



India Port Sector Policy Review Study

Policy papers, case study and capita selecta
draft report

Client: World Bank

Rotterdam, 2 March 2012



India Port Sector Policy Review Study

Policy papers, case studies and capita selecta – draft report

Client: World Bank

Marten van den Bossche
Eric van Drunen
Katrien Dusseldorp
Johan Gille
Hans Vogelaar

Rotterdam, 2 March 2012

About Ecorys

At Ecorys we aim to deliver real benefit to society through the work we do. We offer research, consultancy and project management, specialising in economic, social and spatial development. Focusing on complex market, policy and management issues we provide our clients in the public, private and not-for-profit sectors worldwide with a unique perspective and high-value solutions. Ecorys' remarkable history spans more than 80 years. Our expertise covers economy and competitiveness; regions, cities and real estate; energy and water; transport and mobility; social policy, education, health and governance. We value our independence, integrity and partnerships. Our staff are dedicated experts from academia and consultancy, who share best practices both within our company and with our partners internationally.

Ecorys Netherlands has an active CSR policy and is ISO14001 certified (the internationally recognized quality standard for environmental management systems). Our sustainability goals translate into our company policy and practical measures, such as printing our documents on FSC certified paper.

ECORYS Nederland BV
Watermanweg 44
3067 GG Rotterdam

P.O. Box 4175
3006 AD Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com
Registration no. 24316726

W www.ecorys.nl

Ecorys Transport & Mobility
T +31 (0)10 453 87 60
F +31 (0)10 452 36 80

Picture front page: Tuticorin Container Terminal (Source: Portstrategy.com)

One page summary

1. India needs to develop additional port capacity to facilitate imports and exports and to support the growth of its economy. This additional capacity concerns bulk and containerised cargoes and needs to provide sufficient draft for the largest ships;
2. The Indian economy needs efficiently organised and efficiently operated ports, to make sure that the maritime infrastructure is used as optimal as possible;
3. Competition in the port sector should be promoted, and where necessary regulated, as competition will lead to efficiently organised and operated ports;
4. The logistics flow of trade through ports (and in fact along the entire transport chain) should be supported by efficiently organised information exchange;
5. The increasing pressure on India's rail and road network could partly be relieved by developing short sea shipping as a sustainable alternative mode of transport;
6. Ports should be developed as international connection nodes in structural economic development, aimed at strategically positioning ports as nodes in transport and economic corridors.

Table of contents

One page summary	3
1 Introduction	11
1.1 Background of this study	11
1.1.1 This report	11
1.2 Policy papers	12
1.2.1 Paper on port governance	12
1.2.2 Paper on stakeholder coordination	12
1.3 Case studies	13
1.3.1 Description of the four case studies	13
1.3.2 Methodology of the case studies	15
1.4 Other capita selecta	16
2 Policy paper on port governance	17
2.1 Trends & Challenges	17
2.1.1 Trends	17
2.1.2 Challenges	17
2.2 Governance Structures	18
2.2.1 Introduction	18
2.2.2 Port governance models	18
2.2.3 Port reform modalities	20
2.2.4 Contemporary landlord roles and functions	21
2.2.5 Geographic governance levels	21
2.3 Economic Regulation	22
2.3.1 Introduction	22
2.3.2 Port competition	22
2.3.3 A port regulatory policy and system	24
2.3.4 Regulatory governance	24
2.3.5 Towards an independent competition regulator	25
2.3.6 International practice	26
2.3.7 Conclusions	30
2.4 Port Governance in selected countries	31
2.4.1 Introduction	31
2.4.2 USA	31
2.4.3 Canada	32
2.4.4 UK	33
2.4.5 Netherlands	33
2.4.6 Germany	34
2.4.7 European Union	35
2.4.8 Australia	37
2.4.9 South Africa	38
2.4.10 Japan	38
2.4.11 Hong Kong and China	39
2.5 Conclusions on port governance	41
3 Policy paper on port stakeholder coordination	42

3.1	Roles and functions of a Port Authority	42
3.1.1	Port sector reform models and modalities	42
3.1.2	The European scene	42
3.1.3	Summarizing enhanced roles/functions of a contemporary landlord	45
3.2	Private sector involvement	46
3.2.1	Introduction	46
3.2.2	PPP Models in the Ports Sector	46
3.2.3	The World Bank PPI Database	47
3.2.4	Recent results	49
3.3	Urban context	50
3.3.1	Introduction	50
3.3.2	History of waterfront redevelopments	50
3.3.3	The urban experience, selected port cities	51
3.3.4	Conclusions	55
3.4	Bulk handling	55
3.4.1	Introduction	55
3.4.2	Bulk trades and ports	56
3.4.3	Canada	57
3.4.4	Brazil	58
3.4.5	South Africa	58
3.4.6	Australia	59
3.4.7	Conclusions	60
3.5	Conclusions on port stakeholder coordination	60
4	Case 1: development of a national port network in Turkey	62
4.1	Introduction	62
4.1.1	Context	62
4.1.2	Geography	62
4.1.3	Economic developments	63
4.1.4	Cargo volume development	63
4.2	Transformation in the physical infrastructure	64
4.2.1	Port infrastructure	64
4.2.2	Other transport infrastructure	64
4.3	Objectives that guided this transformation	65
4.4	Evolution in institutional relationships	65
4.5	Underlying governance structure	65
4.6	Legislative changes	66
4.7	Cross country comparison	66
4.8	Sources:	66
5	Case 2: the Maputo development corridor	67
5.1	Introduction	67
5.1.1	Context	67
5.1.2	Cargo volume development throughout the years	68
5.1.3	Political developments	69
5.1.4	Cross country comparison	69
5.2	Transformation in the physical infrastructure	73

5.2.1	Port infrastructure	73
5.2.2	Rail infrastructure	74
5.2.3	Road infrastructure	74
5.3	Objectives that guided this transformation	74
5.3.1	Maputo Corridor Logistics Initiative	75
5.4	Evolution in institutional relationships	75
5.5	Underlying governance structure	76
5.6	Legislative changes	76
5.7	Conclusions	77
5.8	Sources:	77
6	Case 3: Insuring competition in the provision of port services	79
6.1	Scoping: port services	79
6.1.1	Services provided 'on the ship'	79
6.1.2	Port services and charges on the cargo	81
6.1.3	Other types of services and charges	81
6.2	The problem: competition issues in the provision of port services	82
6.2.1	Possible approaches for governments	84
6.3	Regulatory solutions developed in the EU	85
6.3.1	The legislative process until date	85
6.3.2	The focus of the 2004 Second Port Package	86
6.4	Impacts of the EU port package approach	87
6.5	Regulation of port services provision in the UK	90
6.6	Impacts of the UK approach to port services regulations	92
6.7	Conclusions	94
6.8	Literature	94
7	Case 4: redevelopment of old port facilities in Boston	97
7.1	Introduction	97
7.2	Cross-country comparison	97
7.3	Transformation in the physical infrastructure	100
7.3.1	Location 1: Downtown Boston	101
7.3.2	Location 2: Charlestown	102
7.3.3	Location 3: East Boston	102
7.3.4	Location 4: South Boston	103
7.3.5	Water pollution	103
7.4	Objectives that guided the transformation	103
7.4.1	Main drivers for redevelopment	103
7.4.2	Development plans and objectives	104
7.5	Evolution in the institutional relationships and underlying governance structure	105
7.6	Legislation on redevelopment projects	107
7.6.1	Chapter 91 of the General Law of Massachusetts (1866)	107
7.6.2	Chapter 121B of the General Law of Massachusetts; Housing and Urban Renewal (1957)	107
7.6.3	Housing and Urban Redevelopment Act (1965)	108
7.6.4	Urban Redevelopment Corporations Act (1968)	108
7.6.5	Coastal Zone Management Act (1972)	108

7.6.6	The Commercial Area Revitalization District program (CARD) (1978)	108
7.6.7	MWRA enabling act (1984)	109
7.7	Conclusions	109
7.8	Sources	109
8	Other capita selecta	111
8.1	International comparison on port efficiency	111
8.1.1	Introduction	111
8.1.2	Comparison of container port capacity	111
8.1.3	Comparison of container port performance	115
8.1.4	Comparison of bulk port performance	116
8.1.5	Ship size economies and comparison of port drafts	117
8.2	Port competition and regulation	119
8.3	Improved data handling in ports	122
8.4	Short sea shipping potential	123
8.4.1	Marco Polo	123
8.4.2	Motorways of the Seas	124
8.4.3	Short sea network	124
8.4.4	Short sea shipping in Vietnam	124
8.5	Ports and corridor development	125
8.5.1	Priority axes in the TEN-T network	126
8.5.2	Corridor development agencies in Africa	127
8.5.3	The Mumbai-Delhi industrial corridor in India	127
8.6	Concluding remarks	128

1 Introduction

1.1 Background of this study

The World Bank has been asked to support the Rakesh Mohan Committee in India. This committee has been assigned to advise the PM of India with a clear vision on the long term needs for infrastructure in India. The World Bank has asked Ecorys to support the World bank with respect to the future need of sea port infrastructures and regulatory frameworks in which the sector can develop itself.

The overall request for support of the RM committee to the World Bank regarding sea port development was the following:

- Policies & regulatory framework to enhance competition and reduce charges for use of ports
- PPP systems with advantages and disadvantages
- International comparison on port efficiency
- International experiences with policy frameworks to encourage coastal movement of freight
- Documentation systems for processing of import/export cargo to reduce processing time at ports
- Impact of inland connectivity and its capacity and service level on port operations

It was expected from Ecorys to provide the RM committee with best practices from other parts in the world, in order to facilitate the committee in developing its recommendations in this important part of the transport system as a whole.

Given the wide variety of topics in the ToR , this report reads as a capita selecta: each part can be read separately, but reading the whole gives a clear idea on which topics are to be of key relevance in setting a long term perspective for the port development in India.

Moreover the World Bank sought to update the study “*India: Port Sector Development – Possibilities for Accelerating Growth*” that was delivered in 2007. This assignment has also been carried out by Ecorys, but is reported separately.

1.1.1 This report

This report covers the results of the work on all of the above elements, except the update of the India Port Sector Study with new figures on Indian ports. This update is presented in a separate report that follows the structure of the 2007 port sector study and that can be seen as an addendum to it.

In this report, two policy papers (on regulation and stakeholder participation), some case studies and other capita selecta are presented. These elements cover various topics that do not necessarily connect with each other. This report has three main sections:

1. Policy papers: chapters 2 and 3;
2. Case studies: chapters 4 to 7;
3. Capita selecta: chapter 8.

1.2 Policy papers

Against the background of the changing scene of international shipping and ports, the World Bank has invited Ecorys to draft a condensed “state-of-play” summary of the sector in two Policy Papers, one on “Governance”, the other on “Stakeholder Coordination”.

The objective of the Policy Papers is to yield international best practice on issues and trends in contemporary Port Policies, Governance and Stakeholder Coordination relevant to the Indian situation.

Point of departure is the World Bank's *Port Reform Toolkit*¹ (2007), which still stands as the basic source of information on Ports, Shipping and Logistics. Recently, some more emphasis is put on:

- Further implementation of the Landlord Port Management Model
- Evolving private sector participation
- Changing roles and functions of port authorities
- Legislative and regulatory frameworks

1.2.1 Paper on port governance

According to its Terms of Reference, the Policy Paper on Governance shall cover following topics:

- “The relative merits of management of port development through federal or state organisations, autonomous authorities or municipal governments”;
- “The economic regulation of the ports”.

The outline of the paper on port governance (chapter 2):

- First, some main trends and challenges in international shipping and ports, calling for enhanced governance and stakeholder coordination are discussed in section 2;
- Next, section 3 is on Management/administration models, featuring varying involvement of public and private sectors, and section 4 deals with Economic Regulation;
- Finally, an overview of Governance structures in selected countries is presented in section 5, from which conclusions are drawn in section 6.

1.2.2 Paper on stakeholder coordination

According to its Terms of Reference, the present Policy Paper on Stakeholder Coordination shall cover following three topics:

- The involvement of the private sector in the development of port infrastructure;
- The conflict between urban development and the expansion of port operations;
- The development of dedicated bulk-handling facilities outside of the boundaries of the existing public ports.

The outline of the paper on stakeholder coordination (chapter 3):

- First, some main trends and challenges in international shipping and ports, calling for enhanced governance and stakeholder coordination are discussed in section 2;

¹ The online World Bank (2007) *Port Reform Toolkit, Second Edition* by Public-Private Infrastructure Advisory Facility (PPIAF) : <http://www.ppiaf.org/ppiaf/sites/ppiaf.org/files/documents/toolkits/Portoolkit/Toolkit/index.html>

- Next, section 3 deals with Functions and Roles of Port Authorities;
- Finally sections 4, 5 and 6 present results on the issues “PPP”, “Urban” and “Bulk”, and some conclusions in section 7.

1.3 Case studies

The case studies in this report are presented as separate chapters, in the following order:

- Chapter 3: Development of national port networks – supported by the case of Turkey;
- Chapter 4: Development of road and rail freight corridors – described in the case of the Maputo corridor in Mozambique and South Africa;
- Chapter 5: Insuring competition in the provision of port services – as illustrated by the regulation of port services in the European Union;
- Chapter 6: Redevelopment of older port facilities – presenting the case of Boston as an example.

1.3.1 Description of the four case studies

Case 1: Development of national port networks

This case study gives insight into the role of government during a period in which the demand for port capacity is expanding due to growth of intra-regional trade. The case considers the role of the government in guiding the port planning. Considerations are the planning process applied and how the plans of various ports were integrated, the pace of capacity expansion and the way this expansion was implemented (for instance private versus public investments). The proposed example case involved is the port network in Turkey added with observations readily available from other Ecorys assignments.

Example: Development of national port networks in Turkey

Turkey is experiencing a strong economic growth that translates into strong growth of freight transport volumes. The country furthermore has the ambition to become a major logistic hub between Europe, the Balkan countries, the Black Sea, the Middle East and the Eastern Mediterranean. An important element in the realization of this ambition is the development of a trade and transport network, in which Turkish ports will play a major role. In this respect Turkey is decentralizing, deregulating and privatizing its public sector, which has major consequences for port development. On the one hand the Turkish Government tries to realize additional port capacity by privatizing ports, on the other hand the Government will make major investments in additional port capacity, particularly for container handling. Major challenges in this process are the reorganization of public involvement in the port sector and combining the safeguarding of national interests with private involvement in port development. The approach to this case study builds on experience and information gathered by Ecorys in recent work in Turkey.

Case 2: Development of road and rail freight corridors

Railway infrastructure is an important prerequisite for shipping goods from and to seaports. Due to its economies of scale, rail transport is particularly important for the transport of bulk goods, such as coal or iron ore. Without rail access, transportation of these goods would become too expensive. Besides for bulk goods, rail transport can also be used for the shipment of containers. In these cases, rail transport is often seen by governments as a way to alleviate road congestion. In this case study, the role of governments in both a bulk rail corridor (South-African case) and a container transport corridor (the Rhine Delta – Ruhr region case) are presented..

Example: South-African cross-border rail corridor

A good example of a cross border corridor in South Africa is the Maputo corridor, linking the port of Maputo in Mozambique with the production and consumption centers in the North-Eastern part of South Africa (provinces of Gauteng, Mpumalanga and Limpopo). The Maputo corridor is promoted by the Maputo Corridor Logistics Initiative, in which governmental bodies, transport operators and users work together to develop the corridor and to eliminate bottlenecks. Examples of their activities are initiation of cooperation between the Mozambican and South African railway companies, promotion of the streamlining of border crossing procedures and trial runs of container block trains. This case study will build on a recent study on the competitive position of the port of Maputo by Ecorys and on material available on the Rhine Delta-Ruhr region corridor.

Case 3: Insuring competition in the provision of port services

In ports, services such as stevedoring or pilotage are often performed by one or a few firms per port. As a result, possible lack of competition could provide companies with a degree of market power and the ability to exploit customers, for example through higher prices. Besides competition issues by private service providers, also port charges set by the port authorities do not always reflect fair pricing. Governments try to compensate the market power of these service providers and port authorities through various types of measures, such as setting upper limits for prices or regulating the service period of an operator. Depending on the effectiveness, further development of such regulatory models is often seen. In this case study, examples are presented for the EU as a whole.

Example 1: Port services in EU continental ports

Competition between seaports is fierce in some EU regions, notably the Hamburg – Le Havre range, which contains the biggest EU ports. Each port follows its own strategy to attract market share. Typically ports distinguish between market segments, where some segments are more captive than others. For instance the handling of crude oils is often associated with refineries located in a port, limiting the ability of operators to shift to other ports and therefore giving the port authority some freedom to raise port charges. In the container segment on the contrary operators are very footloose, as each port offers handling capacity and hinterland services to the often overlapping hinterland regions. Therefore port authorities tend to keep their charges low for this segment. An Ecorys study for the European Commission revealed that the difference could be a factor 3 or more.

Besides, port authorities do not only depend on port charges paid by vessels calling, but also from land rental revenues (in cases where the port authority owns the land). Again this allows for variation, e.g. by attracting terminal operators with low land lease prices which are then compensated with higher call costs. Competition may be affected by this and the EU has sought for measures to create a level playing field. The so-called Port Package is the result of this and has been heavily debated in the sector. This case study uses the EU Port Package as an example and draws on case material from some 20 EU ports gathered by Ecorys.

Case 4: Redevelopment of older port facilities

Due to changes in competition, economic decline of a region or changes in the location of main port activities, older port facilities sometimes become decayed. Often these facilities are located fairly central in urban areas. In order to revitalise such areas, urban governments invest in the redevelopment of these old ports by introducing new functions, such as a residential or office

function. Numerous examples of such redevelopment exist throughout the world. This case study will present one example from the US, added with readily available material from other cases.

Example: Long Wharf and Custom house district Boston

Boston was an important trading port up until the first half of the 20th century. However, the competitive position of the port declined rapidly due to obsolete infrastructure and other market factors at that time. In the first half of the 1980s the port was in bad shape both in terms of commercial viability, and of habitability due to water pollution. In order to counteract these problems, local government initiated several projects. Firstly, the government created the Massachusetts Water Resources Authority which had as a task to resolve the harbour water pollution problem. Secondly, the government started building an underground expressway, connecting the wharf area with the downtown financial district. Thirdly, the area was further redeveloped, partly retaining the historic buildings and partly replacing them by new buildings. The elaboration of this case is based on publicly available material.

1.3.2 Methodology of the case studies

In the ToR, six components are mentioned that should be covered in the case studies.

1. A cross-country comparison
2. The transformation in the physical infrastructure occurring over the last quarter century
3. The objectives that guided this transformation and how they changed
4. The evolution in institutional relationships that occurred over this period
5. The underlying governance structure that permitted these changes to take place
6. Any legislative changes that helped this to occur

These components will be described below.

1. Cross-country comparison

First part of the case studies consists of an overall comparison of the context in which the case study takes place. This part describes the overall economic, political and social context of the countries and changes that occurred in this context over the last 25 years. Furthermore, a comparison between the countries in the case study and the Indian situation is presented if information is available. Sources that are used for this part of the case studies are country reports of World Bank and other institutions.

2. Transformation in the physical infrastructure

The second part describes changes that have occurred within the relevant port (or hinterland) infrastructure within the given timeframe. The scope of this part is different for each case study. For instance, in the case study on the development of port networks describes the changes in the port capacity of the different ports and the services offered between these ports, while the case on redevelopment of facilities describes the transformation process from an old port into its new function.

3. Objectives that guided this transformation and how they changed

After the presentation of the actual changes, an analysis of the underlying drivers to change is made. This element not only focuses on the objectives of the government, but also looks into the objectives of various other stakeholders, such as port authorities and terminal operators. The section describes the type of objective (economic, social, political, etc.), the process in which these objectives were put forward and changes in these objectives over time.

4. Evolution in institutional relationships that occurred over this period

This section considers changes in the role of the government agencies during the different stages of development, for instance from public investor into facilitator of private investments. It may also refer to the set-up of new government agencies in order to better facilitate the necessary transformations. This section considers drivers to such changes and describe the results of these changes (for instance less costs, more competition, etc).

5. Underlying governance structure that permitted these changes to take place

Section five of the case studies presents the underlying government structure and the interdependencies within this structure. Relevant legislative frameworks as well as the decision-making processes and powers of the government bodies involved are addressed. It provides an analysis on how these structures contributed or were a barrier to change.

6. Legislative changes that helped this to occur

Lastly, any changes in legislation that occurred are described. Legislation changes can refer to changing roles of the government agencies (then they link to component 4 above), decision-making processes or to additions in the legislative environment. Also they can come as policy measures not with a regulatory but with an incentivising character. This section is of considerable importance in the case study on ensuring competition in port services.

7. Conclusions

Each case study ends with an overview of conclusions and lessons learnt with regard to the role of the government. The conclusions give an overview of the best practices (if any to be found) and analyse how these cases could be translated into the Indian situation.

1.4 Other capita selecta

The other capita selecta concern the following issues:

1. International comparison on port efficiency
2. Policies & regulatory framework to enhance competition and reduce charges for use of ports
3. PPP systems with advantages and disadvantages
4. International experiences with policy frameworks to encourage coastal movement of freight
5. Documentation systems for processing of import/export cargo to reduce processing time at ports
6. Impact of inland connectivity and its capacity and service level on port operations

A presentation on these capita selecta was made to the Rakesh Mohan Committee on February 8th. This report contains an elaboration of this presentation.

2 Policy paper on port governance

2.1 Trends & Challenges

The international port sector is facing significant changes in economic and social conditions, and transport/logistics markets which are to be addressed by Governments, Port Authorities, Private Sector and Port Communities. A summary of trends and challenges is given below.

2.1.1 Trends

- Low transport cost along with information technology developments, have made it possible for companies to globalize their manufacturing.
- Ports are focal points in international logistic chains, and globalisation makes that inter-port competition is more and more becoming chain competition.
- Main players in global networks (shippers, carriers, ports/terminals) engage in vertical integration in an attempt to gain scope of control of the entire supply chain.
- Global container carriers employ steadily growing ship-sizes between major (transshipment) ports/terminals, using hub-and-spoke systems.
- Technological changes in the handling of containers and bulk tend to call for more space in existing ports than can be provided by surrounding cities, inspiring operators to move beyond the urban boundaries.
- Hinterland transport costs, usually the major share in door-to-door logistic costs, are increasingly determining shippers' route choice. Port competition is growing as hinterlands are enlarging and overlapping. Port captivity is getting rare in most countries.
- Inter-modalism (rail, barge corridors linking hinterland terminals with ports) is advocated by e.g. the European Commission, to pursue traffic safety and environmental objectives.
- In many countries, clusters of regional ports and linked industrial and logistic activities are emerging, usually led by one major port in cooperation with smaller ones. Port competition becomes cluster competition.
- A "community approach" has been adopted by ports, reflecting the need felt by authorities and society to involve all port related business and social groupings in matters of common concern. Increasingly, ports employ Port Community Systems: shared information systems according to the "Single window trading environment" concept.
- Urban conflicts are growing between the city and its port, in terms of spatial demands and negative environmental and safety/security impacts associated with increasing port throughputs (in particular "dirty bulks"). Once port activities have moved, many cities engage in urban (waterfront) redevelopment projects.

2.1.2 Challenges

To avail of:

- A stated Port Policy, embedded in a National Transport Policy, at National, regional and local level.
- Specification of Port Governance (who is responsible and accountable for what), in particular:
- The functions and roles of public and private sectors in Ports, Transport and Logistics, in particular:
 - The institutional position and objectives of a Port Authority
 - A regulatory framework, addressing:
 - Level-playing-field competition between ports

- Environmental and safety/security conditions in ports
- Stakeholder coordination (at national, regional and local level), involving:
 - Public and private parties in port management and operations
 - Members of the port community
 - Urban players (port, authority, society)

2.2 Governance Structures

2.2.1 Introduction

Port Governance is structured by ownership and administration/management models and regulatory frameworks. These matters have been duly assessed in the World Bank/PPIAF Port Reform Toolkit (hereafter referred to as “Toolkit”). Here we confine ourselves to a short summary of the Toolkit findings, with special attention to their dynamics and recent developments.

2.2.2 Port governance models

During the past three decades, extensive discussions on port reforms centred particularly on the relevance of a number of port management or administration models:

- Service port model
- Tool port model
- Landlord port model
- Private sector port

The choice of model adopted in each country is influenced by the way the ports are organized, structured, and managed. These factors include the socioeconomic structure of a country, the historical development of the port, the location of the port (urban area or isolated region), and the types of cargo that are typically handled (liquid or dry bulk, containers).

These models differ by whether the services are provided by public sector, private sector or mixed ownership providers, their orientation (local, regional or global), who owns the superstructure and capital equipment, and who provides dock labour and management.

Service port model

This is a predominately public model in which the Port Authority owns the land and all available assets (fixed and mobile) and performs all regulatory and port functions. All cargo-handling operations are performed by labour directly employed by the Port Authority. This model is used in a (decreasing) number of developing countries.

In Service Ports, the port is usually controlled by the Ministry of Transportation (and /or Communications). The Chairman of the Port Authority is usually a civil servant responsible for port administration, and who directly reports to the appropriate Minister. In some cases, cargo-handling services are performed by separate public entities; this division of operations between separate public entities can present unique management challenges.

Under this model, the same organization has the responsibility for performing regulatory functions, developing infrastructure and superstructure, and executing operational activities. Generally there is an absence of private sector involvement in port activities.

It can be said that the strength of this model lies in the fact that facilities development and operation are the responsibility of only one entity, making for a streamlined and cohesive approach to growth. On the other hand, the dearth of internal competition can lead to inefficient port administration, or to a lack of innovation, and services that are not user-oriented or market oriented. Dependence on government for funding may lead to wasteful use of resources or under-investment.

Tool port model

This model is characterized by divided operational responsibilities. The Port Authority owns, develops, and maintains the port infrastructure and superstructure, including cargo-handling equipment such as quay cranes, forklift trucks etc. The operation of Port Authority equipment is usually performed by Port Authority labour, but other operations are performed by private cargo-handling firms, on board vessels as well as on the quay and apron. The private operators are usually small companies.

While the model results in an avoidance of duplication of facilities because investment in infrastructure and equipment is provided by the public sector, the fragmentation in responsibility for cargo-handling can lead to conflict between small operators and between the stevedoring companies and port administrators; another weakness of the model is that there is also a risk of under-investment. Strong stevedoring companies are not developed as a local economic benefit.

Landlord port model

In this model, the Port Authority maintains ownership in the port while the infrastructure is leased to private operating companies. The responsibilities of the Port Authority as landlord include economic exploitation, the long-term development of the land, and the maintenance of basic port infrastructure such as access roads, berths, and wharves. The private operating companies that lease from the Port Authority provide and maintain their own superstructure and purchase and install their own equipment. Dock labour is also employed by the private leasing companies.

The strength of this model is that the same entity both executes operations and owns the cargo-handling equipment; therefore, the planning is likely to result in better outcomes and be more likely greater responsiveness to changing market conditions. However, there is a risk of over-capacity as more than one private operator may pressure for expansion. Also, there may be duplication of marketing effort as both terminal operators and the port authority visit potential customers; greater co-ordination of stakeholders and planning is required with this model.

Private service port

In this model, the public sector (the state) no longer has any interest in port activities. Port land is owned by the private sector. All regulatory functions and operational activities are performed by private companies. This is the model used in many ports in the United Kingdom.

A disadvantage of model could become apparent if the government opts to privatize the regulator functions to be outsourced to the port, creating a potential for abuse of a natural monopoly position. A particular strength of the model is that port development and tariff policies tend to be market oriented. On the other hand, this type of model may result in monopolistic behaviour as well as a loss of public involvement in developing long-term economic policy and strategies.

Summary on the port governance models

Table 2.1 Gradations of port sector devolvement
Table 2.1 below summarizes varying gradations of port sector devolvement.

Table 2.1 Gradations of port sector devolvement

Type	Infrastructure	Superstructure	Port labour	Other functions
Public service port	Public	Public	Public	Majority public
Tool port	Public	Public	Private	Public/private
Landlord port	Public	Private	Private	Public/private
Private service port	Private	Private	Private	Majority private

Source: Port Reform Toolkit, World Bank 2007

By now, the Landlord model is the mainstream port governance structure worldwide and becoming the dominant port model in larger and medium sized ports. Summarizing: the Landlord port is characterized by its mixed public-private orientation. Under this model, the publicly governed port authority acts as regulatory body and as landlord, while port operations (especially cargo-handling) are carried out by private companies.

Though widely acknowledged, the Landlord Model is not fully implemented everywhere since port reform requires institutional and managerial competence which is not always available in port organisations. Moreover, transition to the Landlord Model assumes a regulatory framework in place geared to encourage fair competition on a level playing field. See next chapter on Economic Regulation.

2.2.3 Port reform modalities

Governments and port managers can select from among a variety of strategies for improving organizational and operational performance, including:

- Modernization of Port Administration and management.
- Liberalization or deregulation port services.
- Commercialization.
- Corporatization.
- Privatization.

Each of these options may be equally valid and successful forms of port reform, depending on the setting of the port in question.

Modernization of port administration assumes that performance can be improved by introducing more suitable systems, working practices, or equipment and tools within the existing system of bureaucratic constraints. The advantage of this strategy is that certain changes in the organization can be made without the requirement to change laws or national policy.

Liberalization and deregulation are the reform or partial elimination of governmental rules and regulations that enable private companies to operate in an area where previously only the public sector was allowed to operate.

