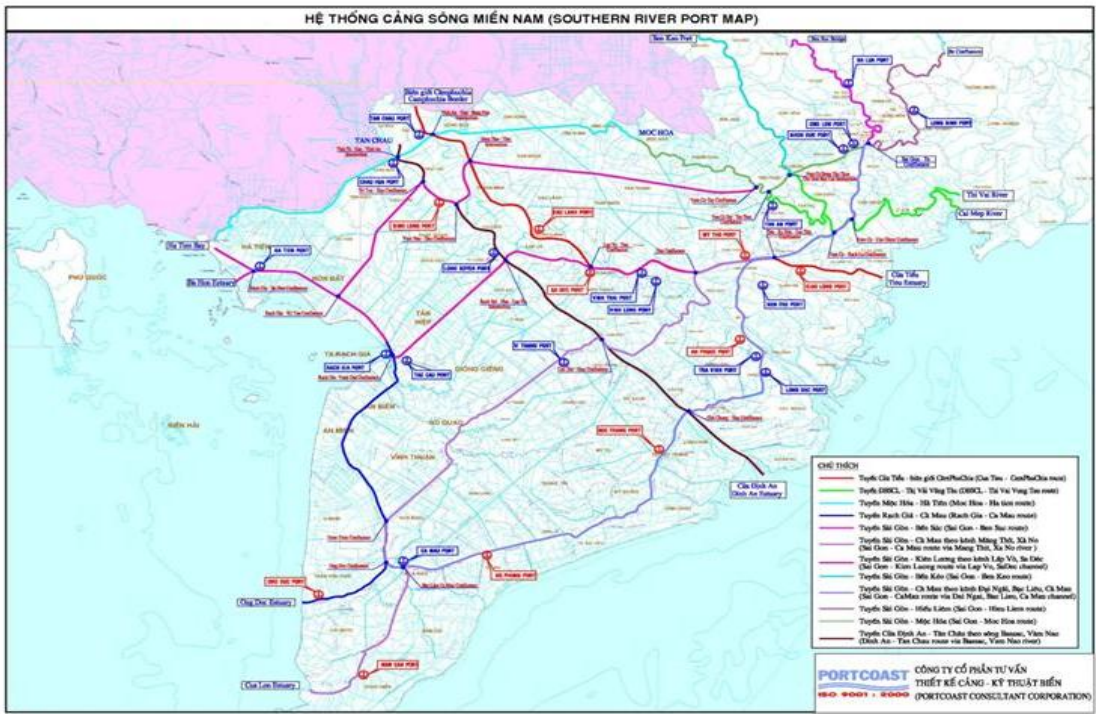


Figure 2: Inland Ports in South Viet Nam



In fact, this potential is more than five times higher and growing rapidly. Multimodal transport in the south is characterised by:

- an extensive inland waterway system offering more transport options than in the north;
- large and steady flow of goods;
- industrial production in the region, agriculture and aquaculture provide a high and growing demand for container transport of high-value goods such as consumer goods, equipment and machinery, but also agricultural and aquaculture products;
- a promising potential for medium to long transit distances between Vietnamese seaports and the neighbouring countries along the Mekong River.

In the Chinese ports analysed, little focus is laid on an active role in the conception and organisation of hinterland connections. As exemplified on the website of the Chinese Guangxi Beibu Gulf International Port Group all data on terminal capacity and facilities, but not any connection to the hinterland is described. However, the Port Group attaches great importance to the development of logistics services. For logistics service providers it offers details on development of the logistics centre Nanning and the free trade zone in Qinzhou. There are also other sites in the region where the Group builds logistics and distribution centres in order to strengthen the network between the sea port industry and logistics and to create well-functioning connections between land, port and sea transport.

In recent years, a lot has been done for the development of transport infrastructure and hinterland connections. All three ports are connected via the transport node Nanning to the entire Chinese railway network.[34] In particular, the situation of the three considered Chinese ports is as follows:

Beihai: The port is well connected to the railway network. However, the Tien Shan terminal (southeast of Beihai) has no rail connection, yet. But there are plans already for a rail link to be used for bulk cargo. Beihai is connected to Nanning, Chongqing and other cities by motorway, having the major junction in Nanning.

Qinzhou: The free trade area is linked to a total of six motorways and is already connected to the railway network. The rail links are still further expanded as the single terminals are not connected to the railway network yet. Highway access is given for the free trade area. The port is connected via a pipeline to a refinery, which also has its own railway connection.

Fangchenggang: The port has a rail connection, which is mainly used for bulk cargoes. There are three lines to Nanning and two lines to other cities in the autonomous region of Guangxi. Of these lines two are high-speed lines. Road access is given via the town and from there further links the highway to Nanning.

Figure 3: Highway System in South China

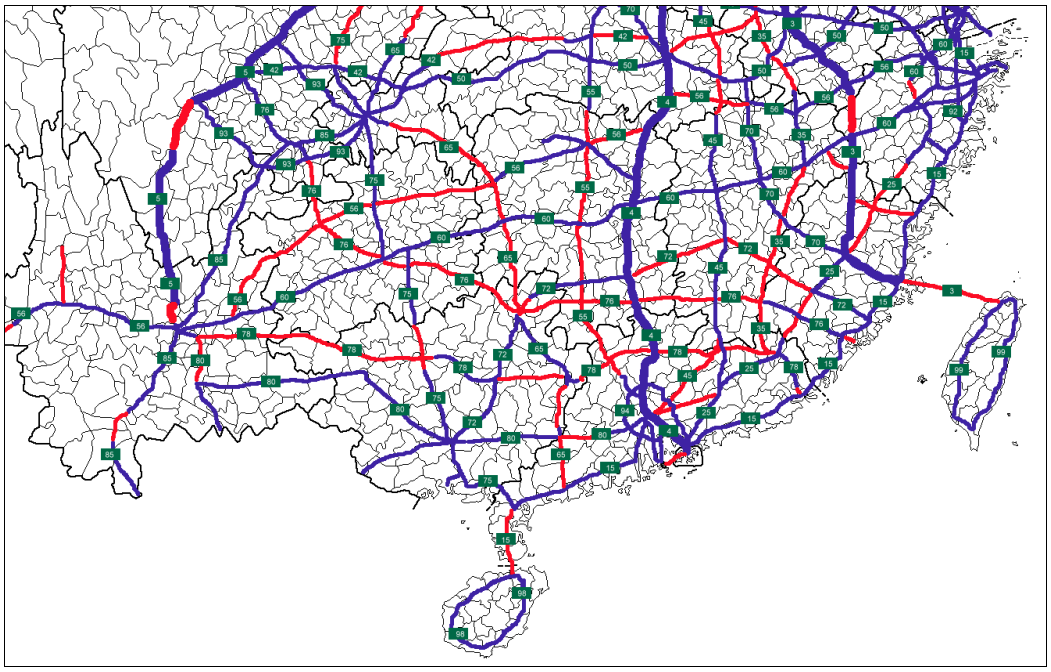


Figure 4: Railway Network Nanning – Fangchenggang – Beihai

Capacities and Assessment of Hinterland Connections

Analysis and evaluation of the Vietnamese transport infrastructure shows that beyond some seaports, only the inland port of Viet Tri in the north provides a rail link. The best rail access is found in the port of Haiphong. In this port about 5% - 10% of hinterland transport is done by rail. Thus, the rail traffic has already reached its capacity limit. An expansion seems unlikely to occur in the short and medium term since according to port operators and port administration the whole rail network needs a complete reconstruction and restructuring.

Generally, the road links between sea ports and inland ports are in better shape, but are often subject to restrictions as well. For example:

- traffic jams up to 48 hours are regularly reported for the road No. 356 (Dinh Vu Industrial Zone, Hanoi River Basin);
- the region of Haiphong, especially its port area, is often jammed with heavy traffic
- the Vinh Tuy Bridge in Hanoi is an obstacle for truck traffic to and from the harbour area.

The rail network in the south is extremely limited. In recent years, the railway system has been only selectively upgraded. Most investments in the transport sector (with international development assistance) have gone into improving the road network during the last years. Nevertheless, there are still a number of obstacles:

- very poor main roads and poor transport conditions due to high traffic density;
- permanent damage caused by overload of trucks;
- some bridges as well as regional and local roads in poor condition;
- low transport efficiency in the distribution of goods and underdeveloped container transport (forward and backward);
- inadequate or lack of motorway links to sea ports and inland ports results in congestion as well as frequent delays in arrival and departure of shipments.

Therefore, the land sided cargo supply and distribution from the sea ports/inland ports can be described as being in constant need of improvement. Currently, there are two World Bank -financed projects focussing on partial relief of this situation:

The Northern Delta Transport Development Project for multimodal transport in the northern corridor commenced in 2008 with a total financial volume of 170 million USD. The project's objective is to improve the waterways in the northern Delta region in order to increase the efficiency of multimodal transport and supply chains. Two connections are particularly supported:

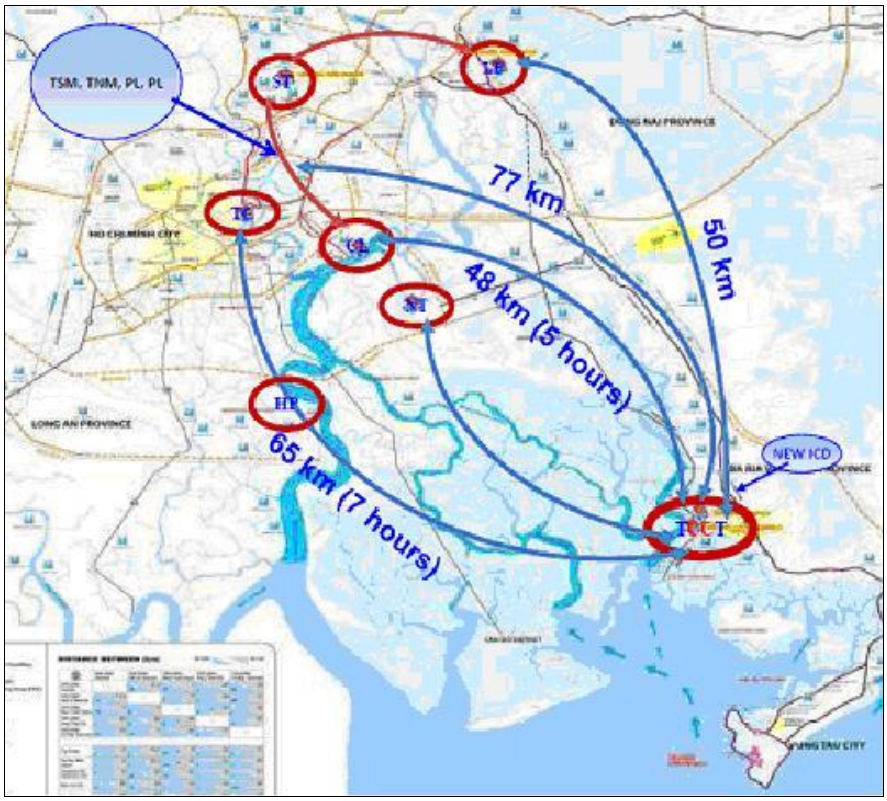
- Connection 1: East-West corridor between the northern environs of Viet Tri and Quang Ninh with a distance of 280 km; This corridor has two distinct sections, a 200 km of inland waterway section between Viet Tri and Haiphong, and a 80 km stretch of coast between Haiphong and Quang Ninh .
- Connection 2: North-South corridor between the Delta ports and Hanoi with a distance of 259 km designed for motorised cargo vessels of 1,050 DWT capacity.

All these investments are intended to increase the efficiency of the transport network. Reportedly, they shall contribute to improving the accessibility of the respective region to the seaports in the north, as well as to Central and South Viet Nam. The project had a slow start and new attempts have only been made in 2013.[35]

Alike in the north, the World Bank has launched the Mekong Delta Transport Infrastructure Development Programme in the south, which provides major investment in fairway and bridge extensions.[36] In 2009, the transport sector in the Greater HCMC area faced a significant boost by the opening of a new deep-water terminal in Cai Mep in Vung Tau province. This new terminal has strengthened the Mekong River's role as a multimodal transport route. The terminal is located at Cai Mep River, with a short distance to the main international shipping routes. The distance to the central business district of Ho Chi Minh City is about 65 km; and the main manufacturing areas located in Binh Duong Province and Dong Nai province are about 50 to 80 km away (see Figure 5 for details).

[35]See http://www.worldbank.org/projects/P095129/northern-delta-transport-development-project?lang=en, 08 July 2013.
[36]See http://www.worldbank.org/projects/P083588/mekong-delta-transport-infrastructure-development-project?lang=en, 08 July 2013.

Figure 5: Hinterland Connections in the HCMC Area



Today, almost all of the containers are transported from the hinterland to/from the container terminal at Cai Mep by inland waterway vessels. This is a result of the poor state of the main National Road 51 to HCMC, but also due to transport cost advantages. The prices of carriers for a 20' container from HCMC to the Cai Mep terminal are reported at 50 USD per truck and at about half the amount (21 to 25 USD) for inland waterway transport. A new highway to the port was planned, but construction has been delayed. Container terminal operators in the region describe the existing land connections as insufficient while reporting a reduction of 20% in terminal utilisation due to lack of road access alone. Long-term plans for a rail link to the terminal do not seem to be very realistic in view of the budget available. Except for the highway from Hanoi to PR China, Viet Nam has, on the land side, few links with significant capacity towards the neighbouring countries. In the northeast of the country this is mainly due to the poor infrastructure. The border to Lao PDR is also difficult to pass because of the mountains.

By 2015, the commencement of (re)construction of Highway No. 5 connecting Hanoi to Haiphong will foster the port's hinterland transport. A construction period of ten years is envisaged. In the Greater Hanoi area truck traffic is only allowed during night-time; the local ring roads are of poor quality and an expansion is not planned. For the next ten-year period, no significant improvement of hinterland connections from Haiphong to PR China is expected. The planned road extension projects will probably not even keep pace with the growth of local and intra-regional traffic in Viet Nam.

In PR China, the situation of the hinterland connections is incomparably better. By own assessment, while driving on the highway connecting Nanning with the three ports, it was found that the highways were

obviously recently reconstructed and expanded. There were obviously no capacity problems. Neither our interlocutors in the three ports and of the Guangxi Beibu Gulf International Port Group have reported any road traffic problems, nor could any obstacles caused by road condition or traffic jams be noticed during various car trips.

The Guangxi Beibu Gulf International Port Group has expressed its wishes for an overall improvement of the railway connections and for provision of higher rail capacities allowing transport of more goods. However, it should be noted that this is complaining on a high level. It does not feature a real bottleneck, but rather reflects the ambitious plans for the ports' future that correspondingly will require more rail capacity. Since strategic importance for the supply of Southwest China is attached to the ports of Guangxi Beibu Gulf International Port Group, it can also be assumed that the Chinese government will further promote rail transport. In Fangchenggang, rail transport has now a capacity of 60 million tons per year, with mainly coal and iron ore transported by rail. In addition, some 70,000 TEU containers per year are transported by rail. According to the Guangxi Beibu Gulf International Port Group, these figures are far from reaching any rail capacity limits.

Inter-modal Hubs

While with Qinzhou, Nanning and Kunming, major inter-modal hubs have already emerged serving the entire southwest of PR China, Viet Nam is only at the beginning of such development.

Until 1990, the various modes of transport in Viet Nam developed separately and almost independently. Each and every cargo unit was usually transported with one carrier in one step. Since 1990, some few cargo units and modes of transport were combined for transporting cargo from storage to customers. Among them the Central Transportation Services Company can be mentioned, which organised the transport of ores from the Lao Cai province to Haiphong by rail or barge, and further shipped the freight by seagoing vessels to the ports in Ho Chi Minh City and Dong Nai in the Mekong Delta. Similarly, transport of cement from the Hoang Thach Cement Factory at the Red River has been organised. But in all these events, the combination of transport modes only took place on a case by case basis, without a clear strategy or a specific multimodal transport concept.

At the beginning of the 21st century, the domestic cargo transport volumes, as well as imports and exports increased in line with the rapid development of the Vietnamese economy. In this context, the multi-modal transport has also developed faster, not only regarding shipments of bulk commodities such as coal and fertilisers or bagged cargo such as cement and food. But the rapid integration of the Vietnamese economy into world trade, and the increasing use of containers as the dominant means of transport for all types of general cargo, are favourable conditions pointing to the further need for inter-modal transport. Good examples in this respect are goods for export, such as textiles, clothing, footwear, aquaculture products, or silk, wool, imported equipments and machinery, etc.

Historically, most of the cargo in Viet Nam has been shipped by state-owned enterprises transporting their self-produced goods with their own truck fleets in most cases. But in recent years many of the for-

merly state-owned fleets have been commercialised or partially privatised. In effect it evolved into a competitive road transport industry with significantly improved service reliability. Mainly in the south of the country, export-oriented industrial and agricultural state-owned enterprises increasingly outsourced their transport to forwarders or independent transport providers. However, despite the increasing demand for warehousing and other value-added services a large part of logistics services is still done in-house.

All in all, the logistics industry in Viet Nam is still in an early stage of development. Transport services as well as the whole transport sector are relatively weak due to the under-developed road and rail network. The distribution system is currently a fragmented netting of public and private companies, import - export companies and wholesalers, independent agents, distributors and retailers.

In recent years, some Vietnamese companies have realised the importance of multimodal transport, not only domestically but also in the cross-border trade within the region and overseas. However, its implementation is hampered by limited sources of capital, limited access to the international market and the lack of suitably qualified personnel. So far, only the inland ports in Viet Nam can actually be considered as inter-modal hubs. Railways do not have any importance in this context. Its capacity is barely perceptible and its network does not provide any links to the distribution centres and logistics hubs.

Thus, the planned construction of new terminals in the inland ports of Viet Tri and Ninh Phuc are of importance for multimodal transport. These ports with current capacity constraints have been selected as pilot investment projects. Above all, Viet Tri was already considered as a major inter-modal hub on the Kunming-Haiphong transport corridor in recent times.[37] Funds will be placed in new quays, storage areas, warehouses, road access and disposal facilities.

In the north, the following limiting factors for efficient inter-modal container transport can be determined:

- The road network is being jammed as the increase in container and truck traffic is much faster than the growth in available capacity despite of further expansion.
- The railways offer only limited routes and suffer from failed investments and high fixed costs.
- The fairways of the channels are mainly left in their natural conditions, without investment, with limited maintenance and sparse navigational aids.
- There are almost no specialised companies and a lack of professional personnel in the field of inter-modal and container transport.
- Inland Container Depots (ICD) are not available in the hinterland or in the inland ports.

[37]See passage 2.5. (Logistics / Hinterland Transport)

2.3 Market and Competition Analysis

Southwest China

Handling Capacity

The handling capacity of the region is subject to constant change, but often statements of port administrations involved turn out to be very optimistic. Generally, a large number of projects are in the pipeline. In some cases the implementation fails due to the funding or policy decisions. The current status is as follows:[38]

Fangchenggang	• Handling capacity of 100 million tons
Beihai	• Terminal for general cargo and bulk cargo accommodating vessels of 10,000-20,000 tons • Terminal for bulk cargo with berths for vessels of 20,000; 30,000 and 50,000 tons • Extension of container terminal for vessels of 50,000 tons
Qinzhou	• Car terminal with a capacity for vessels up to 70,000 tons by 2014 • Container terminals with berths for vessels of 100,000 DWT and two container terminals with capacity for vessels of 50,000 DWT • After completion of all stages of extension, the capacity will be 6.2 million TEU and 30,000 vehicles

Current Cargo Volumes

Fangchenggang	• In 2011, about 70 million tons of cargo in total • In 2012, total throughput of 67.5 million tons. Container throughput of 270,000 TEU • For 2013, total throughput of 74.6 million tons forecasted. Container throughput of 300,000 TEU expected
Beihai	• Total throughput of 6.3 million tons and container volumes of 100,000 TEU
Qinzhou	• Total throughput of 56 million tons, container volumes reach 478,000 TEU[39]

Cargo Split

Fangchenggang	• 24 million tons of coal (1/3 of total throughput) • Grain, fertilisers, sugar, steel, cement, wood, ore, coal
Beihai	• Import: metals, minerals, coal, sulphur • Export: phosphorous, fertilisers, semi-finished products, rice, ore, cassava, fireworks, fruits, anise, wood
Qinzhou	• Containers have a share of 1/6th of total throughput • Conventional general cargo and liquid cargo (crude oil has a share of 10 million tons)

[38]International Maritime Information Website (www.simic.net.cn) 02 July 2013 and interview results.
[39]International Maritime Information Website, www.simic.net.cn, 02 July 2013 and interview results.

Vessel Calls

The port of Fangchenggang is regularly called by vessels from the shipping lines Hengrong Lines (Wan Hai), Korean Marine Transport (KMTC) and Israel Navigation Co., Ltd. (ZIM). The port is well connected within Asia but also beyond, especially by the shipping company ZIM for worldwide relations. The following table gives an overview on the destinations linked by these carriers.