In the case of commercialization, although the public port is not transformed into a private company, it is given more autonomy and made accountable for its decisions and overall performance. A commercialized port authority applies the same management and accounting principles as private firms and can adopt private sector characteristics and practices to become more customer oriented as well as more efficient and profitable.

In the case of corporatization, a public port enterprise is given the legal status of a private company, although the public sector or government still retains ownership. All assets are transferred to this private company, including land lease rights. Land ownership usually remains with the port authority. Having completed the corporatization of port operational activities, subsequently one can consider the corporatization of the port authority as a regulatory body.

The most complex form of reform is privatization, defined as²: "...the transfer of ownership of assets from the public to the private sector or the application of private capital to fund investments in port facilities, equipment, and systems."

Although there are significant regional differences, it may be concluded that – generally – in countries with an open economy and trading policy, the Port Authority is usually corporatized, at arms' length distance from the parent government entity with sufficient autonomy to pursue port regulations while assuming roles and functions of contemporary landlords.

2.2.4 *Contemporary landlord roles and functions*

Next to the traditional functions of landlord, regulator and operator, the contemporary Port Authority is required to assume enhanced roles and functions pertaining to:

- Port development: the port proper, port related industries, port related urban (re)development
- Supply chain management, trade facilitation, getting more strongly involved in hinterland transport
- Environmental management
- Port cluster management
- Managing City-Port relationships
- Port Community management

More on roles and functions in the Policy Paper on Stakeholder Coordination (see section xxx)

2.2.5 *Geographic governance levels*

Port Authorities may function at the National/Federal, State/Province, Local/Regional level. Through time, a gradual decentralization towards lower levels has taken effect in many countries. National Port Authorities, governing the entire port sector from the Centre, are becoming rare these days. The Municipal (or regional) level is now the typical structure in most of the world.

At the central level, sector policies and legislative/regulatory frameworks shall be drafted. A Ports Policy must be firmly embedded in a National Transport Policy, in a truly integrated context, that is: ports, multi-modal hinterland corridors and inland terminals.

Indeed, landlord port authorities at the local/regional level seem best placed to deal with above mentioned functions through due stakeholder coordination, within the conditions set by policy and legislative/regulatory framework set at the central level.

² UNCTAD (1998) *Guidelines for Port Authorities and Governments on the Privatization of Port Facilities*

2.3 Economic Regulation

2.3.1 Introduction

The shift in the role of the public sector from port services provider to Landlord calls for enhanced responsibilities as a regulator of activities that are now executed by the private sector.

Further to the Toolkit models, the distinction between differing types of devolution for the port industry port related activities could be classified into Regulator, Landlord and Operator as in the “devolution matrix” below.

Table 2.2 Port devolution matrix

Governance	Regulator functions	Port functions	
		Landlord	Operator
Public	Licensing, permitting Vessel traffic safety Customs and immigration	Waterside maintenance (e.g. dredging) Marketing of location, development	Cargo and passenger handling Pilotage and towage Line handling
Mixed public/private	Port monitoring Emergency services Protection of public interest on behalf of the community	strategies, planning Maintenance of port access Port security	Facilities security, maintenance, and repair Marketing of operations
Private	Determining port policy and environmental policies applicable	Land acquisition, disposal	Waste disposal Landside and berth capital investment

Source: Brooks, Mary R. (2004) The governance structure of ports, referring to Baltazar and Brooks (2001), The governance of port devolution

Regulation in the port sector may entail: controlling behaviour of port sector entities by rules or regulations or alternatively a rule or order issued by an executive authority, a regulatory agency or a Port Authority, having the force of law. Regulation may cover all activities of public or private behaviour (economic, social, environmental, safety and security) that may affect the development and management of ports and port terminals including their access roads, rail links, pipelines and waterways.

This paper deals economic regulation. Economic regulation typically involves intervention in the functioning of markets in terms of setting and controlling tariffs, revenues, and profits; controlling market entry of exit; and overseeing that fair and competitive behavior and practices are maintained within the sector.

2.3.2 Port competition

There are three categories of port-related competition. Interport competition arises when two ports in the same or in different countries compete for the same cargo. The scale of interport competition often depends on the size of the hinterland of the concerned ports. For example, Rotterdam competes with Antwerp, Hamburg, and Bremen for cargoes destined for Central Europe. Transshipment container trade competition often concerns an entire region; for example, in the

South Asian region, the port of Colombo is competing with Singapore, Tanjung Pelepas, Dubai, Salalah, Aden, and possibly with Vallarpadam.

Intra-port competition refers to a situation where two or more terminal operators within the same port area compete for the same type of cargoes. Intra-terminal competition refers to two or more (stevedoring) companies competing within the same terminal. This situation is rare and usually only exists within small ports operating under the service port model with independent stevedores. In general, intra-port competition is favored by both government and port users, but is not always feasible. It depends on the volume of the cargo, which may not be sufficient to allow two or more operators to run a profitable and effective business. Establishing competition in the port sector requires four steps:

1. Assessment of sector unbundling, especially in the case of a public service port. This relates to the financial and economic feasibility of creating more than one terminal handling the same commodity.
2. Implementation of the new port management structure, if and when required.
3. Conclusion of concession or lease agreements that include tariff regulation mechanisms, if required by the absence of intra-port competition.
4. Introduction of regulatory oversight by the government (port competition act), but only with respect to those tariffs that relate to a monopolistic market situation.

When intra-port competition is deficient or absent, the terminal operators (whether public or private) have an incentive to use their monopolistic market position to charge high tariffs (particularly for captive cargoes), which may justify regulation. The need for such regulation may lead to the creation of an independent port competition regulator. This regulatory function is usually instituted by law.

The main objective of the regulator is to ensure fair competition among competing operators in the port; control monopolies (including public ones) and mergers; and prevent anticompetitive practices. Generally, a port sector regulator has legal powers to interfere in anticompetitive practices such as:

- Use of a dominant position to prevent or lessen competition.
- Cross-subsidization from monopoly services to contestable services, where it threatens fair competition.
- Price fixing among competitors.
- When a firm or a person providing port services pursues a course that of itself has or is intended to have the effect of restricting, distorting, or preventing competition.
- Monopoly situations, which are most likely to occur in medium size or smaller ports. In many ports, only one container or oil terminal exists. Generally, when a monopoly or merger situation is not in conflict with the public interest, it may be permitted.

A port competition regulator should only be established in the event of serious threats to competitive behavior within the port. It should preferably have the character of an arbitrator rather than a court of law, and be accepted by the port community as being independent. In the case that boundaries between port authorities and terminal operators are vague or nonexistent (when a port authority not only runs its own container terminal but also owns shares in a competing facility, as is the case in Sri Lanka), a regulator might be a solution for guaranteeing a level playing field for all port operators. A regulator, however, should not jeopardize the legal powers of port authorities to operate freely in the market or the ability of a terminal operator to negotiate tariffs with its clients.

In principle, tariff setting or other price control should not be exercised under the Landlord model but left to the market. Rather, economic regulation pertains to establishing conditions for fair competition on a level playing field. Only under serious market imperfections, as mentioned above, some pricing control may be indicated. Otherwise, as van Krimpen³ emphasizes, "...there is no need for tariff regulation under a Landlord Port Model. There might be a need for competition regulation!"

2.3.3 *A port regulatory policy and system*

To help design an economic regulatory policy, reflecting the above principles of enhancing competition, the following guidelines have suggested in the World Bank Port Reform Toolkit.

- Government should have a clear understanding of the competitive environment of the port sector.
- A decision on economic regulation should be based on the risk of anticompetitive behaviour or on evidence that monopolistic behaviour is occurring and that other methods of intervention (for example, cease and desist orders, sanctions, or fines) are not feasible, adequate, or appropriate.
- The regulator should clearly define what form of economic regulation (for example, rate of return or tariff setting) is to be applied and under what circumstances.
- Responsibilities for regulation of port operations and competition should be formally separated and assigned to two different entities.
- In the event that economic regulation is imposed, regulators will need to have a reasonable understanding of the cost structure of the operation; this means that regulators will need proprietary financial information and will have to weigh the trade-offs between the need for information and the burden of the reporting requirements on the operators.
- When a determination is made that economic regulation is not necessary, but instead tariff monitoring or approval is warranted, then the regulator will need to clearly set out the tariff reporting requirements, the review process, and impose a time limit on itself as to when an approval decision is to be made.
- The entire competition regulation policy should be conveyed to the port and shipping community, as should the disposition of antitrust cases and regulatory policy decisions.
- Policy and case deliberations should include the opportunity for affected parties to present their views.
- Any decisions made by the regulator should be enforceable with recourse for appeal

2.3.4 *Regulatory governance*

Under the Landlord Port Model the following entities are active as regulators:

1. The Ministry responsible for port affairs with respect to drafting and implementation of transport and port laws, national and international conventions, regulations and decrees.
2. The public Port Authority issuing bye-laws inter alia with respect to safety of vessels in port or at anchor, reporting and communication with vessels, berthing, securing of vessels, shifting, control of dangerous goods in ports, delivery of sewerage, obnoxious and toxic wastes, specific use of terminal areas and other specific port related issues. As part of its

³ Krimpen, Christiaan van (2011) *Regulation of the Indian Port Sector*

landlord function a Port Authority concludes rent, lease and concession agreements with private operators and port users.

Apart from generally applicable legislation by any competent authority, specific port related regulation can also be exercised by:

3. a Competition Regulator giving regulations and specific orders to prevent anti competitive behaviour in ports or abuse of dominant position by a Port Authority or private operators. Usually a competition regulator has the power to issue a tariff order. It might also deal with mergers of port service providers which endanger fair competition in ports.
4. a Maritime Authority in the event that the Port Authorities are deemed to be too commercially oriented.

2.3.5 *Towards an independent competition regulator*

The Competition Regulator would function on the basis of the following principles:

1. The Competition Regulator shall not interfere at its own initiative in the tariff setting of Port Authorities or terminal operators and/or other service providers, whether of a private or public character, carrying out such activities in a port.
2. The functions of the Competition Regulator as provided for under the Competition Act shall not apply to transshipment services.
3. Other than in the manner or to the extent set out in the Competition Act, the grant of a concession or a lease or any other rights to land or property of the Ports Authority shall not fall within the scope of the functions of the Competition Regulator.

The objectives of the Competition Regulator would then be: The Competition Regulator shall exercise, perform and discharge its powers, functions and duties under the Competition Act reasonably with fairness, impartiality and independence and in a manner that is timely, transparent, objective and consistent with the Act and in a manner, which it considers is best calculated:

1. to protect the economic interests of India in general;
2. to encourage and promote competition between service providers, whether of a public or private character;
3. to encourage and promote equity in the access to port services and marine services, and the provision thereof;
4. to promote an atmosphere of confidence in the ports sector in India towards potential and existing investors in port services and marine services;
5. to use best endeavours to create an environment for enhancing the market potential and the profitability of service providers and the application of best practice in the ports and shipping industry.

The Competition Regulator could be positioned at different levels:

- Sub-sector, e.g. Seaports
- Sector, e.g. "Transport" or "Infrastructure"
- Multi-sector, e.g. National Competition Policy

Finally, an important issue is the independent position of the regulator. It is recommended to determine the main tasks and responsibilities of the Competition Regulator as follows (non limitative list):

1. upon complaint of any port user, to investigate and make orders in relation to complaints concerning alleged anti-competitive practices or abuse of a dominant position;

2. upon complaint of any port user in relation to tariffs, to investigate whether those tariffs amount to or evidence an anti-competitive practice or an abuse of a dominant position and to make an order thereon;
3. upon notification to the Competition Regulator prior to any merger of
 - o a shipping line and a terminal operator;
 - o a marine services provider with another marine services provider; or
 - o a terminal operator with another terminal operator in the same port or in a nearby port.

or upon complaint of any port user prior to or upon such a merger, to decide whether the merger situation is incompatible with the promotion of competition and to make an order thereon;
4. on the application of the Port Authority, to review the draft of a concession agreement and advise the Port Authority on whether any provisions thereof may be incompatible with the promotion of competition, may amount to an anti-competitive practice or may result in an abuse of a dominant position;
5. in response to a complaint of any port user, to investigate whether the occurrence of cross subsidization exists from dominant services to contestable services, and make an order thereon.

The Port Competition Regulator should be independent of any Government and have its own sources of income. It is not recommended to include the function of port competition regulation into those of a generic Competition Authority, Commission or Agency as the structure and characteristics of the port sector fundamentally differ from those of the telecom, electricity and railways sectors.

2.3.6 *International practice*

There is surprisingly few evidence in International (Best) Practice on well structured, dedicated port specific economic regulatory frameworks. Results from two major countries, both with a federal structure, are discussed below.

South Africa

The Republic of South Africa is endowed with a coherent framework of Transport Policy and legislation.

- As early as 1996, the White Paper on National Transport Policy was enacted, featuring a truly integrated approach
- The White Paper on Ports Policy (2002), linked to the National Transport Policy is further elaborated in the
- National Port Act (2005), which also hosts provisions for the Economic Regulations

Moreover, all Provinces are required to submit Regional Transport Master Plans, which are at the Central level subsequently amalgamated into the National Transport Master Plan “NATMAP2050” (see boxed text below). The Regional Plans give due attention to Ports Policy and Corridor Development.

Box 2.1: South Africa: National Transport Master Plan objectives

The wider objective in developing a National Transport Master Plan is to examine, determine, and crystallize the relationships between various land uses and the consequential transportation requirements, needs and demands. To this effect the plan will ultimately show how the interaction between various land uses may be viewed so as to evolve an integrated transportation plan's investment strategy for the development of the entire country such that any sectoral Economic Planning & Development Authority may meet its established transportation goals and objectives in the most efficient, economic, and cost effective way, bearing in mind constraints on availability of all the necessary resources. The purpose of the master plan is to:

- Facilitate the long-term and sustainable socioeconomic growth,
- Promote comprehensive integrated development planning, and
- Act as the infrastructure implementation/action plan of macro-scale projects for the whole country.

The wider objective in developing a National Transport Master Plan is to examine, determine, and crystallize the relationships between various land uses and the consequential transportation requirements, needs and demands. To this effect the plan will ultimately show how the interaction between various land uses may be viewed so as to evolve an integrated transportation plan's investment strategy for the development of the entire country such that any sectoral Economic Planning & Development Authority may meet its established transportation goals and objectives in the most efficient, economic, and cost effective way, bearing in mind constraints on availability of all the necessary resources. The purpose of the master plan is to:

- Facilitate the long-term and sustainable socioeconomic growth,
- Promote comprehensive integrated development planning, and
- Act as the infrastructure implementation/action plan of macro-scale projects for the whole country.

The Ports Regulator was established under the provisions of the National Ports Act, 2005. Under this Act, the main functions of the Ports Regulator are to:

- exercise economic regulation of the ports system in line with government's strategic objectives;
- promote equality of access to ports and to facilities and services provided in ports;
- monitor the activities of the National Ports Authority NPA to ensure that it performs its functions in accordance with this Act.

The Ports Regulator of South Africa was established under the provisions of the National Ports Act, 2005⁴. Under this Act, the main functions of the Ports Regulator are to:

- Exercise economic regulation of the ports system in line with government's strategic objectives;
- Promote equity of access to ports and to facilities and services provided in ports;
- Monitor the activities of the National Ports Authority to ensure that it performs its functions in accordance with this Act.
- Hear complaints and appeals under the Ports Act.

⁴ See: http://www.portsregulator.org/national_ports_act.pdf

This mandate is to be exercised in accordance with Government policy as set out in the "National Commercial Ports Policy"⁵.

The vision for Ports is set out in the Policy: "South Africa's commercial ports system should be globally competitive, safe and secure, operating at internationally accepted levels of operational efficiency consistent with the goals and objectives of the Government's macro-economic strategies. The commercial ports system must serve the economy and meet the needs of port users in a manner which is economically and environmentally sustainable."

The Vision of the Ports Regulator: The Ports Regulator will be regarded nationally and internationally as a world class institution which sets the standards for economic regulation in maritime ports.

The Mission of the Ports Regulator is to:

- exercise economic regulation of the South African ports system consistent with Government's strategic objectives;
- support the development of the ports industry and system;
- promote equity of access to ports and to facilities and services provided in ports; and,
- monitor the activities of the National Ports Authority to ensure that it performs its functions in accordance with the National Ports Act, 2005.

Australia

In February 2006, the Council of Australian Governments (COAG) signed the Competition and Infrastructure Reform Agreement (the CIRA), intended to achieve a simpler and consistent national approach to the economic regulation of significant infrastructure. "Economic regulation of ports and port authorities" is provided for in article 4.as in the boxed text below.

Box 2.2: Competition and Infrastructure Reform Agreement, February 2006

4.1. The Parties agree that:

- a) ports should only be subject to economic regulation where a clear need for it exists in the promotion of competition in upstream or downstream markets or to prevent the misuse of market power; and
- b) where a Party decides that economic regulation of significant ports is warranted, it should conform to a consistent national approach based on the following principles:
 - wherever possible, third party access to services provided by means of ports and related infrastructure facilities should be on the basis of terms and conditions agreed between the operator of the facility and the person seeking access;
 - where possible, commercial outcomes should be promoted by establishing competitive market frameworks that allow competition in and entry to port and related infrastructure services, including stevedoring, in preference to economic regulation;
 - where regulatory oversight of prices is warranted pursuant to clause 2.3, this should be undertaken by an independent body which publishes relevant

⁵ See: http://www.portsregulator.org/national_commerical_ports_policy.pdf

information; and

- where access regimes are required, and to maximise consistency, those regimes should be certified in accordance with the Trade Practices Act 1974 and the Competition Principles Agreement.

4.2. The Parties agree to allow for competition in the provision of port and related infrastructure facility services, unless a transparent public review by the relevant Party indicates that the benefits of restricting competition outweigh the costs to the community, including through the implementation of the following:

- a) port planning should, consistent with the efficient use of port infrastructure, facilitate the entry of new suppliers of port and related infrastructure services;
- b) where third party access to port facilities is provided, that access should be provided on a competitively neutral basis;
- c) commercial charters for port authorities should include guidance to seek a commercial return while not exploiting monopoly powers; and
- d) any conflicts of interest between port owners, operators or service providers as a result of vertically integrated structures should be addressed by the relevant Party on a case by case basis with a view to facilitating competition.

4.3. Each Party will review the regulation of ports and port authority, handling and storage facility operations at significant ports within its jurisdiction to ensure they are consistent with the principles set out in clauses 4.1 and 4.2.

- a) Significant ports include:
 - Major capital city ports and port facilities at these ports;
 - Major bulk commodity export ports and port facilities, except those considered part of integrated production processes; and
 - Major regional ports catering to agricultural and other exports.

Source: Competition and Infrastructure Reform Agreement (CIRA), February 2006

Comments:

- Prominent in the regulatory agreement is the openings clause (4.1) stating that in principle the market itself is the regulator, unless.....
- The parties agree (4.2) to allow for competition, unless....
- The economic regulation pertains to “significant ports”, as defined in 4.3

The CIRA principles have been reviewed in the five major zones⁶. The broad objectives of this reviews were to ensure that:

- significant ports in are managed efficiently and, where appropriate, allow for competition in the provision of port and related infrastructure facility services;
- significant ports in maximise the opportunity for competition in up-stream and downstream markets, and do not misuse market power; and
- economic regulation is only introduced if there is a clear need, and only if these objectives cannot be achieved without regulation.

⁶ Macro Port Zones are those where port competition exists within a zone but not between zones. In Australia: the States of Northern Territories, New South Wales, Queensland, South Australia, West Australia

The outcomes in the five zones were similarly positive. We quote from Queensland⁷:

- At a high level, the issues identified by stakeholders conform to the CIRA principles. Hence, no material changes to the legislative framework are necessary to satisfy the CIRA requirements.
- Stakeholders have not identified any pressing need for ports to be further regulated as a way of promoting greater competition in other markets.
- Stakeholders have not raised any concerns regarding the misuse of market power by port Authorities.
- The current planning processes adopted by the port authorities generally deliver efficient outcomes for their customers.

Reference is made to The Productivity Commission's December 2006 "Report to the Council of Australian Governments on the Potential Benefits of the National Reform Agenda", which constituted the point of departure for CIRA, outlining that the overarching aim of the competition stream is to foster competition in infrastructure industries by:

- Removing regulatory impediments to competition and new entrants;
- Delivering more effective and efficient regulatory oversight;
- Removing unwarranted barriers to investment; and
- Improving pricing and investment signals to owners, investors and consumers to promote the more efficient use of resources within the economy.

2.3.7 Conclusions

The shift in functions of the public sector from port services provided to landlord and private operator infers that the role of governments are changing from having direct control over state-owned and operated ports to exercising indirect guidance through appropriate regulation.

Key function of economic regulation in or between ports is competition regulation.

Between ports, the face of competition is changing: hinterlands are expanding and overlapping ("from port to chain competition") and there are fewer situations where captive conditions warrant tariff regulation (max tariffs, "price caps"). Rather, under fair competition the market is the regulator. Economic regulation shall pertain to establishment of a level playing field: "from tariff regulation to competition regulation".

With respect to intra-port competition, there seems to be a tendency for major international mining, manufacturing and logistic companies to gain control over an increasing part of the supply chain through ownership of dedicated terminals. Economic regulation shall be geared to preventing conceivable abuse of monopolistic powers, while ensuring common access.

It is the Central Government's responsibility to draft regulatory legislation.

As to India, it is noted that a number of queries regarding economic port regulation, in particular the controversial issue on tariff regulation have been addressed in:

- Draft Regulatory Authority Bill 2011⁸

⁷ State of Queensland, Department of Transport (2007) *Review of Current Port Competition and Regulation in Queensland*

⁸ See: <http://www.prsindia.org/uploads/media/draft/Draft Port Regulatory Authority Bill, 2011.pdf>

- Intra-port competition in India has been regulated in: Ministry of Shipping (2010) Policy for preventing private sector monopoly in Major Ports⁹

2.4 Port Governance in selected countries

2.4.1 Introduction

Benchmarks

- Institutional setting (key agencies)
- Port ownership
- Stated government policies

2.4.2 USA

Key agencies	Role
Department of Transportation (DoT)	To serve the United States by ensuring a fast, safe, efficient, accessible and convenient transportation system that meets vital national interests and enhances the quality of life of the American people, today and into the future. Oversees federal highway, air, railroad, and maritime and other transportation administration functions.
U.S. Maritime Administration	The Maritime Administration is the agency within the U.S. Department of Transportation dealing with waterborne transportation. Its programs promote the use of waterborne transportation and its seamless integration with other segments of the transportation system, and the viability of the U.S. merchant marine.

Port Ownership structure

In the US, the majority of ports are owned and managed by counties and municipalities. Note that port operations are still largely in the hands of private enterprise.

Government policy documents relevant to ports and freight

America's Ports and Intermodal Transport System (2009) issued by the US Maritime Administration. This document identifies key system-wide findings and challenges in the vital strategic areas of end-to-end freight shipments, water access, landside access and interstate rail and highways with port and terminals as the nexus. The Report also discusses significant institutional challenges, including governance, the role of private industry, financing the transportation system, and infrastructure development.

Framework for a National Freight Strategy (2010) issued by the Department of Transport. This document outlines the objectives, strategies, tactics and activities used for improving US freight transportation efficiency and competitiveness.

⁹ See: <http://www.shipping.nic.in/writereaddata/l892s/69754893-Policyforpreventing.pdf>

2.4.3 Canada

Key agencies	Role
Transport Canada	Transport Canada is responsible for transportation policies and programs. It ensures that air, marine, road and rail transportation are safe, secure, efficient and environmentally responsible.
Infrastructure Canada	The main trading ports are Canada Port Authorities (CPAs) and these fall under federal jurisdiction. Under the <i>Canada Marine Act (CMA)</i> , the federal government owns the port lands and infrastructure of six CPA ports in the province [British Columbia] but leaves administration to local authorities. The <i>CMA</i> was introduced to allow ports to be more responsive to market opportunities. The Port Authorities provide port infrastructure (e.g. vessel berths) and lease terminal sites to private operators

Port ownership structure

The main trading ports are Canada Port Authorities (CPAs) and these fall under federal jurisdiction. Under the Canada Marine Act (CMA), the federal government owns the port lands and infrastructure of six CPA ports in the province [British Columbia] but leaves administration to local authorities. The CMA was introduced to allow ports to be more responsive to market opportunities. The Port Authorities provide port infrastructure (e.g. vessel berths) and lease terminal sites to private operators

Government policy documents relevant to ports and freight

Canada's Asia-Pacific Gateway and Corridor Initiative (2006) was issued by Transport Canada, with the aim of providing a state of the art transport system linking Asian and North American markets⁷. The document outlines new investments, policies and regulatory measures aimed at improving the efficiency and effectiveness of the Asia-Pacific Gateway and Corridor, and Canada's exploitation of it. It also sets the directions for ongoing collaboration, future actions and long-term strategy. It reflects the Government's commitment to work in partnership with provincial governments, private sector leaders and other stakeholders: "The Gateway approach offers a coherent framework for joint leadership and focused collaboration among the different public and private sector actors who control or influence the key issues"

2.4.4 UK

Key agencies	Role
Department for Transport	The Department for Transport provides leadership across the transport sector to achieve its objectives, working with regional, local and private sector partners to deliver many of the services.
Infrastructure Planning Commission (IPC)	The IPC is the independent body that decides applications for nationally significant infrastructure projects. These are the large projects that support the economy and vital public services, including railways, large wind farms, power stations, reservoirs, harbours, airports and sewage treatment works
Scottish Executive	The devolved government for Scotland is responsible for most of the issues of day-to-day concern to the people of Scotland, including health, education, justice, rural affairs, and transport.
Welsh Assembly	Devolved Government for Wales
Northern Ireland Executive	Devolved Government for Northern Ireland

Port ownership structure

Most commercial ports' operations have been privatised. 15 of the largest 20 UK ports (by tonnage) are in private ownership, which accounts for two thirds of the UK's port traffic. These private ports have no government investment i.e. all their investment must be privately financed on a commercial basis. Many of the smaller ports are trust ports (independent statutory organisations but without shareholders), as well as a few larger ones such as the Port of London Authority. A few ports are also municipal ports (belonging to local authorities).

Government policy documents relevant to ports and freight

Modern Ports: A UK Policy (2000) – Issued by all the above agencies. Purpose is to set out for the first time the broad policy aims of the UK Government with respect to ports.

Freight Action Plan for Scotland (2006) – issued by the Scottish Executive. The goals are improved journey times and connections, reduced emissions and a transport system that is high quality, accessible and affordable to use.

Draft National Policy Statement for Ports (2009) – issued by the Department for Transport and relevant to England and Wales. Sets out the Government's conclusions on the need for new port infrastructure, considering the current place of ports in the national economy, the available evidence on future demand, and the options for meeting future needs. Provides guidelines for the IPC on assessing new port development applications.

Here more on Department for Transport e.g. Guidelines for Port Master Planning

2.4.5 Netherlands

Key agencies	Role
Ministry of Transport, Public Works and Water Management / Freight Transport	To ensure that the Netherlands' infrastructure is able to facilitate transportation that is quick, easy and safe.

Port ownership structure

Port infrastructure belongs to municipalities and central government (often joint ownership) that are responsible for developing this infrastructure. Port operations are run by private companies.

Government policy documents relevant to ports and freight

Seaports: Anchors of the Economy. National Seaports Policy 2005-2010 (2004) issued by the Ministry of Transport, Public Works and Water Management / Freight Transport. This is the third in a series of five-year rolling National Seaports Policies. The aim of the document is to improve the international competitive strength of the Dutch seaports. It lays out the Government's policy plans aimed specifically at improving the market conditions for port-based companies, maintaining and improving the accessibility of seaports along with ensuring sufficient physical space for growth, and promotion of safety.

Seaports as Turntables Towards Sustainability (2008) issued by the Ministry of Transport, Public Works and Water Management / Freight Transport. The aim of this document is to encourage the sustainable development of the Netherland's seaports.

2.4.6 *Germany*

Key agencies	Role
Federal Ministry of Transport, Building and Urban Development	Responsible for national policy with respect to transport, construction, urban development and housing

Port ownership structure

Port infrastructure belongs to individual states or municipalities and they are responsible for developing this infrastructure. Port operations are run by private organisations and trade unions.

Government policy documents relevant to ports and freight

Port Concept for Sea and Inland Ports (2009) issued by the Federal Ministry of Traffic, Building and Urban Development. This document is intended to increase the competitiveness of both Germany's ports and general economy, and to help Germany through the international financial crisis providing jobs to the port and construction sectors while providing protection for the environment.

Freight Transport and Logistics Master Plan (2008) issued by the Federal Ministry of Traffic, Building and Urban Development. This plan sets the direction for transport policy as a whole, because passenger and freight transport are closely interlinked. It aims to ensure that in twenty years' time, Germany has a transport system that ensures mobility, prosperity and jobs while reflecting environmental concerns.

2.4.7 European Union

Key agencies	Role
European Commission	The Commission's job is to represent the common European interest to all the EU countries. To allow it to play its role as 'guardian of the treaties' and defender of the general interest, the Commission also has the right of initiative in the law making process. This means that it proposes legislative acts for the European Parliament and the Council of Ministers to adopt. The Commission is also responsible for putting the EU's common policies (like the common agricultural policy and the growth and jobs strategy) into practice and manage the EU's budget and programmes.
The European Seaports Organisation (ESPO)	The ESPO represents seaports in all maritime EU Member States and Norway and has observer members in Croatia, Iceland and Israel, ensuring that seaports have a clear voice in the European Union.

Port ownership structure

See above the diversified ownership structures in Member States. More in ESPO (2011) *European Port Governance 2010*.

Government policy documents relevant to ports and freight

Communication on a European Ports Policy (2007) – Issued by the European Commission. The present Communication aims at a performing EU port system able to cope with the future challenges of EU transport needs; it sets an action plan for the European Commission. It follows up from an extensive consultation with the stakeholders in 2006-2007, which included six workshops, two large conferences and meetings with experts from the Member States.

European Ports Policy

Communication Issues:

- Demand for international transport growing faster than the economy
- Technological change
- Commitment to reduce greenhouse gases
- The necessity to develop a recurrent dialogue between port stakeholders and city/regional communities
- Transparency to ensure level-playing-field competition
- Port performance and hinterland connections
- Master Plan updates, broad consultation
- Expanding capacity while respecting the environment
- Sound economic assessment of proposed projects
- Modal shift away from road transport, towards rail and barge corridors
- Enhance competitiveness in port and transport industries through internalisation of external social costs into transport prices
- Modernisation: safety and security systems; Identification and Tracking, e-maritime approach
- Clarity in financing: guide to regulate "State-aid"

The set-up of port management varies considerably across the Community. In some Member States ports are managed by private entities which own port land (or avail themselves of rights similar to those of an owner). Those ports are entirely private business, like notably in the UK. In other cases – a large majority in continental Europe – ports are managed by public entities or undertakings. Table 2.3 below shows Government level and type of Port management (Government direct, Public Entity, Private entity) in EU Member States.

Table 2.3 Port management approaches in the EU

Member state	Government level	Port management		
		Government direct	Public entity	Private entity
Belgium	Municipal/regional		X	
Cyprus	National		X	
Denmark	Municipal/regional	x	X	x
Estonia	National		X	
Finland	Municipal	X	X	x
France	National/regional	x	X	
Germany	Regional/municipal	x	X	x
Greece	National/municipal		X	
Ireland	National		X	x
Italy	National	x	X	
Latvia	National/municipal		X	
Lithuania	National		X	
Malta	National		X	
Netherlands	Municipal/regional/national		X	x
Poland	National/municipal		X	
Portugal	National		X	
Slovenia	National		X	
Spain	National/regional		X	
Sweden	Municipal	x	X	
UK	National/municipal/regional	x	x	X

Source: ESPO. A capital "X" indicates the dominant model in a member state

2.4.8 Australia

Key agencies	Role
Department of Infrastructure, Transport, Regional Development	The Department of Infrastructure, Transport, Regional Development and Local Government is responsible for infrastructure planning and coordination; transport safety, including investigations; land transport; civil aviation and airports; transport security; delivery of regional and rural specific services; maritime transport including shipping; regional development; matters relating to local government; and major projects facilitation.
National Transport Commission (NTC)	The role of the National Transport Commission is to work closely in partnership with peak industry bodies and government to develop more consistent, practical and effective land transport policies, laws and practices.
Infrastructure Australia	Infrastructure Australia will develop a strategic blueprint for the nation's future infrastructure needs and - in partnership with the states, territories, local government and the private sector - facilitate its implementation. It will provide advice to Australian governments about infrastructure gaps and bottlenecks that hinder economic growth and prosperity. It will also identify investment priorities and policy and regulatory reforms that will be necessary to enable timely and coordinated delivery of national infrastructure investment.
Australian Transport Council (ATC)	The ATC was established in June 1993 to provide a forum for Commonwealth, State, Territory and New Zealand Ministers to consult and provide advice to governments on the co-ordination and integration of all surface transport and road policy issues at a national level.
State Government Departments of Transport	Each State Department of Transport is responsible for road, rail and port policy in their respective states.

Port ownership structure

Australia has three levels of Government – Commonwealth, State and Local. The Commonwealth has key functions involving the ports, including security, environment, competition policy and border control. It also finances and owns specific infrastructure assets including certain railways and roads. Port corporations are owned by State Governments (which also control adjacent land uses), with the exception of South Australia, which was privatised in 2001. Queensland is also currently processing the privatisation of the Port of Brisbane. Australian ports are, in the main, landlords to terminal operators (stevedores) and are primarily only responsible for the management of port infrastructure such as dredged channels and berths. Terminal operating/stevedoring services are provided by a small number of specialist firms that own the container handling equipment but lease berth space from the relevant port authorities.

Government policy documents relevant to ports and freight

National Infrastructure Priorities (2009): In May 2009, Infrastructure Australia released its National Infrastructure Priorities. It gives the Federal Government an important role to play in ports development.

National Transport Policy Framework: At the request of the National Transport Commission, ministers of the ATC are working on developing a national transport policy. Working groups have been formed, with each working group being assigned to an individual state minister. The working groups most relevant for ports and freight are 'Infrastructure Planning and Investment' as well as 'Capacity Constraints and Supply Chain Performance', which have been given to the transport ministers for Victoria and South Australia respectively.

Proposed National Ports Strategy (May 2010): Overarching purpose is to drive development of efficient sustainable ports and related freight logistics to boost export performance and economic productivity, and influence policy making in areas relevant to freight. Developed by Infrastructure Australia and NTC in consultation with a wide range of stakeholders.

Recognises that the private sector will undertake much of the investment and operation of the ports and related infrastructure, and that given long-life assets are involved, optimal private investment and use of these depends on investor confidence, enabled by all levels of government providing certainty of their intentions (e.g. port land, roads, rail etc).

2.4.9 South Africa

Key agencies	Role
National Department of Transport (NDOT)	Leads the development of integrated efficient transport systems by creating a framework of sustainable policies, regulations and implementable models to support government strategies for economic, social and international development.

Port ownership structure

The National Port Authority (controlled by the Ministry and Department of Enterprise) owns all the commercial ports and is responsible for providing and maintaining port infrastructure (breakwaters, channels, berths etc.). In order to encourage a competitive environment the Government plays a minimal role in port operations.

Government policy documents relevant to ports and freight

Draft White Paper on National Commercial Ports Policy (2001) issued by National Department of Transport and subsequently approved by Cabinet on 6 March 2002. The purpose of this policy is to ensure affordable, internationally competitive, efficient and safe port services based on the application of commercial rules in a transparent and competitive environment applied consistently across the transport system.

2.4.10 Japan

Key agencies	Role
Ministry of Land, Infrastructure and Transport (MLIT)	To utilise, develop and conserve land in Japan in an integrated and systematic way; develop infrastructure necessary for attaining these goals; implement transportation policies; promote the progress of meteorological tasks; and maintain marine safety and security.

Port ownership structure

All of Japan's ports and harbours are managed by the public sector. Japan's port management bodies consist of proprietary-type organizations. In addition to building, maintaining, and managing port facilities (navigation channels, breakwaters and other basic facilities and quay walls, cargo handling and other functional facilities), port management bodies formulate policies for basic development plans in consideration of the development of the inland regions. Port facilities (functional facilities) are leased to the private sector under the management of the port

management bodies. Actual operation (port transport, storage, land-based transport, etc.) is entrusted to the private sector, as stipulated by the relevant laws and regulations.

Government policy documents relevant to ports and freight

Ports and Harbours in Japan (2006) issued by MLIT Ports and Harbours Bureau – A document providing an overview of Japan's ports and harbours sector, including challenges and government policies and strategies.

It is concluded that port development is systematically subsidized by the Central Government. Since this is a major incentive for local governments, private investments tend to be quite limited. However, MLIT gives priority to certain ports with strategic advantages (Ports are classified into “Important Ports” and “Regional Ports”. Important Ports are defined as “those ports and harbours , which will be designated as such in a Cabinet Order, being of great importance to the national interest”).

2.4.11 Hong Kong and China

Government involvement in the Port of Hong Kong

All terminals in Hong Kong are privately owned and operated. The port governance model that prevails in Hong Kong is one where the private sector is left to finance, develop and operate terminal facilities, while government concentrates on providing the back-up infrastructure needed to service the port, as well as strategic planning for port development.

The Transport and Housing Bureau is responsible for managing maritime policy in Hong Kong; in particular to enhance its competitiveness and strengthen its position as an international shipping and maritime centre. In 2003, two non-statutory bodies were created: the Port Development Council (PDC) and the Maritime Industry Council (MIC). The organisations advise the government through the Secretary for Transport and Housing, which is the chair of each. The PDC advises on port development strategy and port facilities planning as well as assists the government in promoting the port.

In 2001 the Logistics Development Council (LOGSCOUNCIL) was formed to further promote Hong Kong as a key logistics hub.

China's Port Governance

The evolution of port governance in China may be dissected into three phases: 1979 – 1984, 1984 – 2004, and 2004 – present.

The first period, 1979 – 1984, is characterised by central control of the port sector. The Ministry of Communications owned the ports, controlled planning and strategy, managed operational activities, and determined infrastructure priorities. During this period the Ministry of Communications neither benefited nor suffered from under-performing ports. Further, a lack of funding restricted the development of the ports.

From 1984 – 2004, China began to decentralise control of its ports. 1984 saw the classification of 14 coastal cities, including Shanghai, as „open cities“. Increased foreign investment resulted. In 1985 the State Council of the People's Republic of China (PRC) promulgated regulations which aimed to promote the economic cooperation and technical interchange between China and foreign countries and to speed up the development of ports and terminals.

From 2004 onwards the ports sector experienced more decentralisation and entered an era of corporatisation. The *Port Act of the People's Republic of China ('Port Law')* was adopted in 2003 and is seen as evidence of the great importance attached to the port industry by the Chinese government. Decentralization efforts began cautiously during the mid-1980s, but it wasn't until the late 1990s that local authorities obtained primary responsibility (under the so-called dual leadership platform). Today the central government is no longer involved in the ownership of ports but it retains an oversight role in strategic planning.

Shanghai Port Authority

In 2003 Shanghai's port oversight body underwent a restructure resulting in the Shanghai Port Administration Bureau, which took responsibility for port planning, administration and regulations, and the Shanghai International Port Group (SIPG). The latter was designated port manager and operator and also given responsibility for the operation and management of Yangshan's first five berths.

Today administration of the Shanghai Port is the charge of the Shanghai Municipal Transport and Port Authority (the "Shanghai Port Authority"), which has the authority to:

- implement guidelines and policies and enforce laws, rules and regulations
- formulate plans and strategies for the Shanghai harbour (including Yangshan);
- enforce trade regulations application to the Yangtze River (within the Shanghai municipality);
- supervise and manage environmental issues
- coordinate research and development
- supervise the quality and safety of construction projects
- vessel management
- tariffication
- supervise and administer pilotage within the port;
- conduct cooperation and technical exchanges between the Shanghai Port and other domestic and foreign ports; and
- administer technical and vocational training, including examinations and the issuance of certificates for workers engaging in port activities.

Shanghai International Port Group (SIPG)

Established in 2003, the SIPG was wholly floated on the Shanghai Stock Exchange in 2006. Its major shareholders are the Shanghai Municipal Council (44%), China Merchants International Terminals (Shanghai) Co Ltd (26%), and Shanghai Tongsheng Investment (Group) Corp (16%). The Shanghai Municipal Council's major stake is consistent with the model of governance adopted throughout China since it began to corporatize and privatise ports from 2001.

As to the China port sector, it is concluded that, nowadays, ports generally feature open access, are managed at the municipal level, with local governments taking a substantial interest in corporatized operations.

2.5 Conclusions on port governance

- Worldwide, the Landlord model has been adopted as the indicated Port Management model today.
- The contemporary Port Authority is usually a corporatized entity with sufficient autonomy to pursue port regulations at the local/regional level
- Economic port regulations pertain to
 - Inter-port competition, requiring competition regulation rather than price regulation
 - Intra-port competition: preventing abuse of monopolistic power while ensuring common access
- A port policy shall be imbedded in a national integrated (inter-modal) transport policy, to be defined at the central government level
- Worldwide, Port Authorities at the local/regional level prove best placed to deal with traditional roles, i.e. landlord, regulator, operator, and enhanced functions:
 - Shaping supply chains, involving hinterland intermodal corridors and terminals
 - Planning and financing of port development, port related industrial development and port related urban (re)development
- Above conclusions emerge from international comparison. Countries differ substantially, but one, Australia, is in our view outstanding in Ports Policy and Management, relevant to the Indian situation, and recommended for further consideration by Indian authorities. Key characteristics have been summarized in the box below.

Box 2.3: Key characteristics of Australian ports policy and management	
<p>Features</p> <ul style="list-style-type: none"> • Dimensions • Federal government structure • Macro port zones and clusters • Notion of “significant port” 	<p>Port Authority</p> <ul style="list-style-type: none"> • Landlord • Corporatized • Municipal/regional level
<p>Policy</p> <ul style="list-style-type: none"> • National transport policy • Freight policy • Ports policy • State policies coherent with national policy 	<p>Stakeholder coordination</p> <ul style="list-style-type: none"> • Ports and hinterlands • Urban separation dedicated bulk-handling facilities • City-port relationships, urban (re)development, port community

3 Policy paper on port stakeholder coordination

3.1 Roles and functions of a Port Authority

3.1.1 *Port sector reform models and modalities*

During the past three decades, extensive discussions on port reforms centred particularly on the relevance of a number of port management or administration models, summarised as follows:

- (Public) Service Port, a management model where a Port Authority functions both as landlord and terminal operator. This model has become rare as it does not properly function in a market oriented economy;
- Tool Port, an (unsuccessful) combination of a Service Port and a Landlord Port where the Port Authority manages the port land and operates the terminals while labour is supplied by the private sector.
- Landlord Port, is characterised by a strict division of tasks and responsibilities between the public sector in the form of a public Port Authority and the private sector performing terminal operations.
- Privatised Port, sometimes in the form of a Private Service Port. Basic characteristic is that a private port authority owns the port land. This model can be found in the UK and New Zealand

The Landlord model is increasingly becoming the dominant port model in larger and medium sized ports all around the world. Under this model, the port authority acts as a regulatory body and as landlord, while port operations (especially cargo-handling) are carried out by private companies.

Port reform modalities refer to the continuum of port administration reform, in terms of the key notions modernization, liberalisation, commercialisation, corporatisation, privatisation. By now, the mainstream all around the world is a development towards corporatized Port Authorities, with sufficient autonomy to assume roles and functions of contemporary landlords, as delineated below.

More on port reform models and modalities in the Policy Paper on Port Governance.

3.1.2 *The European scene*

The objectives of a Port Authority (PA) shape its functional profile. Looking at the three traditional functions, i.e. landlord, regulator, operator functions, it can be concluded that the PA gradually moved away from providing cargo handling services, increasingly assuming landlord functions, which can now be considered as the principal function.

This picture emerges from a recent survey by ESPO (European Sea Ports Organisation), under 216 ports (in 22 EU member states plus 4 neighbouring states). There are substantial regional

differences, but some general conclusions have been drawn by Patrick Verhoeven (“anchor man” of ESPO)¹⁰:

- The landlord translates itself essentially in the ability to contract land to third parties
- Half of the corresponding PAs (but the majority of the larger ones) engage in urban real estate management and environmental land management
- The increased focus on the negative externalities of port operations has reinforced the regulatory role of Port Authorities in the fields of environment, safety and security
- The traditional PA functions have gone through a substantial change: the operator function has made way to landlord and regulatory functions, which have gained a strong community focus, social dimension and strong stakeholder involvement (e.g. PAs maintaining intensive contact with local government)
- Gradually, larger Port Authorities transpose their functions beyond their own borders, through investments in hinterland networks, taking interests in other ports and inland terminals.

Institutional and organisational frameworks:

- PAs featuring at the governance levels:
 - National PAs, managing all ports in a country (some countries refer to “Ports of national interests”)
 - Regional PAs, managing a cluster of smaller ports
 - Municipal PAs, managing local ports of varying importance
 - Holdings, managing several ports (not necessarily geographically organised)
- Municipal Port Authority is the typical option in Europe
- In general, cooperation between (neighbouring) ports is intensifying
- The vast majority of the Port Authorities is publicly owned
- The PAs went through a process of commercialisation and corporatisation (following principles of corporate governance)
- Still, political influence is generally exercised through appointments of top management executives
- Financial capabilities of a PA are considered one of the key governance factors, most PAs bearing financial responsibility for basic infrastructure and services (while the private sector finances superstructure)
- The autonomy of Port Authorities with regard to port charges/tariffs differs greatly, varying from high in the Anglo-Saxon region (privatisation) to low in the Latin region (centralised regimes).

Roles of Port Authorities

Verhoeven (2011) distinguishes three types, those of:

- “Conservator” PA concentrates on being “a good house keeper” and essentially sticks to a passive implementation of the traditional functions at local level
- “Facilitator” PA profiles itself as a mediator between economic and societal interests (community manager function)
- “Entrepreneur” PA combines the main features of the facilitator with the commercial attitude as an investor, service provider and consultant at all three geographical levels

In combination with the functions, a matrix emerges as in the table below.

A gradual shift in emphasis has been observed from traditional functions under the role of conservator towards the roles of facilitator and entrepreneur. Next to the traditional functions

¹⁰ Verhoeven, Patrick (2011) *European Port Governance (2010)*

“Landlord”, “Regulator” and “Operator”, a fourth one has been added: “Community Manager”, see below.

Table 3.1 Typology of port authorities

	Conservator role	Facilitator role	Entrepreneur role
Landlord	Passive real estate ‘manager’: - continuity and maintenance - development mainly left to others (government / private sector) - financial revenue from real estate on “tariff” basis	Active real estate ‘broker’: - continuity, maintenance and improvement - development broker and co-investor - includes urban and environmental real estate brokerage - financial revenue from real estate on commercial basis Mediator in commercial B2B relations between service providers and port customers Strategic partnerships with inland ports, dry ports and other seaports	Active real estate ‘developer’: - continuity, maintenance and improvement - direct investor - includes urban and environmental real estate development - financial revenue from real estate on commercial basis - financial revenue from non-core activities Direct commercial B2B negotiations with port customers – active pursuit of market niches Direct investments in inland ports, dry ports and other seaports
Regulator	Passive application and enforcement of rules and regulations mainly set by other agencies Financial revenue from regulator role on ‘tariff’ basis	Active application and enforcement of rules and regulations through co-operation with local, regional and national regulatory agencies + setting of own rules and regulations Provide assistance to port community to comply with rules and regulations Financial revenue from regulator role on ‘tariff’ basis with differential charging options for sustainability	Idem facilitator Idem facilitator + selling expertise and tools outside the port Financial revenue from regulator role on commercial basis
Operator	Mechanistic application of concession policy (license-issuing window)	Dynamic use of concession policy, in combination with real estate broker role ‘Leader in dissatisfaction’ as regards performance of private port services providers Provide services of general economic interest and specialised commercial services.	Dynamic use of concession policy, in combination with real estate development role Shareholder in private port service providers Provide services of general economic interest as well as commercial services. Provide services in other ports
Community Manager	Not actively developed	Economic dimension: - solve hinterland bottlenecks - provide training and education - provide IT services - promotion and marketing - lobbying	Idem facilitator type but economic dimension with more direct commercial involvement
Geographical Dimension	Local	Local + Regional	Local + Regional + Global

Source: Verhoeven (2011)

3.1.3 Summarizing enhanced roles/functions of a contemporary landlord

Developer/entrepreneur

Managing port development: the port proper, port related industries, port related urban (re)development. Management of infrastructure development and financing: private sector involvement, public-private partnership arrangements. See also chapter 4 of this paper.

Supply chain manager.

A more active involvement of a PA is especially relevant in hinterland transport as this is rapidly becoming the main bottleneck in international door-to-door transport chain. The focus is shifting from port performance to supply chain performance as the cost (per ton-kilometer) of hinterland transport is the multiple of maritime shipping costs.

De Langen (2008)¹¹ argues that Port Authorities should introduce a better coordination along the supply chain in a sense that they should become more strongly involved with hinterland access infrastructure and operations, through e.g.

- Concession agreements with terminal operators
- Pursuance of objectives regarding modal split of hinterland transport, for example:
 - Rotterdam sets targets for rail, barge and road shares in container movements
 - The European Commission is striving for gradual liberalization of barge and rail markets in support of modal shift policies

Environmental manager.

As to environmental concerns, local communities near major port sites are confronted with the adverse impacts of increased port throughput. Port generated traffic contributes to congestion on transport networks, and to safety risks, noise and air pollution. Port Authorities are to coordinate implementation of environmental regulation by port stakeholders at local and regional level.

Policy frameworks need to be defined at the central, i.e. national/federal, and in environmental matters preferably even at supra-national level. In the EU, efforts are being made to achieve “internalisation of external costs” into the price of transport services. That is: the social cost of congestion, accidents, pollution should be reflected in transport prices.

Strategic cluster manager

Increasingly, ports cooperate in regional clusters. Examples are the Dutch port cluster Rotterdam/Amsterdam (both with regional subsidiaries) and the Copenhagen Malmo Port Authority.

Managing City-Port interface

The Port Authority managing the transition process. First “separation”, the handling of some “dirty” and/or space demanding cargoes moving out of the city, then redevelopment of the city centre, i.e. “waterfront regeneration”. See chapters 5 and 6 of this paper.

Port community manager

The general connotation of “port community” refers to social and business interaction with the Port Authority. More specifically, the technical term “port community system” refers to electronic information systems, channelling port stakeholder coordination in a “single window environment”¹².

¹¹ Peter W. De Langen (2008) *Ensuring Hinterland Access, The Role of Port Authorities* in Round Table “Port Competition and Hinterland Connections”, OECD/International Transport Forum, Joint Transport Research Centre

¹² UNESCAP and UNECE (2011) United Nations of Experts for Paperless Trade in Asia and the Pacific (www.unescap.org/unnext), European Port Community Systems Association (www.epcsa.eu/port-community-systems)

3.2 Private sector involvement

3.2.1 Introduction

Facing fiscal constraints, many governments all around the world have pursued private finance for transport infrastructure more to move investment off-budget rather than to improve efficiency and services. Results have thus far been mixed, and suggest a need to focus more on Public-Private Partnerships (PPP) that indeed can achieve value for money.

Private sector involvement in ports occurs in various ways:

- Following devolvement in port management towards the Landlord model, the taking over of formerly publicly managed operations by the private sector through concessions granted by the Landlord, whereby the Government remains owner of the basic infrastructure and the private sector invests in terminal superstructure and runs the operations.
- Port development, either rehabilitation of existing infrastructure or a new (greenfield) facility (terminal or dedicated berth) under a BOT type of contract.

In this chapter we will first indicate some particularities of PPP arrangements in Seaports. Next, an overview is given of world-wide PPP performance in Seaports (relative to other sectors) based on the World Bank PPI-data base, and finally some recent developments at the international PPP front.

3.2.2 PPP Models in the Ports Sector

Unlike the roads sector, there is little literature on PPPs in ports. The World Banks Port Reform Toolkit presents basic principles and results. Some recent evidence has been found in a EU initiative “COST” (European Cooperation in Science and Technology), Action 1001: Public Private Partnerships in Transport, Trends and Theory (initiated in 2010), in particular the contribution by Sheila Farrell (2011) Observations on PPP Models in the Ports Sector”, from which the introductory part has been adapted as in the box below.

BOX 3: PPP models in the ports sector

Most PPP models in the ports sector sit within a landlord port structure in which a public sector port authority (often autonomous) enters into PPP contracts for a series of individual terminals. The operators of the terminals are usually different, and the PPP model used may differ from one terminal to the next. The role of the port authority is to provide and manage common facilities like the breakwater and entrance channel, utilities and road and rail access; to regulate the individual PPPs; and to plan and implement the expansion and development of the port.

The most common PPP models for individual business units are:

The management/investment model for existing public assets: The private operator manages publicly owned assets and makes additional investments in them, in exchange for being given the right to use them for a specified period of time. Ownership of the public assets remains with the public sector throughout this period;

This type of PPP model is generally associated with the port privatisation programmes which have taken place since the late 1980s in southern Europe, South America, Africa and South Asia.

The development rights model for new private assets (BOT). Here the private investor buys the right to build new port assets and have exclusive use of them for a fixed period of time before transferring them over the public sector. This is a model which has been increasing in popularity in the ports sector as the stock of public assets suitable for private management has dwindled. However it raises the question of why private investors should have to give back their assets to the public sector, often free of charge, when a hotel complex built on the same waterfront site would be treated as freehold property.

The public-private joint venture model. In this, the public sector has an influential or controlling stake in the Special Project Vehicle (SPV) which is set up to hold either a management-investment contract or a development rights contract for new port facilities. These contracts otherwise operate broadly as described above, although the existence of a large public sector stake in the SPV has a significant effect on the detailed provisions of the contract, as described later. This type of PPP model has become the norm in China and Indonesia, but is rarely found elsewhere.

Management contracts, where the private sector operates port facilities on behalf of the public sector with minimal investment of its own, are now quite rare. This is partly because they generate small returns in relation to the inputs of relatively scarce management time required. There is also a history of failure caused by conflicts over strategy, usually arising when private operators are not given the freedom they need to satisfy public sector objectives for the contract.

Short-term leases of public assets of up to 15 years, often renewable, are more popular than management contracts because they give the operator greater commercial freedom.

Source: Adapted from *Observations on PPP Models in the Ports Sector* (2011), Sheila Farrell

3.2.3 *The World Bank PPI Database*

The World Bank, in association with the Public-Private Infrastructure Advisory Facility (PPIAF) maintains the “Private Participation in Infrastructure Database” since 1990. Main entries are:

Investment by Sector:

- Energy
- Telecom
- Water
- Transport
 - Roads
 - Railways
 - Inland Waterways
 - Seaports

Investment by segment

- Channel dredging
- Channel dredging and terminal
- Terminal

Investments by region

- East Asia and Pacific

- Europe and Central Asia
- Latin America and the Caribbean
- Middle East and North Africa
- South Asia
- Sub-Saharan Africa

Type of Project/Investment:

- Concession: A private entity takes over the management of a state-owned enterprise for a given period during which it also assumes considerable investment risk
- Divesture: A private entity buys an equity stake in a state-owned enterprise through an asset sale, public offering, or mass privatization programme
- Greenfield project: A private entity or a public-private joint venture builds and operates a new facility for the period specified in the contract. The facility may return to the public sector at the end of the concession period
- Management and lease contract: A private entity takes over the management of a state-owned enterprise for a fixed period while ownership and investment decisions remain with the state.

Table 3.2 PPP Projects and Investment by Sector, totals 1990 – 2010

	Energy	Telecom	Water	Transport	(Seaports)	Total
Number of projects	1952 41%	798 17%	731 15%	1291 27%	(364) (8%)	4772 100%
Investment (US\$ million)	548,279 33%	761,394 46%	62,543 4%	275,597 17%	(54,542) (3%)	16,74,813 100%

Source: World Bank PPI database

Table 3.3 Transport and Seaport PPP Projects and Investment in World Regions, totals 1990 – 2010

	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa	Total
Transport							
Number of projects	354	59	475	34	279	90	1291
Investment (US\$ mln)	78,371	16,424	115,612	7,124	46,005	12,062	275,597
Seaports							
Number of projects	106	25	122	21	43	47	364
Investment (US\$ mln)	19,757	2,294	14,758	4,868	8,552	4,313	54,542

Source: World Bank PPI database

Overall/World-wide, totals 1990 – 2010:

- “Transport” counts for 27% of the number of Projects, 17% of Investment
- “Seaports” as share in Transport: 8% of Projects, 20% of Investment

- Average size (Investment) of Project in Transport (213) and Seaport (150) well below overall (350)
- In Transport, a major share of Projects (49%) and Investment (45%) are in Asia (East Asia and the Pacific, South Asia); in Seaports respectively 41% and 52%
- In Seaports, the vast majority is in Concession plus Greenfield: 88% of Projects, 95% of Investment
- Most typical Seaport Project: Terminal, 92% of Projects, 87% of Investments

Table 3.4 Overview of PPP projects in the periods 1991-2000 and 2001-2010

Sector,region	1991-2000		2001-2010		Growth factor
	Number	%	Number	%	
All Sectors					
World	2213	100%	2527	100%	1.1
China	281	13%	667	26%	2.4
India	107	5%	405	16%	3.8
Transport					
World	585	100%	675	100%	1.2
China	137	23%	87	13%	0.6
India	36	6%	227	34%	6.3
Seaport					
World	171	100%	192	100%	1.1
China	23	13%	39	20%	1.4
India	7	4%	26	14%	3.7

Source: World Bank PPI database

Dynamics from 1991 – 2000 to 2001 – 2010:

- World-wide moderate growth number of Projects: 14%
- Shares Transport (26%) and Seaports (7%) stable
- Overall (all Sectors) shares of China and India growing fast while # Projects in rest of the world declined by 20%
- Transport declined in China, increased in India (particularly “Highways”)
- Seaports in both China and India, both absolutely and relatively, growing significantly

3.2.4 Recent results

In 2010, 93 transport projects with private participation reached financial or contractual closure in 16 low- and middle-income countries, involving investment commitments of US\$28.3 billion.

Private activity was concentrated in India and road projects globally. India alone accounted for 56% of investment and 61% of new projects, driving most of the growth in activity in 2010. Road projects accounted for 69 new projects and US\$20 billion of investment, the highest level thus far thanks to activity in India. In addition, there were sixteen port projects with investment of US\$3.7 billion, two railway projects with investments of US\$3 billion, and six airport projects with investments of US\$2.3 billion

India accounted for all but one project in South Asia. Roads comprised most of the activity in India, accounting for 49 projects and investments of US\$12.7 billion. These road projects, most of which were for the expansion of highways from two to four lanes, represented over 4,870 kilometers. In addition, five greenfield seaport terminals reached financial closing at Kandla, Paradip, Salaya and Murmugao Ports. The ports were dry bulk coal terminals, except for one in Kandla Port, which was a multi-purpose terminal.