Table 1: Vessel Calls at Fangchenggang

Shipping Line	Departure	Route	Ports of Destination
Korean Marine Transport (KMTC)	daily	• PR China • Southeast Asia	Surabaya, Haiphong, Bangkok, Ulsan, Laem Chabang, Ho Chi Minh City, Jakarta, Pusan, Singapore, Penang, Port Klang,
Wan Hai Lines (WANHAI)	several times daily	• PR China – Hong Kong – Macao – Taiwan • PR China – Southeast Asia • PR China – Northeast Asia	Kaoshiung, Keelung, Pasir Gudang, Laem Chabang, Manila, Pusan, Port Kelang, Oakland, Jakarta, Moji, Haiphong, Shanghai, Tokuyama, Bangkok, Belawan, Antwerp, Karachi, Surabaya, Nhava Sheva, Nagoya, Danang, Hakata, Hong Kong, Kawasaki, Kobe, Yokkaichi, Colombo, Penang, Yokohama, Long Beach
ZIM Israel Navigation Co., Ltd.	weekly	• PR China – Hong Kong – Macao – Taiwan • PR China – Australia - New Zealand • PR China – Europe – Mediterranean • PR China – Northeast Asia • PR China - Central and South America	Hong Kong, Port Kelang, Mersin, Laem Chabang, Haiphong, Brisbane, Novorossiysk, Pusan, Rio Grande

Source: Cargo in China, 2013.

At the port of Beihai, vessels from the shipping lines Yang Min Marine Transport Corp. (YML), Israel Navigation Co. Ltd (ZIM), Maersk Line (MAERSK), Wan Hai Lines (WANHAI) und Korean Marine Transport (KMTC) are calling. Cargoes for worldwide transport to Asia, Europe, Africa, Australia as well as Central and South America are handled here.

Table 2: Vessel Calls at Beihai

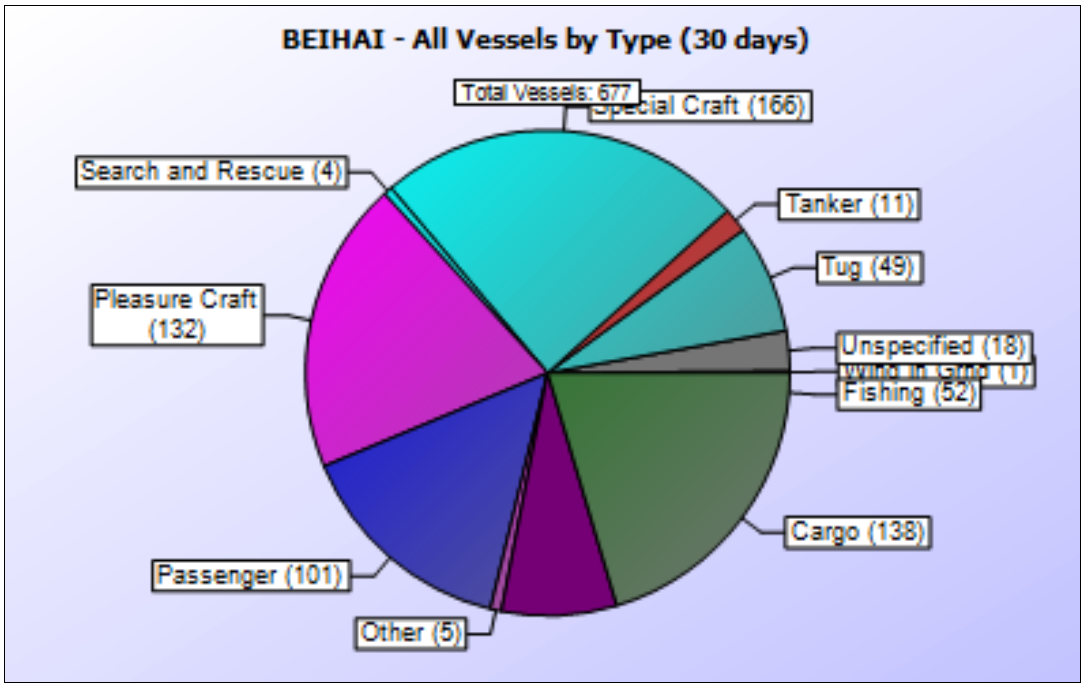
Shipping Line	Departure	Route	Ports of Destination
Yang Min Marine Transport Corp. (YML)	daily	• PR China – Southeast Asia • PR China – Europe – Mediterranean • PR China – Northeast Asia • PR China – Hong Kong – Macao - Taiwan	Surabaya, Fos, Kwangyang, Laem Chabang, Kobe, Yokohama, Keelung, Hong Kong, Manila, Penang, Valencia, Bangkok, Oakland, Jakarta, Constanzia, La Spezia, Port Kelang
ZIM Israel Navigation Co., Ltd.	several times weekly	• PR China – Southeast Asia • PR China – Middle East - Persian Gulf – Indian Sub-continent • PR China – Europe - Mediterranean	Singapore, Dammam, Laem Chabang, Illichivsk, Colombo, Pusan
MAERSK	daily	• PR China – Europe – Mediterranean • PR China - Central and South America • PR China – Hong Kong – Macao – Taiwan • PR China – Southeast Asia • PR China – Middle East - Persian Gulf – Indian Sub- continent • PR China -US West Coast • PR China – Australia – New Zealand • PR China - Africa	Bremerhaven, Itajai, Yantian, Gothenburg, Garden City, Norfolk, Shanghai, Hong Kong, Delta, Valencia, Balboa, Buenos Aires, Sydney, Tin Can, Rijeka
Wan Hai Lines (WANHAI)	several times weekly	• PR China –Hong Kong – Macao - Taiwan	Kaoshiung, Keelung, Hakata, Laem Chabang, Hong Kong
Korean Marine Transport (KMTC)	several times weekly	• PR China – Southeast Asia • PR China – Northeast Asia	Ulsan, Haiphong, Bangkok, Laem Chabang, Jakarta, Port Klang, Penang, Ho Chi Minh City, Singapore

Source: Cargo in China, 2013.

According to „Marine Traffic“ about 677 vessels are handled at the port of Beihai on average per month, split by the following classes:[40]

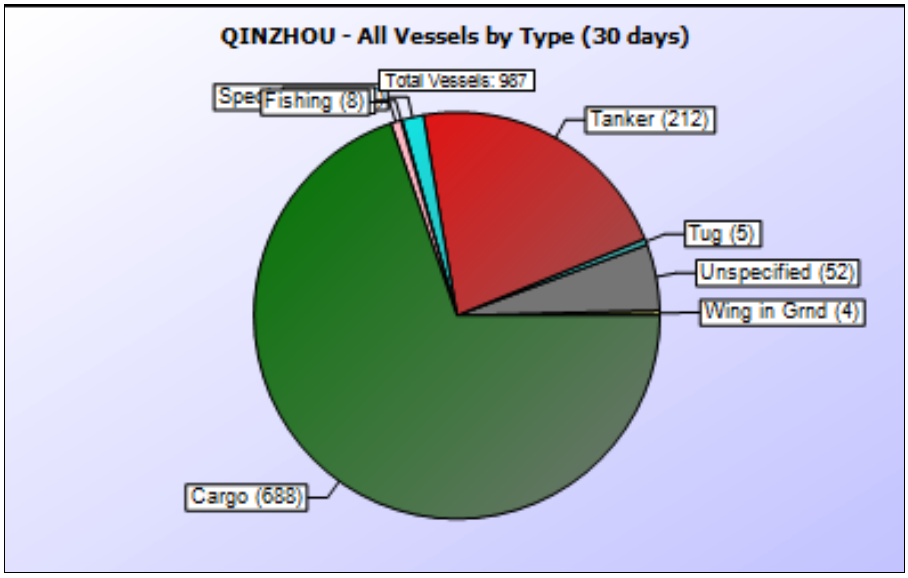
[40]See Marine Traffic, http://www.marinetraffic.com/ais/details/ports/1247, 24 June 2013.

Figure 6: Vessel Types at Beihai



The port of Qinzhou registers about 987 vessels per month according to data of „Marine Traffic". Apparently, the overall majority of vessels are given in the cargo segment.[41] Further statistics from the list of sailings of Qinzhou could not be obtained.

Figure 7: Vessel Types at Qinzhou



[41]See Marine Traffic, http://www.marinetraffic.com/ais/details/ports/2344, 24 June 2013.

Size of the Ships

An overview on the size of the ships that can be handled in the three ports in southwest China is given below.[42]

Fangchenggang	Beihai	Qinzhou
Draught 11.4 m	5 berths for vessels of up to 500 tons	Draught 9.4 m
Out of a total of 41 berths located in the port, 26 are designed for vessels of over 10,000 DWT	Container terminal with 2 berths for vessels of up to 70,000 tons and a water depth of 12.5 m	4 container terminals with berths for vessels of 100,000 DWT
5 additional berths each with a capacity for vessels of 150,000 DWT	One rail-connected terminal for general cargo and bulk can accommodate vessels of 10,000-20,000 tons	Ship length of about 150 m possible
The largest berth has a capacity for vessels up to 250,000 DWT		

Developments Expected in Cargo Throughput

The Chinese ports in the region already have relatively adequate logistical conditions. However, the anticipated development in cargo volumes is also strongly related to the hinterland development in this case. Subsequently, the development forecasts are summarised, have been mentioned in part by the port operators themselves who follow a very optimistic approach.[43]

Fangchenggang

- Increase to 136 million tons by 2015.

Beihai

- After expansion of the port: 10 million tons.
- Container handling expected at the end of 2013: 100,000 TEU.

Qinzhou

- Total capacity should be 500 million tons in future

Such expected throughput figures appear to be quite overdrawn from today's perspective.

While PR China's exports still have seen an increase of 14.7% in April 2013, the increase dropped to only one per cent in May 2013 in a year to year perspective. Experts had expected a positive quantity of 7.3%. In June 2013, exports actually fell by 3.1% compared to the same month the year before. The collapse was unexpected since experts had forecasted a significant increase in exports of three to four per cent before-

[42]International Maritime Information Website, www.simic.net.cn, 01 July 2013 and interview results.
[43]International Maritime Information Website, www.simic.net.cn, 01 July 2013 and interview results.

hand. It has been the first export deficit of PR China since January 2012.[44] Many indications point to a further slowdown in the export sector. In light of fear of recession and market saturation tendencies, the times when the growth of Chinese export figures have continuously been well above the rate of economic growth appear to be all over. While still expecting a positive balance in future, we assume that the foreign trade figures will meander around the economic growth trends in the coming years. Therefore, the cargo throughput to be expected in the ports has been based on forecasts for future economic growth in PR China.

Since 2008, "The Conference Board" publishes forecasts on economic development. The Global Economic Outlook 2013 presents projections for 11 major regions and individual economic analyses for 33 industrial countries and 22 developing and emerging countries for the years 2013, 2014-2018 and 2019-2025. The projections for the expected economic growth are based on a supply-side growth model which is reflecting the resource use of labour and capital as well as taking productivity gains into consideration.[45]

For the Chinese economy, this results in a baseline scenario of 5.8% in average growth for the years 2013-2018 and 3.7% per year in the following period until 2025. The baseline scenario, as well as a pessimistic scenario, has been considered for the development of cargo throughput in the ports. Reference to an optimistic scenario was only made in cases where due to local or regional characteristics a particularly positive development may be expected (e.g. cargo mix in Qinzhou port). For the expected throughput in the years 2026-28, the percentage figures of the year 2025 were carried forward.

[44]Spiegel Online, http://www.spiegel.de/wirtschaft/unternehmen/chinas-exporte-und-importe-im-juni-ueberraschend-eingebrochen-a-910318.html, 10 July 2013.

[45]See Vivian Chen, et al. Projecting Global Growth; The Conference Board, Economics Working Papers, EPWP #12 – 02 November 2012; see http://www.conference-board.org/pdf_free/GEO2012_Methodology.pdf., 15 July 2013.

Table 3: Expected Economic Growth

	2013 - 2018			2019 - 2025			
	GDP Growth in Optimistic Scenario	GDP Growth in Base Scenario	GDP Growth in Pessimistic Scenario	GDP Growth in Optimistic Scenario	GDP Growth in Base Scenario	GDP Growth in Pessimistic Scenario	Distribution of World Output 2025
United States	2.5	2.3	2.1	2.4	2.0	1.6	18.3%
Europe*	1.5	1.2	0.8	1.6	1.3	0.9	17.4%
of which: Euro Area	*1.4*	*1.1*	*0.8*	*1.6*	*1.3*	*1.0*	*12.0%*
Japan	1.3	0.9	0.5	1.2	0.9	0.7	4.8%
Other advanced**	3.5	2.6	1.7	2.5	1.8	1.2	7.3%
Advanced Economies	**2.1**	**1.8**	**1.4**	**2.0**	**1.6**	**1.2**	**47.8%**
China	8.0	5.8	3.7	4.9	3.7	2.5	22.7%
India	5.7	4.7	3.6	4.5	3.8	3.2	8.2%
Other developing Asia	6.4	5.0	3.6	5.5	4.4	3.2	4.9%
Latin America	3.9	3.2	2.5	3.4	2.8	2.2	7.1%
Middle East	2.7	2.5	2.3	2.5	2.3	2.0	2.5%
Africa	5.1	4.1	3.2	5.0	4.1	3.2	2.6%
Russia, Central Asia and Southeast Europe***	3.1	2.1	1.2	2.1	1.5	1.0	4.1%
Emerging and Developing Economies	**5.7**	**4.4**	**3.0**	**4.2**	**3.3**	**2.5**	**52.2%**
World Total	**4.0**	**3.1**	**2.2**	**3.3**	**2.6**	**1.9**	**100.0%**

*Europe includes all 27 current members of the European Union, as well as Iceland, Norway, and Switzerland.
**Other advanced includes Canada, Israel, Korea, Australia, Taiwan, Hong Kong, Singapore, and New Zealand.
***Southeast Europe includes Albania, Bosnia & Herzegovina, Croatia, Macedonia, Serbia & Montenegro, and Turkey.
Source: The Conference Board Global Economic Outlook 2013, May 2013 update

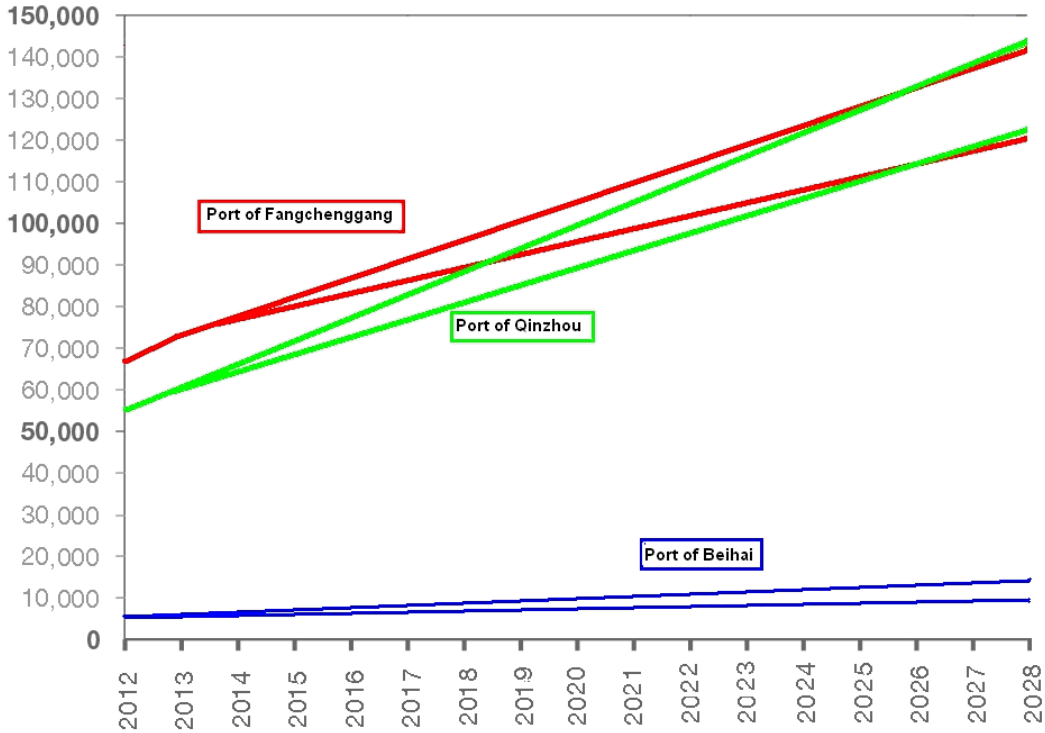
This leads to the following prospects for the Chinese PBG ports considered:

B cargo handling in the port of Fangchenggang will increase continuously. The installed capacity of 100 million tons will not be reached before 2020. By 2028, a throughput of 140 million tons can be expected while realising further extensions.

Due to its location, expansion plans and commodity structure, the port of Qinzhou is expected to grow continuously better than the bulk cargo port in the neighbouring Fangchenggang. Against this background we expect a cargo volume of just less than 150 million tons by 2028. As the port operator has prospected a three-fold higher and above throughput, the port's expansion capacity will not (yet) be fully used in the medium term.

The Port of Beihai will show more of a limited growth in its development. The installed capacity of 10 million tons will only be required continuously in about ten years. In the long run, it will remain operative as a city and niche port.

Figure 8: Cargo Volume Development predicted for the Chinese PBG Ports (in tons)



Development of the Hinterland Transport

As already mentioned, there are substantial investment needs in the development of hinterland transport throughout the PBG region. Such development will be crucial and decisive for the extent to which the region is becoming a competitive location for business. The logistic handling in the ports is already performing in a relatively systematic way, but without the corresponding modal or inter-modal transport linkages, the supply chain cannot be served to the degree required. The current state of the network is as follows:[46]

Fangchenggang

- Railways have a share of 50-65% in the hinterland transport and a capacity of 60 million tons per year;
- 3 rail lines (two high-speed lines) to Nanning and two lines to other cities in the autonomous region Guangxi;
- 70,000 TEU of containers are transported by rail per year;
- Road transport used to have a share in the hinterland traffic of about 10% in former times, but after the construction of motorways the proportion has increased to 30%;
- Barge transport (especially of coal) has a share of about 10%.

[46]International Maritime Information Website, www.simic.net.cn, 27 June 2013 and interview results.

Beihai

- Complete, albeit extensible, transport networks within the autonomous region of Guangxi and the rest of Southwest China are available;
- Capacity increases in freight traffic are conceived after completion of the motorways to Chongqing, Changsha and Qunmin in Southwest China and the Guanxi coastal highway;
- The construction of the Nanning-Beihai high-speed railway line was completed in 2012;
- The airport of Beihai has reached a capacity of 140 flights, connecting every major city of the country and Hong Kong regularly.

Qinzhou

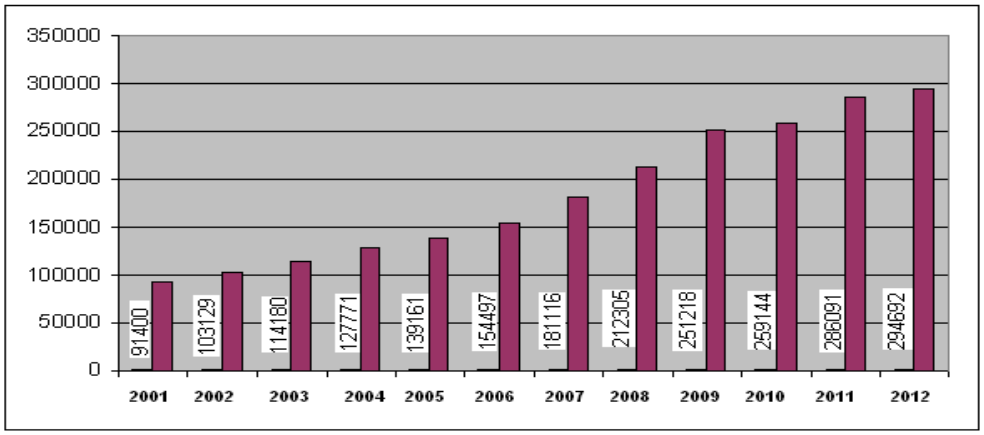
- The port is connected via a pipeline;
- A railway link to the refinery is in operation and another one to the Free Trade Zone is under construction. The railway capacity is still limited by not keeping pace with the expected growth rates in cargo to be handled;
- The Free Trade Zone is connected to a total of six motorways;
- The hinterland development is under the authority of state ministries, but also the provincial governments are constructing highways.

Viet Nam

Handling Capacity

According to calculations by the Vietnam Maritime Administration about 286 million tons of freight (+10% to the previous year) was handled in 2011. This trend has levelled off in 2012.

Figure 9: Combined Cargo Volumes of all Vietnamese Ports 2001 – 2012 (in tons)



A master plan for the development of the Vietnamese port system was adopted in 2009. The plan predicts a doubling of volume every five years to the amount of 500 million up to 600 million tons by 2015 and to between 900 and 1,000 million tons by 2020.

The largest traffic volume is attributed to the region of Ho Chi Minh City, but the ports of the economic region of Hanoi are considered to be in a catching-up process. However, low water depths are limiting the access for shipping, especially since no regular dredging works are being executed to maintain the navigational depths. Currently, vessel traffic suffers from silting of the fairway at the port Dinh Vu at Haiphong, about 100 km east of Hanoi. Due to neglected dredging the access capacity of the ships is reduced from 20,000 to 10,000 DWT. There are similar problems in Can Tho port in South Viet Nam.

Current Cargo Volumes

The following table, depicted by Germany Trade & Invest, gives an overview on cargo handled in the Vietnamese seaports by type and year.[47]

Table 4: Cargo Volumes in the Vietnamese Ports 2010-2012

	2010	2011	2012	Change 2012/11
Total Cargo Volume (in Mio. t)	260	286	315	10%
Transit Cargo	30	44	55	25%
Liquid Cargo	52	51	56	10%
Dry Bulk/Break Bulk	105	110	115	5%
Container	73	81	89	10%
Container (in Mio. TEU)	6,5	7,2	8,6	19%
Incoming Vessels	119.744	130.002	143.002	10%

Source: Germany Trade & Invest, 2012.

Obviously, the number of ship arrivals is continuously increasing. Basically, the highest growth rates are emerging for transit cargo and in the container traffic. Focussing at the different ports of Danang, Haiphong and Ho Chi Minh City, the following pattern becomes apparent with respect to container handling.[48]

[47]See Germany Trade & Invest, March 2012, http://www.gtai.de/GTAI/Navigation/DE/Trade/maerkte,did=530178.html, 20 May 2013.

[48]Compiled from statistics of the Vietnam Seaports Association (www.vpa.org.vn, 20 May 2013) and the Port of Saigon (www.csg.com.vn, 20 May 2013), plus interview results.

Table 5: Container Volumes in Vietnamese Ports 2009-2012

	Danang	Haiphong	Ho Chi Minh City
2009	69,720 TEU	815,831 TEU	3,563,000 TEU
2010	89,199 TEU	956,646 TEU	4,110,000 TEU
2011	114,373 TEU	1,018,000 TEU	4,530,000 TEU
2012	144,555 TEU	990,000 TEU	4,889,000 TEU

Source: Refer to footnote 50.

Cargo Split

In 2012, the following import goods (relative to total imports) were handled in Vietnamese ports: chemical products 15.8%, electronics 11.4%, machinery 11.0%, oil 10.6%, food products 4.9%, other 46.3%. The cargo split in export goods has been as follows: food products 14.6%, textiles/clothing 13.2%, Oil 7.1%, electronics 6.8%, raw materials 6.0%, other 52.3%.[49]

Vessel Calls

It is most likely that the international shipping companies will be further interested in the Vietnamese ports in future. Some shipping lines will do both, investing in the expansion of the ports, as well as offering more direct regular services to Europe and the United States if increasing transport demand is given. Major shipping companies in this context are Maersk Line (Denmark), Hanjin and Hyundai (Republic of Korea), CMA CGM (France), OOCL (Hong Kong), APL (Singapore), Evergreen (Taiwan), Nippon Yusen Kaisha (Japan), MSC (Switzerland) and Hapag-Lloyd (Germany).

The Vietnamese Vinalines (Vietnam National Shipping Line) is the country's largest and most important shipping company and the main port operator. Vinalines operates 130 vessels with a total capacity of 3.1 million DWT. The corporation reported sales of 1.2 billion USD and a profit of 3 million USD in 2011. The port terminals belonging to Vinalines handled 64 million tons of cargo (+10% to 2010).

However, the above figures should be treated with great caution. Recent news reveal that Vinalines has never operated profitably in its core business due to poorly thought-out investment plans, the purchase of overaged vessels, the accumulation of hidden debts and the mismanagement and self-enrichment of the former management personnel.[50]

Vinalines' newly appointed Deputy General Director, Mr. Le Anh Son, has declared in this respect that: "Without the restructuring, Vinalines would face high risk of bankruptcy. Currently, the group is insolvent and the banks are not in favour of extending the debt payment schedule for the corporation".[51]

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[49]See Germany Trade & Invest, May 2013, http://ahk.de/fileadmin/ahk_ahk/GTaI/vietnam.pdf , 08 July 2013.
[50]See http://www.amchamvietnam.com/5558/the-unlearned-lesson-vinashin-vinalines-and-other-soes-inefficiencies/, 10 July 2013.
[51]See http://www.dtinews.vn/en/news/018/28407/---minister-slams-vinalines-for-tardy-restructuring-process.html , 10 July 2013.

Against this background, as early as 2012, the Vietnamese government demanded from Vinalines a concise plan for disposing the company's shares in three terminals in the Cai Mep-Thi Vai port facility in southern Ba Ria-Vung Tau Province. These terminals are the Cai Mep International Terminal, SP-PSA International Port and SP SSA International Container Terminal jointly operated by APM Terminals BV, Denmark, Singapore's PSA International and the American SSA Marine. It is reported that Vinalines holds a 51% stake in each of these terminals. The low financial capacity also meant the revocation of new port projects already trusted to the company, like the port development project Van Phong in the central Vietnamese province of Khanh Hoa.[52]

Size of the Ships

Danang

- Tien Sa Seaport allows a potential draft of 11 m for tankers of up to 45,000 DWT and container ships of up to 2,000 TEU
- Song Han Terminal is 12 miles (22 km) long with a water depth of 6-7 m for vessels up to 5,000 DWT

Haiphong

- Draft: 14 meters
- Vessels with a length up to 200 meters
- Ship sizes of 50,000 to 100,000 DWT possible

Ho Chi Minh City

- Draft: 13.5 meters
- Vessels up to 50,000 DWT possible.

Developments Expected in Cargo Throughput

The total container throughput of all the terminals in Haiphong is estimated at 2.5 million TEUs. Containerisation is valid for about 50% of all cargo. A further increase of containerisation up to a share of 70% is considered feasible, as continued strong growth is expected for this market segment. In the river deltas in HCMC, ten terminal extensions and new port projects are planned. Thus, the cargo handling capacity in the area shall be increased from 15.7 million tons to 28 million tons by 2020. A total of five container ports are built in close proximity to each other in the Cai Mep region at the delta of the Saigon River. The cargo traffic of the city terminals of HCMC is planned to be shifted to them in the long term.

Beyond some preparatory construction work in 2009, the international transhipment port Van Phong in Central Viet Nam exists so far only on paper. SK Engineering from South Korea was the contractor. Since May 2011, the project of the state owned enterprise Vinalines was officially put on hold due to financial constraints. The port with a natural depth of about 20 m was said be able to accommodate container vessels of 6,000-9,000 TEU in the first project stage. Vinalines is now looking for a new project partner. For-

[52]See Vietnamese Investment Review, 07 | 24 June 2013, "Vinalines' Van Phong port dream torpedoed".

eign companies in Viet Nam may have 100% of shares in a terminal operator.[53] In Central Viet Nam, the city of Danang also seeks financial participation in the development of port infrastructure from outside. The facilities need to be upgraded and modernised according to reports by the Danang Port Holding.[54]

A master plan for the development of the Vietnamese port system was adopted in 2009. This predicts a doubling of the volume every five years up to 500 million to 600 million tons by 2015 and up to 900 to 1,000 million tons by 2020.

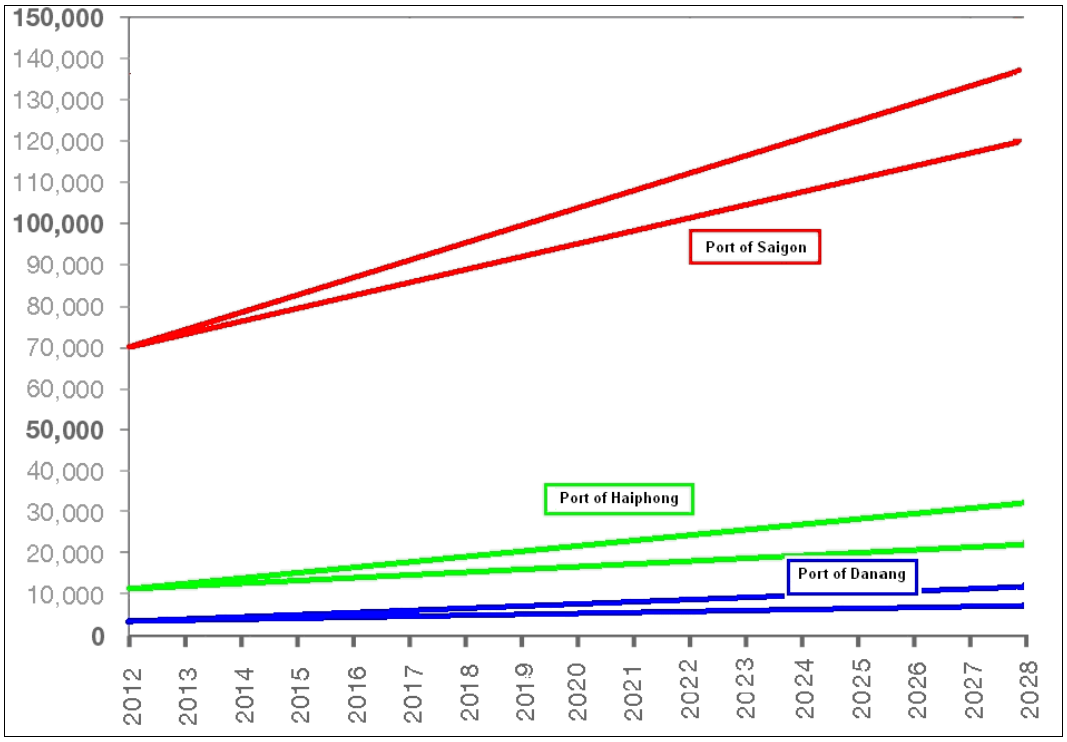
Strong increases in throughput figures in the last decade have led to this very optimistic outlook. It is undisputed that the sector will have a growing need for further investment in future. The primary focus here should be directed to the modernisation of ports and hinterland connections. The above-mentioned master plan allots a total investment of 20-25 billion USD until 2020. The Vietnam Maritime Administration is hoping that such funds can be raised especially from private investors and through development cooperation. A share of only 12-15% by public expenditure is projected. A focus on the modernisation of ports and hinterland connections is given.

The total volume of the expected medium-term development in cargo throughput as well as the prospects for sourcing capital stocks for the expansion is seen as doubtful by us. Based on the methodology already used for the Chinese ports, the throughput of all the Vietnamese ports of about 300 million tons today is estimated to increase to up to 750 million tons by 2028. This corresponds to slightly a bit more than one-third of the expected figures in the master plan. Figure 10 reflects this development for the ports considered in Viet Nam.

[53]See Germany Trade & Invest, March 2012, http://www.gtai.de/GTAI/Navigation/DE/Trade/maerkte,did=530178.html, 20 May 2013.

[54]See Germany Trade & Invest, VDMA 2013 http://bub.vdma.org/documents/105686/1245232/%20Konjunkturbericht_Bauindustrie_Vietnam_2013-04.pdf/148fd64a-a2cc-4ca2-8b19-4771eed71815, 06 June 2013.

Figure 10: Cargo Volume Development predicted for the Vietnamese PBG Ports (in tons)



The port of Ho Chi Minh City continues to keep its primary position in the country. Due to the relocation of urban terminals and the local competition, we expect only a doubling of the throughput within the next 15 years to 140 million tons in total. The capacity of the planned and realised terminal projects is sufficient for this.

The port of Haiphong has the potential to triple its cargo throughput and to achieve a stable level of 30 million tons plus at the end of the next decade. The very ambitious expansion plans leave enough capacity for this.

The port of Danang will double its turnover in the next decade and reach ten million tons in 2028. Thus, a further terminal development should be the subject of discussion no later than in 2020.

Development of the Hinterland Transport

There are major problems in the logistics networks as most Vietnamese ports do not have modern handling equipment and are insufficiently connected to the hinterland. Based on performance data collected by the World Economic Forum, the port system in Viet Nam is only ranked 111 out of 142 countries studied. Experts recommend to improve the situation by focussing on a few ports at strategic nodes (Ho Chi Minh City and Hanoi), instead of spreading the limited funds. Both the misconnection to the railway network and the inadequate road quality has been criticised for years. Above that, there is a lack of capacity of bridges, especially in Danang and the region Thi Vai – Cai Mep. Currently, most containers are transported by feeder vessels to and from the main hubs of Singapore and Hong Kong. These feeder vessels can

navigate upstream the rivers and therefore deliver their cargo closer to the industrial zones. The poorly connected major ports currently offer no adequate alternative.

The importance of RoRo traffic (Roll-on Roll-off) connecting the mainland with the islands of other ASEAN Member States is expandable and such transport could be used more efficiently.[55] However, it would have to be ensured that a steady traffic flow is given and that a stable connection between PR China and Danang is sustained. From Danang, further transport across the neighbouring regions can be organised. This approach provides a relatively fast and, above all, cost-effective alternative in the transport of goods.[56]

In order to accommodate hinterland traffic the (re-)construction of Highway No. 5 for the route Hanoi – Haiphong is planned for 2015. A new highway from Hanoi to PR China is already in existence. The railway from Yunnan to Lao PDR with a gauge of 1.45 m is projected to be expanded, but without the inclusion of Haiphong.

Viet Nam has few functioning links with neighbouring countries by landside. In the northeast of the country this is mainly related to the poor infrastructure. The border to Lao PDR is also difficult to pass because of the mountainous landscape.

The clear advantage of the port of Haiphong is its proximity to the capital and major business centre Hanoi, which is only 100 km away. Since trucks are only allowed to drive at night in Hanoi, all trucks must start in Haiphong in the afternoon hours which correspondingly results in congestion. As the expansion project of Hanoi-Haiphong Highway is described to last several years, a rapid positive relief is not in sight.

The slow road network improvement is considered to be the biggest obstacle to economic growth. Neither rail nor inland waterway transport are an alternative, as in northern Viet Nam the necessary infrastructure network would have to be built up first. All the major logistics centres in the country are far away from possible railway links.

2.4 Competitive Situation of the Selected Ports

Market Shares of the Ports

In Viet Nam, each port usually operates in its regional home market, within its own cargo segment. Due to poor infrastructure, the respective hinterland is relatively well defined and clearly demarcated from the hinterlands of the other ports. Consequently, no significant competition takes place between the ports and each port has a market share of 100% of its hinterland in his cargo segment. With regard to the hinterland, there is also no competition with ports of neighbouring countries.

Should there be signs of apparent competition, it can be noted that this refers to terminals shifted by one and the same company, so it is difficult to speak of actual competition. An example for this is the shipping

[55] Master Plan on ASEAN Connectivity, ASEAN Secretariat, Jakarta, January 2011.
[56] Philippines-China-Vietnam Roll on-Roll-off (RoRo) Feasibility Study – Research Education, and Institutional Development Foundation Inc., Manila, September 2010.

line Vinalines, which operates numerous other terminals besides Haiphong. In 2012, the northern ports (including Haiphong) have suffered a decline in cargo volumes by 2.6% to 2.1 million TEU, after a growth of 11% in 2011.

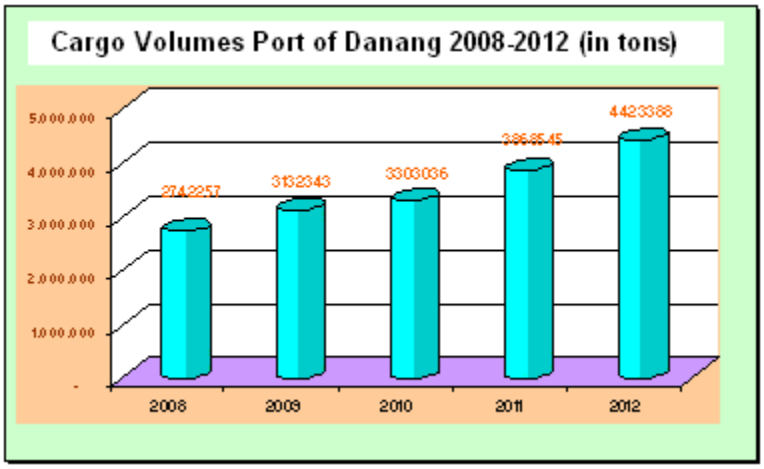
Competition usually only occurs between terminal operators *within* the ports. This, however, is generally limited due to the state's participation in the various companies. However, competition is also not of particular importance for the present study as each of the respective ports is considered as one entity.

An example of the changing competitive situation within a single Vietnamese port is resulting from the construction of the new terminal Lach Huyen. Nine years after its conceptual design, construction work started at Haiphong International Gateway Port Container Terminal in Cat Hai district in April 2013. A total investment of 2.5 trillion VND (120 million USD) is being funded by the Japan International Cooperation Agency (JICA). The new terminal located at the mouth of the Lach Huyen will prospectively be completed in 2016. It is expected that cargo to be handled by this port, will have the origin in or destination of northern Viet Nam, the north-eastern part of Lao PDR and South China.

The port of Danang has reported continuous growth in the last years. However, the total volume of 4.5 million tons does not reflect the full potential yet. With improved hinterland connections and a further development of the corridor to the south of Lao PDR, northern Thailand and Myanmar, there could be a surge in cargo given. However, this can hardly be imagined for the next 15 years.

Since the competitive situation has limited influence on the cargo development of the port of Danang, it can only be explained by economics and population growth. Even if Central Viet Nam is the region with the lowest population density in the country, its population is increasing due to high internal migration. Even without additional investment beyond the projects already planned by the port itself, at least the doubling of the cargo volumes within the next ten years is being anticipated.

Figure 11: Trends in Cargo Handling in Danang



The highest population growth is expected particularly for the southeast of Viet Nam by the year 2022. This counts for both internal migration as well as natural population growth. The ports in the Mekong Delta and on the Saigon River will benefit from this development.

In 2012, a transhipment volume of 200,000 TEU was recorded in Ho Chi Minh City. In 2013, there were no transhipment movements reported so far. Market participants expect that this will not change during the last months of 2013 and in the coming years. Consequently, it can be assumed that the transhipment market share will remain at 0%.

Since the Chinese ports of Beihai, Qinzhou and Fangchenggang are all operated by the Guangxi Beibu Gulf International Port Group Co. Ltd., there is no competition among them. The ports are solely regarding the supply of Guangxi and the neighbouring north-western provinces by sea.