Proper dedicated policy and legislation is a critical success factor in PPP implementation. Here too, India is one of the frontrunners, see the recent Draft Policy on PPP. Further, the art of PPP is well developed in India, see various sites of Ministry of Finance and Planning Commission:

- Ministry of Finance, Government of India (2011) Public Private Partnerships in India: <http://www.pppinindia.com/sector-ports.php>
- Ministry of Finance, Government of India (2011) Draft National Public Private Partnership Policy: <http://www.pppinindia.com/pdf/draftnationalppppolicy.pdf>
- Ministry of Finance, India PPP Toolkit Ports: http://toolkit.pppinindia.com/start-toolkits.php?sector_id=3
- Planning Commission, Secretariat for Infrastructure: <http://infrastructure.gov.in>

3.3 Urban context

3.3.1 Introduction

Recent trends in port territorial developments:

- Globalisation in transport and logistics, concentration towards major international gateways and/or transshipment hubs
- Growing spatial demands for handling, storage and distribution, hinterland access
- Negative (perceived) environmental and safety/security conditions, especially associated with some bulk cargoes

The combined effect of such outer forces (globalisation transport and logistics industry) and inner forces (urban development, social impacts) constituted the impetus to:

- Ports moving to new locations beyond the city's boundaries
- Redevelopment of the city-center ancient port areas

3.3.2 History of waterfront redevelopments

Waterfront revitalisation began in North America in the 1960s and 1970s. USA and Canada are considered "the cradles of the waterfront-redevelopment movement". Well-known is Boston's waterfront redevelopment project Faneuil Hall and Quincy Market, a prototype of a recreation-oriented "people place", which has been reflected in other waterfront redevelopment schemes since. US waterfront projects have been developed in, amongst others, Boston (see case study in Chapter 7 of this report), New York, St. Louis, San Diego and San Francisco (see below). Canadian ports witnessed similar waterfront redevelopments including Halifax, Montreal.

The North American waterfront redevelopment "model" was diffused to other ports around the world. Initially, waterfront development emerged in European Ports, such as in London, subsequently in Australia and Japan, and more recently in all continents, including developing countries. For example, Singapore has rejuvenated its historic harbour, historic waterfront buildings in Mumbai, Calcutta and Madras are being protected and revitalised, Havana is renovating its old port city and Cape Town redeveloped its waterfront. In most of these events, improvements of the waterfront proved a catalyst for revitalising adjacent city centres.

In many port cities, the growing separation between the central city and its commercial port was reinforced by the port's downstream migration. Examples are London, from the Docklands to Tilbury and Rotterdam from the city-centre port to the Maasvlakte.

In Europe today, waterfront redevelopment is underway in many port cities. In the dissertation of Ducruet¹³ and a recent survey¹⁴ it was concluded that the vast majority of European ports (some seventy urban areas were surveyed) have wastelands close to the CBD due to shifting port activities, and are involved in redevelopment projects. It is noted that European port redevelopment typically combines recreational, business and residential functions.

Next to spatial and social considerations, there are also economic drivers behind the movement of port activities out of the city (centre):

- The opportunity to develop high value added economic activities in the former port territory
- The land value of the ports area, usually adjacent to the city centre, is potentially high¹⁵.
- The old port area could be used for development of "cruise tourism", a rapidly growing, profitable segment of international maritime shipping (new destinations, also and particularly in developing and transition countries being very much in demand; an opportunity for Indian port cities!)

3.3.3 *The urban experience, selected port cities*

Canada

The separation of commercial docks and the city began in **Saint John** in the late 19th century and in **Halifax** in the early 20th century. As railways developed and required more land for their activities, the port of Saint John first moved to the west side of the harbour. Similarly in Halifax, railway land requirements led to the development of Ocean Terminals and rail yards to the west of the traditional city centre waterfront and later to the east into the Bedford Basin. In the 1970s, large land area requirements for containerisation forced both ports to develop container terminals outside the city harbour.

In Halifax, the 1976 creation of the Waterfront Development Corporation focussed on revitalizing the downtown waterfronts of Halifax and Dartmouth. The primary aim was the restoration of Halifax's Historic Properties - a shopping, dining, and office complex extending along the central waterfront to encompass the ferry to Dartmouth terminal and the Marine Museum.

Public-private partnership was the key to developing Market Square on a former general cargo pier on Saint John's central waterfront. Market Square was designed to serve as a catalyst for the revitalisation of Saint John's decaying urban core. This mixed use complex involved a partnership of federal, provincial and municipal governments with a private developer.

In **Montreal**, growing urban pressures in *Le Vieux Port* coupled with demands for waterfront access and the retention of scenic views of the St. Lawrence River led the port to abandon its initial work on a central city container terminal and move downstream to its Racine Terminal. The Montreal Port Authority subsequently acquired the former provincial port of Contrecoeur as the site of its next container terminal located about 40 km downstream.

¹³ Ducruet, Cesar (2004) *Les Villes-Ports, Laboratoires de la Mondialisation*

¹⁴ IRSIT (2004) *Les Villes Portuaires en Europe, Analyse Comparative*

¹⁵ A study by ECORYS () revealed that the sheer difference in land value between the old port in Baku centre and a new greenfield location economically justified the project of moving the port out of the city.

In one of Canada's earlier and more controversial waterfront development projects, the former **Toronto** Harbour Commissioners (THC) converted under-used port lands near the city centre to other urban activities, as its international shipping declined due to ship size limitations in the St. Lawrence Seaway.

The **Vancouver** Port Authority (VPA) has had operational problems due to extensive urban development around its main port. In the 1960s, the port created a deep water, off-shore coal terminal at Roberts Bank to the south of the city. In the 1990's, rapid container throughput growth in Vancouver led to the development of a new container terminal. Initially, VPA participated in the capital funds required. One revenue generating solution involved the long term lease of forty hectares of under-used port land near the city centre for waterfront regeneration.

USA

Baltimore has been seen as the earliest example of urban renewal, especially the area of the inner harbour. Baltimore's success was underpinned by the following aspects. The networking enabled both public authorities and private organizations to come to an agreement on development goals and a powerful public leader was able to execute the whole process. A quasi-public agency evolved from Charles Management Office to Charles Centre / Inner Harbour Management Inc. then Market Centre Development Corporation and finally the Baltimore Economic Development Corporation. Although these agencies were directly responsible to municipal government, their distinctive characteristics allowed them to have discretion in execution and implementation under the contract with municipality.

Boston's waterfront development has built up a reputation on reintegrating city fabric with waterfront and maximising public benefit. The underlying factors of success were substantial public landownership, interagency cooperation and a development plan. Moreover, Boston's success was underpinned by strong public leadership and partnership, and recodification of legal doctrine with regard to tidelands. The Boston case is discussed in greater detail in Chapter 7 of this report.

Following a long period of inertia in the cooperation between the Port Authority and the Municipal Government of **San Francisco**, it was the natural disaster of the 1989 earthquake that finally provoked change in the dynamics of the relationship between port and city. Specifically, the barrier of the freeway along the waterfront had collapsed and was not to be rebuilt. Under public pressure from citizen groups, the port developed a comprehensive waterfront land use plan that incorporated a diversity of interests, including maritime industry, labor unions, and neighborhood and city-wide representatives. After a participatory process of negotiation that took seven years and over 100 meetings to complete, *The Port of San Francisco Waterfront Land Use Plan* was finally adopted and published by the Port Commission in 1997.

London Docklands

The first major waterfront redevelopment in Europe was the London Docklands. For a hundred years the greatest port in the world, and the living proof of the power and reach of the British Empire, the docklands occupied 21 km square kilometres in the East End of London (London Dockland). Abandoned in the early 1960s for a new port located at Tilbury, the Docklands lay derelict for over twenty years. By 1981 the then conservative government set up the London Docklands Development Corporation (LDDC) to redevelop the area. The creation of a specific body funded by the government and outside of the normal regulatory process was allied with the

designation of the former docks as an 'enterprise zone' an area where any business that established in this zone could be exempt from property rates and subject to a simplified planning regime. This concept would go on to become an extremely successful model for economic regeneration zones in many countries.

New infrastructure and transport facilities proved a key to the redevelopment of London's docks. It was an immediate task for LDDC to get Docklands connected to the rest of London as Docklands historically had poor transport connections. The first step was the construction of the Docklands Light Railway, making use of old dock railway infrastructure.

Rotterdam

The Rotterdam CityPorts concept, developed during the 1990s, gained shape in 2004 with the foundation of the Rotterdam CityPorts Development Corporation (RCDC), in which the Rotterdam Municipality and the newly established corporatized Port of Rotterdam equally participated. The regeneration of port areas in the city of Rotterdam goes hand in hand with on-going sea-side port expansion, known as Maasvlakte II.

Hamburg

While the important parts of the port are now located on the south bank of the river Elbe, most of the north-western bank has become obsolete for port functions and has thus been transformed for urban use. Initially, the transformation of Hamburg's old port created conflict between the port administration and the city planning department; in order to change the use of the land, the area had to be taken out of the jurisdiction of the port and put under the control of the city planning department. However two key factors facilitated the successful and relatively rapid transformation of Hamburg's port. First, the largest part of the old port area was owned by the city of Hamburg. Second, the area had already been exposed to a planning and urban design workshop in 1989, in which planners and architects were asked to develop ideas and concepts for redevelopment of the district.

Further in Europe, there are many similar examples of port redevelopment in Amsterdam, Antwerp, Barcelona, Copenhagen, Dublin, Glasgow, etc.

Cape Town

Two decades ago, those who lobbied for what is today Cape Town's Victoria and Alfred Waterfront were regarded as idealistic dreamers. Furthermore, no financial institution was willing to provide finance for the project when it was initially announced. But work started in 1989 with the establishment of Victoria and Alfred Waterfront (Pty) Ltd ("V&AW") as a wholly-owned subsidiary by Transnet Ltd (the State-owned South African Transport Services, later corporatised to become Transnet Ltd) to redevelop the historic docklands around Victoria and Alfred Basins as a mixed-use area with a focus on retail, tourism and residential development, with the continued operation of a working harbour. The main planning motivation for the project was the re-establishment of physical links between Cape Town and its waterfront in order to create a quality environment; a desirable place to work, live and play; and a preferred location to trade and invest for Capetonians and visitors.

Sydney

In the Australian context, Sydney Harbour is rapidly being depleted of commercial shipping, with the exception of cruise ships and ferries, as the waterfront converts to housing, land-side commercial and recreational activities. Residents in urban developments close to commercial port activities are forcing terminal operators to curtail night-time operations, limit light "spillage" on adjacent properties

and reduce their noise and pollution levels. Such constraints are forcing commercial marine activities to move away from the city centre.

On the other hand, the port privatisation initiatives in various Australian states encouraged some ports to embrace alternative land uses as a means of generating revenue. It is concluded that the introduction of commercialisation and privatisation to ports governance in Australia and around the world has generated interest and development activity in alternative port land use.

Melbourne

The Melbourne Docklands redevelopment begun in the mid 90's is in many ways a to see how that development model has changed over ten years. The site, the old Melbourne docks, is to the west of the Melbourne. The impetus behind the development was driven by many of the same factors that drove the London Docklands development, the abandonment of the docklands in the 1960's with the advent of containerisation and its location near the commercial heart of Melbourne (Melbourne Docklands).

Adelaide

The impending waterfront redevelopment of Port Adelaide is a local manifestation of a global phenomenon. Through a carefully managed place marketing process, the Port's industrial landscape is to be reconceptualized as a future landscape of cosmopolitan consumption and professional occupancy. This involves a significant transformation not only of the built environment but also the discursive identity of that waterfront landscape. Emphasising landscapes of consumption rather than production, the redevelopment of Port Adelaide is reflective of global trends in urban governance. These trends are entrenched in a distinctive form of entrepreneurial endeavour emphasising new post-industrial forms of capital accumulation.

At \$ 1.5 billion, the Port Adelaide Waterfront Redevelopment is the largest of its kind ever undertaken in South Australia, and one of the last ports in Australia to be redeveloped. In the Newport Quays development consortium, the Land Management Corporation, Port Adelaide Enfield Council and the Port Centre Coordination Group are working together to ensure the rejuvenation of Port Adelaide is a success.

Singapore

Much like Hong Kong, Singapore as an island city has been blessed with a long coastline and waterbodies right in the heart of the city centre. Within and near the City Centre, we have the Singapore River, Kallang Basin and Marina Bay.

Central in the regeneration of the ancient port was the Planning of Singapore River. After ten years of clean up, the river was ready for a new lease of life. Masterplan of the area was prepared. Three key strategies were adopted:

- Creating an activity corridor for recreation and leisure through mixed land uses. The river is zoned for a mixture of land uses that include Commercial Residential, Hotel & Institutional uses. These mixed-use developments would bring people to the area at different times of the day.
- Mixing old and new developments. The identity and character for the Singapore River would be preserved through

- selective conservation of architecturally significant buildings and integrating them with new developments.
- Forging a public/private sector partnership. The Government also provided the planning framework and guidelines for the private sector to carry out the redevelopment along the river using private resources. State land and conserved buildings were sold through the Government Land Sales Programme to enable the private sector to participate in the transformation of Singapore River.

Osaka

In the 1960s, as pressure for land increased, Osaka began to build artificial islands off the port area to receive landfill. As this happened, the function of the port began to change too, from a trade zone to a waterfront urban zone.

Most prominent in the Osaka city waterfront zone is Cosmosquare district. It could be developed after the central government designated it as Priority Urban Area under the Urban Renaissance Special Measure Law.

3.3.4 Conclusions

All over the world, ports are in spatial transition. Following environmental and social pressures, a “separation” occurs, port activities leaving their traditional home in/near the city centre for new – greenfield - locations outside the urban area in industrial and logistic clusters. Later, and that may take decennia, urban redevelopment is initiated, through waterfront “regeneration” of abandoned inner-city port sites.

Critical success factors in this process:

- A port regeneration master plan is required, embedded in an overall integrated urban development policy/strategy
- The plan shall strive for economic and social balance of urban functions, including residential
- The plan shall build on strong cooperation between the Port Authority, the Municipal Government and the Private Sector, preferably through a special purpose vehicle development corporation, using Public Private Partnerships as delivery mechanism
- The Port Authority seems to be the indicated party to guide the transition process and initiate urban redevelopment planning, acting as the stakeholder coordinator in their role as port landlord with responsibilities for the entire port community
- Governance of the transition process shall be at the municipal level. Of course, there is some central oversight (policy, legislation) but planning and action is a local matter
- The economic significance of new maritime activities in the redeveloped port sites, i.e. recreational boating/marinas and cruise shipping is rapidly growing
- Proper access of the regenerated waterfront area and connectivity with the city centre shall be secured

3.4 Bulk handling

3.4.1 Introduction

There is a world-wide trend of development of dedicated bulk-handling facilities outside of the boundaries of the existing public ports. Stand-alone bulk cargo terminals have become more common:

- as the scale of shipments and size of the bulk vessels has increased
- as direct rail access for unit trains operation has become a prerequisite

- as the shippers have assumed greater control over their supply chains, and
- as stricter environmental regulations require greater physical separation from the handling of general cargo.

Traditionally, bulk-handling occurred side-by-side with general cargo in multi-purpose ports. During the past decades, bulk-handling facilities increasingly move away from their original home within city-ports to new locations, beyond the boundaries of existing ports, frequently greenfield sites outside the urban area, for the following reasons:

- Changes in cargo-handling technologies, specialised bulk terminals requiring more storage space and deeper water for larger ships than can be provided in the multi-purpose city-ports
- Hinterland access: the need for direct connectivity to rail and/or inland waterway networks
- Environmental and safety/security pressures from the urban society
- Port development will be more and more integrated with industrial territories outside urban areas for value added production and logistics
- Shippers increasingly strive for vertical integration, securing control over the entire supply chain, including dedicated port and terminal facilities

The movement of port facilities from the traditional central location was described above in the urban context in terms of separation, transition and territorial integration. The latter is manifested in two ways:

- Urban redevelopment, waterfront generation in/adjacent to the city centre, and
- Integrated industrial port development outside the urban area, i.e. container terminals and dedicated bulk handling facilities

In bulk trading, there is a tendency of vertical integration, whereby main players are striving to avail of dedicated facilities preferably in ownership, along the entire supply chain. In principle, this could in some situations, induce risks of monopolistic powers, i.e. when a private terminal is the only one of its kind in a port and does not allow entry and use by others (competitors or not). Port Authorities shall be aware of such risks and if necessary set regulations to ensure level playing field competition.

A selection of ports around the world, hosting main bulk trades, is listed below.

3.4.2 *Bulk trades and ports*

The vast majority of bulk trades (in tons) is Coal (basically coking or steam) and Iron ore. In order of importance:

- Iron ore Main exporters: Brazil, Australia, India, South Africa, Canada
- Iron ore Main importers: China, Europe, Japan, Korea, Taiwan
- Coal Main exporters: Australia, Indonesia, United States, Canada, Russian Federation
- Coal Main importers: Europe, Japan, Korea, India, Brazil

Selected countries and ports are presented in the following sections below.

3.4.3 Canada

Port-Cartier, Iron ore

- Port Cartier is a private port, owned by Archelormittal.
- Concentrate produced at Mont-Wright is unloaded at Port-Cartier using the dumper, a system that empties train cars two at a time without uncoupling them. The concentrate is then routed to one of three destinations: the pellet plant, the stockpiles and the port.
- Port: The port facilities at Port-Cartier have an annual shipping capacity of over 20 million tonnes, making it one of Canada's largest private ports. Marine traffic tops approximately 450 vessels a year.
- Hewn into the rock at the Gulf of St. Lawrence estuary, the five-dock facility is accessible year-round. Two docks are reserved exclusively for concentrate and pellet shipping, while the third receives raw materials for pelleting. The last two are leased for transshipment of grain from Western Canada.
- Railway: The Company railway transports iron ore concentrate from Mont-Wright to Port-Cartier. Renowned throughout the North American rail industry, it is considered a benchmark for reliability and innovation. The Company's rolling stock includes 22 locomotives, some 950 cars, more than 300 utility cars.

Seven Islands

- Seven Islands Development Corp. has 5,000 acres of land available in Seven Islands (Sept-Îles), Québec Canada. This land is on the Gulf of St. Lawrence. It has 3 miles of ocean frontage on the gulf, 2 miles of frontage on the pure fresh water Moisie River and three miles of highway frontage. It borders the massive developments now taking place in Seven Islands.
- The general area extending North from Seven Islands is a major world resource for iron ore, where much activity is also now taking place in prospecting, mining and developing Nickel, Copper, Titanium, Apatite and rare earth minerals. The area is also one of the world's largest producers of Aluminum.
- Seven hundred kilometers of rail facilities are now in place to handle all of this expanding activity running north to the cities of Wabush, Fermont, Labrador City and Schefferville. These minerals are being shipped to and from the enlarged port facilities of Sept-Îles.

CSL Transshipment,

- Dedicated transshipment company in Seven islands.
- CSL Transshipment ("CSLT") is the global leader in offshore dry bulk cargo transshipment. CSLT combines:
 - Existing dry bulk cargo handling systems in new and innovative configurations
 - Experience gained from transshipping in excess of 24 million tons of dry bulk cargoes annually
 - A global customer base located in Asia, Australia and North America
- CSLT centralizes all of CSL's marketing, commercial, operational and technical transshipment expertise into one organization. Current and potential customers now have a single point of contact for their global transshipment needs.
 - Iron Ore - Export - Seven Islands Bay, Quebec, Canada
 - Coal - Export - Strait of Canso, Nova Scotia, Canada
- Canada Steamship Lines and CSL International, on a spot and contractual basis, for several iron ore and coal exporters located on the North American Great Lakes and Saint Lawrence Seaway, tranship and perform cargo top-off operations using self-unloading vessels to load ocean going dry bulk carriers for export to Europe and Asia.

3.4.4 Brazil

Vale - iron ore

Vale is the second biggest mining company in the world, and the largest private company in Latin America. Headquartered in Brazil and operating in 38 countries, Vale now employs over 126,000 people. Vale is the global leader in iron ore.

Vale invests more in logistics in Brazil than any other company. Through the years, substantial investments have been made to expand capacity and meet rising demand, contributing to growth in the country's economy and exports. Multimodal infrastructure connects major producing regions to ports, providing for efficient cargo transportation.

Vale is focused on raising the productivity of our railroads and ports, and ensuring efficiency and safety in our operations and communities.

Logistics

Vale's logistics infrastructure in Brazil includes 10,179 kilometers of railroad. The company has four railroads: Centro-Atlântica Railroad (FCA), Vitória-Minas Railroad (EFVM), Carajás Railroad (EFC) and the North-South Railroad (FNS). In addition, Vale has a 41.5% stake in MRS Logística.

Ports and terminals

Vale's logistics infrastructure includes nine port terminals: a multi-modal terminal, five general cargo ports and three iron ore export terminals. In addition, Vale owns 20 ships and has a diverse range of contracts of affreightment.

Located in Vitória, Espírito Santo state, the Port of Tubarão covers an area of 14km². The port complex has two piers, able to accommodate up to three ships at the same time and transfer 43,000 tons per hour. The complex can export up to 100 million tons per year.

In addition to Tubarão Terminal, which exclusively handles iron ore, the complex has three general cargo terminals: Praia Mole Terminal (coal), a Diverse Products Terminal (soy and fertilizers) and a Bulk Liquid Terminal.

According to a study by the University of São Paulo, the Port of Tubarão is the most efficient bulk cargo terminal in the world, comparing favorably to larger ports such as Dampier and Port Hedland in Australia. When storage areas of the same size and with the same assets were compared, Tubarão was found to be 35% more efficient than other ports.

3.4.5 South Africa

Richards Bay, coal

South Africa is one of the world's leading exporters of coal. The seven most important mine operators in the country have funded, built, and now operate a huge coal terminal at Richards Bay with exceptional rail access facilities to serve their export business. The terminal has no public service obligation and handles the traffic of its shareholder- customers on a priority basis. This places the small producers in a situation of dependence. They in effect are obliged to sell their

production to large operators or use other, less competitive and more expensive ports (Durban or Maputo), or use the terminal as second-class customers.

Saldanha, iron ore

The Port of Saldanha Bay, South Africa's largest natural anchorage and port with the deepest water is 60 nautical miles northwest of Cape Town. The port has developed into a modern harbour only recently, when it became necessary to facilitate the export of iron ore from the Northern Cape. This required the construction of a railway more than 800km to the mines at Sishen in the Northern Cape and the construction of a deepwater jetty in Saldanha Bay to accommodate the Capesize ore carriers.

Deliveries of iron ore were exported since 1976, and since then close to 500 million tonnes of iron ore has been handled at the Saldanha Bulk Terminal. Iron ore is delivered to the port along a dedicated ore railway known as the Orex line, from the mines near Sishen in the Northern Cape. This line was originally built by Iscor and later taken over by Spoornet (now Transnet Freight Rail).

In addition, the Saldanha Steel Mill near the port has also been commissioned for the export of steel manufactured from more than 1mt of iron ore which is railed direct to the mill.

Port Facilities: contrary to Richards Bay Coal Terminal, Saldanha Bay is a common user port

3.4.6 Australia

Port of Hay Point

Situated about 40 kilometres south of Mackay in Mackay Regional Shire, the Port of Hay Point is one of the largest coal export ports in the world. Located close to the neighbouring towns of Louisa Creek, Salonika and Half Tide, the port comprises two separate coal export terminals, Dalrymple Bay Coal Terminal (DBCT), leased from the State Government by the private company, DBCT Management Pty Ltd, and the Hay Point Coal Terminal (HPCT), owned and operated by BHP Billiton Mitsubishi Alliance (BMA).

Together, the two terminals serve the coal mines of Central Queensland. The mines are linked to the terminals through an integrated rail-port network. North Queensland Bulk Ports (NQB) is the port authority for the port. NQB is responsible for five port locations which handle a variety of cargoes:

- the trading ports of Hay Point, Mackay, Abbot Point, and Weipa
- the non-trading port of Maryborough.

The trading ports handle bulk export commodities, the non-trading port is held for strategic purposes, should a commercial need arise.

At each port, NQB is responsible for strategic planning, operational issues, infrastructure development, security and emergency response planning, protection of the environment, and maintaining navigable port depths. Pilotage and port navigation is controlled by Queensland Transport.

Dalrymple Bay Coal Terminal (DBCT)

DBCT is a multi-user coal export facility located 38 kilometres south of Mackay at the Port of Hay Point. DBCT is owned by the Queensland State Government and is leased to DBCT Management through a 50 year lease with a further 49 year option. Through significant capital investments since taking over the lease, DBCT Management has expanded the capacity of DBCT to its current

nameplate capacity of 85 MTPA. All of this capacity is currently contracted to coal producers located in the Bowen Basin coalfields. DBCT is declared for third party access under the Queensland Competition Authority Act with terms and conditions of access regulated by a QCA approved access undertaking. DBCT operates in a dynamic environment receiving upwards of 20 trains per day from two competing train service providers servicing 8 parent companies with approximately 16 coal mines.

Port of Abbot Point

Situated about 25 kilometres north of Bowen, the Port of Abbot Point is Australia's most northerly coal port. The existing Abbot Point Coal Terminal comprises a rail in-loading facility, coal handling and stockpile areas, and a single trestle jetty and conveyor connected to a berth and shiploader, located 2.75km off-shore. The terminal is being expanded with the addition of a second wharf and shiploader as well as an additional onshore stockyard and machines.

Coal is supplied to Abbot Point by rail from Newlands, Collinsville and Sonoma mines. The coal terminal at Abbot Point, which is owned by NQBP and operated by Abbot Point Bulk Coal Pty Ltd, is currently undergoing significant expansion works, to take capacity to 50 million tonnes per annum. The expansion is due for completion in 2011.

On 3 May 2011, the Queensland Government announced the 99-year lease of the X50 Abbot Point Coal Terminal to Mundra Port Pty Ltd for \$1.829 billion. Mundra Port is the Australian subsidiary of Mundra Port and Special Economic Zone Ltd, which developed and manages the largest privately developed port in India and forms part of the Adani Group (the largest integrated coal management firm in India).

Under the lease, the State will retain ownership of the Port land and fixed infrastructure such as the jetty and the wharf. The State will also continue to facilitate future private-sector funded expansion of export infrastructure within the broader port precinct, such as Terminal 2, Terminal 3 and the Multi Cargo Facility. The North Queensland Bulk Ports Corporation remains as port authority for Abbot Point, responsible for the ongoing safety, security, efficiency of and master planning for the Port.

3.4.7 Conclusions

- International practice shows a trend towards enhanced vertical integration and enhanced control over the major parts of the supply chain, through ownership or taking interests.
- Nature of main trades bulk handling: Dedicated, sometimes private facilities (port or terminal), intermodalism :hinterland rail, port/terminal, maritime shipping
- Sometimes common access conflicts arise (e.g. Richards Bay)
- Port Authorities generally alert on fair competition (Australia!)
- All major bulk trades of minerals are handled outside the urban areas, hence avoiding environmental and social conflicts

3.5 Conclusions on port stakeholder coordination

Mainstream in contemporary port governance is the landlord port management model and a corporatized Port Authority with sufficient autonomy to assume enhanced roles and functions in field of:

- Evolution from “Conservator” to “Facilitator” and “ Entrepreneur”
- Strategic Manager for (cluster of) regional ports
- Responsible for port development and its financing
- Including port related industrial development (bulk trades)
- Committed to Global Logistics/Trade Facilitation/Supply Chain Management
- Increasingly involving hinterland transport (corridors) and inland terminals
- Caring for port community/social matters and maintaining the city-port dialogue

Private sector involvement in ports occurs in terminal operations and port development.

In financing port development (and associated industrial facilities and urban regeneration), Public Private Partnerships are increasingly employed. A worldwide survey reveals that India and China are leading, while the rest of the world is stagnating in PPP applications.

Many port cities all around the world undergo a transition in terms of separation of space demanding and/or dirty trades from the inner-city port to a location outside the urban area, followed by waterfront regeneration in the city centre. International best practice shows many successful projects. Frequently, cruise shipping promises an untapped potential.

In bulk-handling, particularly coal and iron ore, there is a trend towards vertical integration by major suppliers, aiming at increasing the scope of control over the entire supply chain through dedicated facilities under private ownership. Port regulation shall be geared to preventing abuse of monopolistic power while securing common access.

4 Case 1: development of a national port network in Turkey

4.1 Introduction

4.1.1 Context

Turkey enjoys a strategic location, geographically as well as geo-politically, as a bridge between Europe and the Middle East. The country is increasingly and quite successfully developing its potential to play a pivotal role in regional and global economic integration. The economic crisis set apart, the Turkish economy has grown rapidly in the last years. Important energy, trade and transport networks run through the country, connecting which connect west to east and north to south. The country has embarked on a large scale privatization scheme aimed at reducing state involvement in sectors such basic industries, banking, transport and communication. These are key to unleashing the Turkish potential.

To accommodate the economic growth in Turkey a lot of investment needs to be done in the infrastructure, transport and logistics sector. Turkey's ambition is to become a logistical hub between Europe and the Balkans, Middle East, Russia, Caucasia, Black Sea and Mediterranean countries. One of the policy priorities of Turkey is increasing its port capacities and transforming ports into logistical centres where combined transport can be realised whilst ensuring efficient management of ports. Especially investments in the maritime (and rail) sector are needed, as the current capacity is too low and too inefficient to accommodate the increasing freight flows.