Figure 12: Internal Migration by Regions in Viet Nam

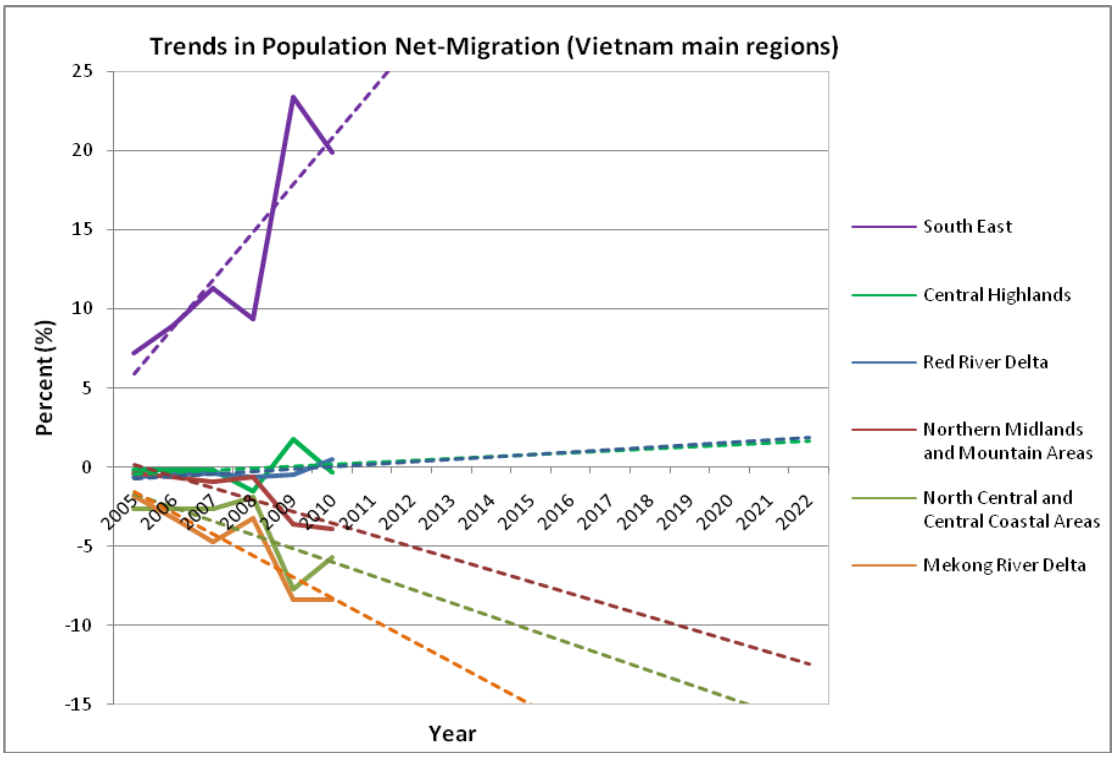
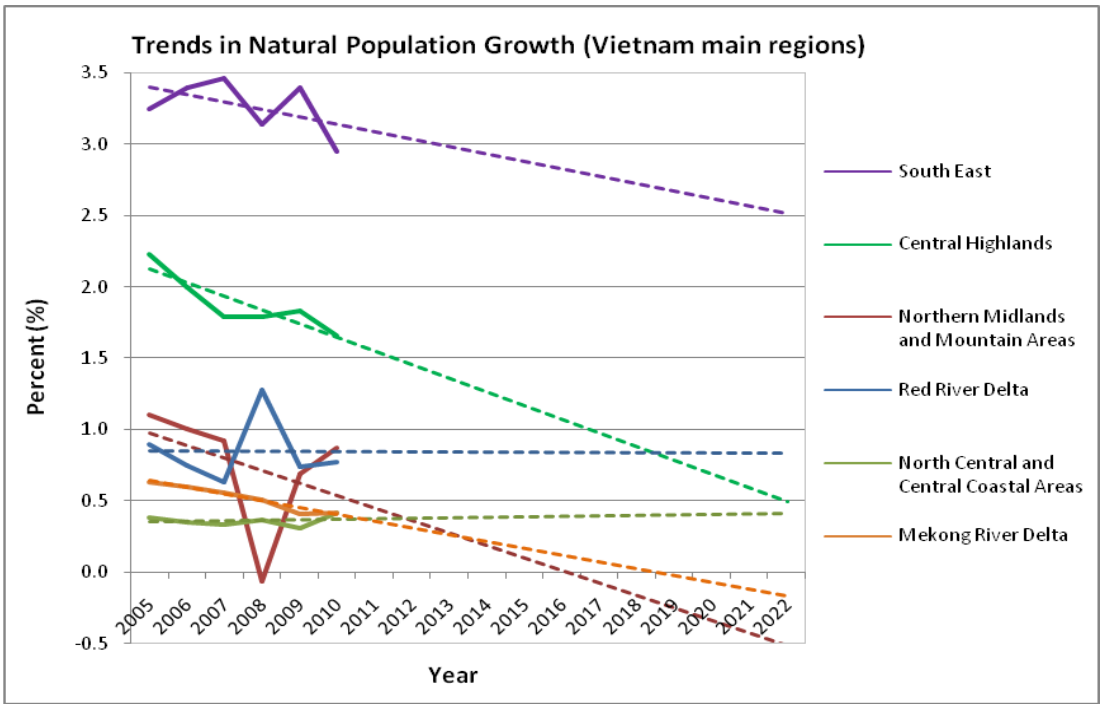


Figure 13: Natural Growth of Population by Regions in Viet Nam



National Competition

As described in the previous section, there is no competition given between the selected ports. Therefore, the ports in Viet Nam are characterised by a strong regional presence. The port of Haiphong is the gateway to North Viet Nam, while the port of Ho Chi Minh City and the new terminals in the Cai Mep-Thi Vai Region bundle concentrate the traffic in the south. The river systems of the Mekong/Saigon River and Red River foster these strong natural port-hinterland relationships. Thus, it does not come to cross-regional competition. However, a cut-throat competition within the regional port clusters is being observed. This relates particularly to the south of the country, where the terminals located in and around HCMC can be described as one port. Here, decreasing demand has provoked a local price war between the inner-city terminal in Ho Chi Minh City, and the container terminals on the lower reaches of the Saigon River.

In May 2013, the Vietnam Seaports Association (VSA) reported that the container terminals in the south of the country are struggling for survival due to global uncertainties and in the face of declining demand and growing competition from the neighbouring terminals in Ho Chi Minh City. According to a new report released by the People's Committee of the Ba Ria-Vung Tau province, several container terminals at the Cai Mep-Thi Vai area currently operate with a mere 15% of their given capacity, a figure that reflects the plight of the port operators. Previously the Maritime Adviser Truong Dao Thai Bui of Drewry Maritime Asia reported that the southern container terminals with a total of 4.9 million TEU reached only 6.8% in growth in 2012, after a growth of 9.6% in 2011.

Having in mind the manner in which the container terminal capacity has been expanded in the south of the country between 2010 and 2013, Truong Dao Thai Bui believes that a much higher growth was ex-

pected by all the port operators. The Vietnam Shipping Report is cited as explaining that only two of the six cluster terminals in the Cai Mep-Thi Vai region are experiencing regular vessel calls. VSA reports that all terminals in the region offer their services far below a reasonable profit margin, simply to "buy business".[57]

According to statements of management personnel in the sector, there is also no evidence that freight volumes will increase in 2013. Against this trend, a sixth terminal has been installed with an investment of 12,891 billion VND (619.7 million USD). The Cai Mep-Thi Vai International Container Terminal (Capacity: 700,000 TEU) was inaugurated in January 2013.[58]

Competition with Regional Hub Ports

PR China

As explained in the previous sections, the (potential) competition from the Vietnamese ports is limited to the transhipment market. The situation is similar with regard to the three ports of the Guangxi Beibu Gulf International Port Group Co. Ltd. The only theoretical competitor concerning the current hinterland transport would be the port of Zhanjiang. However, in order to allow competition, it would need a respective decision by the Chinese government that delimits the reference spheres of the strategically important port operating business from each other today.

Whether the plans of the Guangxi Beibu Gulf International Port Group Co. Ltd. are realistic to establish its three major ports as a hub for, inter alia, the supply of Viet Nam, is difficult to assess. This business idea, denoted by the Chinese side as a possible "cooperation" with Viet Nam, is not in the interest of the neighbouring country. The Vietnamese side would try to avoid this option in order to keep the port terminals in the south of the country from competition. Currently, the share of the Beibu Gulf ports in the transhipment market is almost 0%. One possibility to change this, from the Chinese side, is to selectively redirect Chinese shipping companies towards these ports. But this can currently not be expected.

As already mentioned, the Vietnamese port terminals have lost their shares in the transhipment market. A reversal of this trend would only be possible with very aggressive pricing policies. This unfavourable development refers to the unfavourable market situation of increasing capacities and stagnant demand.

After slow but steady growth since the global financial crisis, several Southeast Asian ports suffered decline in 2012 while others flourished according to data of Container Management[59]. While the Port of Singapore defended its regional position and reported goods growth in 2012, other Southeast Asian ports have not been as successful. In the following, the main competitors on the transhipment market are briefly described.

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[57]See Vietnam Shipping Report, Q1/2013, p. 59ff (www.businessmonitor.com) 26 July 2013.
[58]See Port market with a focus on Asia, Jason Chiang, Manila, February 2013.
[59]Container Management, June 2013, www.container-mag.com, 05 July 2013.

Singapore

PSA Singapore Terminals (the flagship of PSA International Pte. Ltd.) reported in 2012, a 6.4% increase in traffic volume over the previous year and recorded a historic all-time high of 31.26 million TEU containers transhipped. Nevertheless, Tan Chong Meng, CEO of PSA International, described 2012 as "another challenging year for the shipping and port industry" and further stated, "global trade growth continued to be weak, undermined by volatile market conditions, including the ongoing sovereign debt crisis in Europe, sluggish recovery of the American economy, turmoil in the Middle East and the slowdown of economic growth in PR China."[60]

In order to guarantee the immediate future, the Maritime and Port Authority of Singapore (MPA) undertook a comprehensive review of port charges and tariffs to ultimately ensure improvements in Singapore's competitiveness as hub port in the medium term. As a result, it has simplified and rationalised the dues structure and created a number of new incentive systems.

In July 2012, PSA awarded a contract to Singapore Technologies Kinetics and Shanghai Zhenhua Heavy Industry Company (ZPMC) to develop a prototype for an energy-efficient, hybrid automated guided vehicle (AGV). Together with Cargotec a common navigation system for these vehicles is being designed. Corresponding pilot studies will be carried out from 2014 to 2015.

In October 2013, the company introduced a 2.8 billion USD Project to further expand (phases 3 and 4) its Pasir Panjang Terminals (PPT) by increasing the port's capacity to 50 million TEU. At the 6 km long quay, which offers a depth of 18 m, the next generation of container ships can be handled easily.

But the hub port focus should also be on the more remote future. MPA and the Singapore Maritime Institute (SMI) have offered a one million USD award for the "Next Generation Container Port'. A team from the National University of Singapore, the Shanghai Maritime University and ZPMC won the award with a proposal for an innovative two-storey container movement concept promising higher throughput, efficient use of space, and high labour productivity.

Thailand

The country is expected to play an important role in the ASEAN Economic Community (AEC) which will officially become operative in 2015. In 2012, the government recommended an investment of 120 billion THB (3.8 billion USD) for the third phase of expansion of the port of Laem Chabang. With its location near the border with Myanmar, Lao PDR, Cambodia and Malaysia, an increase in the import/export cargo handling is expected at this site. In 2012, almost 6 million TEUs were handled at the seven existing container terminals. The recommended super-post-panamax development would add another 8 million TEU, increasing the port's annual capacity to 18.8 million TEU in total. In preparation for the port development, the expansion of the road network to Laem Chabang, a single rail transfer operator (SRTO) project to

[60]PSA Container Throughput for 2012, Press Release of PSA International, Singapore, 11 January 2013.

improve the railway network connecting the port terminals and a project for the development of cargo transport by inland waterway barges, is being carried out.

Indonesia

The state-owned terminal operator PT Pelabuhan Indonesia III (Persero or Pelindo III) has ordered 10 container gantries and 20 automated stacking cranes (ASC) with an estimated value of 130 million USD for the first automated container terminal in the country. The government has launched a nationwide freight transport programme to improve the movement of goods through the hinterland and by waterway.

Malaysia

The Malaysian container handling showed a growth of 2.82% in 2012, to a total of 20.8 million TEU. In early 2013, Port Klang passed the mark of 100 million tons in cargo handling, the first Malaysian port to do so. This was possible as, for the first time, more than 10 million TEU were handled in 2012, representing a growth of 4.1% to 2011. Both Westport and Northport in Port Klang are strengthening their capacities. The expansion of the Port of Tanjung Pelepas, (PTP) to a quay length of up to 5 km with 14 berths for the handling of 18,000 TEU Maersk vessels, will increase the port's capacity by additional 10.5 million TEU (or 25%).

The port of Penang sees opportunities for growth and will expand its capacity to 2 million TEU per year. On the east coast of Malaysia, overlooking the important sea lanes through the South China Sea, the deep-sea port Kuantan Port Consortium (KPC), a subsidiary of the stock listed company IJM Berhad, has created port facilities stretching over 4 km, including three “dedicated” container terminals. The handling of cargo has grown steadily during the years since the privatisation of the port in 1998. In 2012, 16.1 million tons of cargo including liquid bulk cargo, general cargo and containers were handled, showing an increase of 6% to the previous year. For 2013, a cargo volume of 20.5 million tons is expected, which means an increase of 4 million tons or 27%. In cooperation with the Malaysian government, KPC has started an expansion of the port, including the construction of a new deep-sea terminal with a capacity of 1.5 million TEU for larger vessels of up to 200,000 registered tonnage. It is expected that the terminal will be put into operation in 2017.

2.5 Proposals on New Cooperation

General Remarks

Cooperation is based on the intent of two or more partners in a field of common interest to work together for mutual benefits. For a successful development of cooperation, a common interest should always go in line and resulting benefits should equally fall to the partners. It has been proven to be of advantage to start first with a small cooperation circle and to include further partners over the course of successful cooperation.

New cooperation in the Pan-Beibu Gulf region could follow the EU's example and commence with clear mutual cooperation objectives, with equal advantage sharing and with an at least initially small number of participants. In addition, the cooperation objectives should not only be desirable but also feasible, and the target-oriented procedures should be reached by mutual agreement between the partners. Furthermore, the degree of target achievement should be assessed regularly and effectively following mutual agreement.

Such preconditions are not easy to accept for some countries in the region, as

- global agreements with many participating countries or organisations are preferred, which then are proclaimed with great publicity. However, the execution of the agreements will be trusted to cadres who neither identify with the objectives, nor have any motivation for implementing them successfully;
- the success of such regional cooperation is hampered by the fact that in some countries of the region, the mutual confidence between people, businesses, government agencies and states is still low and thus any cooperation, in which a certain amount of trust between the partners must be given, is being prevented or at least complicated;
- it must be noted that the success of a cooperation will also be hampered or prevented, when the benefits of cooperation largely fall to a single partner or when one partner strives for dominance over the other partners;
- a kind of pick-up business mentality was generated in the recipient countries by uncoordinated development assistance of various donors and at times it is expected that all the costs incurred regarding activities initiated from outside are covered by the donor side.

Nevertheless, some partnerships may be proposed which can take different, more or less formal forms.

One aspect of the present study was to focus on a pre-selection of Chinese and Vietnamese ports. However, for most cooperation opportunities suggested below, such a focus is not necessary due to substantial or operational reasons. Therefore, it is explicitly proposed to widen the scope of cooperation towards all ports in the PBG region in the further course of the project or in follow-up projects, provided there are no political or institutional constraints. For example, a (economic) policy restriction could be, that one wishes to exclude a port because of its already existing large market power in facing the fear that it might benefit more than other cooperation partners.

Cluster Formation

As described above, there are already some approaches to cooperation in the Pan-Beibu Gulf region. The Guangxi Beibu Gulf International Port Group Co. Ltd. especially, is seeking for strategic partnerships, both in the PBG region and outside the region to strengthen its competitive position. For the region of Southwest China, possibly with the involvement of Viet Nam, the Port Group could serve as a nucleus for a maritime cluster formation in the region.

In economics, the meaning of the term “cluster” is comprehended as the relationship of actors who are interrelated by similar technology and market reference in a region defined by economic geographical limits. The actors are, in the majority, commercial companies that complement each other, but also compete with each other. In addition, there are academic institutions, associations and organisations as well political representatives.[61] The objectives are first of all very general and abstract:

- Strengthening the competitiveness of the enterprises with regard to regional and international markets;
- Increase of the regional value added;
- Securing and creating sustainable jobs;
- Promotion of technology transfer between science and industry;
- Development of innovative projects;
- Initiation of cooperation projects and expansion of existing networks;
- Strengthening regional competences.

Specifically, a "maritime cluster" for the region should strive towards cooperation between the various companies and organisations in the sector in order to create an integration of services and an integrated logistics network. Here, the term “maritime” is not only to be meant in the narrow sense, i.e. in the sea transport and port-related sense, but also in a broader sense. That means the cluster should comprise companies from the fields of logistics, inland transportation, education and training, policy and research as well as shipping companies and the port industry.

As already described in existing studies on the PBG region, there is a problem in the lack of a holistic strategic thinking with regard to the ACPBG development. Companies and even government organisations often reflect only their business environment and do not establish relationships beyond their specific work spheres. This in turn leads to fragmentation of the port and logistics sector and its infrastructure. Talks and interviews in the region have repeatedly shown that the companies do not feel responsible for the layout of infrastructure development, but remain confident that government agencies will provide it correctly. Thus the creation of a formal cluster could contribute to an integration of different interests. It could also assist in the development of an overall concept for the regional ports, port-related logistics and service industries, as well as hinterland transport.

[61]According to: Maritime Cluster North Germany, www.maritimes-cluster.de, 15 July 2013.

Skills Development

In the field of skills development, there are various ways for creating new collaborations.

With regard to **exchange of information and experiences,** regional conferences with invited speakers from within the region lecturing on specific topics can be means of regular exchange of experiences. Topics for such conferences or meetings could include:

- International cooperation in the field of SAR Search and Rescue - possibilities of coordinated cooperation in neighbouring ports and even between states. Exchange with other international organisations in the field of SAR, such as from the U.S. or from the North Sea countries that are already cooperating closely with each other in this field.
- International/regional cooperation on the implementation of environmental protection laws and conventions as well as on the development of environmental guidelines specifically for the entire PBG region or parts of it. For this purpose, speakers may be invited from HELCOM (Baltic Marine Environment Protection Commission) to explain how such cooperation could be implemented.
- Formation of regional clusters: this idea could be elaborated on joint workshops. External speakers from existing clusters, alike the Maritime Cluster Northern Germany or the *Cluster Maritime Luxembourgeois,*[62] may assist in this case.
- Exchange of information in the field of transport documentation and data exchange is another topic for workshops and conferences. In the field of maritime transport, there are uniform documents and formats that can be exchanged with each other. In workshops or conferences, facilitating regional cross-border traffic could be discussed and "Green Papers" for political decision makers could be developed. When participants from different countries and sectors, such as from ports and logistics and transport companies, work together on drafting these papers, proposals may be realised which take into account the interests of all process stakeholders.
- In the area of IT, a common approach to standardised data exchange can be developed in workshops. Individual ports may develop ideas for a comprehensive Port(s) Community System together with port users and hinterland transport operators, warehousing companies, agents and other stakeholders.
- Organisation of thematic Best Practices workshops or conferences. Depending on the subject, participants from the region working in different fields can come together. They can report on tried and tested technologies and procedures in their organisations. Other international speakers from various organisations can also be invited. Such resource persons can share experiences of best practices in their respective organisations and can also provide assistance in the implementation of similar ideas in the region.

[62]More information on this and the following European / German organisations written in italics can be found in the appendix (chapter 7)

In the field of **training,** formal training approaches can be a sphere for wider cooperation. Here, a distinction should be made between local cooperation between neighbouring ports and inter-regional or international cooperation in the training field. Obstacles to the establishment of cooperative training facilities may be that

- the provision of education and training opportunities is, in many countries, a heavily defended sovereign function, for which non-state providers are not welcome;
- business parties expect that the public sector is providing education and training opportunities free of charge;
- maritime training institutions in some countries in the region are underutilised and there is public pressure to use these facilities by the port industry. However, no funding is given for the re-training of lecturing staff from shipping to port training;
- if cooperation with government training institutions is intended and initiated by business parties, these training institutions first require the expansion of training facilities, the acquisition of new training materials and equipment and the hiring of additional staff, but do not want to debate the training strategy and the development of made-to-measure training courses;
- necessary training arises at the lower and middle educational level. The respective trainees in target, often only speak their national language so that transnational training programmes may be mainly offered for participants from the upper educational level.

Nevertheless, there are a wide range of possibilities and opportunities for both, local cooperation between neighbouring ports as well as cross-regional cooperation schemes, such as:

- Establishment of inter-company training centres ,
- Shared use of simulators for training,
- Joint training in the field of maritime search and rescue, naval accidents and response coordination,
- Joint training and exercises for inspectors carrying out port state control,
- Conferences
- Workshops on specific topics.

Local Training Cooperation: For smaller ports closely located to each other, it can be useful to establish a joint training centre. First, certain minimum standards for the training can be fixed and met by such training centres. Local joint training proves beneficial for basic port workers such as equipment operators. It can be extended to training in documentation handling, dangerous goods, ISPS, introduction to the maritime sector, lashing and stowage of cargo and the like.

The advantages for this are obvious. On the one hand, a standardised training would be ensured so that operators could easily work in different ports. On the other hand, a joint training would save resources as not each and every port has to keep training rooms, equipment and trainers, but all of them can be shared. Additionally, these cost savings can in turn provide the possibility of purchasing higher-quality training equipment, perhaps even simulators, i.e. investments that would not be worthwhile for a single port. In

the long run, a consistent training provides benefits also for the port customers as for many problems a unified approach would apply, for example, in the documentation or handling of dangerous goods. Thus, customers who call at several ports must not make themselves familiar with new circumstances every time, but could expect rather standardised procedures.

Cross-regional Training: Cross-regional schemes are best provided for training which require either very high investments or in the case that training demand in the individual ports is limited but regular, and ready to be internationally or nationally standardised. One typical field is education and training in the realm of environment and SAR. Since most of the provisions here are based on international regulations and conventions, standards are already largely given from outside. Again, joint investment can pay off in training facilities in this case.

For example, for training how to deal with oil spills, specific combat devices such as skimmers, booms and boats can be purchased together. In addition, such training can be used to arrange and to drill common approaches into regional emergency responses. In the PBG region, the Memorandum of Understanding on Port State Control in the Asia Pacific region, in short, the Tokyo Memorandum of Understanding (MoU), applies in the field of Port State Control. The Tokyo MoU stipulates the qualification and training requirements for control inspectors. In this field, regional training schemes can also be useful.

Professional Training Centre for Port and Logistics Training: The creation of a sub-regional training centre for port and logistics training should be considered for an identified group of neighbouring ports and for logistics companies active in these ports. They need to be located in the same language or political environment and should have a similar cargo transhipment structure. After analysing the training needs of ports and logistics companies a collaboration in formal training could be installed by establishing a common organisation. The centre's budget should be funded by all participating businesses/organisations and the respective competent authorities in the form of a public-private partnership. One possibility would be the creation of an independent company, in which the users are partners, paying agreed service charges and thus financing the training centre.

The training organisation is under the responsibility and guidance of the financing partner companies. It has its headquarters and a part of its training facilities in a central location and additional local training facilities in the member ports. Continuous, recurrent training requirements are met in the local centres by local trainers supported by, if necessary, trainers from the headquarters. Sporadic training needs can be satisfied by carrying out training either by local and/or centre-fed trainers at the local sites or at the central training centre. Thus, on the one hand it can be ensured that training capacity is available at the ports at any time thereby securing a continuous professional training, and on the other hand, those training needs that require special expertise or special facilities can be covered quickly and efficiently. Furthermore, such an approach ensures that the training offered meets the requirements of the local economy. If this model of cooperation is working successfully, there may be other partners, i.e. ports and logistics companies, to join in, or it may serve as a standard for similar cooperation in other areas of the region.

The particular urgency in the need for training, especially in the region's smaller ports, can best be illustrated by the following example:

Of particular importance for economic exchange in the PBG region is the supply of raw materials to PR China by Indonesia. This includes trade in coal, minerals, but also foods such as bananas. The bulk transport of minerals has been suffering technical-nautical problems since the end of 2010. During this time, five ship losses occurred. The last vessel that sunk was the Harita Bauxite loaded with nickel ore at Obi Island, which came in distress at sea off the Philippines on February 24th, 2013. Only 9 out of 24 sailors were rescued and survived. 4 out of 20 disasters with bulk carriers worldwide in 2010/11, and 66 out of 82 fatal casualties connected to these incidents are related to the above mentioned traffic by sea from Indonesia to PR China.

The five accidents were caused by improper loading of the cargo which later resulted in the liquefaction of the cargo causing instability on board. Actually, correct ship loading is easy to ensure. The Directorates General on Sea Transport and Ports and Harbours in Jakarta have not taken any position on the accidents and laid the responsibility to the ports in Sulawesi, Muluku and Papua. The training of port workers with regard to proper loading processes can prevent such accidents. Cooperation with Chinese ports could be useful here.

Port Management

In the field of port management, cooperation already exists between the ports of Beihai, Qinzhou and Fangchenggang by the joint owner, the Guangxi Port Group. It is the declared objective of this cooperation to keep the ports open for all kinds of goods in principle, but setting priorities in the various ports - bulk in Fangchenggang, containers and cars in Qinzhou and cruising/passenger traffic as well as container ships and also bulk in Beihai. Thereby duplications of investments shall be excluded, resources shall be saved and unnecessary competition shall be avoided. In the field of manpower, alleged cooperation exists in the field of training and even personnel sharing between the three ports and a fourth one, which is close by, but not part of the Port Group.

Similar approaches can be considered for other port groups in the region. In this context, it must be noted, that any prioritisation of types of cargo can only be decided in close consultations with the seaward and landward port customers. This must be done in order to prevent that the total costs of the supply chain are increasing which might provoke the customers to channel their goods through other ports. Also, any accusation of cargo flow control or protectionism measures, which could lead to an intervention by cartel or anti-trust authorities, must be avoided.

Ports along a shipping route serving the same customer may offer, for example, by coordination and agreement, specific advantages or benefits for these port customers. Such opportunities include priority handling, for example, which would particularly be advantageous for ship owners in the case of traffic congestion in the port. Furthermore, harmonisation of the technical and cargo handling equipment, uni-

fied documentation processes and timely exchange of ship and cargo related data of a vessel with the next port of call can be mentioned.

Another way of cooperation between ports in the port management would be to develop a common system approach on capacity building of managers and professionals in the fields of cargo handling equipment and maintenance, water and civil engineering, and human resources as well as the initiation and care for international cooperation and contacts by maintaining internship and trainee sharing programs with the other ports.

Logistics / Hinterland Transport

In the field of logistics and hinterland transport, there are many opportunities for cooperation, especially commercial cooperation. There are numerous international examples given, but the political conditions must be in favour of commercial cooperation. This applies to the field of information technology as well. Nevertheless, there are many opportunities to be explored:

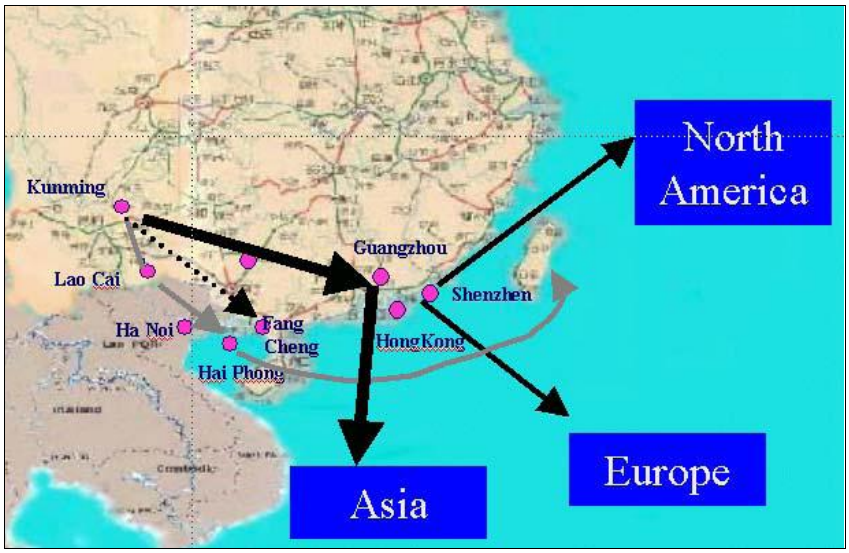
- Hinterland Terminals: for example, a port of destination can cooperate with inland terminals in order to offer better services. The Guangxi Port Group has already started to draw hinterland terminals into consideration. As far as known, no such initiative has been launched in Vietnamese ports up to now. In Germany, *Eurogate* and *Hamburger Hafen und Logistik AG* (HHLA), two competing companies in seaport cargo handling, are planning to jointly build inland railway terminals. The objective behind this is to transport more containers by rail instead of using trucks, in order to ensure a faster dispatch of containers to the hinterland. This would strengthen the competitiveness of the ports through easy access to industrial centres in the hinterland. Furthermore, it is intended to reduce costs and improve efficiency and train utilisation in hinterland transport. AP Moller Maersk also pursues the strategy to ensure fast and flexible hinterland networks through the development of terminals in Central Europe.
- Hinterland Transport: ports can cooperate with railways, or if politically feasible, can even found joint railway companies for bulk or container transport. An example of such an endeavour is *Metrans*, a company that offers block train connections in the ports of Hamburg and Bremerhaven to and from the Czech Republic, Slovakia and Hungary, thereby linking this hinterland with Hamburg, Bremerhaven, Rotterdam, Duisburg and Koper. Metrans has its own hinterland railway container terminals and can offer its transport and handling services regardless of state railways.

A specific example of cooperation in hinterland transport is the development of a regular container block train services between the Vietnamese port of Haiphong and the capital of PR China's Yunnan Province, Kunming. Built in colonial times by the French, a narrow gauge railway line between Haiphong and Kunming is in existence. This route is still used today and it should be possible to handle container transport on railroad cars there. The port of Haiphong or a Sino-Vietnamese logistics company together with Chinese and Vietnamese railways should initiate a feasibility study and in case of positive results should start this block train as a commercial service product.

- Transport Corridor Development: The definitions of main transport axes are of particular importance in order to prevent an excessive fragmentation of the limited infrastructure development funds and to achieve a continuous focus on logistics cluster synergies. For Viet Nam, the Kunming - Haiphong transport corridor in the north and the Mekong - Phnom Penh route in the south, should amongst others, open up.

The most important development perspective for inter-modal container transport in the north of Viet Nam is the Kunming - Haiphong Transport Corridor. With the social and economic development of PR China's southwest, the provinces of Sichuan and Yunnan, the passenger and freight transport demand is rapidly rising. The entire route from Kunming via Hanoi to the port of Haiphong is only half of the distance between Kunming and the Chinese ports of Guangzhou and Shenzhen.

Figure 14: Transport Axis of Kunming



This underlines the possibility of activating this corridor as a connection to the sea for southwest China. The connection of Kunming in Yunnan Province of the PR China, via Hanoi to the ports of Haiphong and Cai Lan in Viet Nam, is also an integral part of the Greater Mekong Subregion (GMS) Northern Economic Corridor. One of the transport perspectives arises for Viet Tri as multimodal hub for cargo traffic between Kunming and North Vietnamese seaports. Viet Tri is the westernmost inland port on the Red River, which can be served by relatively large barges from the sea. The link between Viet Tri and Southwest China can be realised by land transport. Currently, in being part of a highway from Kunming to Haiphong the section Noi Bai - Lao Cai is built at an estimated cost of 1.25 billion USD.

The project was designed as a 244 km motorway link with ten toll booths and five service areas. The road starts at Lao Cai, on the border with the PR China in the northwest of Viet Nam and ends in Noi Bai, a suburb of Hanoi. It is questionable whether this motorway project will actually encourage inter-modal transport, as the transport means road and river run more or less parallel. It must also be noted that the short- and medium-term estimates of expected container traffic on the destination are still disappointing. In a

study carried out in 2005 a mere quantity of 7,000 TEUs for the year 2015 and 16,000 TEU for the year 2025 has been predicted.[63]

In light of this low traffic forecasts the Kunming - Haiphong transport corridor in the north gives at least a hypothetical opportunity for better integration and connection of the northern ports of Haiphong and Cai Lan. However, in the south the Mekong-Phnom Penh route, which is also part of the Asian highway network (Highway No. 1), is providing a much more promising alternative, in particular with regard to:

- the integration of HCMC and the Mekong Delta ports in logistics networks,
- the opening of the deep-water container ports in Cai Mep,
- ongoing investment programmes in infrastructure,
- the relatively advanced stage of container transport in the region.

Trade along the lower Mekong River between the countries of Viet Nam and Cambodia has increased in the recent past. Until 2009, trends for container traffic to and from Phnom Penh Port, and the conventional cargo development through the inland port of Can Tho, showed steady growth. The subsequent decline in freight volumes can be attributed to the global financial crisis and a related decrease in demand in export of garments to the United States. The location of Can Tho has a key role to play as the inter-modal hub in the south. In addition, a new study suggests the construction of further inter-modal terminals close to the Cambodian border.

[63]Economic and Financial Commission; Study on the Kunming-Hai Phong Expressway Project (Hanoi-Lao Cai), Final Report, 2005.

Figure 15: Greater Mekong Subregion Northern Economic Corridor

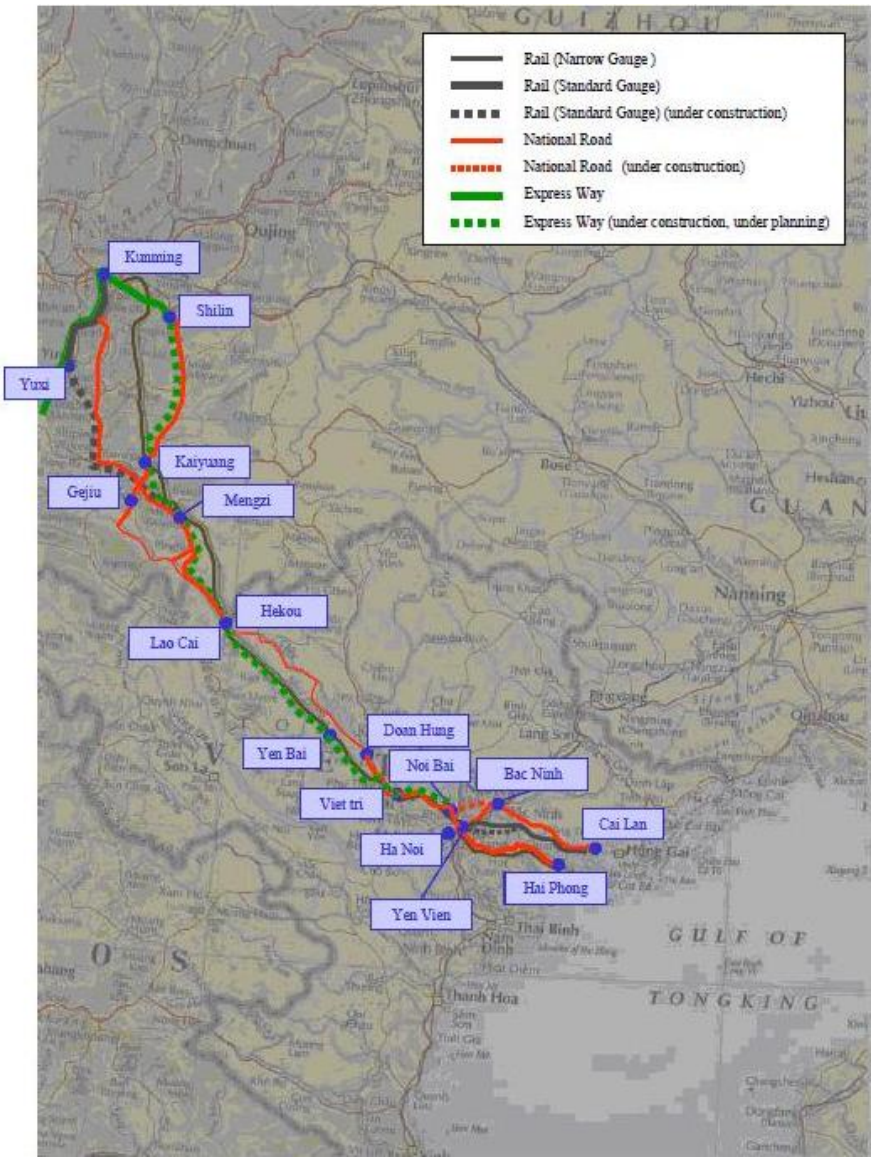
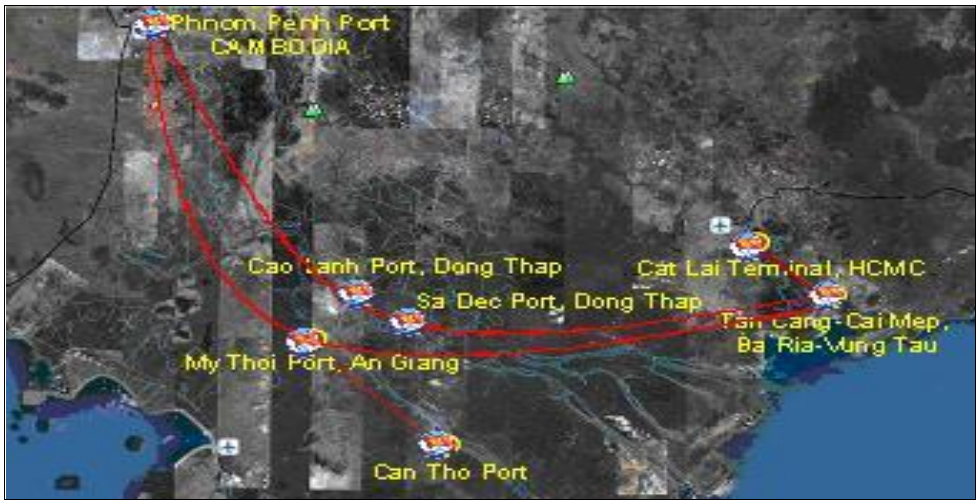


Figure 16: Container Traffic in the Mekong Delta with Transit to Cambodia



Marketing

In the field of marketing, partnerships might be a firsthand solution if the ports are not directly competing with each other. However, as the *Port of Hamburg Marketing Association* (HHM) and the *Port Cooperation Community Unterelbe* in Germany show, even competing port corporations or ports can work together in one organisation if they share a common goal, wish to establish a common brand in the market or strive individually for a stronger position in the market through cooperation. Consequently, competing terminal operators in the Port of Hamburg are members within HHM. HHM provides international representation of the entire Hamburg port, and facilitates central contact points for customers from different countries as well as for the companies in the Port of Hamburg, who are located abroad. Through the cooperation of HHM with other ports and the representations at different locations, a relatively close proximity to customers is being guaranteed.

Such kind of cooperation could be established between ports of the PBG region. One single large marketing organisation might be too cumbersome and could also be poorly responsive to the different needs of the ports. One possibility would be to initiate marketing partnerships between regional ports close to each other. In this way, regional statistics could be generated, joint marketing campaigns could be started and publications could be issued, and the regions could easier present themselves at conferences or trade shows.

Information Technologies (IT)

In the IT field, there are many ways of cooperation, especially in offering customers the greatest possible reliability and comprehensive service. An example is the development of a port community system as it exists in the Port of Hamburg as well as in other ports. In Hamburg the *DAKOSY*, a Port Community System, serves as a "single window". The system offers comprehensive solutions for information and data exchange for import and export, customs, freight forwarding services, hazardous materials information, etc. The system is flexible and does not impose any specific hardware on the customer - either the hard-

ware can be leased or own hardware can be used with an interface developed by DAKOSY. There are also many areas with internet-only solutions.

Interesting is the ownership structure given, which may also provide proposals for some ports or regions in the PBG region. One third of the ownership is for the shipping side, the DAKOSY Pool of Hamburg Liner Agencies Ltd, one third for the freight forwarders, the DAKOSY Pool of Hamburg Freight Forwarders Ltd. and one third for the terminal side, the DAKOSY Pool of Hamburg Port Operators Ltd. This ownership structure ensures, on the one hand, that all interests are protected, but on the other hand, that IT is reflecting the real needs and processes for import and export. Both, the Vietnamese ports as well as the three Chinese ports in focus are still far away from such kind of cooperation and data exchange. A first step must be a reduction of mistrust towards others, and willingness to share data with others at all.

Another possibility to cooperate in the IT field can be shown by an example from the Netherlands. There, the Port Authority of Rotterdam, jointly with the Association of Inland Terminal Operators, has developed a software solution for shippers and logistics service providers worldwide, which allows sharing of information on inland terminals. The software provides information about which services are offered on the terminal, how the terminal can be reached (by rail, road, inland waterway), a timetable of departures to and from Rotterdam and transit times, information on safety regulations, availability of customs clearance services as well as information and communication facilities given on the terminals.

Environmental Protection

Beyond cooperation in education and professional training in the training field, neighbouring ports can also work together in waste management and absorption capacities for ship-generated waste as well as create common ways of waste disposal. For example, that would be possible in the case of the ports of Beihai, Qinzhou and Fangchenggang.

A cooperation between ports, even on the regional level, in the prevention and control of marine pollution is feasible with respect to mutual timely information, support from experts, helpers and equipment and possibly also by coordinating the procurement of specific pollutant absorbing devices and pollutant treatment facilities. This includes a regular exchange of information and regular joint exercises.

In addition, port cooperation is possible in the handling of ship and port waste, according to the binding requirements of the “International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978" (MARPOL 73/78) and the relevant Annexes. For example it is an obligation by MARPOL for ports, to maintain oil reception facilities for oil residues, for oil sludge and for water of ships contaminated with oil. As the provision of such facilities is associated with considerable costs, a concerted action of adjacent ports could help to reduce costs and improve environmental protection. The same concerns the land-side treatment of sewage from ships (MARPOL Annex IV: Sewage) and waste from ships in harbours (MARPOL Annex V: Garbage).

New RoRo Connections

There are plans to connect the islands of the Republic of Indonesia, Malaysia and the Republic of the Philippines with new RoRo lines and to create new transport routes in the region utilising the existing road structure of the islands.

There are also suggestions to include PR China and Viet Nam, which would not be reasonable because of the lack of economic efficiency and ecological sustainability regarding the long distance. The RoRo plans should be considered with caution as they would direct the traffic on the islands' streets instead of going around the islands. This might subsequently lead to ecological problems.

3. EFFECTS OF COOPERATION

- The following section provides an overview of the cooperation possibilities, which were reconsidered with the discussed partners in Asia and Europe. Two of the shown cooperation possibilities should not be followed up in this report, due to the following reasons: Cooperation in the port management is conform to cartel characteristics or will lead to cartel analogue market structures. Consequently, it will lead to negative effects for the welfare and also for the (German) port customers.
- The considerations of some institutes regarding new international RoRo connections are mainly economically inefficient or not ecologically sustainable as this would lead to a shift of sea transport to the streets of several Indonesian and Philippine islands.

As a result, the following cooperation possibilities are examined in greater detail:

- Formation of clusters
- Development of competences
- Logistics
- Hinterland traffics
- Marketing
- IT
- Environment protection

Cooperation in the fields of marketing and environment protection will expectedly not influence the traffic volumes. Formation of clusters, corporate development of competences or new IT cooperation instead would increase the efficiency of the participating ports. Corresponding cost savings could be forwarded to the customers (based on adequate competition pressure.) This would result in a low increase of traffic which cannot be quantified.