4.1.2 Geography

Turkey has a long coastline. It is bordered by the Black Sea to the north, the Aegean Sea to the West and the Mediterranean Sea to the South. Only the Eastern border of the country, about half of the southern border and a small stretch in the northwest are land borders. The majority of Turkey's surface is located in Asia; a small part of the country is located on the European continent. The European and Asian part of Turkey are separated by the Dardanelles Strait, the Sea of Marmara and the Bosphorus, which connect the Aegean Sea with the Black Sea. Particularly the Dardanelles Strait and the Bosphorus, which runs right through the city of Istanbul, are bottlenecks to maritime traffic. Both straits are so narrow that traffic streams up and down have to be alternated, causing the need for ships to wait for a convoy to pass through. In the Bosphorus, safety is an important issue, as fully loaded tankers have to navigate the narrow and bendy Bosphorus right through the middle of Istanbul, which has a population of 14 million people.

Figure 4.1 Map of Turkey



Source: Perry Castañeda Library Map Collection

4.1.3 Economic developments

Turkey experienced a severe financial crisis in 2001, followed by financial and fiscal reforms as part of an IMF program. These reforms strengthened the country's economic fundamentals and kickstarted an era of strong growth - averaging more than 6% annually until 2008, when global economic conditions and tighter fiscal policy caused GDP to contract by 5% in 2009. Inflation by 2009 was reduced to 6%, an 34 year low (2002 inflation was 30%). In 2010, the economy bounced back to growth at 9% and the 2011 growth figure is likely to come to 6.5 to 7%.

In May 2006, the first oil emerged from the Baku-Tbilisi-Ceyhan pipeline and several gas pipelines connecting Central Asia to Europe through Turkey are under planning. This will bring new economic opportunities to Turkey and might help addressing the country's dependence on energy imports in the long term.

The basis of this economic performance lies in structural reforms that strengthened the macroeconomic fundamentals of the country, partly driven by the post 2001 crisis IMF programme and partly by the country's EU accession process. The main objectives of these efforts were to increase the role of the private sector in the Turkish economy, to enhance the efficiency and resiliency of the financial sector, and to place the social security system on a more solid foundation. The improvements in the Turkish economy have also boosted foreign trade; the traditionally largest Turkish export sector of textiles has meanwhile been surpassed by the automotive, construction and electronics industries. Exports have grown from 36 billion USD in 2002 to 114 billion USD in 2010. In 2023, the value of exports is expected to hit the 500 billion USD mark.

4.1.4 Cargo volume development

As an expected 90% of Turkish trade will move by ship, this will place the Turkish port sector under a heavy burden. Container volumes have increased from 1.25 million TEU in 2001 to 5.87 million TEU in 2010, whereas in the same period the total cargo volume more than doubled from 170 million tons to 350 million tons. Expectations are that container volumes will grow to 15 million TEU in 2020 and 30 million TEU in 2030, and that the total cargo volume for these years will grow to 419 million tons and 758 million tons respectively.

This enormous growth in cargo volumes will have to be catered for by an efficient ports system, linked to the main consumption and production centres of the country by an efficient hinterland network of roads and railways.

4.2 Transformation in the physical infrastructure

The Turkish maritime policy vision is based on the following elements:

- Provision of infrastructure with sufficient capacity, based on the cargo volume forecast figures as indicated in the previous section
- Efficient operation and efficient administration
- Improved safety and security
- Integration with European and neighbouring economies

The major challenge in the coming decades is to provide additional infrastructure and to make existing infrastructure more efficient.

4.2.1 Port infrastructure

The Turkish maritime policy vision aims to develop ports at the right place, at the right time and with economies of scale. They need to be developed into logistics centres with good hinterland connections and will be planned according to strategic planning documents and with proper feasibility studies. Apart from several smaller initiatives, both public and private, Turkey is aiming to develop three major port projects. These ports were selected as a result of the TINA (Transport Infrastructure Needs Assessment) study for Turkey carried out in 2004, as priority port projects to develop a multimodal transport network in Turkey. In fact the TINA study prepared an extension of the TEN-T (Trans European Network - Transport) into Turkey. All three ports will be considered for European funding through the IPA (Instrument for Pre-Accession) programme. These ports are:

- a container terminal in Çandarlı (near Izmir), with an ultimate capacity of 4 million TEU;
- additional container terminals at Mersin, with an ultimate capacity of 11 million TEU;
- a bulk and general cargo port in Filyos, with a capacity of 10 million tons of dry bulk, 3.6 million tons of breakbulk and 0.9 million TEU containers.

The ports of Mersin (on the Mediterranean coast) and Filyos (on the Black Sea coast) will be connected by a railway so that they can form a landbridge as an alternative to maritime transport through the Bosphorus.

4.2.2 Other transport infrastructure

Though not part of the ports network, a road and rail network that connects ports to the major production and consumption centres is paramount to complete the network of ports. The Turkish government is aware of this too and is investing in its road and rail network. In the feasibility studies of the three major port projects above, the road and rail connections of the port, including expansion plans, have been studied in great detail.

4.3 Objectives that guided this transformation

The major objectives behind the development are clear: Turkey wishes to develop a port infrastructure to support its economic growth objectives, and wishes to do so in a coordinated manner. Along with the objective of providing infrastructure with sufficient capacity, there are objectives such as:

- Correct timing of the developments in order not to waste capital
- Improvement of efficiency in the ports to make better use of existing capacity
- Improvement of the efficiency of administrative processes in order to facilitate trade and transport flows
- Improving safety and security in ports to match international requirements
- Involvement of the private sector to attract capital for investment and knowledge in specific areas
- Stimulation of containerization. (Turkey has a containerization rate of about 70%, compared to 85%-90% for the most advanced economies, so there is still room for further containerisation)

4.4 Evolution in institutional relationships

The concept of PPP is not new to Turkey. In particular the BOT concession has been widely applied with mixed success in Turkey, particularly in the energy, airports and ports sectors. In the ports sector the BOT (Build Operate Transfer) law has been used to build nine marinas and four ports, but there have also been some unsuccessful examples and a number of projects have been cancelled or abandoned. Some attempts have been made in Turkey to tender projects without explicit government guarantees but no compliant bids were received. The private sector has been reluctant to invest without these guarantees especially in light of the financial crisis. On the other hand, the same BOT law has worked well in the airport sector.

Today, the Turkish state still has a very large stake in the port sector. Many ports are still state owned, managed and operated. This situation is changing however, as Turkey is privatizing parts of its port sector seeking private capital to invest in port infrastructure. Parts of the three major port development projects that will be tendered soon will be tendered as BOTs, where the government will only invest in those elements of the development that cannot be attractively funded by the private sector, such as breakwaters and some of the other basic infrastructure. All other investments, including part of the basic infrastructure will be funded by the private sector.

4.5 Underlying governance structure

There is, as yet, no single ports authority in Turkey; ports are owned and operated by TCCD (Turkish Railways), which remains responsible for the performance of the ports operator, and has the power to step-in in the event of default by the operator of its contractual obligations. These include a requirement to carry out specified improvements to the port infrastructure.

It is possible for private companies to propose other port developments, but these must obtain a number of permits and consents from the State Governor, the municipality (for zoning), DLHI acting on behalf of the Ministry of Transport (for consistency with national strategy and technical approval of designs) and the Ministry of Finance (to establish a value on the lease of State land). Permits to operate are granted by the Turkish Maritime Organization. Increasingly the State has provided feasibility studies, environmental impact assessments, engineering surveys and settlement plan

approvals in order to minimize delays to the projects. In some cases the State also provided the construction of the basic infrastructure such as breakwaters (with the prior approval of the State Planning Organization (SPO) for the necessary public investment). The subsequent port operator then provides the superstructure within the terms of the concession agreement. No government guarantees are permitted.

The privatization programme for the TCDD owned ports is now almost completed, and the methodology for encouraging private investment under the BOT model has evolved to work effectively in the ports sector. BOT is considered to be the most appropriate model for creating new facilities, although the TOR model (in which the operator operates the port according to certain specifications) can also include capital improvements in the concession requirements. Between 10 and 15 ports are now in private operation under the TOR model.

4.6 Legislative changes

The BOT law (3996) has been used as the basis for private investment in nine marinas and four port facilities. A report by the Ministry of Transport has looked at alternative financing models for the ports sector and made recommendations on improving the application of the existing BOT laws, based on experience to date, as a short term measure, and the drafting of a new PPP law for the longer term. A general PPP law is under construction but is yet to be enacted.

4.7 Cross country comparison

The situation in India has obvious parallels with the Turkish situation. Both countries are developing economies that experience strong economic growth, both countries have a long coastline and rely on maritime transport for most of their imports and exports, both countries are confronted with fast growing volumes of maritime cargo and face the challenge of supplying the infrastructure to handle these volumes.

4.8 Sources:

- Assessment of the results achieved by Support to European Integration 2006 project and major project application form (Çandarlı and Mersin Port), Ecorys 2010
- Assessment of the results achieved by Support to European Integration 2006 project and major project application form (Filyos Port), Ecorys 2011
- CIA world factbook
- IMF world economic outlook September 2011
- Invest in Turkey (www.invest.gov.tr)
- Perry Castañeda Library Map Collection (www.lib.utexas.edu/maps/index.html)
- The next generation of PPP in Turkey: Review, strengthening and harmonization of policy, institutional and legal framework for the next generation of PPP projects in Turkey, Ecorys 2007
- Turkish Maritime Policy Vision and Container Forecast 2035 – presentation by State Planning Organisation in Brussels, 17 February 2011

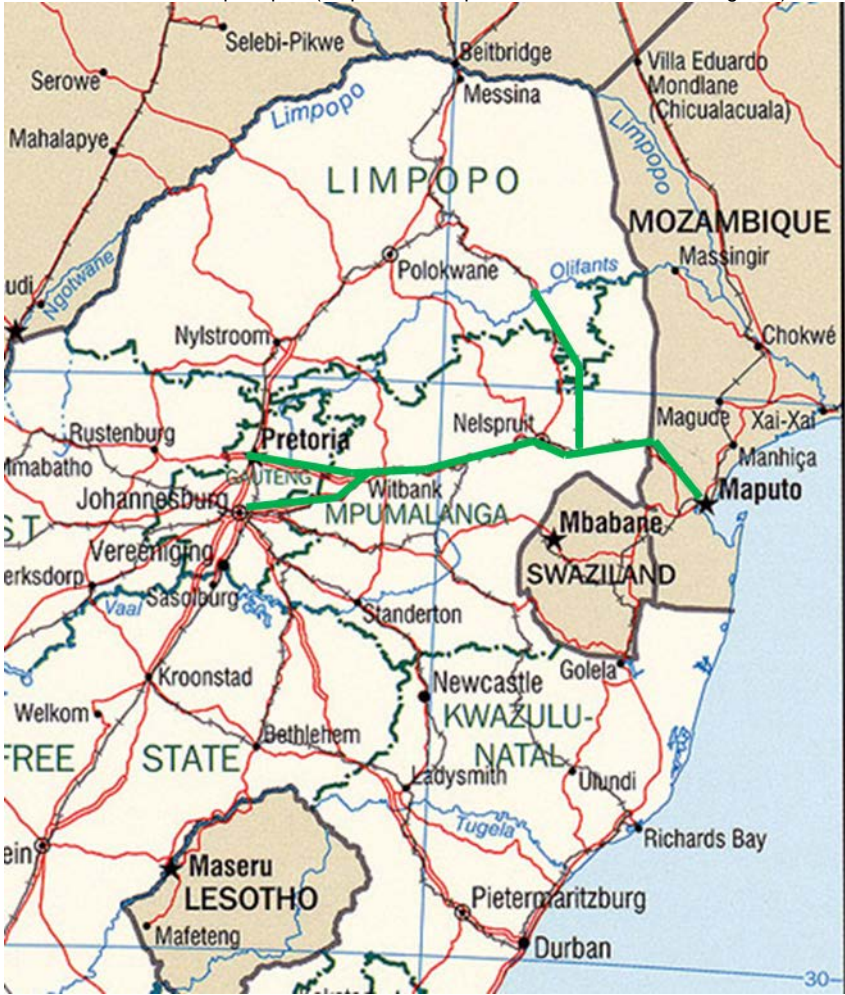
5 Case 2: the Maputo development corridor

5.1 Introduction

5.1.1 Context

The city of Maputo in Mozambique has a port that is well located for South African transit cargoes. For cargo with origin or destination in the South African provinces of Limpopo, Mpumalanga, and Gauteng the port of Maputo is either the nearest port or just as far as Durban or Richards Bay (see Figure 4.1). The distance between the port and the South African border at Lebombo (Mozambique)/Komatiport (South Africa) is only 100 km.

Figure 5.1 Map of the hinterland of Maputo port (Maputo Development Corridor indicated in green)



Source: Perry Castañeda Library Map Collection

Along the corridor Johannesburg-Witbank-Nelspruit-Komatipoort, there are several centers of production, notably mining and agricultural products. In fact, the corridor runs through the most highly industrialised and productive area of South Africa. The densely populated Gauteng area (Johannesburg-Pretoria) is an important center of consumption too. These centers of production and consumption are served by the South African ports of Durban (containers, general cargo, minor bulk flows) and Richards Bay (major bulk flows), as well as increasingly by the port of Maputo in Mozambique. Table 5.1 shows the distances between a few of these production or consumption centers and the ports of Durban, Richards Bay and Maputo.

Table 5.1 Distances by rail between major centres and seaports (in km)

Location	Country	Maputo	Durban	Richards Bay
Johannesburg	South Africa	584	720	652
Witbank	South Africa	407	820	600
Nelspruit	South Africa	188	830	648
Polokwane	South Africa	550	1050	976
Phalaborwa	South Africa	374	1083	895

Source: Maputo Corridor Logistics Initiative

The distances by road show a similar pattern. The distance from Witbank to Maputo by road for instance is 420 km, compared to Durban 626 km and Richards Bay 538 km. For Phalaborwa, located just north of the Olifants River in Limpopo, the distance advantage is even larger. The port of Maputo is connected to the South African consumption and production centers by railway through the Ressano Garcia line in Mozambique (part of the network of CFM - Portos e Caminhos de Ferros de Moçambique) and by the rail network of South Africa's railway company Transnet Rail. The road connection in both Mozambique and South Africa is the N4, a toll road. Rail and road use the same border crossing, at Lebombo/Komatipoort.

5.1.2 Cargo volume development throughout the years

At its peak year during the colonial era, in 1971, the port of the city (then called Lourenço Marques) transported 17 mln tons of cargo per year, a fair share of which was SA transit cargo. The independence of Mozambique in 1975 was followed by a period of civil war lasting until 1992, during which the port but in particular the railways suffered damage from attacks and neglect. By 2002, the all time annual low volume was recorded at 1.2 million tons.

In the early years of this century, the port and the railway were gradually rehabilitated and a quality road was constructed. Today, the port caters to local imports and exports as well as to transit imports and exports. Most of these transit cargoes are from South Africa, but increasingly transit cargo from other countries finds its way to Maputo, in particular cargo from Zimbabwe and Swaziland. The total cargo volume handled in 2011 is likely to come to the range of 11.5 million ton and the port has plans to further upgrade and expand capacity to about 30 million tons by the end of the decade.

5.1.3 Political developments

The development of the Maputo corridor, or rather, if compared to the pre-1975 situation, the revival of it, was triggered by major political, economic and social changes in both South Africa and Mozambique.

Mozambique

The years of the civil war (1977-1992), combined with a major draught in 1983, practically paralysed the Mozambican economy. After the peace treaty between the Marxist ruling party FRELIMO and resistance movement RENAMO in 1992, the gradual rehabilitation of the country's economic, political and social structure could start. Today, the country is still among the poorest of the world, with a GDP per capita of 1000 USD in 2010 and an estimated 54% of the population below the poverty line. However, the economy has been growing at a rate of 6% to 7% in the past few years, despite the worldwide recession.

South Africa

In the decades before 1990, when the first steps towards abolishment of the apartheid system were made, South Africa was boycotted by most Western as well as African countries. In 1994, the first free elections were held which were overwhelmingly won by the African National Congress (ANC), which has been in power ever since. Since then, international and economic relations have been re-established. The country's economy is developing, but faces problems such as high unemployment (especially among the black population), brain drain, an electricity crises (lack of power plants having an adverse effect on industrial production and investments in industrial facilities) and high crime levels. Pre-world crisis growth levels ranged between 4 to 5% (annual GDP growth), but the crisis resulted in a decline of -1.8% in 2009. 2010 GDP growth bounced back to positive figures with 2.8%.

The country is very rich in natural resources (coal, iron ore, chromium, gold, and a series of other ores and rare earth metals). Despite its economic issues, the country has recovered from the economic crisis and has joined the BRICS¹⁶ grouping of countries in April 2010.

5.1.4 Cross country comparison

Comparison to India

As Southern Africa, India too has a geographical situation where the major production and consumption centers are situated away from the major ports. The Delhi-Mumbai corridor is a good example, in a way comparable with the Maputo corridor. The major difference is that the Gauteng area in South Africa has several corridors to ports for its imports and exports, and that there is a border crossing in the Maputo corridor which forms an obstacle.

Politically speaking, political stability in India has existed for far longer than in both South Africa and Mozambique. India's economy is growing rapidly too and at higher levels than the two African countries. Pre-crisis annual growth levels frequently hit the 10% mark and during the crisis growth only slowed down to just under 6%. Yet, comparable to South Africa, the country has an economy that is rapidly expanding and modernizing.

¹⁶ BRICS (Brazil Russia India China South Africa)

The Rhine corridor in North-west Europe

The Rhine corridor forms an important transport corridor between the port of Rotterdam in the Netherlands and the German Ruhr area. The Rhine river is navigable beyond the Ruhr area all the way to Basle in Switzerland and even further (about 1000 km), but this section focuses on the Rhine corridor between Rotterdam and the Ruhr area (some 200 km).

The Rhine corridor consists of several transport links, of which the main ones are described below (see also map on the next page):

- Inland waterways, notably the Rhine Estuary with Nieuwe Waterweg, Waal and Rhine as the main connection from Rotterdam to the Ruhr area, the Meuse river to the South and several canals and river branches connecting the above waterways or branching into them
- Rail links, including a dedicated freight rail link, the Betuwe line, between the port of Rotterdam and the German border, connecting to the rail link Arnhem-Oberhausen. The German sector of this dedicated freight rail link is yet to be constructed. Some parallel combined freight and passenger rail lines complement this corridor.
- Road links: Highway A15 Rotterdam-Nijmegen, starts right from the Maasvlakte container terminal areas and runs parallel to the Betuwe rail line and the Rhine river. Two other highways run more or less in parallel, one a few tens of kilometres to the north and another a few tens of kilometres to the south.

The Rhine and Meuse are part of the European Trans European Network-Transport (TEN-T) priority project 18, the Rhine-Meuse-Main-Danube corridor that connects Rotterdam to the Black Sea in Romania. The Betuwe line is TEN-T priority project nr. 5.

The Rhine corridor is in fact a transport network of major East-West connections, with branch connections and north-south connections, offering several routing choices for each transport mode. While the waterways network are largely natural rivers, the other infrastructure in the corridor was developed over a period spanning more than a century, with the construction of the first railway lines and the canal Nieuwe Waterweg in the 19th century and the construction of the highways since the mid 20th century.

The infrastructure could broadly be divided into three categories:

1. Naturally available, which relates to the waterways. These have been adapted and been made navigable, but in principle are based on the natural existence of the rivers.
2. Purpose built infrastructure, which applies to some of the canals (notably the Nieuwe Waterweg that gave the port of Rotterdam direct sea access in the 1870s) and the Betuwe rail freight line.
3. Infrastructure built with a mix of purposes, which concerns most of the railway lines and the highways. These were built with the purpose of connecting the major urban centres as well as with the purpose of connecting the industrial areas to the port(s).

Figure 5.2 Map of the Rhine corridor area



Source of map: printscreen taken from www.viamichelin.com

Contrary to the Maputo corridor, there is no corridor development agency. The responsibility for the infrastructure falls under several public authorities, mostly at national level or at the level of federal state (in the case of Germany) or province (in the case of the Netherlands). This explains for instance that the development of the Betuweline was completed from the Dutch side, but is awaiting further works on the German side. The private sector is much less involved in the development of the corridor than in the case of the Maputo corridor, although on the rail corridor, the management and maintenance is tendered and a concession is given to a private operator for the infrastructure, who should then arrange access to multiple rail operating companies against regulated tariffs.

Navigation on the Rhine is coordinated through the Central Commission for Navigation on the Rhine, which was founded in 1815. With the Act of Mannheim (1868), the principle of free navigation on the Rhine was arranged. This principle is considered to have been a major condition for the economic development of the countries along the river.

5.2 Transformation in the physical infrastructure

The infrastructure of the Maputo corridor was gradually rehabilitated in recent years:

- Maputo port was concessioned to the Maputo Port Development Company (MPDC)
- The Ressano Garcia railway line, from the port of Maputo to the border crossing at Lebombo/Komatipoort was rehabilitated in the early years of this century. Further upgrading of its capacity is still ongoing.
- The road connection consisting of the N4 toll road running from Johannesburg (with a branche from Pretoria) to Maputo was constructed in the years 1998-2001.

5.2.1 Port infrastructure

The port of Maputo was concessioned to MPDC, a joint venture of Portos e Caminhos de Ferro de Moçambique (CFM), Grindrod and DP World. In 2003 MPDC obtained a concession for 15 years with an option of extending for another 15 years. In June 2010, the concession period was extended for another 15 years, with an option of an additional ten years of operations after 2033. MPDC holds the rights to finance, rehabilitate, construct, operate, manage, maintain, develop and optimize the entire concession area. The company also holds the powers of a Port Authority, being responsible for maritime operations, piloting towing (tugboats), as well as port's planning development. The fact that (part of) the port authority function that previously exclusively rested with CFM is part of the concession is quite unique; commonly concessions concern stevedoring and terminal management, but not the marine function and port planning functions which are typical for a port authority. MPDC has several subconcessions: DP World Maputo (container terminal), Grindrod (Matola bulk terminal), STAM (sugar terminal).

The port nowadays consists of the main port in the center of the city and the bulk terminals at Matola, about 6km upstream from the main port. The main port has 16 berths with depth alongside from 8 to 11 m (below chart zero). It handles containers, breakbulk cargo, cars and a series of smaller bulk flows, such as sugar, sized coal, chrome ore, ferrochrome, phosrock, manganese. etc. Larger bulk flows are handled at Matola, such as coal, magnetite, aluminium and petroleum products.

The main port consists of quays dating back to colonial times. Some of these have been rehabilitated, others are still in need of an upgrade. Expansion plans mainly focus on increasing efficiency of terminal areas by improvement in equipment, storage and logistics. Additional berths are foreseen for the container terminal in order to increase capacity from the current 140,000 TEU (based on 1 berth) to an eventual 1.4 million TEU (based on 4 berths).

The terminal at Matola has a current capacity of 6 million tons of bulk cargo per annum. By the end of 2012, the terminal capacity will be expanded to 7.3 million tons by improvements to equipment and storage. Further expansion plans consist of the construction of additional berths and terminal space on reclaimed land, which will add a total of 20 million tons annual capacity by 2017. All this capacity will cater to the export of coal and magnetite, which mostly will come from SA.

In conjunction with the major expansions at Matola in the coming years, the access channel of the port is planned to be dredged to 14.5m by 2014, which will allow fully loaded Panamax vessels to leave the port.

5.2.2 *Rail infrastructure*

The rail infrastructure of the Maputo corridor consists of the Ressano Garcia Line (RG-line), running from Maputo to the border crossing at Lebombo and operated by CFM. The RG-line connects to the South African Transnet Rail Network at the border, which offers a rail connection to Johannesburg and several branch connections, such as the branch to Phalaborwa (where most of the magnetite comes from).

The Ressano Garcia railway line was rehabilitated in the early years of this century. Some capacity expansions have already taken place (such as increase of the number of passing loops, upgrading of the signaling system and investments in rolling stock). Further capacity expansions are planned, as the capacity of the RG-line needs to be kept aligned with the capacity of the Matola bulk terminals.

5.2.3 *Road infrastructure*

A good quality toll road, the N4, from Johannesburg (with a branch from Pretoria too) to Maputo was built under private concession in the years 1998-2001. The concession rests with TRAC (Trans African Concessions), a company that was established in 1994 for the purpose of developing the N4 toll road. The road was constructed under a BOT (Build Operate Transfer) contract for 30 years that was closed in 1997. TRAC operates 6 toll plazas along the stretch of 600km of N4 road; 2 in Mozambique and 4 in South Africa.

5.3 Objectives that guided this transformation

Several objectives of various stakeholders have guided this transformation. MPDC wished to promote the port of Maputo amongst South African cargo owners as an alternative to Durban or Richards Bay. CFM wished to upgrade its railway connection to South Africa and to attract cargo to it. South African cargo owners were looking for alternative and efficient routes to export or import their cargo. Government organisations were looking at the development of regional economic opportunities and the rehabilitation of infrastructure.

In order to align the objectives of the various stakeholders and to unite them in a joint effort, the Maputo Corridor Logistics Initiative (MCLI) was founded in 2004.

5.3.1 Maputo Corridor Logistics Initiative

MCLI is a non-profit organisation consisting of infrastructure investors, service providers and stakeholders from Mozambique, South Africa and Swaziland, who are focused on the promotion and further development of the Maputo Development Corridor (MDC) as the region's primary logistics transportation route. It was founded by stakeholders from the public sector, such as CFM, the South African Department of Transport and Transnet Freight Rail, and the private sector, such as MPDC, DPWorld Maputo, Grindrod and TRAC. MCLI aims to co-ordinate the views of service providers and users of the corridor, engaging primarily the governments of South African and Mozambique as well as Swaziland, to remove barriers along the corridor, inform on market developments along the corridor and to market strategic benefits and opportunities of using the corridor.

The mission of MCLI goes beyond supporting the development of the Maputo Corridor into a sustainable, highly efficient transportation route, as the mission explicitly includes the creation of a favourable climate for investment and new opportunities for communities along the Corridor. This mission therefore joins the objectives of the infrastructure and logistics service providers and their users with those of the regional and national governments, who have the objective of creating economic opportunities and attracting investment in the regions that are situated along the corridor. This is reached by bringing together stakeholders of the corridor in joint development efforts. These stakeholders are a wide range of organisations and companies: government departments, cargo owners, road hauliers, intermodal operators, rail service providers, logistics companies, clearing agents, forwarding agents, shipping lines, port agents, shipping brokers, professional bodies, associations, financial institutions, border post management and officials.

MCLI's activities consist of:

- Coordinating initiatives and engaging the relevant authorities to contribute to the planning of service and infrastructure improvements
- Organising events, fact-finding missions, forums and meetings
- Communicating progress and developments through electronic newsletters and the media
- Promoting positive attitudes and perceptions towards the Maputo Development Corridor, and logistical benefits offered by the corridor
- Facilitating training opportunities, including industry cross-training of public and private stakeholders to ensure full understanding of the supply chain
- Putting users in touch with service providers, and providing information on all aspects of how to utilise and benefit from the corridor
- Development of a corridor supporter and service provider directory and website.
- Organising strategic quarterly forums
- Organising service provider forums

It should be noted that MCLI has no power to take decisions concerning investments in infrastructure, development and enforcement of regulations or whatsoever. These tasks remain with the competent authorities. MCLI functions as a sounding board for various stakeholders in which they pursue the joint goal of developing Maputo Corridor. MCLI is financed from the membership contributions its members pay.

5.4 Evolution in institutional relationships

The institutional relationships along the Maputo corridor are not particularly different from elsewhere in the world. The exception is perhaps the fact that MPDC also holds part of the port authority function for the port of Maputo in its concession. The strength of the Maputo Development Corridor

however is in the way that the various stakeholders and institutions are working together within the framework of MCLI to develop the corridor. In this initiative not only the infrastructure owners and transport operators cooperate, but also the users of the transport system; those that have cargo to be transported. For them, it makes a difference if they have a well functioning corridor for their exports or imports, as the alternative might either be accepting a much longer transit time through the corridor or using a completely different corridor connecting to a port much further away. In both cases, it would mean considerably higher inland transport costs. This feature is different from Western examples; in the Rhine corridor there are various alternatives, both in terms of transport mode (road, rail, inland waterway, pipeline) and in terms of routes and ports.

The development of Mozambique and South Africa into stable democratic nations was a condition that allowed the current developments to take place, without it MCLI could not have taken off. The MCLI idea required cross border cooperation too; which particularly in the field of government bodies was not an obvious development. The main evolution that has taken place was probably realized by bringing stakeholders of diverse backgrounds and from two different countries around the table to discuss their mutual interests.

5.5 Underlying governance structure

MCLI is incorporated in South Africa as a non-profit membership organization, which positions MCLI to facilitate inclusively between all stakeholders, public and private, across national borders. Its role is explicitly to promote and to bring stakeholders together. It cannot make decisions on infrastructure or regulations or enforce them; such power rests with the competent authorities. However, MCLI can set up contacts between other stakeholders and the authorities or inform authorities on other stakeholders' needs and wishes.