Table 6: Overview of the Cooperation Possibilities

Cooperation Possibilities	Feasibility	Welfare Effects	Potential Benefits for the German Economy	Cost Elements	Conclusion
Formation of Clusters	existing, depending on local structures	positive	consulting projects	organisational, institutional, consulting costs	to approve, if done proactive
Development of Competences	existing	positive	consulting and training projects	workshop costs, consulting costs	to approve, eligible
Training Center	existing	positive	consulting and training projects	workshop costs, costs of a new facility, consulting costs	to approve, eligible
Logistics	existing, relevant investment readiness assumed	positive	consulting projects	organisational, institutional, consulting costs	to approve / eligible, if done proactive
Hinterland traffic	theoretically given, a long-lasting infrastructure set-up with political support is necessary in Viet Nam	positive	consulting projects	organisational, institutional, consulting costs, in Viet Nam extensive costs for a new infrastructure	to approve / eligible only with governmental participation, very long-term
Marketing	existing, depending on local structures	none	consulting and training projects	organisational, institutional, consulting and workshop costs	to approve, if done proactive
IT	depending on local structures	positive	consulting projects	IT, organisational, institutional, consulting costs	to approve, if done proactive
Environment protection	existing, depending on local and political structures	positive	consulting and training projects	organisational, institutional, consulting costs, new equipment, consulting and workshop costs	to approve, eligible

Source: HPC, 2013.

Cooperation in the field of **Logistics** might lead to a significant increase in traffic volumes. In order to quantify them, one should develop and exactly analyse specific projects. These projects can only be developed jointly with the participating companies and institutions and optionally only with intense support of the respective government. Only if the trigger comes from the institutions and enterprises themselves, a successful project development is assumed. But information about this matter is often confidential in this region and was knowingly refrained in local discussions. Hence, one can assume that there are accordant specifications. In the field of bulk transport in the PBG region, this was approved to us but without revealing concrete plans.

Cooperation regarding the **hinterland traffic** can also lead to a significant traffic increase. Potential international cooperation projects with participation of the identified focused ports would mainly base on the common use of Vietnamese hinterland connections. Hence, an intensive construction of the Vietnamese street and railroad network was essential. But one cannot assume that the necessary infrastructure development will be finished in the next 10 to 15 years because the Vietnamese demand in this regard still grows faster than the development of the traffic connections.

- If successful, all the proposed cooperation possibilities will generally influence the market with a timely delay. This will have an influence on the long term cargo and ship prognoses. Nevertheless, these effects will be overshadowed by other participants' decisions.
- The amount and the direction of action of the investments in the traffic infrastructure measures in some countries cannot be foreseen in the short term. Nonetheless, it plays an important role for the shipment forecast as well as the economic development.
- The price political decisions of the container terminals in Viet Nam, which are underused on a big scale, might surely affect the loading of the other ports.
- The decisions of the internationally acting container terminal operators to construct further container terminals in the region in order to be able to process large container ships for example, might influence the smaller container ports positively or negatively.
- A re-strengthening of the world economy and an accompanying shortage of raw materials might lead to the fact that raw material deposits, which could not be sold on the market at the moment because of their location or their quality, could become exploitable and conveyable through an increase of the price level. This would result in a demand for special handling plants in the ports.
- A rapid increase of the disposable income, which PR China experienced in the past years, would lead to an extended private consumption. This would increase the demand for special port handling plants for automobile, large equipment, food and other industrial products in the countries of the region.

4. ROADMAPS

4.1 Cluster building

In the area of cluster building the cooperation of the ports and all other companies working in the maritime sector play an especially major role. The government should only play a supportive role and assist in financing the start-up phase. This results in the following road map from the point of view of ports.

Support in developing maritime clusters in the PBG Region

Objective: Set-up of regional initiatives to further smooth cooperation between all companies and authorities in the area of maritime logistics, with the aim to create more efficient and customer-friendly processes and to create synergies. Further objectives are the development of networks and the enhancement of regional competencies.

Target Groups:

- Companies and organisations of the maritime logistics industry. Ports, shipping companies, ship yards, maritime and logistics services providers, suppliers
- Authorities, scientific institutions

Partner and stakeholders:

- Regional, city and port administrations
- Companies of the maritime industry
- Universities and research institutes

Resources / Financing needs

- Financing of a consultant to set-up the cluster
- Financing of the cluster management
- Financing of the start-up phase
- (Part)Financing of events

Time frame	Steps / Activities / Tasks
Start-up Phase	• Workshops to generate ideas for cluster building in the individual regions • Keynote – Report on existing maritime clusters, there set-up and their objectives • Definition of the aims of cooperation • Collecting the interests of participating organisations • Determination of further steps to be taken
End of month 3	• Elaboration of a business plan for the Cluster
Months 2 – 12	• Setting up the cluster • Development of the core cluster • Set-up of a cluster management • Development of a Web-Site for the cluster

	• Set-up of a data base for information exchange between cluster members
From month 6	• Initiating and conducting of workshops
From month 6	• Establishing contacts and connections • Initiating and conducting "Get together" Events • Making contacts
From month 6	• Participation in relevant trade fairs and other external events
From month 6	• Making and keeping contacts to • Research institutions, associations and political institutions
From month 10	• Publication of relevant studies, surveys, reports and research results
From month 12	• Organisation of events to discuss current topics
From month 12	• Initiating and supporting the definition and implementation of joint research projects in the area of regional maritime logistics

4.2 Human Capacity Development (HCD)

In the area of HCD there are different cooperation possibilities, reaching from rather informal cooperation in form of case-by-case execution of workshops and conferences on specific topics to formal cooperation by setting up joint institutions.

Conferences and workshops

This measure describes the organisation of workshops and conferences. Depending on the topic, here, either the private sector or government authorities are involved. The first actions are the organisation of workshops and conferences with the purpose of promoting the issue at hand and familiarising the stakeholders with possible solutions. The following Roadmap can therefore be applied for the port as well as for the government side.

Organisation of regional conferences and workshops for exchange of experience and information on different topics

Objective: A regular exchange of information and knowledge between all companies and organisations working in the maritime industry is ensured.

Target Groups:

- Ports, logistics and transport companies
- Relevant state institutions – administrations and public authorities

Resources / Financing needs:

- Financing of Kick-off events
- Financing of selected important events
- The financing of regular meetings for information exchange should be covered by the participants

Time frame	Steps / Activities / Tasks
Regularly every 6 months	• Organisation of regional workshops on the topic of transport documentation and data exchange
Start-up Phase Regularly every 6 months	• Elaboration of a joint concept to harmonise rules and regulations • Organisation of an initial workshop • Organisation of working groups to discuss harmonised regulations
Regularly every 12 months	• Best Practices workshops on different topics – new technologies, proven processes and procedures, IT etc. • Recruiting of external lecturers and experts • Organisation of the workshops / conferences

Supra-regional education and training

This area of cooperation deals with informal, case-by-case cooperation up to establishing joint training institutions. Here, mainly the private sector should actively participate to define and implement a joint concept and training contents. The local governments should be involved mainly in financing the investments and to supervise the quality standards. Thus, the roadmap focuses on the private sector.

Establishment of regional training centres for port and logistics training

Framework conditions: The readiness of different states and companies to jointly finance and implement trainings, and training facilities utilising public-private partnership (PPP) as financing mechanism.

Objectives:

- Ensuring adequate and high quality training
- Provision of standardised and high quality training for equipment operators, in documentation, dangerous goods handling, ISPS, as well as introduction to the maritime industry, lashing and stowing, English language and other topics
- Cost savings as training facilities and equipment only have to be purchased once

Target Groups:

- Ports, logistics and transport companies, located in close vicinity to each other
- Relevant public agencies, administrations and public authorities

Resources / Financing needs:

- Consultants to set-up training centres
- Experts to develop and elaborate training materials
- Funds for the procurement of training material and technical equipment for training
- Funds for construction of training centres
- Trainer to train future instructors
- Funds to operate the training centres

Time frame	Steps / Activities / Tasks
Months 1 and 2	• Site analysis – determination of adequate locations for inter-company training centres
Month 2	• Discussion / workshop with potentially interested companies which could participate in setting up a joint training centre
Months 2 – 4	• Analysis of training needs
Months 4 – 8	• Definition of training contents and curricula
Months 2 – 8	• Development of a concept for establishing a joint training centre and of a business plan
Months 8 – 18	• Construction and set-up of the training centre, procurement of the necessary equipment
Months 8 – 12	• Identification of instructors
Months 12 – 18	• Training of instructors
From month 18	• Starting the actual training activities

Supra-regional and cross-national training

The training areas related to environmental protection, search and rescue at sea and coping with the effects of maritime accidents, are state tasks. Therefore, below please find a roadmap for the government.

Supra-regional, cross-national training in the areas of search and rescue, maritime accidents and environmental protection

Objective: Agreement on and training of joint, coordinated approaches in case of a regional emergency. Therefore, fast and effective reaction on emergencies.

Target Group: State institutions of different countries in charge of search and rescue, maritime accidents and environmental protection.

Resources / Financing needs:

- Financing of joint workshops
- Financing consultants to coordinate the activities and to transfer experiences made in other countries
- Procurement of equipment like oil skimmers, oil booms and boats
- Financing of the training measures and exercises

Time frame	Steps / Activities / Tasks
Initial phase	• Cross-national workshop with participation of all institutions in charge of search and rescue and maritime accidents • Definition of a joint objective • Definition of the necessary framework conditions • Discussion about appropriate locations for joint training
Months 2 – 6	• Elaboration of training contents based on international regulations and laws
Months 2 – 6	• Determination of the necessary equipment and facilities to execute the training
Month 2	• Determination of locations • Discussion about an agreement on the financing of operational costs
Months 6 – 8	• Agreement on deployment of trainers plan
Months 6 – 12	• Procurement of required equipment
From month 12	• Execution of coordinated training and exercises

Port State Control is also a state task. This roadmap therefore also focuses on the government side.

Supra-regional, cross-national Training in Port State Control

Objectives:

- High quality of the training, standardisation of approach, support of the Tokyo Memorandum
- Possibility to ensure continuous training of the inspectors

Target Group:

- Public authorities / state institutions / ministries in charge of Port State Control

Partner and stakeholders:

- Ministries and other institutions involved in port state and flag state control
- Secretariat of the Tokyo Memorandums

Resources / Financing needs:

- Financing of joint workshops
- Financing of consultants to coordinate the activities and to transfer experiences from other countries
- Financing of training measures

Time frame	Steps / Activities / Tasks
Month 1	• Cross-national workshop with participation of all institutions involved in port state and flag state control

	• Definition of joint objectives • Definition of the necessary framework conditions
Months 2 – 6	• Establishment of a supra-regional working group to analyse the training and qualification requirements specified in the Tokyo Memorandum
Months 4 – 10	• Elaboration of a qualification plan based on the recommendations of the Tokyo Memorandums
From month 8	• Cooperation in the area of qualification and training through exchange of experts and joint execution of training • Continuous exchange about developments and particularities in the area of port state control in conferences and workshops

4.3 Logistics and hinterland transport

Depending on the organisational in respect to political circumstances, private or state companies are involved, but not governments or state authorities. The roadmap therefore focuses on the private sector; the state only plays a role as owner of state owned enterprises.

Establishment of cooperation between seaports and inland waterways ports, respectively railway terminals in the inland

Objective: Provision of improved, faster and client-oriented services

Target Group: Seaports, inland waterways ports, railway terminals, logistics centres

Partner and stakeholders: Seaports, inland ports, railway terminals, logistics centres

Resources / Financing needs:

- Financing of the start-up costs
- Financing of consultants to coordinate the activities and to transfer experience from other countries

Time frame	Steps / Activities / Tasks
Months 1 – 6	• Identification of possible cooperation partners / inland destinations • Selection of strategic ports and inland terminals / inland ports • Exchange of experience with successful similar cooperation
Months 5 and 6	• Negotiations on cooperation • Conclusion of contracts between seaports and inland terminals
Months 6 – 9	• Establishment of working network for the transport Seaport – inland terminal
Months 6 – 12	• Communication of the new service to the clients • PR and marketing measures

Month 9	• Beginning of the active cooperation
From month 9	• Analysis of the market requirements • If needed: investment in new infrastructure: up-grading (or even new building) of terminals, up-grading of connections to the terminal, procurement of new wagons, inland waterways vessels, trucks, development of an efficient IT connection.
From month 12	• Communication of the new service to the clients

Development of cooperation between seaports and railway companies

Objective:

- Establishment of new railway transport companies, organised on a commercial basis with participation of ports and railways
- Improved and faster connection of the ports to the inland destinations

Target groups:

- Seaports, railway companies
- State railways

Partners and stakeholders:

- State and/or private railway companies (depending on the country and the political circumstances)
- Seaports respectively terminal operators, freight forwarders
- Public authorities of the regions involved
- Political decision makers

Resources / Financing needs:

- Financing of the planning phase – payment of consultants to elaborate the feasibility study and the business plan
- Financing of training for the operative start-up phase
- Financing of investments in infrastructure and equipment
- Financing of the operative start-up phase

Time frame	Steps / Activities / Tasks
Months 1 – 9	• Analysis of transport data • Analysis of the transport market • Execution of a technical-economical feasibility study • Assessment of the political acceptance of the establishment of a new railway transport company
Months 9 – 12	• Determination of the shareholders, the legal form and the location of the company
Months 9 – 12	• Calculation of the capital needed for investments in infrastructure and equipment

Months 12 – 15	• Elaboration of a business plan
Months 15 – 24	• Making necessary investments
Months 18 – 24	• Marketing and attraction of customers
Months 18 – 24	• Training of employees
From month 24	• Beginning of operations

4.4 Development of Transport Corridors

In this area, the private sector can only play a secondary role as the physical development of railway and road networks has to be decided upon and implemented on government level by the countries involved. The roadmap therefore focuses on the state sector.

Development of the transport corridor (PR China) – Haiphong (Viet Nam),

Upgrading of the road connection Kunming – Viet Tri and Noi Bai – Cai Lan,

Objectives:

- Improved and faster connection of the seaports with the hinterland
- Making full use of the improved transport corridors / in case of railway corridors: start of operations

Target Groups:

- State railways
- Governments and ministries in charge
- Ports, railway transport companies
- Transport and logistics companies

Partners and stakeholders:

- National ministries in charge
- International financing organisations

Resources / Financing needs:

- Financing of experts to carry out needs analyses and feasibility studies
- Financing of experts to give support in securing the necessary credits / loans to up-grade the transport corridors
- Financing of experts to carry out the necessary environmental impact assessments
- Financing of experts to supervise, control and accompany the upgrading measures
- Credits and state investments to improve the transport corridors

Time frame	Steps / Activities / Tasks
Months 1 – 3	• Assessment of the political acceptance of the upgrading of the transport corridor • Negotiations of the governments involved about the upgrading and the necessary investments
Months 6 – 18	• Needs analyses and feasibility studies
Months 18 – 24	• Calculation of the required investments
Months 18 – 24	• Execution of environmental impact assessments
Months 15 – 24	• Making necessary investments
Months 24 – 30	• Securing the financing for the required upgrading of the infrastructure
From month 30	• Upgrading of the infrastructure for the transport corridor: railway tracks, roads, railway terminals, handling equipment • Marketing measures and measures to attract clients for the upgraded transport corridor

4.5 Marketing

The roadmap related to marketing focuses on the private sector. Marketing for services should be taken care of by the service providers themselves. Governments do not play any role here; at the most they can assist in financing the marketing organisation in order to promote the location.

Creation of joint marketing organisations

Objectives:

- Networking in order to combine the strengths and competences of different individual companies in an all-encompassing service profile
- Joint location marketing and establishment of a central contact point for clients with the aim to improve the competitive standing in the market

Target Group: Ports

Partners and stakeholders:

- Port companies, logistics companies, shipping agents
- Port Authorities
- Local / regional public authorities

Resources / Financing needs:

- Financing of experts to elaborate the concept and the business plan as well as to attend to the setting up of the marketing organisation
- Financing of the setting up of the organisation

- Financing of operation of the organisation and execution of the different marketing measures (should for the major part be financed by membership fees)

Time frame	Steps / Activities / Tasks
Month 1	• Workshops with participation of different regional / local ports and companies to determine the need for a joint marketing organisation and to define the objectives
Months 2 – 6	• Elaboration of an organisational and a membership concept
Months 2 – 6	• Elaboration of a business plan with a concept defining the specific tasks of the organisation as well as the financing
Month 7	• Presentation of the business plan and the concept
Months 8 – 12	• Set-up of the organisation
From month 10	• Attraction of clients and members
From month 13	• Active location marketing with all corresponding measures

4.6 Information Technologies

In the area of IT, the private sector and the public administration should cooperate very closely in order to establish an effective Port Community System, as this system should provide information concerning state institutions and authorities as well as information concerning the private sector. Further, all parties involved must agree on adequate formats and contents. The state administrations should take care of coordination in this area. Therefore, this roadmap concerns the state as well as the private sector economy, which is mirrored in a joint roadmap. Separate roadmaps for the port authority and government could not take sufficient care of the coordination of the future data exchange.

Set-up of Port Community Systems

General requirement: The trust of port service providers and port users as well as of relevant state authorities in the neutrality and confidentiality of all data provided to the system must be ensured.

Objective: Avoidance of duplicated data and ensuring a fast and efficient data exchange between all companies, organisations and state authorities involved in the port business.

Target groups:

- Port service providers
- Port users
- Customs, fire brigades
- Port authorities
- Public administrations

Partners + stakeholders:

- All companies and administrations working in the port

- All vessels calling the port
- The Port Community System Management company to be created

Resources / Financing needs:

- Financing of Stakeholder Workshops
- Financing of consultants
- Financing of the software development
- Financing of the start-up phase of the system

Time frame	Steps / Activities / Tasks
Month 1	• Execution of events to reach a common understanding about objectives and performance profile of a Port Community System
Months 2 – 3	• Support by existing Port Community Systems – Identification of other systems, events to present these systems
Months 3	• Appointment of responsible persons in the different companies providing port services
Month 2 – 4	• Identification of the core services of the Port Community System
Months 3 – 6	• Definition of the business model and the financing of the set-up and operations of the Port Community System • Definition of the ownership structure and operations structure
Months 3 – 6	• Identification of stakeholder groups who could assist in developing the modules of the port community system, thus ensuring an as accurate reproduction of business processes as possible
From month 7	• Development of the software for the individual modules of the system
From month 12	• Commissioning of the first modules
From month 15	• Operation and further development of the Port Community System

4.7 Environmental Protection

Ensuring environmental protection, conventions and legislation are complied with, is a state task. This roadmap therefore concerns only the government sector.

Cooperation in the area of waste management and ship waste reception

General condition: Political willingness to implement the international conventions like e.g. MARPOL jointly and in a cooperative way

Objectives:

- Improvement of environmental protection by coordinated, joint activities

- Cost savings by joint procurement and joint operation of ship waste reception facilities and sewage as well as reception facilities for oil waste

Target groups:

- Ports or port authorities which are located closely to each other
- Responsible state regional administrations

Partners and Stakeholders:

- Port authorities
- Ministries of the Environment
- Ministries of Transport

Resources / Financing needs:

- Costs for consultants to assist in the elaboration of a joint concept and to assist in procurement of joint facilities and equipment
- Costs for oil waste reception facilities
- Costs for facilities to treat ship generated sewage
- Costs of waste reception facilities
- (the latter two items should only in the initial phase be externally financed as the facilities should be operated on the basis of the polluter pays principle)

Time frame	Steps / Activities / Tasks
Months 1 – 3	• Identification of suitable ports in a region located in close vicinity to each other
Month 4	• Workshop / discussion platform to formulate a joint strategy
Months 4 – 8	• Elaboration of a cooperation plan: definition of joint activities and procurement, definition of locations to establish the jointly procured equipment / facilities
From month 6	• Regular exchange of information: Web-Sites, workshops, working groups
From month 12	• Conducting joint drills and exercises Definition of the ownership structure and operations structure
Months 8 – 10	• Specification of reception facilities for different types of waste and waste water
Months 11 – 18	• Tendering and procurement of the joint facilities
From month 18	• Operation of the facilities / implementation of the relevant international conventions

5. WELFARE EFFECTS

5.1 Socio-Economic Effects

This section estimates the socio-economic effects of increased cooperation. The objective of maritime cooperation is to jointly improve competitiveness. In this respect the following impact chain will occur:

- On the business side, economies of scale through increase of cargo volumes respectively service volumes,
- Increased operational efficiency through improvements in technology and human capital,
- Network effects through the increase of value of maritime connections and logistics hubs in case the number of possible connections is increased,
- Spill-Over-Effects through transfer and exchange of knowledge and experience,
- Indirect multiplier effects as a consequence of the above mentioned effects,
- External ecological effects by reduction of emissions,
- Negative Effects by cartelisation.

At first, all effects except the last one lead to an increase of welfare. However, the first three mentioned effects can also decrease welfare, if they lead to buildings of oligopolies or monopolies. The direct benefits of these effects will be dealt with in the following paragraph 5.2. Firstly, in the following, the socio-economic effects which can be deduced will be discussed.