The development of the physical infrastructure was realized with the help of the private sector, such as with the concession of MPDC for the port of Maputo and the BOT of TRAC for the N4 toll road. Whereas such constructions are fairly standard, they both have some unique features. The MPDC concession includes marine operations and port development, which gives MPDC more control of aligning marine and cargo terminal development in the port and a greater influence in the overall strategic planning in the port. The N4 toll road concession includes the entire stretch of road in two different countries, which avoided working with two different concessionaires for each country, thus eliminating the risk of both concessions not being well aligned in terms of timing, road capacity or quality. Compared to Western standards, it is also fairly unique that a road project can be completely financed from toll charges. Apparently the time gains and cost reductions experienced by its users compared to alternative routings (using rail or importing/exporting through different ports) are of such levels that they are willing to pay the toll fee.

5.6 Legislative changes

Whereas MCLI cannot propose or impose any legislative changes, it can lobby for them. MCLI has put great efforts in facilitating changes in border crossing procedures. The major disadvantage of the Maputo corridor compared to the Durban corridor is the fact that it includes a border crossing, which used to be a time consuming and costly affair. The time needed to cross the border has been

greatly reduced by the introduction of pre-clearance. Transit cargo from the port of Maputo can nowadays be pre-cleared to cross the border so that truck drivers only need a quick check of their papers before they can cross.

Mozambican customs currently still charge a bank guarantee for transit cargo, to be paid on the total value of the cargo instead of the duty value only and to be arranged for each separate truckload. This places quite an administrative and cost burden on transit cargo, compared to the Durban corridor. MCLI currently facilitates negotiations between the various stakeholders to change this regulation, so that the administrative process for transit cargo becomes less complicated and the cost of transit cargo will decrease.

5.7 Conclusions

In a transport corridor, the various infrastructure elements need to be aligned in terms of capacity, quality and time of realization. A port with 20 million tons of capacity needs a combined rail and road capacity of the same volume to connect it to its hinterland. Such alignment would also need to exist in terms of regulations, but more importantly in terms of objectives of the various stakeholders: the authorities, infrastructure owners, logistics service providers, rail, road and port operators, cargo owners, communities along the corridor, etc.

A very good means of promoting a corridor and of bringing in contact the various stakeholders in a corridor to align their objectives and to facilitate changes and development is a corridor promotion organization, such as MCLI in the example of the Maputo Development corridor. There are more examples of such corridor development organisations, such as the Walvis Bay Corridor Group or the Dar es Salaam Corridor Group.

Contrary from the situation in India, this corridor includes a border crossing which used to form a barrier (and to an certain extent still does). Corridor development efforts by where therefore partly focused on removing the barriers caused by border crossing; which in the case of India would not be necessary. Apart from this minor difference, a corridor development organisation would be a good instrument to develop freight corridors in India.

5.8 Sources:

Some of the information provided in this case study comes from interviews with stakeholders in the port community in Maputo and with major port users in South Africa and Mozambique, held in the frame of two port studies performed by Ecorys in 2008 and 2011. These interviews were held during visits to Maputo and South Africa in April and May 2008 and in November 2011.

Other sourced that have been used are:

- CIA world factbook
- Competitive position of Maputo as a regional port, Ecorys 2008
- Dar es Salaam Corridor Group (www.dsmcorridor.com)
- Maputo Corridor Logistics Initiative (www.mcli.co.za)
- Perry Castañeda Library Map Collection (www.lib.utexas.edu/maps/index.html)
- Port Maputo (www.portmaputo.com)
- Trading Economics (www.tradingeconomics.com)
- Walvis Bay Corridor Group (www.wbcg.com.na)
- World port source (www.worldportsource.com)

6 Case 3: Insuring competition in the provision of port services

Since the nature of this case study differs from the other three cases elaborated in the sense that it does not concern changes to the physical infrastructure but rather regulatory changes that are realized over time (and in the case of the EU not even realized but considered), a different reporting structure is chosen. This follows the following logic:

1. First, the scope of port services is explained: which services are being considered?
2. Then, what reasons are there for regulating competition in the provision of these services? E.g. what are the underlying reasons calling for government action in this field?
3. Subsequently, we zoom into the EU: how is the issue being tackled in the European Union, which process was followed for this and which choices were made?
4. Based on the EU approach, what are the (expected) impacts on port services provision, costs, and competition within and between ports?
5. Separately, we address the situation in the UK, which although a member of the EU, has a different position because of its historical organization of ports.
6. Again, also for the UK possible impacts are being addressed.
7. Finally, conclusions are drawn based on the UK and EU lessons, and the relevance for India is addressed.

6.1 Scoping: port services

The port services cover services of a commercial value which are provided against payment to port users in a seaport and whose payment is not normally included in the charges collected for being allowed to call at or operate in a port. This relates to the following services:

- technical-nautical services of pilotage,
- towage and mooring,
- cargo handling operations (loading, unloading, stevedoring, stowage, transshipment and other intra-terminal transport),
- passenger services, and
- environmental services

These services are clustered in services “on the ship”, “on the cargo” and “other services”.

6.1.1 Services provided ‘on the ship’

Both port authorities and (semi)-private companies provide the port services provided on the ship. The provision of maritime access, general facilities in the port basin, and the provision of berthing space are all examples of services provided by the port authorities and concern a natural monopoly. Other services, like pilotage, towage and mooring are all conducted by specialised companies and are “... of a commercial value and are provided against a payment to port users in a port and this payment is not included in the charges collected for being allowed to call and operate in a port” (COM(2004)654).

The following table provides an overview of all port services on the ship, the related port tariff and the generally involved authority. In bold, the services considered part of the scope of this case study are highlighted.

Table 6.1 List of port services and charges on the ship

Nr.	Description of service	Related port tariff	Authority involved
1/1	Maritime access: general facilities related to port access as far as outside the port area: Provision of aids to navigation Provision of port access	Conservancy dues Lighthouse dues, aids to navigation dues	Harbour Master
1/2	General facilities and navigational services in the port comprising: Navigational passages/VTS/Necessary services of fight against fire/Wave barriers/Pollution control/Maritime police	Port dues	Harbour Master
1/3	Pilotage services. Pilotage from the station outside the port to the berth or in opposite direction and also movements of ships move from one berth to another within the port	Pilotage tariff	Pilotage company/ Harbour master
1/4	Towage services	Towage tariff	Towage company Harbour Master
1/5	Connecting the ship cords and mooring on the quay or buoy and un-mooring	Mooring / un-mooring tariff	Pilotage company
1/6	Occupation by the ship of the assigned berth, whether quay, buoy or if mooring on the lock	Berth tariff	Port Administration
1/7	Shipping different merchandises (general merchandises/solid/dry/liquid etc.) from the quay to the ship and unloading merchandises from the ship to the quay with use of cranes and ship equipment	Stevedoring Loading unloading tariff Cargo handling on board	Private stevedoring company
1/8	Providing additional services to load and unload the merchandises, which require special care, whether due to their special nature or the way they are shipped, e.g. (for frozen merchandises refrigerating containers)	Special cargo handling tariff Extra movement tariff	Private stevedoring company
1/9	General use by the passengers (incoming or travelling) of the facilities and services intended for them like (Passenger rooms and stations/Mean of transport...etc.)	Passenger dues	Private companies Port Administration
1/10	Providing the ship with its needs. E.g. electrical current, water, fuel, telephone as well as providing assistance services (garbage collection/building cleaning)	Ancillary services tariff	Private companies

Source: Ecorys (2005)¹⁷

¹⁷ Ecorys (2005), Complementary Economic Evaluation study on the Commission proposal for a Directive on market access to port services. Study on behalf of the European Commission, DG TREN, 1 November 2005.

The pilotage and towage services are generally provided by pilotage companies, by towage companies or by specialised companies depending on the port.

The ancillary services are less important in qualitative terms and therefore not considered as these are not required for each ship calling.

6.1.2 Port services and charges on the cargo

The cargo handling services are often provided by one type of company, the terminal-handling operator. These services include the following. Again, port services part of this case study scope are highlighted in bold.

Table 6.2 List of port services and charges on the cargo

Nr.	Description of service	Related port tariff	Authority involved
2/1	General services to the goods provided by the general facilities and areas during the good's presence in the port and its circulation therein	Port due on cargo Wharfage	Port Administration
2/2	Cargo handling on quay related to receiving and delivery of cargo Other handling of goods	Cargo handling tariff	Terminal handling operators
2/3	Transshipment of merchandises in the port stores and spaces of the port after the authorized period	Transshipment tariff	Port Administration
2/4	Storage of merchandises in the port stores and spaces of the port after the authorized period	Cargo storage tariff	Port Administration
2/5	Providing the other services for the merchandises	Other cargo services tariff	Port Administration Free Zone Companies

It should be noted that terminal-handling operators often offer both the cargo handling (2/2) and transshipment services (2/3) and storage services (2/4), however this situation differs per type of port and per type of commodity. Another important remark relates to the existence of vertically integrated companies that offer different handling services. This relates to the following commodities:

- Crude oil and petroleum products
- Dry bulk commodities such as grain, coal, iron ore, alumina and bauxite

6.1.3 Other types of services and charges

To complete the overview of port services, some other types of services are distinguished and presented below.

Table 6.3 Other types of port services and charges

Nr.	Description of service	Related port tariff	Authority involved
3/1	Rent of forklifts, cranes etc.	Equipment hire	Port Administration
3/2	Rent of trailers, launches,	Rent of vessels	Port Administration
3/3	Fire fighting, rescue	Services hire	Port Administration
3/4	Use of land, buildings, silos, constructions etc.	Real estate tariff	

These other services are all less important in terms of quantity; furthermore these services were also not covered in the proposed Directive.

6.2 The problem: competition issues in the provision of port services

In ports, services such as stevedoring or pilotage are often performed by one or a few firms per port. As a result, possible lack of competition could provide companies with a degree of market power and the ability to exploit customers, for example through higher prices. Besides competition issues by private service providers, also port charges set by the port authorities do not always reflect fair pricing. Governments try to compensate the market power of these service providers and port authorities through various types of measures, such as setting upper limits for prices or regulating the service period of an operator. Depending on the effectiveness, further development of such regulatory models is often seen.

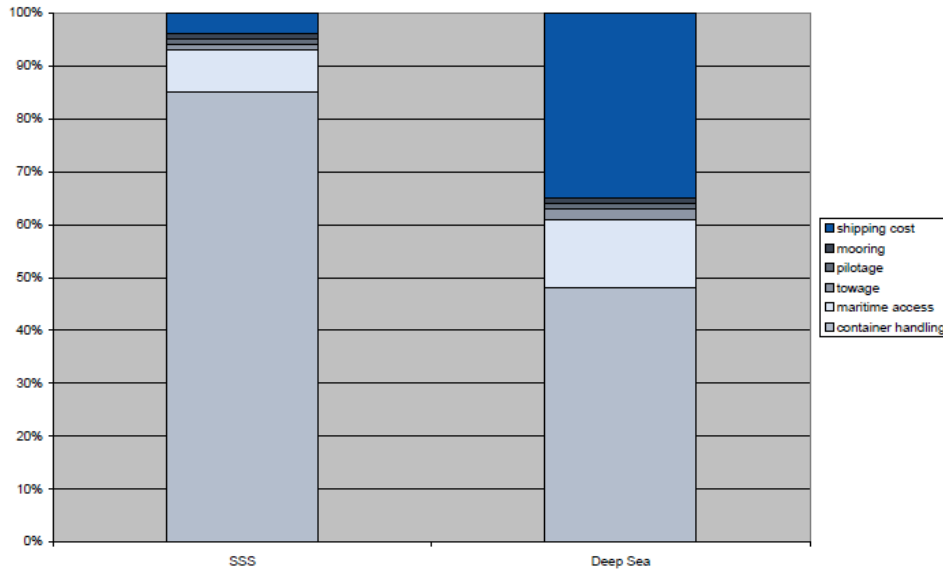
In the field of port services, an inventory of European ports shows that in many ports shows that:¹⁸

- In the sector of pilotage services in many European ports there is only one supplier of these services, and in many cases these services have not been tendered out, but concessions have been awarded to – former – (semi)governmental bodies, active in an intricate mix of public and private interests.
- Also in the sector of towage and mooring this situation exists: suppliers of services are often combined in one supplying entity offering its services to the port, in many cases without public procurement procedures.
- Regarding cargo handling operations (loading, unloading, stevedoring, stowage, transshipment and other intra-terminal transport) the situation differs per type of cargo: though it is shown by others that in container handling the tariffs of North West Europe are comparatively low when compared to other parts of the world, it also can be demonstrated that price differences within Europe are still considerable, and cannot be explained by cost differences only. The same applies, maybe even to a larger extent for non-containerised cargo handling (liquid bulk, dry bulk), though factual information in this sector is even less available.
- Moreover it has been shown that in several instances labour in ports is relatively well paid when compared to relevant job alternatives in the same region outside the port area.

¹⁸ Ecorys (2005), Complementary Economic Evaluation study on the Commission proposal for a Directive on market access to port services. Study on behalf of the European Commission, DG TREN, 1 November 2005.

Port services however only account for a small share in total shipping costs. Price differences in individual port charges therefore will only have a small effect for shippers in their choice of port. This is shown in the below figure, which shows the cost structure for a short sea and deep sea container shipment. This figure makes clear that port costs have a higher relevance for shortsea shipping than for deepsea shipping because of their high value relative to port-to-port shipping costs.

Figure 6.1 Breakdown of port access costs



Source: Ecorys (2006), Complementary Economic Evaluation study on the Commission proposal for a Directive on market access to port services

Whether there are market failures in the provision of port services requires detailed study. However typical indicators for the existence of such failures are:

- Number of service providers in a port
- Level of tariffs compared to other competitors
- Level of wages compared to other sectors
- Procurement procedures

An inventory in 47 EU ports has shown that for many services only one operator is available.¹⁹ For most ports however it appears difficult to have more than one operator, simply because of the scale of operations which in many ports is too small to have more than one company working effectively. Still this does not mean there is no competition per se. With regular and publicly procured concession contracts market functioning could be in place. This will depend on the set-up of the tender procedure, concession period, etc.

Box 6.1 Privatisation of pilotage services in the Port of Rotterdam

On national level, there also has been a tension between regulation and deregulation. Pilotage in the port of Rotterdam for instance, was a regulated government service up until 1988. In that year, the pilotage company was privatised in steps. This followed intense discussions and policy preparations in the decade before. The result was that the Pilotage authority became an independent non-civil servant organisation. Results were directly seen: entrepreneurship changed the work ethos and freed pilots from the restrictive resting and

¹⁹ ESPO (2005), Factual report on the European port sector 2004-2005

working hours that were imposed on them as state and municipal pilots. Staff levels were reduced by half while service levels improved.

In the years up until 1991, the state still guaranteed the income of the pilotage company by setting standard tariff structures and by taking the exploitation risk. Several evaluations were conducted resulting in changes of the Pilotage Act (tariffs, working hours, exemptions for experienced captains, etc.). The operations of the Dutch pilotage are under the supervision of the Dutch national competition authority. Tariffs are compared to those in other ports in the Hamburg – Le Havre region as an input to deciding on approval of proposed tariff changes. So far the tariff levels turned out to remain below the average. For the future, a unified tariffication for ports across the country is foreseen, since the current structure implicitly implies a cross-subsidy between ports (profits in the larger ports, losses in the smaller ports).

In recent years, the Pilotage associations invested in new vessels, since their fleet was not modernised for several decades as the state did not invest prior to privatisation.

Sources: SWZ Maritime (2011); Loodswezen (2000)

6.2.1 Possible approaches for governments

Since ports are, like other infrastructure sectors, characterized by large capital stocks in the form of high fixed (sunk) costs to construct them, port operations as a whole may be seen as being a monopoly. According to OECD (2011)²⁰ there are three categories of solutions:

- Separating the monopoly portions from those activities that can be efficiently opened up to competition.
- Create competition through vertically integrated providers
- Achieve efficient operations within government regulation through ‘incentive regulation’.

In the context of ports, examples of each of these solutions are found. However competition may come from other forms as well. In the area of ports, competition within a port may be faced differently when also competition between ports is in place. On a higher level, ports can be seen as only nodes in transport chains serving the delivery of goods between A and B. The definition of ‘the market’ for transporting goods defines the impact of (non)competition within a seaport.

Finally, the role of end client should be considered. What market power does the cargo owner have in terms of e.g. choosing an alternative port or even another transport mode as compared to paying the charges demanded in the respective port. In port competition terms: is the cargo captive to the port or not? This relates not only to other ports available but also to their accessibility, services offered within the port and hinterland connectivity options.

All in all, for addressing port competition issues, a clear market definition of the economic services concerned is necessary. With regard to the specific port services under the scope of this case study, across the world an increasingly dominant role for private operations is seen.

The market for container handling services is considered to be the largest of all port services assessed here, which is also reflected in Figure 6.1 above. Furthermore in many ports more than

²⁰ OECD (2011), Competition concerns in ports and port services. Submitted by the US Department of Justice and the US Federal Trade Commission to the Working Party No. 2 on Competition and Regulation.

one container handling operator is active (sometimes even more than 10), suggesting an amount of intra-port competition. In most ports however in fact one dominant operator and a few smaller operators are active. Still, large differences are seen between the container handling rates in Europe, North America or Asia, as Table 6.4 shows.

Table 6.4 Price ranges in container handling charges per TEU (in USD)

Port region	Price range container handling charges/TEU
NW Europe	\$ 95-133
America	\$ 179-281
Asia	\$ 94-306

Source OSC, 2005

In the United States, the organisation of ports is not centralised, but regulatory authority tasks are dispersed throughout the three government layers: federal, state and local.²¹ Ownership models also vary private ports, privately owned public ports and public ports.

The US Shipping Act of 1984 provides immunity against antitrust laws for marine terminal operators. The jurisdiction over this specific sector lies with the Federal Marine Commission who has to approve exemptions over the antitrust laws based on filings by terminal operators planning to merge or develop joint activities.

6.3 Regulatory solutions developed in the EU

Beforehand, it is noted that the regulatory process in the EU is still ongoing and no final implementation has been realized by now. This implies the below description is a state of play elaboration including assumption on the current and expected future impacts.

In its white paper of 2001, and reinforced in its 2011 White Paper, the Commission addresses the need to raise transport efficiency as a measure to contribute to the expected rise in demand for port services following the forecasted dramatic growth of freight volumes in the coming decades.

On 13 February 2001 the European Commission adopted a Communication to the European Parliament and to the Council “Reinforcing Quality Service in Sea Ports: A Key for European Transport” (the so called Ports’ Package). The cornerstone of this Communication was a proposal for a Directive of the European Parliament and of the Council on “Market Access to Port Services”.

6.3.1 The legislative process until date

In recent years, important steps have been made in the insurance of competition of port services on the level of the European Union.

On 13 February 2001 the Commission adopted a Communication to the European Parliament and to the Council “Reinforcing Quality Service in Sea Ports: A Key for European Transport” (the so called Ports’ Package). The cornerstone of this Communication was a proposal for a Directive of the European Parliament and of the Council on “Market Access to Port Services”.

²¹ OECD (2011)

The Ports' Package proposal led to an extensive debate, both within the inter-institutional legislative process, but also with and between stakeholders. On 20 November 2003, the European Parliament in a Plenary Session rejected a compromise text.

However, the Commission believed that the need to establish a Community legal framework for access to the provision of port services remained necessary, in the interest of operators, authorities and consumers. Therefore the Commission brought forward a new proposal for a Directive on market access to port services ("Port Package II") in October 2004.

The second port package again led to an extensive debate among stakeholders. Especially the port workers were very opposed to aspects regarding labour policy, and organized protests in the streets of Brussels. In January 2006, the European Parliament again rejected the Port Package text.

Both the so-called Port packages 1 and 2 did not materialize, due to several reasons which will not be discussed here. The 2007 "Communication on Port Policy", which is based on soft laws and best practices, was not able to change this picture substantially.

The ambitions of the Transport White Paper of 2011 clearly go beyond what has been reached until now. Action 4 is aimed at improving both efficiency and quality of port sector, in the light of the important role the transport sector has to play as a sustainable enabler of future economic growth. The possible adoption of Commission State aid guidelines for public financing of ports is currently considered (DG COMP). Furthermore, internal market rules on public procurement (including concessions) are currently being revised (DG MARKT) and this will also have an impact on port services.

In September 2011 EU Transport Commissioner Siim Kallas announced his intentions to bring forward a new package of proposals for port services. This package should be effectuated in 2013.

So at present still no strict Community regulatory framework exists for these services. Despite the freedoms and competition rules as set by the Treaty, port services delivery restrictions are still in place regarding access and fair and equal treatment of potential services providers with consequences for quality and costs of services. Therefore the Commission proposes again to introduce specific and clear rules on access to the port services market.

Following its publication in 2011, the European Commission launched a study concerning "Measures to enhance the efficiency and quality of Port Services in the EU".

6.3.2 The focus of the 2004 Second Port Package

The stated aims of the Directive are to remove restrictions that hamper access for existing or potential port service operators, ensure a more systematic application of Treaty rules, improve the quality of service to port users, and help reduce costs

In practical terms, the Directive will introduce a common framework for entry into competition for the provision of commercial port services. The services covered by the Directive are: cargo-handling, pilotage, towage, mooring, storage and passenger services. The Directive would create a level playing field by ensuring that the market is aware of the opportunities that exist for the provision of such services and would require ports to allow competing service providers to enter the market

should they wish to do so. However, it also allows the number of service providers to be limited in certain circumstances (such as safety grounds).

Specifically, the Directive seeks to establish common rules for:

- implementation of the principle of freedom to provide port services
- prior authorisation for port service provision
- limiting the number of port service providers
- self handling
- duration of individual authorisations
- procedures to be followed

In practical terms this means that the Directive would introduce a formal framework to regulate competition for the provision of commercial port services within individual ports. It would ensure free competition amongst existing and prospective providers to offer services ranging from pilotage to cargo handling within each port and in particular will allow for "self handling" by customers. Ports would be required to allow competing service providers who pre-qualify by meeting economic, safety, social, and environmental standards (authorisation) to enter the market should they wish to do so, although in certain cases where there are practical constraints the number of service providers may be limited. The maximum length of each authorisation will be determined by the level of investment contemplated by the service provider. The Directive provides safeguards for the entire process by requiring both independent supervision and an appeals mechanism.

The Commission claim that the whole thrust of this directive is to introduce a permissive rather than a mandatory regime. They claim that the aim is to ensure that the market is aware of the opportunity for provision of competitive services existing in the ports sector. The Commission believe that the Directive will allow for market access providing there are suppliers seeking to enter the market.

A port operator can today effectively act both as a provider of services and as the competent authority for authorisation and limitation decisions provided the management of each function can be viewed as sufficiently independent of one another. The Directive provides safeguards in this situation by requiring both independent supervision and an appeals mechanism.

Box 6.2 Rejection of the second port package in 2006

Decision making in the EU is a complex matter, as will be clear from current discussions on the Euro crisis. With regard to the Second Port Package, Psaraftis (2006) wrote on the rejection of 532 out of 677 Europarliamentary votes: "At face value, this was a big fiasco for the European Commission, even bigger than the narrow parliamentary defeat of the first proposal in November of 2003." The first package was rejected because of several stakeholders' pressure, amongst others the European labour unions uniting dock workers, who felt jobs would be at risk; the private ports in the UK, who did not see advantages of introducing public tendering (see also section 5 below), and the 'one-size-fits-all' model of the Directive which to many would not fit the wide diversity of the European industry. The second package principally did not solve these issues and because stakeholder consultation was deemed insufficient.

Until date, no port services directive is implemented in the EU, so principally no solution is found.

6.4 Impacts of the EU port package approach

At the time of the second Port Package development, an Impact Assessment was conducted by Ecorys (2005) which derived a number of impacts for various options of regulation that were

assessed. Findings were based on surveys among stakeholders, in-depth interviews with a number of parties and the use of quantitative data on cost sensitivity, including the use of the Port Competition Model, developed by Ecorys.²² We here summarise the main findings.

Table 6.5 Main effects of Port package

Type of effect	Effect	Remarks
Level of service charges	-15% to +5%	<ul style="list-style-type: none"> - Partly based on strategic answers, aggregate + expert opinion: downward trend achievable. - A distinction should be made between technical-nautical services on the one hand, and cargo handling charges on the other - With respect to technical-nautical charges, effects might be considerable (up to 15%), per port strongly depending on levels of competition already attained. - This applies both for smaller and larger ports - Regarding cargo handling charges, the effect will also vary between individual ports. Smaller ports might see relatively more important effects than larger ports. The foregoing of course all individually dependent on the levels of current market functioning that have already been already attained. - In the Mediterranean ports the effects might be more considerable than those in North Western Europe. The effect on SSS will be larger than those on intercontinental transport
Trade generation	Nil	
Trade distribution	Nil	
Transport operations	<ul style="list-style-type: none"> - Possibly small shifts between Atlantic ports, mainly containers, less bulk cargoes - Small shifts between Mediterranean ports - Slightly increased competitiveness of Mediterranean ports in Central Europe - Shift from road transport towards SSS 	
Income effects	Mostly income distribution effects from port service providers to port users/consumers (limited effect, maximum distributional effect up to 1 billion € for EU as a whole)	No net income effects are expected since the trade generation and the trade distribution patterns are not expected to change
Substitution between smaller ports with own	Relatively small	Due to lack of fierce competition

²² Bückmann, E. and S. Veldman, A model of container port competition, Maritime Economics & Logistics, Vol. V, No.1, Jan-Mar 2003.

Type of effect	Effect	Remarks
captive hinterlands		
Substitution between North West European ports and Mediterranean ports	If Mediterranean ports increase their efficiency and lower their charge levels, they will become more competitive in areas like Austria, Southern Germany, and similar regions	Mainly containers, less bulk cargoes
Substitution between road/rail transport and SSS	Small shift from road transport towards SSS	Relatively low price elasticity, at this moment still a relatively small market
Turnover existing service providers	Might decrease up to 10% due to increased competition in combination with –possibly- too many authorisations.	This might offset the tendency towards increasing scales and increasing turnover per provider
Turnover new entrants	Additional when compared to current situation	
Turnover: possibility of cherrypicking	Prohibition of cross-subsidizing might lead to nonviable routes and ports unserved	
Security	Small	
Environment: damages related to accidents	Possibly negative: depends on safety perspective, between small effect, and increased chance on accidents due to less safety	If competent authorities will perform their regulatory role the effect on accidents should be limited
Environment: emissions	Small, positive: related to shift from road to SSS.	Current substitution possibilities are modest, future benefits will increase with growth SSS
Social conditions in general	- Long term effects will create change in current labour conditions: less favourable conditions for current labourers, improved conditions for new entrants on the labour market. - The short term effects may be negative due to possible social unrest	Much debated, often emotional (see various websites). In general labourers working currently in service providers expect negative effects, port users expect positive effects
Salary levels	-10 to +5%	More likely to decrease per employee
Size labour force	-1 to +4% according to stakeholders	Yet undetermined: increased market functioning will lead to decrease in staff size at current service providers, possibly compensated by new employment created at new entrants
Number working hours	-16 to +4%	
Quality of labour (proficiency, training, health, safety)	Negative or positive	Depending on stakeholders' point of view.

Several case studies indicate that while the impact regulating port services may have on charges to be paid, the impact on port throughput and market shares will be much smaller since the charges regulation will only affect some 4-6% of total transport costs.

The study concludes that organizational models matter. In general four types of port management can be distinguished; Public service port, Tool port, Landlord port, and Private sector port. The difference between the types of ports relates to the role of the government. In a public service port, the government not only owns the land, but is also responsible for maintenance, operations and cargo handling. In a private service port, all assets and operations are managed by private companies.²³ Within mainland Europe, the landlord model is the dominant form.

Since the role of private operators varies between these models, the impact of regulating port services competition also differs. The table below summarises the expected impacts for each port management model.

Table 6.6 Effects port package per port type

	Charge levels	Investments	Safety	Environment	Social
Private port	Limited when proper procurement is assured	Limited when proper procurement is assured	Limited when proper procurement is assured	Limited when proper procurement is assured	Limited when proper procurement is assured
Landlord port	Slightly Downward when improved public procurement is assured	Slightly upward when appropriate concession periods are established	Small effect when regulation is properly adhered to	Shift road/rail towards SSS possible	Lower wages existing service providers, shift of labour towards new service providers, shift of income to port users
Tool port/service port	Downward when improved public procurement is assured	Upward when appropriate concession periods are established	Small effect when regulation is properly adhered to	Shift road/rail towards SSS possible	

Source: Ecorys (2005)

6.5 Regulation of port services provision in the UK

The EU level of regulation can be compared to the regulation at national, regional or even local level, as for instance seen in the UK. Although the latter is a member country of the EU, their situation differs considerably, mainly because of the domination of private financing and operation in the UK's commercial seaports. In the UK, privatised ports are essentially self-regulating (World Bank, 2007). LBRO (2009) suggests that regulation at the local level may even be the most effective in addressing problems faced locally. The downside, as also addressed by them, is that the impacts of local regulation may however be felt at a wider geographical level, causing impacts

²³ See World Bank (2007), Port Reform Toolkit, Second Edition, Module 3: Alternative Port Management Structures and Ownership Models, for a detailed description of these models.

elsewhere and impeding the need or desire for higher level coordination, if not regulation. Vice versa, effective local regulation can contribute to setting the standards for national level regulation.

Box 6.3 Box: situation in the UK

In the United Kingdom, the organization differs from most of the continental European countries, in two respects:

1. Role of the private sector: the majority of the large commercial ports are financed and operated by the private sector, whereas in mainland Europe in most cases the port authority is a government agency or government owned enterprise.
2. Ownership relations between ports: in the UK most of the large commercial ports belong to ABP, the Associated British Ports, e.g. are residing under one umbrella company. This is not the case in most of the mainland European ports where each port, or sometimes a few ports in the same region, are owned or managed by the same authority.

This distinct situation in the UK results in several port authorities operating all or the majority of services in the port, thus having all services in one (private) hand. Ports are often vertically integrated between port ownership and harbour operation.

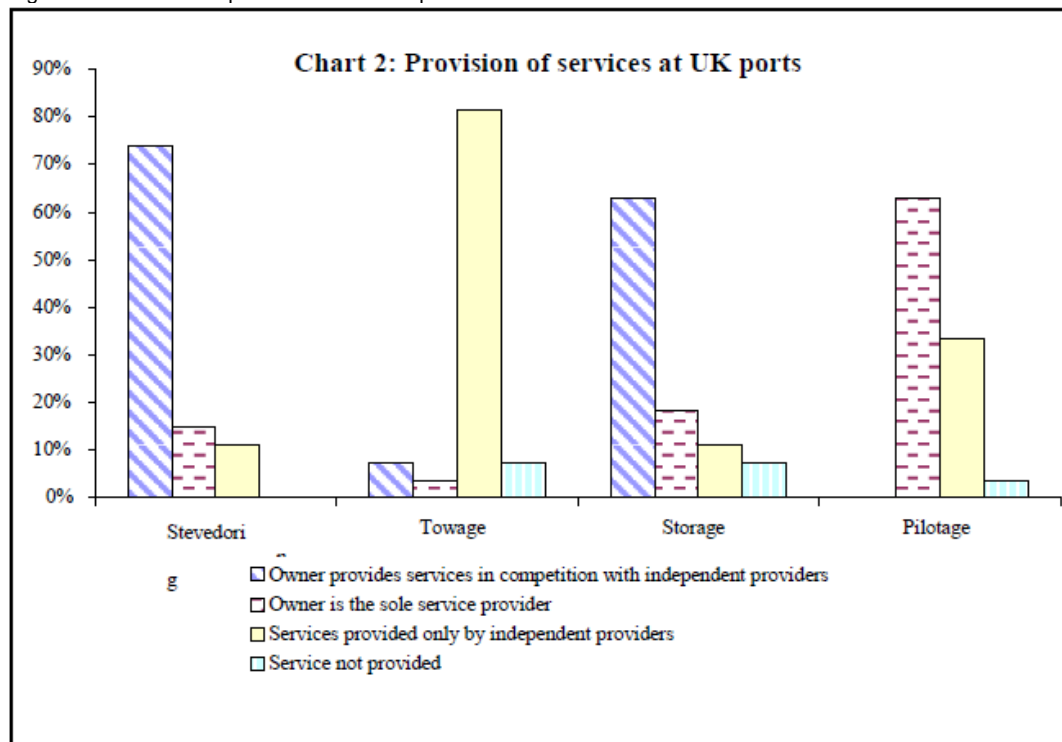
The economic regulation of ports is laid down in the Harbour's Act of 1964, but otherwise does not have a sector specific regulator in place.

Source: author, based on "EC Directive on Market Access to Port Services COM(2004)654 final. Initial assessment of the impact of this proposed directive on the UK ports sector" and OCED (2011).

In the 1980s former state-owned ports have been privatised and the seaport industry has been deregulated. One reason was the financial burden of port development to public budgets. Three forms of governance were formed: private ownership, trust authority, and municipal control. Most of the larger ports became privately owned and they also own the port's land. No port regulator was installed leaving the private ports free in setting tariffs for port services. Trust ports and municipal ports essentially serve local interests on a quasi-commercial basis. The national government has limited its role to regulate issues like health, safety and security (Triantafyllou, 2009).

Ports under private ownership account for 64% of total port throughput volume in 2009 (OECD, 2011). While they are often vertically integrated, port services are not always provided by the port operator itself, and in some cases it even competes with other service providers.

Figure 6.2 Provision of port services in UK ports



Source: OFT Infrastructure stock-take. In: OECD (2011).

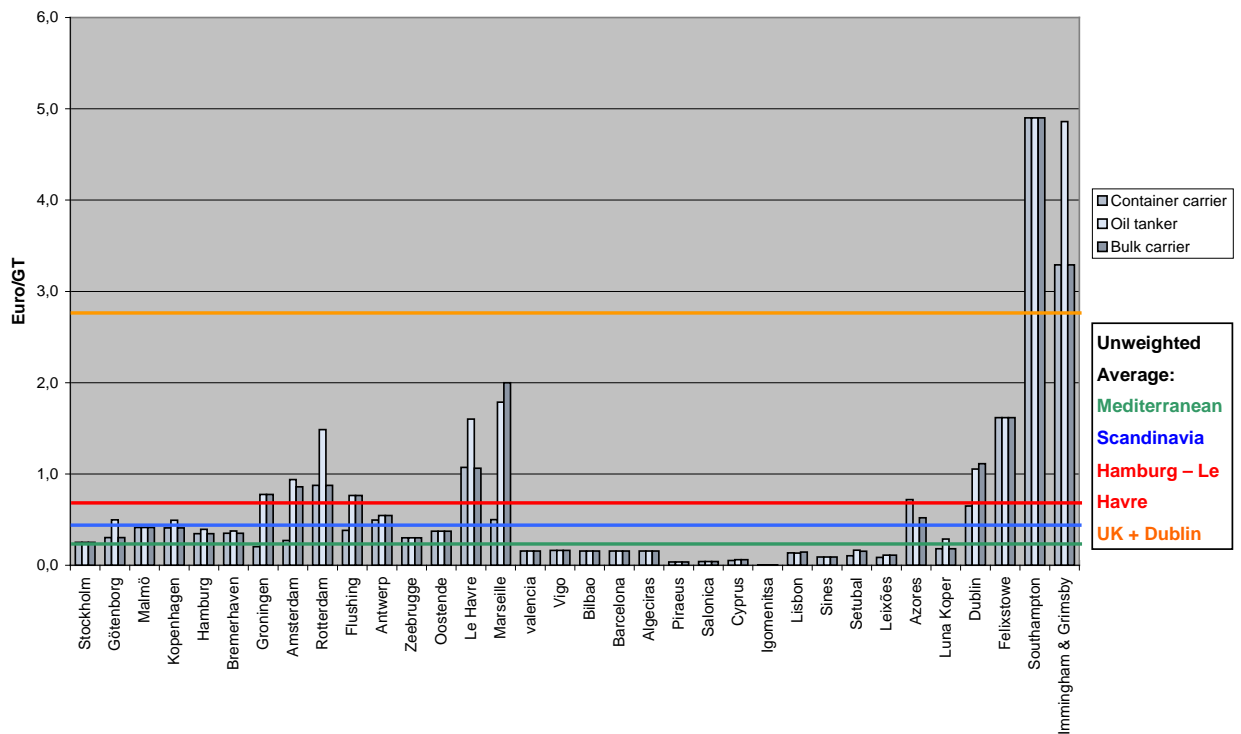
For assessing competition for services, distinction is made between freight and passengers, as the latter are served both by ferry ports and airports. With regard to freight and passenger ports, the south east region specifically faces competition from Channel Tunnel transport services, thus allowing for substitution and resulting in a different view on intra-port or inter-port competition.

The largest private port operator is ABP: Associated British Ports, owning and operating 21 ports jointly accounting for about 120 mln tons of throughput per annum or 25% of the total UK port throughput.

6.6 Impacts of the UK approach to port services regulations

Compared to mainland European ports the UK ports are an main exception as port service charges are not set by a supervising national authority but decided on a commercial basis in each port by the (private) port authorities. These tariffs vary considerably between ports. The overall understanding is that prices of port services in the UK on average are higher than those of nearby mainland European ports. Detailed data however do not allow simple comparison. On a broader scale, the same is seen when comparing port access charges across Europe. Here, the assumption is that the impact of privately operated ports versus public ports is seen in all revenue components of a port.

Figure 6.3 Harbour dues for a typical vessel in various EU ports



Source: Ecorys (2006)

The port services provision models in place in UK ports have been developed building on several drivers, such as (OECD, 2011):

- Abolition of the National Dock Labour Scheme in 1989, making third party provision commonplace, often even in competition with port authority provision
- The size of the port, which may restrict the number of service providers that can operate profitably – as is the case seen in EU mainland ports as well.
- The search for revenue streams by port authorities, for which they tend to take part in service provision
- The type of products served. E.g. for some commodities, the services provision is vertically integrated within the customer's process facilities.

The UK claims to have a higher level of market discipline already in place, thereby reducing the need for European intervention. An impact assessment of the European port package to UK ports concludes that the impacts would be largely negative. Their main complaint is that the Directive is based on the common port operational model in place in continental ports (e.g. the landlord model), where indeed a further liberalisation is welcomed, but which in the UK is not an issue since ports and the port services therein are already liberalised. Some examples of possible negative impacts that relate to the ownership and operational structure of UK ports are the following:²⁴

- Most service providers are relatively small companies only operating in one port and not likely to compete outside their home port market. An estimate among 650 UK ports indicates 95% of port service providers are small firms (less than 50 employees). Therefore introducing public tendering is not expected to result in increased competition. For smaller ports hence regulation could create inefficiencies rather than efficiencies

²⁴ Unknown (2005)

- The market entry process set out may still be complex, leading to potential new entrants to buy in taking over existing operators rather than trying to enter on their own. As such the number of suppliers will not increase.
- A number of UK ports is considered vertically integrated. Regulating the provision of port services independently could affect this since it targets only part of the services provided by these operators. The directive sets tonnage and passenger number limits, excluding small ports from its scope. The consequence would be that small ports just below the threshold might get a competitive advantage over slightly larger ports that are within the scope.

The majority of UK stakeholders do not envisage any benefits from the Commission Directive (i.e. the second port package), since they believe the directive targets market failures relevant to other (mainland European) ports which do not apply to the UK.

For smaller ports, UK port operators claim that having port operation and port services provision in one hand increases efficiency for port customers.

6.7 Conclusions

The analysis above has shown that competition for port services can contribute to efficient operations and lower prices. With regard to analyzing the level of competition in place, however, a distinction should be made between intra-port and inter-port competition. Intra-port competition may be defined by the number of operators for a service. Inter-port competition will depend on the connectivity between ports, the hinterland service options available, as well as the accessibility of ports for shipping companies and shippers.

India has twelve major ports, and in most of them the handling of liquid and dry bulk commodities are the largest share of volumes handled. According to Pittman (2009), the combination of the proximity to bulk shippers and poor interior connectivity may be the cause of limited inter-port competition, thus calling for ensuring sufficient intra-port competition. On the other hand some of the major (and minor) ports seem located close enough to each other or having similar quality hinterland railway networks available to ensure at least the potential of inter-port competition.

With regard to regulating port services in India, the regulatory regime of the EU seems to fit better than that of the UK since most of the Indian ports are under government control. The profile of the ports, and their differences in handling volumes, commodity types and navigational access may require some level of differentiation. Furthermore a question to be answered would be whether to apply the same regime for major, minor and state ports. Finally, a development of private ports in India is noticed and this may shift the future balance if the trend is continued. In that case a mixed regulatory model addressing both categories could be envisaged.

6.8 Literature

- Bückmann, E. and S. Veldman (2003), A model of container port competition, *Maritime Economics & Logistics*, Vol. V, No.1, Jan-Mar 2003.

- Ecorys (2005), Complementary Economic Evaluation study on the Commission proposal for a Directive on market access to port services. Study on behalf of the European Commission, DG TREN, 1 November 2005.
- Ecorys (2006), Impact Assessment on the levying of charges for the use of ports infrastructure. Study on behalf of the European Commission, DG TREN, 13 January 2006.
- ESPO (2005), Factual Report on the European Port sector, 2004-2005. European Sea Ports Organisation.
- European Commission (2005), Directive of the European Parliament and the Council on market access to port services, COM(2004)654 final.
- LBRO (2009), Addressing National Threats Through Local Service Delivery.
- Loodswezen (2000), From state pilot to members of private pilotage associations, backgrounds 1859 – 2000. Loodswezen history.
- OSC (2005), The proposed Directive on Market Access to port services and container terminal operations in Northern Europe, Ocean Shipping Consultants (OSC), May 2005
- OECD (2011), Competition concerns in ports and port services. Submitted by the US Department of Justice and the US Federal Trade Commission to the Working Party No. 2 on Competition and Regulation.
- OECD (2011), Competition in Ports and Port Services. Policy Roundtable. Revised version 14 November 2011.
- Pittman, R. (2009), Competition Issues in Restructuring Ports and Railways, Including Brief Consideration of these Sectors in India. Economic Analysis Group Discussion Paper 09-6, November 2009.
- Psaraftis, Harliaos N. (2006), Failure of “Port Package”: A Big Fiasco, or a Blessing in Disguise?
- SWZ Maritime (2011), Loodswezen breidt uit met oog op service en grotere haven (Pilot services expand aiming at service and growth of port activities). June 2011.
- Triantafyllou, M. (2009), The logistical and operational implications of waste management schemes in UK ports. Transportation Research Group, University of Southampton, United Kingdom.
- Unknown (2005), EC Directive on Market Access to Port Services COM(2004)654 final, Initial assessment of the impact of this proposed directive on the UK ports sector.
- World Bank (2007), Port Reform Toolkit, Second Edition, Module 3: Alternative Port Management Structures and Ownership Models.

7 Case 4: redevelopment of old port facilities in Boston

7.1 Introduction

The Boston Harbor is located on Massachusetts Bay in the Atlantic Ocean and was established as a fishing and shipbuilding centre in the early 1600's. It has been for almost 400 years one of the most active seaports of the United States of America. During the centuries, many influences (technological and economical changes, world wars, political situations, immigrants, etc.) have redefined the Port of Boston and the nature of its activities. The port's dominance as the major American North Atlantic world port lasted until 1750. From that year on, the port of Boston experienced severe competition from other ports like New York, Baltimore and Philadelphia, and an overall trend downward was noted until the period after World War II. After World War II, the creation of Massport, the implementation of containerization and significant public and private investments have supported modern shipping activities and maintained the port's variability. During the second half of the 20th century, markets, industries and modes of transportations were all changing, which made it necessary for the Port of Boston to keep reinventing itself in order to remain competitive and to deal with the changing global economy.

The main transformation that took place from the late 19th century until the second half of the 20th century, was the relocation of the main shipping activities from central Boston (Downtown) to outer areas (like Charlestown, East Boston and South Boston). This was due to the growth of central Boston, which became more densely settled as an urban area. As a result, this part of Boston became too congested for the growing Port's needs and was no longer suitable for the direct cargo rail service to the waterfront. These services had to shift to other areas like Charlestown, East and South Boston. Downtown Boston became an area for recreation and residential use.

The port of Boston became the only full-service industrial port of New England and is nowadays an important economic engine with an annual economic impact of \$2.4 billion and 34,000 jobs.

Before going into the details of the Boston redevelopment works, a cross-country comparison is given.

7.2 Cross-country comparison

The theme of port city redevelopment is seen across the world. Many cities, where commercial trade activities were developed from decades or even centuries ago, have seen growth in the volumes of cargo handled, as well as the population to be accommodated. Furthermore increase of scale of shipping activities has led to physical limitations as well. The need for relocation of commercial port activities, and subsequently redevelopment of the 'old' port area became visible already from the 1960s but received increased attention in the 1980s.

In general, the main drivers for redevelopment of old port areas found worldwide are:

- Growing spatial demands (especially for recreational and residential use) within the city;
- The scaling-up of port activities and the necessity to move to other areas with more space;
- Opportunities for development of high value added economic activities;
- Rising land prices of old port locations;

- Increasing demand for good connections between the city centre and the old waterfront;
- Prevention of the economical, physical and social degeneration of old port areas;
- Possibilities for cruise tourism in the old port areas.

The above described drivers for redevelopment of old port areas resulted in several projects with e.g. recreational, residential or business purposes. The approach followed to realise and interpret these developments however differs between port cities across the globe.

The urban renewal of the old port locations began in the USA and Canada, whereof Boston is a good example. But also other cities like New York, St. Louis, San Francisco, Halifax and Montreal conducted several waterfront development projects. In Halifax, for example, the growing land requirements for railways led to development of terminals and rail yards at the east and west side of the city and the older port area within the city centre became abandoned. The establishment of the Waterfront Development Corporation led to redevelopment of the old downtown waterfronts of Halifax, with restoration of historical sites and realisation of multiple restaurants and shops.

Within cities and adjacent port areas, priorities are increasingly given to the demand for public (social) space and multifunctional and intensive use of spaces. Each single city has to deal with the economical context, its own town planning problems and the answers in terms of urban design. The 'Kop van Zuid' in Rotterdam is a nice example of multifunctional and intensive use of space combined with appropriate urban design. The 'Kop van Zuid' was built on former docklands and is located relatively far from the city with the Maas river as a physical barrier. By modern urban design, multiple facilities along the river and the realisation of good connections with the city centre, this location became a popular residential area, but also became an important bridge between the southern and northern part of Rotterdam.

Figure 7.1 Artist's impression of redevelopment of the docklands of Rotterdam; the 'Kop van Zuid'



A main driver for the project 'Kop van Zuid' was the need to strengthen connections between the waterfront sites and other parts of city of Rotterdam, since the redevelopment asked for a better connection between the two due to the change in spatial functions.

These developments was also seen in Cape Town, where a mixed-use area was created and needed to be made accessible from land side residential and other business/retail sites in the city. This was done by redevelopment of the old, historic docklands around the Victoria and Alfred Basins with retail, tourism and residential developments. This resulted in physical link between the city and its waterfront, and the 'Victoria and Alfred Waterfront' became a popular and high quality trade and investment location.

In other places, where former commercial port areas are abolished and the risk of economic and physical degeneration is faced or even materialised, regeneration is seen as an answer to stop this trend and to revive these areas. An example is the Valletta Waterfront Project in Malta, where the need to develop and expand cruise terminal facilities led to Waterfront development and triggered the economic growth and the creation of jobs. Through the development of cruise and ferry terminals together with a concept such that the waterfront itself is a place to visit (restoration of marine structures, restoration of the Pinto and Forni Warehouses, shopping and leisure facilities), the Valletta Waterfront is a main touristic attraction and of great importance for the economy of the City of Valletta and the Grand Harbour.

Another example are the London Docklands. The London Docklands were for decades one of the greatest ports in the world, but when the shipping industry adopted the new container system in the 1960's, the docklands were no longer suitable for the much larger vessels that were needed for this containerization. The shipping industry moved to a new port area, located at Tilbury. In 1980 the London Docklands were closed and the area laid derelict for over twenty years. This degeneration resulted in high unemployment rates, poverty and other social problems. In 1981 the London

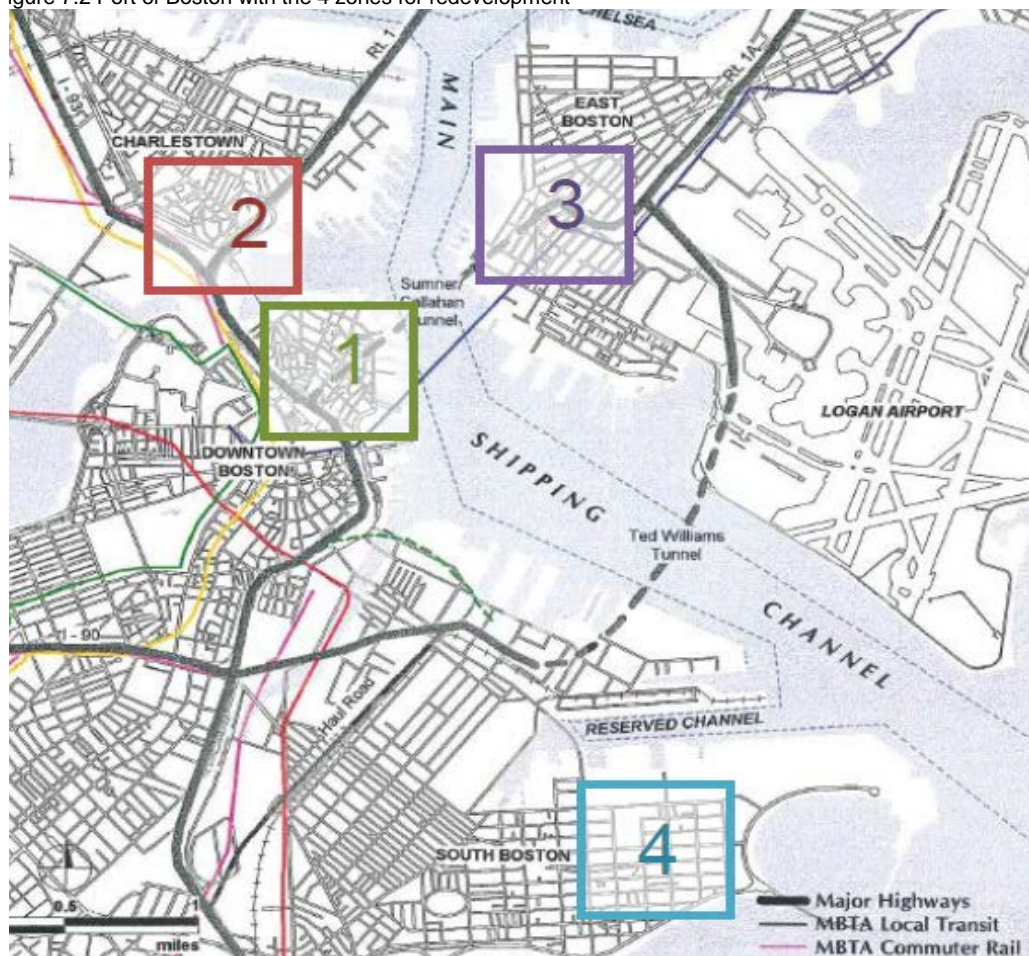
Docklands Development Corporation (LDDC) was founded to redevelop the London Docklands as an ‘enterprise zone’. Organisations that invested in this area and established businesses were exempt from property taxes. This turned out to be a key success factor in the redevelopment process and this concept is copied by many other countries.

7.3 Transformation in the physical infrastructure

We will now further zoom into the redevelopment projects in Boston. First, in this section we will address the physical changes that were realised. In the subsequent sections the underlying driving forces, objectives, processes and the role of institutions is addressed.

Four zones of port activities were defined in the port of Boston (Figure 7.2); 1. Downtown Boston, 2. Charlestown, 3. East Boston and 4. South Boston. All of these locations had their own (re)development processes. Subsequently, the main redevelopment processes of the four areas are shortly described.

Figure 7.2 Port of Boston with the 4 zones for redevelopment



7.3.1 Location 1: Downtown Boston

Downtown Boston is the old harbor location and its waterfront is regenerated during the last centuries from an important commercial shipping area to an recreational and residential attractive area. Examples are the redevelopment of the Long Wharf, the India Wharf and the Rows Wharf. The Long Wharf (built 1710-1721) was once the main commercial wharf within the port, but since ca.1990 Long Wharf has been transformed from a commercial waterfront area into a recreational and cultural centre with a hotel, boat landings, restaurants, shops, offices and residences.

The regeneration of India Wharf took place in the 1970s as part of the Boston Redevelopment Authorities plan. The plan introduced the desirability to live along the waterfront, which made investors develop luxury residences along the wharf (e.g. the Harbor Towers) and create good public access to the Harbor.

Until the early 20th century, shipping commerce dominated the Rows Wharf area and the wharf also served as a access point for public ferry services. Due to outdated shipping infrastructure and a stagnant economy, Rows Wharf deteriorated. The construction of a large mixed-use development in the 1980's resulted in a successful renewal of Rows Wharf. The Rows Wharf Building is a good example of the provision of both commercial and residential space. The realisation of attractive and accessible public promenades made Rows Wharf one of the main attractions of the waterfront of Boston.

The previously described wharfs are just a few examples of the redevelopment projects in the waterfront of Downtown Boston. Several other wharfs more up to the north have undergone similar processes, for example the Battery Wharfs and the Liberty Wharf, where luxurious residences, hotels and parking places are realised. Figure 7.3 gives an overview picture of the redevelopment of the Battery Wharfs with residential buildings and parking places.

Figure 7.3 Redevelopment of the Battery Wharfs (picture taken from the north)



An other famous example of redevelopment in Downtown Boston is the Faneuil Hall and Quincy Market, once an important shipping location with a meat and product distribution centre, but

nowadays one of the most popular tourist areas in Boston consisting of restaurants, fast food stalls and a large shopping centre.

Charlestown, East Boston and South Boston experienced significant developments since the 1880s. The developments contained the construction of infrastructure, cargo and passenger piers, warehouses or storage elevators and landfill.

7.3.2 Location 2: Charlestown

Charlestown is located north of downtown Boston. The waterfront consists of multiple wharves, which made this, together with the status of Charlestown as a deep water port, attractive for the US Navy to construct a Navy Yard in 1797. This yard has attracted prominent shipbuilders and maritime related industries, and during World War II this yard was of great importance for the US Navy. This resulted in major labor demands in the shipyards. After the war, the demand for naval construction declined and in 1972 the Navy Yard was closed and since that moment much of the waterfront of Charlestown was transformed to non-maritime uses. Examples are the former Navy Yard and Hoosac Pier, these are nowadays used for mix of commercial, residential and touristic purposes. Especially the old Navy Yard, an extensive mixed-use urban renewal project, became part of the Historical Park of Charlestown with a mix of historic preservation and new construction. In this park, visitors can learn about the events that led to the American Revolution and the history of the Navy.

The development of the Moran Terminal by Massport (Massachusetts Port Authority) began a new trend of waterfront industrial development, which made the Charlestown port area one of the pillars of the Port of Boston for intermodal container traffic, an array of bulk commodities and general cargoes.

7.3.3 Location 3: East Boston

East Boston has been of great importance for the Port of Boston commerce since the early seventeenth century. The industries and piers developed nearly at the same time as the activities in Charlestown and South Boston. Together these three areas made it possible for the Port of Boston to adapt to the increasing demands for space and landside transportation. Such space could not be found at Downtown waterfront in central Boston, due to the congested wharves and increasing land prices. However, during the last decades the East Boston waterfront industries have shrunk or disappeared (due to changes in transportation methods and the decline of the shipbuilding & repair market) together with the waterfront employment. The upper reaches of Chelsea Creek remain important maritime properties, though along the rest of the waterfront for decades little private investments have been made and no large scale redevelopment projects have been conducted.

This changed with the East Boston Master Plan in 2000, where the city and the community made a plan for new growth and development in the commercial districts and waterfront area. An example of a project that was included in this plan, was the "Portside at Pier One" project. This project realised 490 residential units, marine/shipyard uses, public waterfront access, a day-care centre, retail and restaurant space. The project connected the neighbourhood with the waterfront and revitalized the waterfront area.

7.3.4 Location 4: South Boston

South Boston is an industrial zone that is located within the peninsula in the Southeast of Boston and is the largest and most active maritime industrial area of the harbor. It includes the Port's largest container facility, Boston's only cruise terminal and the Marine Industrial Park (MIP). In addition, South Boston is also home to the fishing fleet and the seafood industry of Boston.

The South Boston harbor area has experienced major changes in land use the last decades. In order to satisfy the growing demands in shipping activities, adopt to the global changes in the shipping industry and stay competitive, Massport (Massachusetts Port Authority) and the City of Boston (through the Boston Redevelopment Authority (BRA) and Economic Development and Industrial Corporation (EDIC)) have made major investments in port facilities, like the Conley Terminal and the Black Falcon Cruise Terminal as well as investments in the seafood industry and the Marine Industrial Park.

The realisation of the Central Artery/Tunnel (CA/T) project, known as the Big Dig, has improved the accessibility of South Boston. The Commonwealth Pier became home to the Boston Convention and Exhibition Centre, the Seaport Hotel and Seaport World Trade Centre.

In 1999 the BRA published the South Boston Waterfront Public Realm Plan, which provided a framework for future waterfront developments in the South Boston area. The main objective was to develop the district not only for business expansion to create jobs, but also to provide an accessible waterfront, an attractive open space network, a strong urban design character and new places to live. The neighbourhood should become a mix of industrial, residential, commercial, civic and retail uses.

The above examples are highlight a few of the physical changes that have been realised since BRA came into action in the 1970s. The implementation of the Economic Development Plan in 1995, was a major step towards the redevelopment of (old) port areas into high quality, mixed-use locations in Boston.

7.3.5 Water pollution

The port water crisis began in the beginning of the 20th century when the sewage pollution forced several clam beds to close. The then Metropolitan District Commission (MDC) took over this issue and ordered the construction of sewage treatment plants. The result was the realisation of two separate treatment plants until 1968. Due to updated federal regulations, the Massachusetts Water Resources Authority (MWRA), which replaced MDC, had to implement a further upgrade of the treatment plants and was responsible for overseeing the cleanup of the Boston Harbor. The treatment plants have been in operation until the 1990s and played a major role in the redevelopment of the waterfronts. In 1998, the MWRA opened the Inter-Island tunnel connecting the south system flows to Deer Island and in 2000, completed the Mass Bay Outfall tunnel in order to move efficiently the discharge from the confined waters of Boston's harbor.

7.4 Objectives that guided the transformation

7.4.1 Main drivers for redevelopment

The main economic drivers that shifted the shipping industry from Downtown Boston to other locations and therefore redevelop the old port area were:

- The growing demand for space in the port industry and the lack of such space downtown;
- Containerization accompanied with much larger vessels;
- Competition from other US and Canadian ports;

- The development in regulatory in trucking and ocean shipping;
- Labour costs, productivity and regulations;
- The growing spatial demand for residential and recreational purposes within the city, resulting in increasing land values in the old port area;
- The attempt to boost tourism.