In consideration of the mentioned deficits of the cargo structure, the low level of hinterland connections, the missing intermodality, the very few existing port clusters and the under developed logistics functions in the region, it can be expected that multiplier effects will have by far the greatest impact. For any improvement of the existing structures generally three levels of effects have to be distinguished:

Direct impacts – Employment and business activities in the ports themselves, including cargo handling, storage and warehousing, construction of related infrastructure and related services.

Indirect impacts – Employment, GDP and tax incomes along the supply chain as a consequence of handling of cargo and services in the region. Here, among others, raw materials, communication as well as a variety of services for companies (accounting, IT etc.) have to be mentioned.

Induced impacts – Employment and activity by those who are directly or indirectly employed in the ports and who use their income to purchase products and services in the general economy. This helps to create jobs in retail trade and in the leisure industry and supports companies producing consumer goods and in the service sector.

A study carried out for the British port sector recently showed that, for example one "direct" job in the British ports comes along with 1.5 "indirect" jobs and additionally induces just under one more job. A similar factor was identified for the contribution of the port sector in value creation.[64] Therefore, it seems

[64]See Oxford Economics, The Economic Impact of the UK Maritime Services Sector: Ports, Oxford 2013.

realistic to assume that the necessary "catch up" development in the establishment of port related economic clusters in the Pan-Beibu Gulf Region will create and secure direct, indirect and induced jobs at least in the same degree.

In this respect, port cooperation can form an important part of an overall strategy to establish growth centres in order to foster the economy by the improvement of capacities and efficiency in trade and transport in the region and to stimulate private and public investments.

Cargo transport and logistics are the "lifelines" of any economy: the growth rates in the area of transport and the levels of economic growth are closely interlinked. The development of the transport and logistics sector is at the same time result and driver of economic activities in other sectors. Port cooperation aimed at joint growth, can therefore support an overall sustainable economic development to create more jobs and higher income.

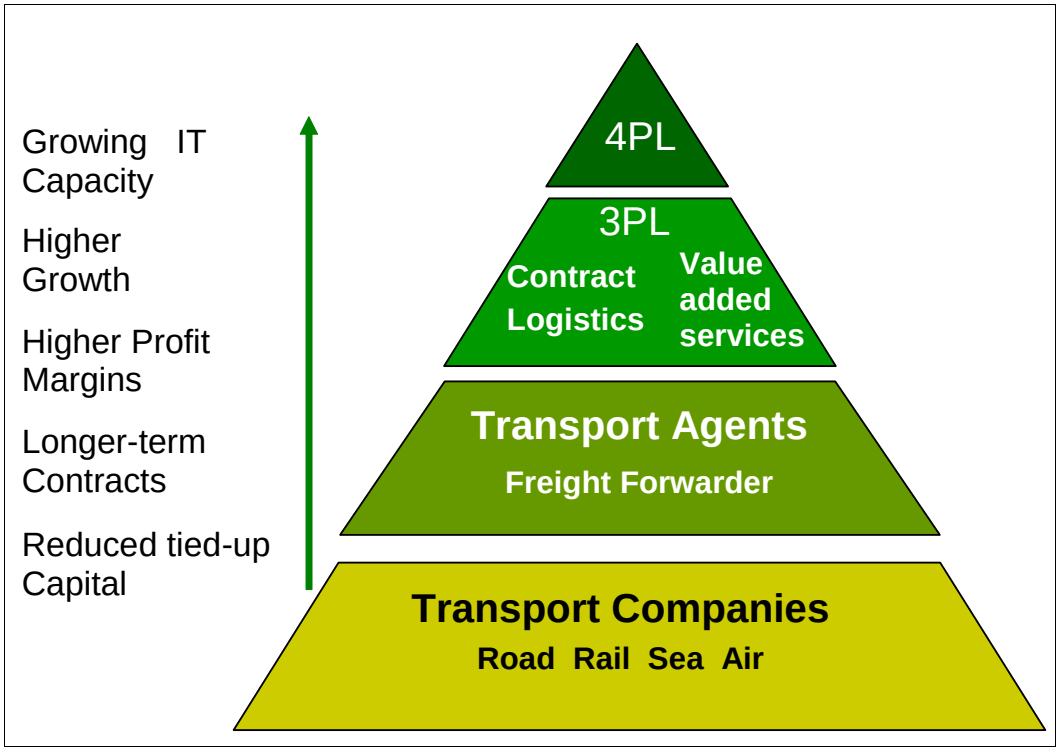
Cluster building

A decisive factor for the creation of potential regional economic clusters is to integrate port development into a logistics value chain and to further expand this value chain. At least for Viet Nam it can be stated that pure, single-modal transport services on the lowest step of the logistics pyramid (see Figure 17) are currently still the rule. The existing deficits in the areas of national transport law, of IT-Electronic Data Interchange and in promotion of networks are becoming more and more realised by political decision makers. One example is that the government regulation on multi-modal transport existing since 2009 is being complemented by studies and development projects to promote this type of transport.[65] Here, it can be assumed that lobbying of the Vietnam Freight Forwarders Association (VIFFAS) also plays a role.

The "Fourth-Party-Logistics Providers" (4PL), shown on top of the pyramid in Figure 17, are service providers coordinating the logistics processes of a company without having own assets. The "Third Party Logistics Provider" (3PL), are company external logistics service providers. Their core competency is the provision of transport and storage services for their clients. Third-Party-Logistics service providers take increasingly care of additional services. In contrast to Fourth-Party-Logistics and Application Service providers 3PL-service providers have their own assets in the area of the classical processes transport, cargo handling and storage. 4PL-service providers hence do not have own trucks and warehouses, but provide only their know-how (e.g. fleet management). The combination of 3PL and 4PL competences defined the Lead Logistics Provider. Thus, they can offer the clients comprehensive logistics services from one source in the sense "one-stop-shop" with own trucks and warehouses as well as with the necessary know-how to control complex supply chains.

[65] Decree on Multimodal Transport (No 87/2009/ND-CP) Hanoi, 19 October 2009; multi-modal approaches have recently been implemented among others in the Mekong Delta Transport Infrastructure Project of the World Bank and in the Country Strategy and Program (CSP) of the ADB.

Figure 17: Pyramid of Added Value in Logistics



Clusters are especially relevant in the transport and logistics sector and are a decisive factor for the access to the most important transport hubs. A transport cluster is a good basis for the creation of added value services in the area of reduced or optimised storage of goods and better distribution that is in the security of an uninterrupted supply chain. Development of competencies, as well as networking in transport and IT, aimed at in port cooperation set the frame for successful business.

Clusters fundamentally contribute to the economic strength and to the tax revenues locally (development of communities) as well as regionally. The importance of clusters cannot only be measured by the "direct" activity of the companies in the transport industry as shown above, but also by the creation of a network into the upstream and downstream sectors. "Indirect" jobs measured in full-time equivalents created by the network have to be taken as a measure for success, for example in the following areas:

- Specialised technical services (e.g. material flow, IT);
- Institutional services (legal and financial services, insurance);
- Infrastructure – Development and maintenance (e.g. materials and services);
- Machinery (e.g. vehicles, cranes, services);
- Transportation means (e.g. road, rail, sea and air transport);
- Services related to transport (e.g. transport equipment, maintenance, mechatronics and other activities);
- Energy supply;
- Research and development (e.g. increase of productivity, new technologies);
- Consulting companies;

- Others such as safety, health, training;
- Human Capacity Development

The most significant economic effect of competency development is the contribution to the creation of innovation systems. The absorptive capacity of technologies and the capacity to create innovations are key factors and sometimes even prerequisite for sustainable competitiveness, continuing economic growth and increasing welfare. As Kadura et al. emphasises: information systems, consulting and training services are a central approach "to build bridges" for human and social capital in order to achieve a stimulus for a comprehensive innovation system, not only to strengthen the knowledge base and improve quality.[66]

Development cooperation usually distinguishes between three levels of competency development:

- Individual level – competency development on the individual level requires the development of conditions and structures enabling an individual person to develop new knowledge, skills and abilities or to improve existing ones.
- Institutional level – that is „modernising" the knowledge pool of existing institutions and giving support in adapting organisational structures and in transferring efficient management structures
- Society level – capacity development on the society level implies the development of interactive and self-reflective systems of knowledge creation and application.

Competency development within this project is therefore to be understood as a comprehensive process in the course of which individual persons, organisations and national / regional institutions obtain skills and capabilities either individually or jointly with the aim to execute functions in the port or transport management, to solve problems in transnational port networking and to set and achieve objectives for safe and efficient cargo transport.

In the previous chapter of this study, numerous examples are given how to lay the basis for a port and transport related education culture and regional exchange with the help of short-term education and training measures. From these measures, multiplier effects in knowledge transfer are to be expected, starting from general awareness raising for the social value of port cooperation, up to improving logistics processes and transport optimisation.

The promotion of cooperative learning between the regional ports will in the medium term also lead to an adjustment of standards in occupational safety, hazard control, port state control and environmental protection measures. Furthermore, it should even lead to an adjustment of standards in related institutions outside the port industry due to demonstration effects.

[66]See Kadura, B./Langbein, J./Wilde, K.: Strengthening Innovation Systems. Foundation, Concept and Strategic Approach, Hamburg 2011.

Logistics

The Logistics Performance Index (LPI) regularly issued by the World Bank gives a good overview of the national capacities regarding technological and in-time realisation of cargo transports in the region. If the development of the index values related to the global ranking of the countries in 2007 and 2012 is compared, the following picture is gained:[67]

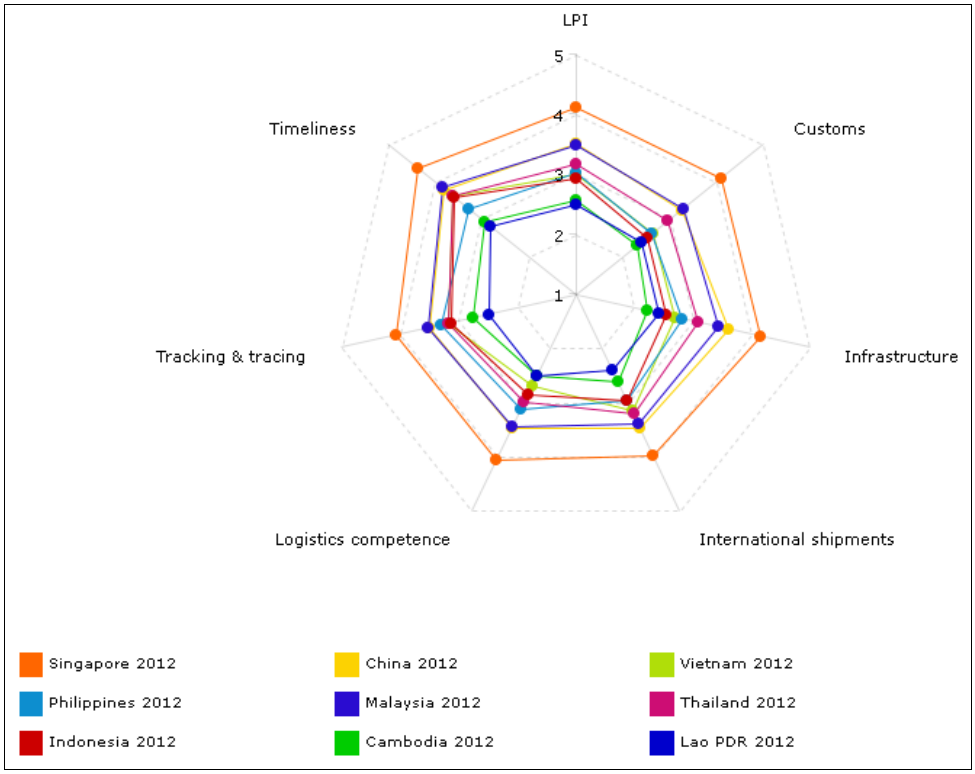
	LPI 2007	LPI 2012	Trend
Singapore	1	1	+
Malaysia	27	29	o+
PR China	30	26	+
Thailand	31	38	o
Indonesia	43	59	o-
Viet Nam	53	53	o
Philippines	65	52	++
Cambodia	81	101	o-
Lao PDR	117	109	+

Under consideration of the LPI 2010, a tendency can be derived in how far the respective countries globally kept pace with their logistics framework conditions. While the results for Indonesia and Cambodia are rather negative there is stagnation in Thailand and Viet Nam. The Philippines clearly improved the logistics value and presumably it is no coincidence that the country with its good economic growth figures best of all managed to cope with the enduring economic crisis. The respective keys for the index are defined as follows:

- Efficiency and effectiveness of clearing processes by customs and other border control agents;
- Quality of transport and IT infrastructure for logistics;
- Competency of the local logistics sector (e.g. cargo transport companies, customs, agents);
- Tracking and tracing of consignments;
- Local logistics costs (e.g. local transport, terminal cargo handling capacity, storage) and
- Timeliness of shipment of the cargo to the destination.

[67] http://lpisurvey.worldbank.org, 12 July 2013; Trend: HPC/HPTI.

Figure 18: LPI 2012 for the Pan-Beibu Region



It is obvious that in all the named countries there is still much room left to come close to the capacity of the regional and global logistics benchmark Singapore, thus equalising the differences in regional welfare.

The improvement of mobility is a critical prerequisite to achieve productivity gains, growth and employment in a macro-economic context. The context between economic growth and demand for transport services is the result of various effects. These effects, e.g. cargo volumes or transport intensity, can be clearly seen in the growing importance of the economic sector in cargo distribution.[68] In well developed economies also the demand for higher quality consumer and capital goods increases. The share of mass products in comparison remains at the same level or even decreases. The distribution of goods therefore shifts to qualitative higher products which have to be delivered fast. This effect in the pattern of goods serves as a socio-economic indicator and has at the same time an inverse effect on the port systems.

Hinterland Transport

An improvement of hinterland transports results in some socio-economic and cultural effects which may not only have positive consequences. It may come to a shift between different population groups and ethnic groups. On the one hand, the population in the inland profits from the improved and faster connection to the growth centres in the ports, by reduced transport costs and transfer of knowledge. Normally, also gender equality will profit by transfer of values and more jobs in areas of the country which were in

[68]See Pfohl, H.-G. Logistiksysteme, Betriebswirtschaftliche Grundlagen, Heidelberg 2004.

the past more difficult to reach[69]. The possibility of migration into the city / rural depopulation is improved by better hinterland transport connections, which could be advantageous, but could also have some disadvantages.

On the other hand, a spread of lifestyle and sexually transmitted diseases can be observed when cargo transports into the hinterland areas increase. This also applies for the number of crimes committed and the growing problem of HIV-Aids

Information Technology

Supply chains must be able to react flexibly in order to quickly balance fluctuations in demand, in production and sales volumes, in regional distribution as well as preference drifts. Lead times in transport are becoming shorter and at the same time cost and resource intensive occasional transports have to be avoided. The aim of all transport related IT solutions are therefore to support transport and distribution processes especially regarding the factor speed.

With the above described unified customs system in the ASEAN area, the implementation of which, unfortunately delays the exchange of goods at the borders will be considerably facilitated. Since the end of the Second World War, "Peace through Trade" is the determining basis for the creation of the world trade system[70]. A positive effect can thus also be expected by promotion of port cooperation with the neighbour PR China, often perceived as pre-dominating by the interview partners, as existing tensions may be reduced.

Environmental Protection

Optimised transport routes, caused by a better transport network, lead to better use of resources and capacities, which means that they lead to higher efficiency and lower costs. Therefore, in optimised supply chains, the stock of raw materials, intermediate goods and finished products are also reduced, which in turn leads to lower capital, inventory and warehouse costs and in the end to better prices for the end consumer. Hence, this is a classical win-win situation in ecological as well as in economic respect.

Consequently, by the reduction of CO_2 volumes through improved vehicle and equipment technology, a contribution to climate protection can also be expected. On the other side, any type of transport causes environmental risks, e.g. noise. As already mentioned before, we expect a continuous, albeit not abrupt, increase of transported cargo volumes from and to the ports of this study. Here, it will be most important to ensure an intelligent mix of the different modes of transport for the hinterland transport.

[69]See Vietnam: Gender equality key to nation's progress (11/03/2013) in http://vietnamnews.vn/sunday/features/236152/gender-equality-key-to-nations-progress.html, 12 March 2013.
[70]See Young, B./Bertram, F.; „Frieden und Handel" in *Handbuch Frieden*; Wiesbaden 2011, p. 347-356.

5.2 Cost-Benefit Analysis

Economic effects

As described in the previous section, next to costs directly caused by maritime cooperation the following economic effects can be expected:

- Operational economies of scale caused by increased cargo handling volumes and respectively increased service volumes,
- Increase of operational efficiency caused by improved technology and human capital,
- Network effects caused by the increased value of maritime connections and logistics hubs together with an increase of possible connections,
- Direct effects caused by improved transport infrastructure,
- Spill-Over-Effects caused by transfer and exchange of knowledge and experience ,
- Indirect multiplier effects as a consequence of the above mentioned effects,
- External ecological effects because of reduction of emissions,
- Negative effects caused by cartelisation.

At first, all except the last effect lead to an increase of welfare. However, the three first mentioned effects can also reduce welfare if they lead to the creation of oligopolies or monopolies.

In addition to the above mentioned direct economic effect, international or intra-regional cooperation can also cause the following organisational advantages which can lead to further economic gains:

- Reduction of trade barriers – even if there will not be any new overall political agreements, it can be expected that improved communication, especially improved data and information exchange, will facilitate trade and transport for the shipping and freight forwarding industries.
- Closer cooperation can, in the long run, also lead to better mutual understanding and thus less political conflicts.
- Regional cooperation, e.g. between Viet Nam and Southwest China, or the creation of a maritime cluster in the Nanning region can lead to better coordinated infrastructure development. Also, the infrastructure in ports can be better planned and set-up through target-oriented cooperation.

Evaluation of cooperation potential

Table 7 gives an overview of the evaluated cooperation opportunities, their feasibility, welfare effects and benefits for the German economy as well as cost elements.

The selection is limited to the above identified feasible cooperation opportunities with not-negative welfare effects.

Accordingly, also the area “hinterland transport” has been considered. It has to be mentioned though, that the feasibility strongly depends on the close cooperation with the highest government levels of Viet Nam with the respective neighbouring country.

Table 7: Overview of Cooperation Opportunities

Cooperation opportunities	Feasibility	Welfare effects	Potential for cooperation with German Companies	Cost elements	Conclusion
Cluster building	given, depending on local structures	positive	Consulting projects	organisational, institutional, consulting costs	recommended, if initiated on initiative of companies involved
Competence development	given	positive	Consulting and research projects	Seminar costs, consulting costs	recommended, eligible for funding,
Training centre	given	positive	Consulting and training projects	Seminar costs, costs to set up new training facilities, consulting costs	recommended, eligible for funding,
Logistics	Given if willingness to invest is high enough	positive	Consulting projects	organisational, institutional, consulting costs	Recommended / eligible for funding, if initiated on initiative of companies involved
Hinterland transport	theoretically given, but in Viet Nam first of all a long-term infrastructure development with political support is necessary	positive	Consulting projects	organisational, institutional, consulting costs, in Viet Nam considerable costs for new infrastructure	Only with government participation recommended / eligible for funding, very long-term
Marketing	given, depending on local structures	none	Consulting and training projects	organisational, institutional, consulting and training costs	recommended, if initiated on initiative of companies involved
IT	depending on local structures	positive	Consulting projects	IT, organisational, institutional, consulting costs	recommended, if initiated on initiative of companies involved
Environmental protection	given, depending on local and political structures	positive	Consulting and training projects	organisational, institutional, new Equipment, consulting and training costs	recommended, eligible for funding

Source: HPC, 2013.

Effects of the individual cooperation opportunities

This section provides an overview of the effects of each of the following, previously described cooperation opportunities. That is cluster building, human capacity development, logistics and hinterland transport, Marketing, Environmental Protection, and IT projects.

Cluster building

Normally, clusters origin from the regional agglomeration of companies and other organisations connected by a joint field of activities. A concentration of businesses is only called a "cluster", if a certain ("critical") amount of companies and institutions are located in close vicinity, the activities of which complement each other within one or several value chain(s) or are related to each other. Only under these conditions a dynamo for growth, which also attracts suppliers and specialised service providers and creates competitive advantages for all enterprises involved, can develop.

Hence, a cluster in the sense of this study is linked to a port or at least two very closely located ports. In order to establish sustainable clusters, a minimum frequency of interaction is required. There are not too many ports in different countries located in close vicinity to each other in the PBG region. Therefore, in the region an "international cluster" could be established if companies of one country engage in the port of another country. This strategy follows, for example, the Guangxi Beibu Gulf International Port Group Co. Ltd. in Indonesia, Philippines and Malaysia.

The cluster causes direct increases in efficiency through the concentration of know-how and new technologies, which in turn lead to economies of scale. Also, further network effects are generated by the larger amount of enterprises with which cooperation would be possible. The mentioned concentration of know-how can expand to further organisations through spill-over effects, for example if an employee changes to another employer. All previously mentioned economic effects can cause multiplier effects.

Negative effects of cartelisation are only to be expected if in the course of the cluster building, companies would be taken over in a larger extend. This would have to be verified on an individual basis; in general this effect is not to be expected.

For German companies cluster building would be interesting if they can accompany the cluster building within consulting projects. The costs of a consulting project for cluster building are estimated at about 100,000 Euro.

Human Capacity Development

Competence development leads, in the first step, to an increase in efficiency. Depending on the deficits in the specific field of training, the training effects can be quite substantial regarding the learning curve.

Additional to that, newly gained knowledge can be dispersed nationally and within the region via spill-over-effects. Greater efficiency in port cargo handling and logistics in turn again lead to economies of scale. The networking of trainees can again lead to the "general improvement of cooperation" mentioned in 5.2 (Economic Effects).

German companies can acquire new customers by assisting as consultants in competency development, or directly by executing training measures. The extent of training will depend on available resources, field of specialisation, and level of participants and objectives of the training. For an international workshop, "Search and Rescue", for the execution of which also the necessary equipment and facilities have to be specified, the minimum estimate is 120,000 Euro. Standard training in the area of maritime security (ISPS) will cost about 40,000 Euro, for Port State Control we estimate approximately 320,000 Euro and for training in environmental protection approximately 120,000 Euro.

Logistics and hinterland transport

Improved logistics and hinterland connections on the one hand provide as infrastructure the basis for new industrial settlements, and on the other hand enable better links between individual companies corresponding networking effects. Both functional chains are carried forward to economic multiplier effects. In border regions additionally the "general improvement of cooperation" mentioned in section 5.2 (Economic Effects) can occur.

German companies can acquire new customers by assisting as consultants in competency development or directly by executing training measures. The costs for a development study on measures for improvements of logistics and hinterland transport can be estimated at 250,000 Euro. For a needs analysis for transport corridors, 90,000 Euro, and for the implementation of a corresponding training programme 400,000 Euro.

Marketing

Direct economic effects of marketing measures cannot be proven; however, indirect effects after operationally successful measures are possible.

German companies can prepare or accompany marketing measures as a consultant or by executing training. The costs for the elaboration of a concept and implementation of a joint marketing organisation for a port will approximately amount to 200,000 Euro. A training measure including the elaboration of a strategic marketing plan and assistance in implementation will cost about 60,000 Euro.

IT-Projects

Improvements in the area of IT improve business efficiency and therefore also lead to indirect economies of scale. In the case that IT systems are being unified and the communication between port service providers, clients and authorities is being facilitated, further incentives to expand business are the network effects. The same applies for the provision of IT infrastructure (infrastructure effects). Better planning of all logistics "movements" enables their minimisation while keeping up the same service level which in turn leads to reduction of emissions. By creating cross-national IT networks the "general improvements in cooperation" mentioned in section 5.2 (Economic Effects) can be expected.

German companies could for example benefit by selling consulting services for set-up and coordination of a port community system. The costs for this project, including a workshop in Europe amount to 180,000 Euro.

Environmental Protection

Environmental protection measures usually aim at direct reduction of emissions. Frequently, at the same time an increase of efficiency due to the use of better technologies and/or know-how is caused. An international coordination, e.g. in conferences and workshops can also lead to the „general improvement of cooperation" mentioned in section 5.2 (Economic Effects).

German companies could offer consulting and training services in this field, for example for coordination of tariffs for disposal of waste. The costs of a project like this amount to approximately 100,000 Euro.

Conclusion of Potential Cooperation

As can be drawn from the preceding section, negative effects of cartelisation are not to be expected by the mentioned cooperation measures. Therefore, only positive effects for the economy were identified. The expected socio-economic effects described above in section 5.1 are without exception positive as well. Only cooperation in the area of marketing does not automatically lead to positive economic or socio-economic effects – but not to negative effects, either.

Table 8: Effects of Cooperation

Possibilities for cooperation	Economies of scale	Increase of efficiency by technology and know-how	Networking effects	Infrastructural effects	Spill over effects	Multiplier effect	Reduction of emissions	Cartelization	General improvements of cooperation	Potential benefits for the German economy	Cost elements
Clustering	+	+	+		+	+				Consulting projects	Consulting: 100,000 €
(international) development of expertise	+	+			+				+	Consulting and advanced training projects	Seminar costs: sea rescue 120,000€; ISPS 40,000€; Port State Control 320,000€; Sea rescue/environmental protection 120,000€
(international) training centre	+	+			+				+	Consulting and advanced training projects	Depending on the equipment 1,5 mio to 5 mio €
Logistics			+	+		+			+	Consulting and advanced training projects	Development study 250,000€ Seminar costs 400,000€
Hinterland traffic			+	+		+			+	Consulting and advanced training projects	Demand analysis 90,000€ Seminar costs 400,000€
Marketing										Consulting and advanced training projects	Consulting on concepts and implementation of a marketing organization 200,000€ Seminar costs 60,000€
IT	+	+	+	+			+		+	Consulting projects	Consulting 180,000 €
Environmental protection		+					+		+	Consulting and advanced training projects	Consulting/seminar costs 100,000€

5.3 Monitoring of Effectiveness

The monitoring of the effectiveness of the implemented cooperation projects includes the assessment of the sustainability and the lasting success of projects. This can be done by different means:

- Reporting by project members as well as systematic or random reporting in the media or at conferences.
- Systematic control of success: in order to implement a systematic success control already during project planning the project objectives of each individual measure should be formulated in a specific way and made verifiable by indicators and milestones. Thus, project progress can be monitored continuously and deviations can already be detected at an early stage. At the end of the

project an external expert can evaluate the project as a whole on the basis of the project objectives and indicators.

The financial correctness of the implementation of the projects can be evaluated after finalisation of the project by an auditing firm (or the German Federal Court of Auditors).

For the cooperation projects described above, planning workshops should take place already at the beginning of the implementation. In these workshops the objectives should be substantiated, and precise indicators to monitor the achievement of objectives should be defined. On the basis of these objectives and indicators, a systematic monitoring can take place. Generally, the objectives of the proposed cooperation projects are promotion of the development of competitive economic structures and the development of the corresponding human capital. In the following, a rough overview of objectives and possible indicators is given. Partly, the effectiveness of the specific measures can only be evaluated by indirect indicators, which describe the results of individual working steps, as the success of the proposed projects depends not only on the implementation of the measure, but also on overall economic and political framework conditions. The mentioned implementation indicators have to be seen in chronological sequence.

Table 9: Monitoring of Effectiveness

Consulting

Project	Objectives	Indicators
Cluster building	Increase of efficiency of the processes through synergy effects	**Implementation indicators** Regional coordination centres to develop maritime clusters are established Measures to establish clusters are defined and are being implemented **Indicators measuring effectiveness** The clients are offered integrated services The number of jobs in the companies forming part of the cluster increases
Marketing	Set-up of a central contact point for clients	**Implementation indicators** Possibilities to develop a regional marketing organisation are investigated with the assistance of external experts An organisational structure and a membership structure is proposed and set-up Specific marketing measures to promote regional locations take place **Indicators measuring effectiveness**

		The ports which are being represented by the marketing organisation are being perceived as attractive cargo handling facilities which in turn leads to higher cargo volumes and new customers
Maritime environmental protection	Creation of high environmental and safety standards	**Implementation indicators** A study, investigating which ports in the PBG region could reasonably work together in the area of environmental protection, has been conducted The ports in the PBG region have oil and ship waste reception facilities **Indicators measuring effectiveness** Decrease of dumping of oil and ballast water at sea in the region Decrease of energy consumption in ports for cargo handling
Logistics and Hinterland transport	Smoother and client-oriented services	**Implementation indicators** Concepts to establish fast and efficient connections of the hinterland with the sea ports are elaborated with the assistance of external consultants Individual measures, like e.g. cooperation with inland terminals, development of new rail connections, better use of the inland waterways (were existing) are being implemented **Indicators measuring effectiveness** Number of clients using the integrated transport corridor has increased
IT	Port Community Systems have integrated interfaces	**Implementation indicators** International working group meetings to integrate Port Community Systems take place Joint workshops with comparable panels in the EU take place An external expert coordinates the integration activities **Indicators measuring effectiveness** The transmission of data from one Port Community System to another is possible and therefore the communication for all parties involved in maritime transport and cargo handling is facilitated

Source: HPC, 2013.

Competence Development

Project	Objectives	Indicators
Set-up of training centres	Development of capacities and qualifications in cargo handling and logistics	**Implementation indicators** Analyses of regional qualification needs are elaborated with the assistance of external experts Regional concepts to set-up training centres are elaborated with the assistance of external experts Detailed concepts for training and equipment / facilities needed are elaborated Training centres are being built Instructors and trainers are being trained First training measures take place **Indicators measuring effectiveness** The percentage of employees qualified according to the needs of the job and the companies has increased
Port marketing	Transparent presentation of the service capability of the ports to the clients	**Implementation indicators** Seminars and workshops to elaborate strategic marketing plans take place in the individual ports with the help of external trainers / consultants Marketing measures such as the set-up of meaningful and informative web-sites, selected international press activities, participation at trade fairs, direct client contacts etc. take place **Indicators measuring effectiveness** Cargo volumes and amount of clients have increased
Maritime Security	Improvement of security	**Implementation indicators** A concept to regionally standardise ISPS training has been elaborated ISPS training is standardised All staff mentioned in the ISPS Code and the guidelines for implementation is being trained regularly and according to the agreed standards **Indicators measuring effectiveness** The effectiveness of security controls is raised

		There are less attacks in the vicinity of ports
Port State Control / maritime environmental protection	Improvement of maritime protection Improved cooperation and coordination in port state control	**Implementation indicators** Training in the area of environmental protection and fighting against the consequences of maritime accidents took place. A working group to elaborate internationally standardised qualifications in the area of port state control on the basis of the Tokyo Memorandums is established Training and further qualification in the area of port state control is standardised Regular training for inspectors take place **Indicators measuring effectiveness** The number of sub-standard ships in the region is reduced
Search and Rescue	Coordination of joint rescue activities, Improvement of rescue and emergency missions through mutual learning („Twinning")	**Implementation indicators** Twinning of individual search and rescue organisations took place and regular experience exchange meetings take place **Indicators measuring effectiveness** The quality of support of vessels in emergency situations is raised – more people were saved from distress at sea or dangerous situations and more assistance for ships has been rendered than in the base year 2014

Source: HPC, 2013.

6. CONCLUSION

This report analysed potential fields of cooperation between ports and within the maritime sector in the PBG region and discussed them together with private sector, especially representatives of the maritime industry.

Theory, as well as international examples have shown a multitude of different possibilities of cooperation which were researched in this paper. However, just a small amount of these possibilities seem to be eligible, considering the PBG integration with German participation. The criteria to curtail the form of cooperation to focus on during the project are as follows:

- feasibility,
- regional scope (participation of several PBG countries),
- contribution to gain welfare in the PBG region,

The question of feasibility mainly depends on the economic realisation ability and the political will behind this regional mechanism. The first aspect could be estimated based on experience in that sector. The political will plays an especially important role if high investment volumes should be covered by various countries, as it is the case for implementing international transport corridors. Cultural willingness to cooperate plays a role too. Cooperation demands from all partners to share information and to jointly work towards common goals.

The four selection criteria, depending on different weighting, have shown some options for cooperation which are described in the chapters above. For most of the chosen types of cooperation there is no need to limit the cooperation to the initially defined focal ports.

Concluding an especially well fitting and promising possibility of cooperation regarding the selection criteria should be outlined here:

- Installation of a cluster, which preferably should have been engaged in that port before, for example as terminal operator. For this purpose the company would have to list its abroad facilities, and together with the GIZ and potential consultants choose one of the available ports.
- Nearly all interviewed persons wish more cooperation in the area of Capacity Development, staff training and exchange of experiences. Important aspects should be port state control, port management and the operational optimisation of port facilities and terminals.
- Cooperation within existing staff training structures in the region under the ACPBG framework.
- Even though the potential regarding hinterland logistics are bleak to date, there could be a possibility for cooperation in the long run. As there are many political decisions and significant investments still required, a tight cooperation between the Ministries of Transport of both countries is firstly needed. A first concrete project approach would be the mutual commissioning for the development of an international transport master plan for northern Viet Nam and the regions Yunnan, Guizhou and Guangxi.

- Cooperation of public institutions in the common-benefit field of activities such as environmental protection or SAR is requested by most of the interviewed persons. Environmental protection is considered as a field, where common standards, common staff training and coordinated measures can be most successful. A concrete example for this is intergovernmental consultation regarding a standard for flat rate disposal for oil residues and other waste in the ports of the PBG region.

The first steps for regional cooperation are regional workshops and conferences, where potential cooperating partners discuss areas open for collaboration, common objectives are discussed as well as the means needed to reach these objectives. It is most important to formulate common aims and to develop a strategy consisting of particular priorities and concrete measures. The approach of the *North Sea Commission* is a good example. First only general objectives and steps have been formulated and then all the participants figured out that no efficient cooperation could be reached. Only when concrete objectives, priority areas and measures were defined, all partners realised the advantage of cooperation and collaboration could actually start.

It is crucial to maintain a stakeholder forum in order to coordinate strategies and actions and to assure that no measures are executed twice and no individual and regional interests are disregarded. Furthermore, the added value of actions and advantages of cooperation need to be displayed further, and a broad agreement should be achieved.

Apart from workshops and conferences as first steps, which besides are not very costly, a formal network should be set up in order to be the base for further cooperation. By communicating on a regular base, individual needs of the participants become visible and it becomes easier and faster to react accordingly.

7. APPENDIX

Cluster Maritime Luxembourgeois

Created in 2008 as a non-profit organisation, the Luxembourg Maritime Cluster (CML) brings the Blue Economy of the Grand-Duchy to the fore. Member companies and institutions represent the local maritime business community, domestic and abroad. Members of the Cluster offer together a wide variety of maritime business experience and expertise: shipping, dredging, classification, ship brokerage, banking, law, consultancy & audit, insurance, security and safety, railway and maritime logistics.

Since 2011 the CML holds the Vice-Presidency and the General Secretary of the European Network of Maritime Clusters.

Website: www.cluster-maritime.lu/

DAKOSY (Datenkommunikationssystem AG)

As one of the leading IT and software service providers for the transportation industry and the logistic sectors in trade and industry, DAKOSY AG, located in Hamburg, has been providing solutions for freight forwarding and customs clearance for more than 30 years.

DAKOSY was founded in 1982 by the Seaport Industry as the Port Community System (PCS) for the port of Hamburg. The connected companies and authorities use the assistance for the PCS to optimise their import, export and transit processes.

More than 2,200 companies across Europe use DAKOSY AG's data centres for their electronic business communication.

Website: www.dakosy.de/...

EUROGATE

EUROGATE is one of Europe's main shipping line-independent container terminal operators with excellent connections to the European hinterland. The handling of containers at seaports is EUROGATE'S core business. In 2013, they handled over 14 million TEUs at 11 terminal locations. As a shipping line-independent container terminal group they operate sea terminals jointly with their sister company Contship Italia on the North Sea, in the Mediterranean region as well as on the Atlantic.

Website: www.eurogate.de/...

Hamburger Hafen und Logistik AG (HHLA – *Port of Hamburg Logistics*)

Hamburger Hafen und Logistik AG is a German logistics and transportation company. The Group's subsidiary companies and affiliates are organised in four segments (Container, Intermodal, Logistics, and Real Estate). The firm operates three container terminals at the Port of Hamburg as well as cargo handling and transport services by rail, road and sea. HHLA offers its clients a wide range of services along the entire logistics chain.

Website: www.hhla.de/...

Metrans

Metrans provides intermodal rail-road transportation services operating own shuttle trains to and from the Czech Republic, Slovakia, Hungary and new services to German hinterland and Austria, connecting this territory by rail with major European ports, including Hamburg, Bremerhaven, Rotterdam and Duisburg, or southbound rail connection to Koper, Trieste, Rijeka and a new shuttle train service to Istanbul. Metrans has its own hinterland railway container terminals and can offer its transport and handling services regardless of state railways.

Website: www.metrans.eu/

North Sea Commission

The North Sea Commission is a cooperation platform for regions around the North Sea. It represents 34 member regions from 8 countries bordering the North Sea (Norway, Sweden, Denmark, Germany, The Netherlands, France, England and Scotland). Its mission is to further partnerships between regional authorities which face the challenges and opportunities presented by the North Sea. Through dialogue and formal partnerships it seeks to promote common interests, especially in relation to European Union institutions, national governments and other organisations dealing with issues that are relevant to the North Sea.

Website: www.northsea.org/

Port Cooperation Community Unterelbe (Lower Elbe Cooperation)

The goal of the Lower Elbe Cooperation is to prepare a joint marketing strategy for future activities. This includes representation at international trade fairs and exhibitions. Another objective is joint land management in the Lower Elbe region. The aim is to ensure that companies are encouraged to settle or to remain in the area and thus ensure continued growth in seaborne.

Port of Hamburg Marketing Association (HHM)

With location marketing, the Port of Hamburg Marketing Association aims to consolidate and expand Hamburg's position in the market as a port/logistics region. In Hamburg, as its base, and in its market regions, the HHM works closely with logistics initiatives as well as chambers of industry and commerce, and other associations and organisations. Its thirteen representative offices in Europe and overseas represent the interests of the Port of Hamburg and its members in the hinterland of Germany and in foreign markets.

Website: www.portofhamburg.com/...

GIZ "Regional Economic Cooperation and Integration in Asia (RCI)"-Programme

Background

Regional economic cooperation and integration are consensually seen as key to Asia's future development, whose architecture is built largely on subregional initiatives with so far only few, lean regional institutions. Subregional economic cooperation initiatives aim at promoting cooperation in specific areas, like trade and transport, investment, tourism, energy or environment. Given the development gaps in the region, it is even more important to make regional cooperation inclusive and to ensure that the smaller countries can access benefit from regional actions.

Our Approach

The RCI Programme supports regional and national stakeholders in the context of subregional cooperation initiatives by providing capacity building, organising trainings and dialogue events, and conducting sector studies.

Fact Box RCI	
Project name	Regional Economic Cooperation and Integration (RCI) in Asia
Commissioned by	German Federal Ministry for Economic Cooperation and Development (BMZ)
Key subjects	Trade and investment facilitation, port cooperation, local cross-border economic cooperation and social implications of economic integration
Duration	2011 – 2015

Subregional initiatives can foster the development of regional and local production networks and help to overcome limitations of domestic markets. Therefore, cooperation projects within this scope have the potential to close development gaps by boosting economic growth through trade facilitation. By these means, resources for poverty reduction can be generated that lead to a more sustainable, inclusive growth within the subregion.

The cooperation encompasses the focus areas of the Regional Cooperation and Integration within the framework of the ASEAN-China Pan-Beibu Gulf (ACPBG) Economic Cooperation and within the Greater Tumen Initiative (GTI). In addition, best practices of regional cooperation are transferred among the named Asian regional initiatives as well as Central Asia Regional Economic Cooperation (CAREC) and Greater Mekong Subregion (GMS).

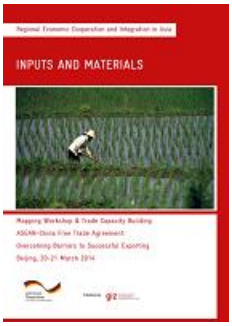
Focus Areas

- Addressing functional aspects of regional cooperation and integration within ACPBG by organising studies and capacity building activities.
- Contributing to the implementation of concrete projects in the GTI priority areas of trade, transport, and local cross-border cooperation.
- Promoting peer-to-peer learning and exchange of good practices among regional initiatives, leading to pilot replication of lessons learnt.

Other Publications by RCI

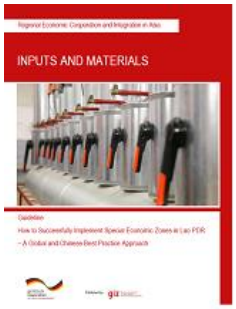
The GIZ RCI Programme publishes regular updates on its activities to offer insights and disseminate regional knowledge on integration processes in Asia. To download please refer to http://www.scribd.com/Rci ASIA or http://de.slideshare.net/RCI-Asia

Inputs and Materials

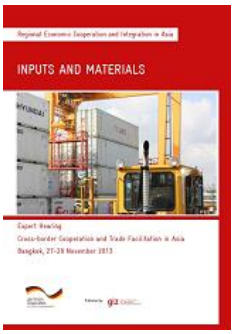


Mapping Workshop - ASEAN-China Free Trade Agreement

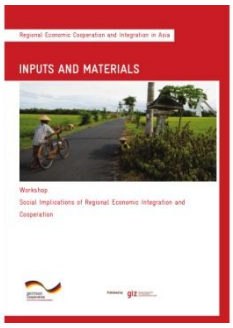
Development of Ferry Boat Routes in Northeast Asia



How to Successfully Implement Special Economic Zones in Lao PDR



Cross-Border Cooperation and Trade Facilitation in Asia



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