In addition to the economic factors, this factor should be mentioned:

- The increasing pollution from the sewage system which resulted also to endangerment of the local flora and fauna, from the environmental perspective.

7.4.2 *Development plans and objectives*

The Boston City Council and the Massachusetts Legislature established in 1957 the BRA (Boston Redevelopment Agency). Its primary goal is to work with both public and private stakeholders in order to provide direction for development in the city of Boston. Initially, the BRA was assigned to address the problems faced in the inner city, but during the process however the scope was broadened and it was noted that redevelopment works were also needed in other parts of the city, like the harbor area. In the 1970s the first steps towards redevelopment of parts of the port area were taken. Three of Massport's piers (Commonwealth, Fish and Hoosac Pier) that were underutilized were given mixed functionalities. Between 1978 and 1983, MassPort spent more than \$22 million to upgrade the basic infrastructure connections of these development sites (reconstruction of Northern Avenue and Northern Avenue Bridge, construction of the Seaport Access Road, and parking and boat terminal facilities), which was essential to attract private investors.

The intention to redevelop deteriorated port sites was reflected in the Redevelopment plan of 1986. The plan consisted of ten city-wide initiatives and included a master plan for the Boston waterfront as well. The main objective of the master plan to design public access to the waterfront was guaranteed through the creation of a Harborpark. This was accomplished by creating a pedestrian walkway named Harborwalk, through stringing together small and large open spaces that are located adjacent to the Boston Harbor.

Massport's (Massachusetts Port Authority) responsibilities are to plan, develop, market and operate the Port's public terminals, and to coordinate planning and development of the commercial port as a whole. In the context of these responsibilities, seven roles were defined for Massport whereof two were:

- Redeveloper of obsolete properties;
- Provider of public access to the waterfront.

With these roles, Massport intended to commercially redevelop obsolete maritime properties, such as the World Trade Center at the Commonwealth Pier and Constitution Plaza at Hoosac Pier. These redevelopment intends to increase revenue sources to finance other Port investments. While redeveloping certain areas, attention was also paid to the public access to the waterfront, additional to the realised Harborwalk along the waterfront.

In the 1990s the objectives were again redefined and broadened to the entire port in the Port of Boston Economic Development Plan (1996). The major change was the joint effort of the BRA and Massport (Massachusetts Port Authority). This Port of Boston Economic Development Plan made a

major step into the redevelopment of (old) port areas for mixed-use purposes and the main objectives were:

- Promote and encourage seaport economy
- Maintain maritime industrial jobs and preserve essential port properties for active maritime uses
- Provide the waterside and landside public infrastructure to support the future growth of the industrial seaport
- Promote the Port as a component of the Boston tourist trade
- Redevelop appropriate portions of the Port for a mixed harbor-wide economy

In the context of the redevelopment of older port facilities, only the last point is relevant. While planning the redevelopment of portions of the Port, new and unique opportunities have been investigated. The main objective that was kept in mind, was to achieve a synergy among the industrial port, waterfront commercial and mixed uses, and public spaces. This all together should result in an economically vital port, and a publicly lively harbor and waterfront.

In the past 20 years, the City of Boston and the Boston Redevelopment Authority have developed multiple plans to further establish principles for the redevelopment of the Central Waterfront and Waterfront sites, these include:

- The 1991 Harborpark Plan;
- The South Boston Municipal Harbor Plan;
- The East Boston Municipal Harbor Plan;
- The Inner Harbor Passenger Water Transportation Plan;
- The Fort Point Downtown Municipal Harbor Plan;
- The Fort Point District 100 Acres Planning process;
- The Fort Point Channel Watersheet Activation Plan;
- And extensive redevelopment efforts in East Boston, the North End and Charlestown.

7.5 Evolution in the institutional relationships and underlying governance structure

The main authorities for redevelopment of the Boston's waterfront are the BRA and Massport, though many other institutions (especially concerning the water quality of the harbor) were involved in the process. The main contributing institutions are addressed below.

In the 1950s and before, the Boston city council (through the Port of Boston Commission) was the sole authority responsible for the port. In 1957, the Boston Redevelopment Authority (BRA) was established (by the Boston City Council and the Massachusetts Legislature) and the development powers previously held by the Boston Housing Authority were transferred to BRA and these powers were, later on, expanded beyond public housing. In 1960, the responsibilities of the City Planning Board were transferred to BRA as well and the board itself was abolished. The statutory authority of BRA was constitutionalized in the Massachusetts General Laws in 1960 and BRA became more and more the general planning and economic development authority of Boston with a broad range of responsibilities (including the development of the port of Boston). Today, the authority's responsibilities include planning, workforce development and overall economic development. Especially, the inclusion of the Economic Development and Industrial Corporation of Boston (EDIC) and its Office of Jobs and Community Services (JSC) into BRA expanded BRA's responsibilities of planning and economic development with several work force development programs.

Nowadays, BRA plays a key role in formulating the spatial planning policy as well as the urban renewal policy in Boston. Some of BRA's responsibilities regarding spatial planning are:

- co-working with developers, businesses and citizens to formulate master spatial plans that address the city's needs for infrastructure and community economic development.
- approving development projects;
- acquiring, selling and leasing real estate to achieve economic redevelopment and to promote public policy objectives, such as encouraging growth industries and implementing appropriate land use policies;
- owning real estate throughout the city and selling any such property when an attractive plan for the use of the property is submitted and approved;
- issuing bonds and notes to finance the development projects;
- granting tax concession to encourage commercial and residential development, if necessary.

Regarding urban renewal policy, some of the guiding principles:

- BRA plays an important role in formulating the urban renewal policy. Commercial enterprises, professional associations and local citizens are consulted to determine the best urban renewal option. In many cases, BRA co-works with the private sector to implement large urban redevelopment projects.
- BRA may sell land to developers for redevelopment purpose.
- After evaluating the social benefits, BRA determines the priority of implementing urban renewal projects.
- BRA develops good transport infrastructures and regenerates green spaces to improve the living environment.

With the commercialisation of the port, the Massachusetts Port Authority (Massport) was created, which replaced the locally controlled Port of Boston Commission. Massport is an independent public authority of the Commonwealth of Massachusetts, created by the act of legislature in 1956 to own and operate Boston-Logan International Airport, Laurence G. Hanscom Field, the Port of Boston and certain facilities in and around the Port. The authority was charged with the promotion of maritime trade and commerce and the development of port properties. Massport is a true authority (in contrary to many other 'port authorities') and therefore, as stated in the law, '*shall not be subject to the supervision or regulation of the [state] department of public works or of any department, commission, board, bureau or agency of the Commonwealth*'. From 1977 on, Massport increasingly focused on the revitalization of Port cargo terminals and redevelopment of obsolete terminals.

Massport and the City of Boston (acting through BRA and EDIC [Economic Development and Industrialisation Corporation]) are both independent authorities and play both a significant role in the maritime industry in Boston. By joining forces in early 1995, they developed a comprehensive and coordinated Economic Development Plan for the Port of Boston.

The Governor and the Legislature created in 1984 the Massachusetts Water Resources Authority (MWRA) with the overall objective to reinvent the region's wastewater conveyance, treatment and discharge systems. The MWRA took over the water supply and sewer activities of the Metropolitan District Commission (MDC). MWRA monitors the water quality of Boston Harbor and Massachusetts Bay, and developed the Integrated Water Supply / Quality Program to improve the reliability and quality of the water supply and meet the stringent requirements of the Surface Water Treatment Rule set by the federal EPA. The efforts made by the MWRA turned one of the filthiest

harbors of the nation into one of the cleanest, where fishing and water recreation are no longer hampered by pollution.

The Metropolitan District Commission (MDC) was created in 1919 by a merger between the Metropolitan Park Commission and the Metropolitan Water and Sewer Commission. After handing over the water responsibilities to the MWRA, the parks component of the MDC made great improvements. Today, the MDC is in charge of 22 parkways, about 168 miles of road, and 14,700 acres of reservations around Greater Boston. Regarding the Port of Boston, the MDC is responsible for a part of the Boston Harbor Islands State Park on several sites including parkways, rivers, streams, beaches and playgrounds. The MDC was involved in the redevelopment process of the waterfront areas concerning the recreational facilities and parks.

The public interests of harbor users, environmentalists, developers, waterfront business and decision makers are brought together by the non-profit, public interest organization TBHA (Boston Harbor Association). This association is founded in 1973 by the League of Women voters and the Boston Shipping Association in order to promote a clean, alive and accessible Boston Harbor.

Other relevant stakeholders that are involved in the redevelopment process are the EIDC (Economic Industrial Development Commission), the CZM (Coastal Zone Management), the DEP (Department of Environmental Protection), the EPA (Environmental Protection Agency), the NSF (National Science Foundation), meat / fish dealers, residents, etc.

7.6 Legislation on redevelopment projects

As the process took several decades, quite some legislation affected the redevelopment process, both its approval and its implementation. Main examples of legislation regarding the redevelopment of Boston are:

7.6.1 *Chapter 91 of the General Law of Massachusetts (1866)*

One of the primary goals of the City of Boston's waterfront planning is to ensure that the public has meaningful access to Boston Harbor. This is a goal that is consistent with chapter 91 of the General Law of Massachusetts. This law protects the public's interest in waterways of the Commonwealth. It ensures the public's rights to fish, fowl and navigate are not unreasonably restricted and that unsafe or hazardous structures are repaired or removed.

7.6.2 *Chapter 121B of the General Law of Massachusetts; Housing and Urban Renewal (1957)*

In order to revitalize decadent or substandard areas and encourage economic growth, the legislature developed an urban renewal program under the Massachusetts General Laws Chapter 121B. This chapter places great importance on the achievement of socio-economic development and future development must be undertaken in accordance with use limitations specified in approved urban renewal plans. The projects included in these plans should help municipalities to revitalize deteriorated areas by realising an economic environment that attracts and supports private investments. The Urban Renewal Plan should be submitted for approval by the municipality through its urban renewal agency to the Massachusetts Department of Housing and Community Development. The urban renewal agency may be either the local redevelopment authority, the local housing authority in a city or town in which there is no redevelopment authority or the local housing authority.

M.G.L. Chapter 121B allows municipalities, through their Redevelopment Authorities acting as urban renewal agencies, to develop projects in order to revitalize deteriorated areas and encourage new growth. Therefore, Redevelopment Authorities have the power to:

- Establish rehabilitation and design standards;
- Assemble and dispose of land, including the taking of real estate through eminent domain;
- Relocate businesses and residents occupying urban renewal sites;
- Demolish and/or rehabilitate substandard structures;
- Participate in real estate development and commercial revitalization;
- Issue bonds, borrow money and invest funds;
- Receive grants and loans;
- Accept gifts or requests.

7.6.3 Housing and Urban Redevelopment Act (1965)

The Housing and Urban Development Act was an ambitious federal housing effort undertaken to extend the urban renewal programs set in motion by the Housing Act of 1949. It provided several forms of federal assistance to cities for removing derelict housing and redeveloping parts of downtowns, like downtown Boston.

7.6.4 Urban Redevelopment Corporations Act (1968)

This act provides in the creation of urban redevelopment corporations for undertaking residential, commercial, civic, recreational, historic or industrial projects in areas which are considered to be deteriorated, substandard or wasted. The statute and regulations of this act authorize these projects to be exempted from real and personal property taxes, betterments and special assessments. Procedures are provided for negotiations about alternative tax payments on these developments. By allowing these tax exemptions, the development of derelict areas is encouraged and the city of Boston receives at least some tax revenue on properties that otherwise would have been undeveloped.

7.6.5 Coastal Zone Management Act (1972)

Coastal Zone Management Act (CZMA) established a national policy to 'preserve, protect, develop, and, where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations' and to 'encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone'.

Massachusetts established the Massachusetts Office of Coastal Zone Management (CZM) in order to meet the goals of the CZMA and developed a state-wide Coastal Zone Management Plan (approved by the National Oceanic and Atmospheric Administration (NOAA) in 1978), which included CZM's program policies, addressing water quality, marine habitat, protected areas, coastal hazards, port and harbor infrastructure, public access, energy, ocean resources and growth management.

7.6.6 The Commercial Area Revitalization District program (CARD) (1978)

The CARD program assists communities with older downtowns or commercial centres to support private and public investment into the targeted areas in order to counter the economic decline and physical deterioration that relating disinvestment. The Division of Community Services approves and helps municipalities develop and implement CARD plans. The CARD designation can help a municipality to prioritize local efforts and establish a framework for reinvestment.

7.6.7 MWRA enabling act (1984)

The Massachusetts Water Resources Authority (MWRA) is established by an enabling act (Chapter 372 of the Acts of 1984) enacted in 1984. The act was declared to be an emergency law, necessary for the immediate preservation of the public convenience. The main objective of the MWRA was to provide wholesale water and sewer services to 2.5 million people and more than 5,500 large industrial users in 61 metropolitan Boston communities.

7.7 Conclusions

One of the key success factors in the redevelopment of the old, underutilized port areas in Boston was the establishment of the Boston Redevelopment Authority and its co-operation with the Port Authority, Massport. The BRA is mandated with the task of improving and developing urban areas in Boston. The joint forces of the BRA and Massport contributed significantly to the renewal of the deteriorated port areas.

An important objective of the BRA is to work together with citizens, business and developers in the process of developing urban renewal plans for the city of Boston. This public/private partnerships turned out to be essential for the success of the renewal of derelict (port) areas.

Since private investments and economic activity form the basis of the development of Boston, the city kept on creating a favourable environment for private investors in decadent and underutilized urban areas. Several regulations and facilities were developed with the objective to attract and support these private investors (e.g. the exemption of property taxes for certain areas).

The necessary investments in road and rail infrastructure were needed to connect the revitalized areas with other parts of the city. These infrastructural developments gave another economic boost to these areas and increased the attractiveness for private investors.

7.8 Sources

- Hargens, Andrew G., AICP | LEED AP, Presentation 'Port of Boston Update', Massachusetts Port Authority, Economic Planning and Development Department.
- Costa, J.P.T.A. (2007), *The New Waterfront: Segregated Space or Urban Integration?*; Levels of urban integration and factors of integration in some operations of renewal of harbour areas.
- DiGaetano A. and J. S. Klemanski (1999), *Power and City Governance: comparative perspectives on urban development*, University of Minnesota Press, Minneapolis.
- *Save the Harbor/Save the Bay & the City of Boston (2005), Boston's Harbor and Waterfront; A Renaissance Underway.*
- McCarthy, John (2003), *Spatial Planning, Tourism and Regeneration in Historic Port Cities*, The Geddes Institute, School of Town and Regional Planning, University of Dundee.
- *City of Boston & the Boston Redevelopment Authority (2001), A Strong Economy and Housing:*
- *Partners in Progress, Economic Development Legislation Proposed by the City of Boston and the Boston Redevelopment Authority 2001-2002.*
- *City of Boston (2000), Decision on The City of Boston's South Boston Waterfront District Municipal Harbor Plan.*

- Hargens, Andrew G., (2007) AICP | LEED AP, Presentation 'Waterfront Smart Growth Lessons from the South Boston Waterfront', Massachusetts Port Authority, Economic Planning and Development Department.
- Save the Harbor /Save the Bay (2005), Boston's Harbor and Waterfront; A Renaissance Underway, A Special Indicators Report with an Initial Framework for Measuring Success.
- Marshall, R., Boston's waterfront story, Case studies – Boston, Harbour Business Forum.
- Kohr, Todd (2003), Inside the Working Port: A Study of Boston's Designated Port Areas, The Boston Harbor Association.
- City of Boston & Boston Redevelopment Authority (2002), Municipal Harbor Plan of the city of Boston, East Boston Waterfront District.
- Glaeser, E.L. (2004) Reinventing Boston: 1630–2003, Journal of Economic Geography, vol. 5, pp. 119-153.
- Oosthuizen, M., The Victoria and Alfred Waterfront; Evaluating the Public Space, University of Stellenbosch, Department of Geography and Environmental studies, Matieland.
- Massachusetts Port Authority (1990), Massport Seaport Strategy, Boston, Massachusetts.
- Boston Redevelopment Authority & Massport (1996), Port of Boston Economic Development Plan.
- <http://www.mwra.state.ma.us/03sewer/html/sewhist.htm>
- <http://www.mass.gov>
- <http://www.bostonredevelopmentauthority.org>

8 Other capita selecta

8.1 International comparison on port efficiency

8.1.1 Introduction

This section focuses on a comparison of port capacity and efficiency in India with capacity and efficiency elsewhere in the world. Efficient ports with sufficient capacity are vital to a country's economy, as poor port performance and lack of port capacity leads to higher costs of imports and exports, which discourages economic growth. India needs to realize much more port capacity in order to realize its full economic potential.

8.1.2 Comparison of container port capacity

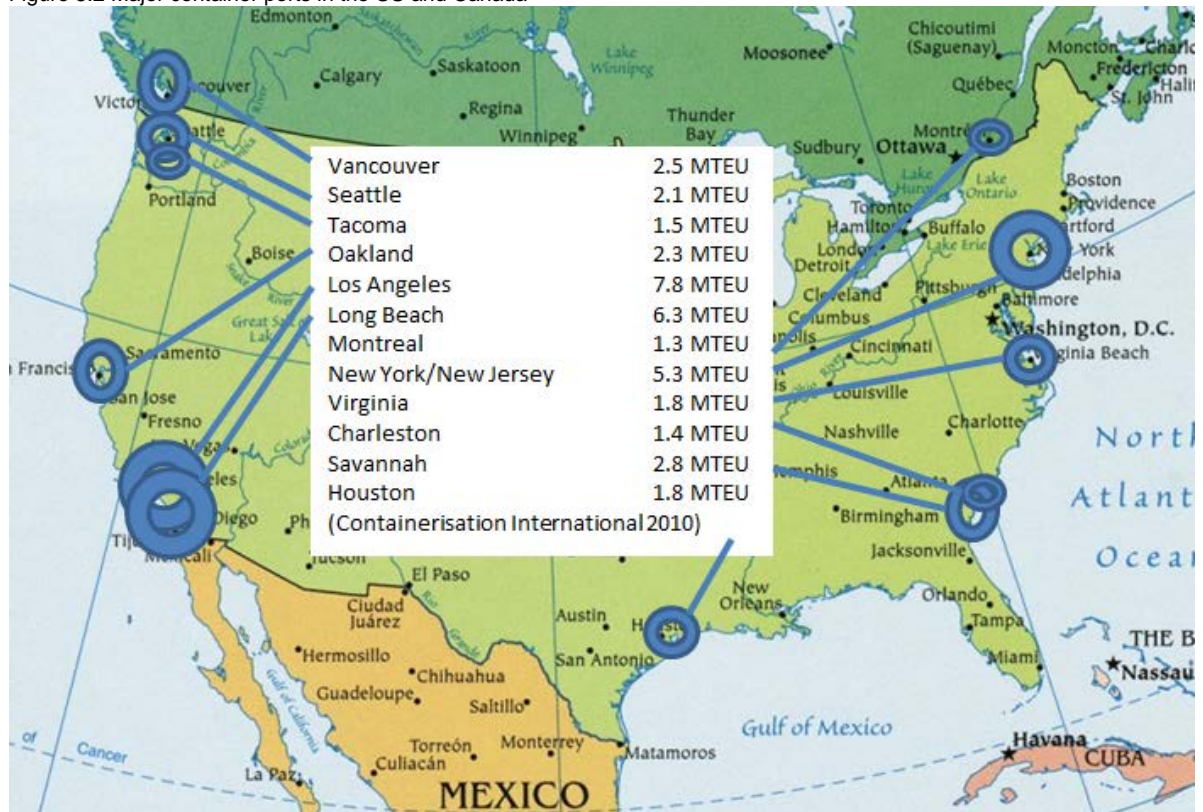
This section gives a comparison of container port capacity in Northwest Europe (Hamburg-Le Havre range), US and Canada, China and India. The following four maps each show all container ports of 1 million TEU and over (2010 figures).

Figure 8.1 Major container ports in the Hamburg-Le Havre range (Northwest Europe)



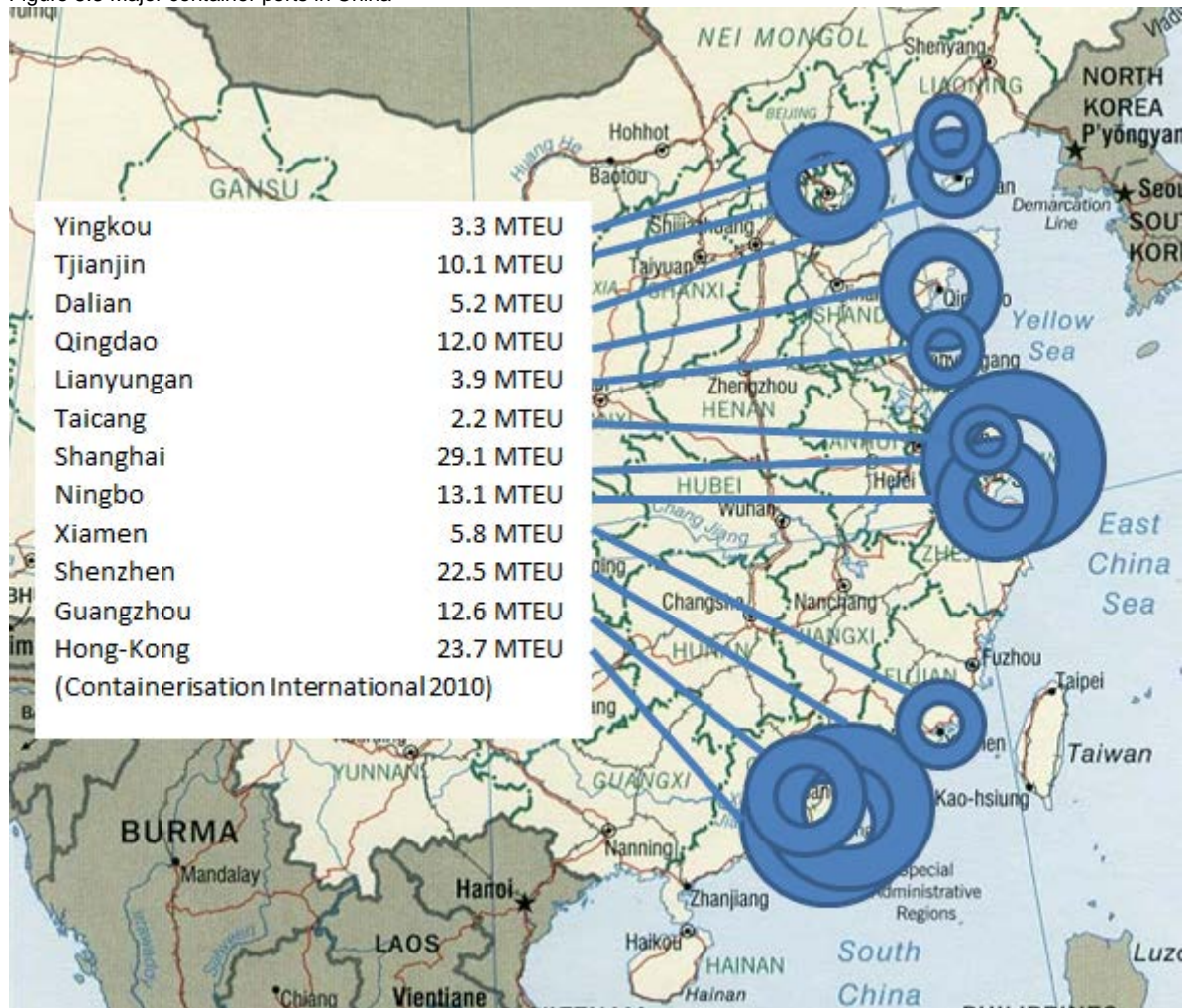
Source map: Perry Castañeda Library Map Collection, source data: Containerisation International 2010.

Figure 8.2 Major container ports in the US and Canada



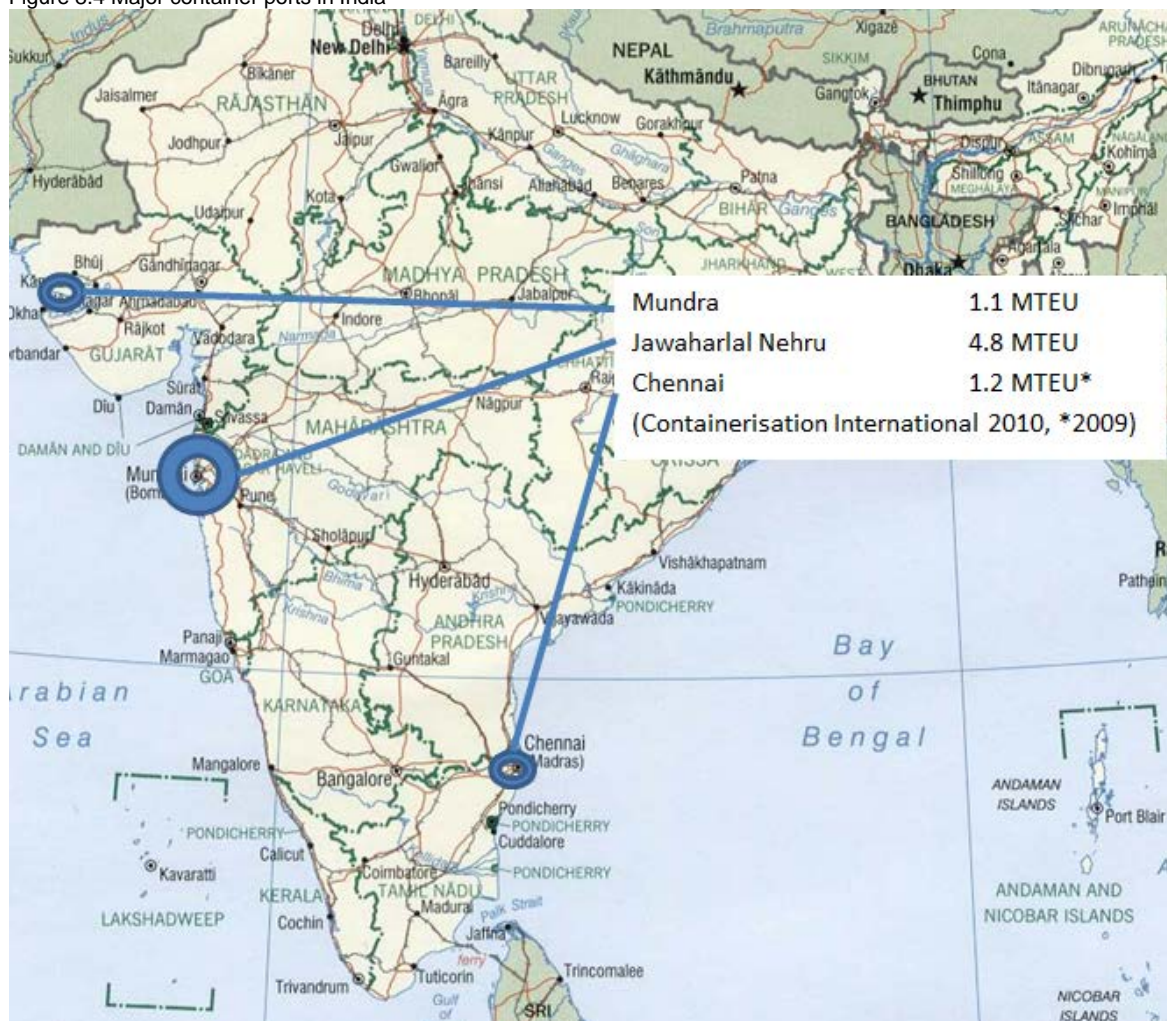
Source map: Perry Castañeda Library Map Collection, source data: Containerisation International 2010.

Figure 8.3 Major container ports in China



Source map: Perry Castañeda Library Map Collection, source data: Containerisation International 2010.

Figure 8.4 Major container ports in India



Source map: Perry Castañeda Library Map Collection, source data: Containerisation International 2010.

The message of the four maps is clear: India has very few major container ports compared to Northwest Europe, the US and Canada and China. Even if the container volume in ports with less than 1 million TEU is considered, the picture does not change.

Smaller container ports have not been included in the maps, however that would not change the general picture so much. In 2010, India had an estimated volume of 2.3 million TEUs in container ports smaller than 1 million TEU, whereas Northwest Europe had 0.5 million TEU, China 3.8 million TEU and the US & Canada 6.6 million TEU in container ports smaller than 1 million TEU.

This suggests two issues:

- Container penetration in maritime transport in India is –yet!- not very high. This means a lot of general cargo is still transported in loose form, which is less efficient than transport in containers.
- The Indian economy does not generate as much container traffic as the economies of the countries included in the examples. There are –yet again!- less imports and exports of containerized cargo.

However, it may be expected that both issues may change drastically in the coming years or decades. Continuous GDP growth will lead to more (containerized) imports, growth of industrial production will lead to more containerized exports. On top of that, as the Indian economy gets more interconnected with worldwide logistics chains, the container penetration in the Indian transport sector will increase. Combined these two effects may be expected to result in enormous growth in Indian container volumes. This growth will have to be catered to by a serious number of container ports and/or container terminals at existing ports. Careful and strategic selection and development of the best locations for this additional capacity (which may in size surpass the existing capacity several times!), is of utmost importance.

8.1.3 Comparison of container port performance

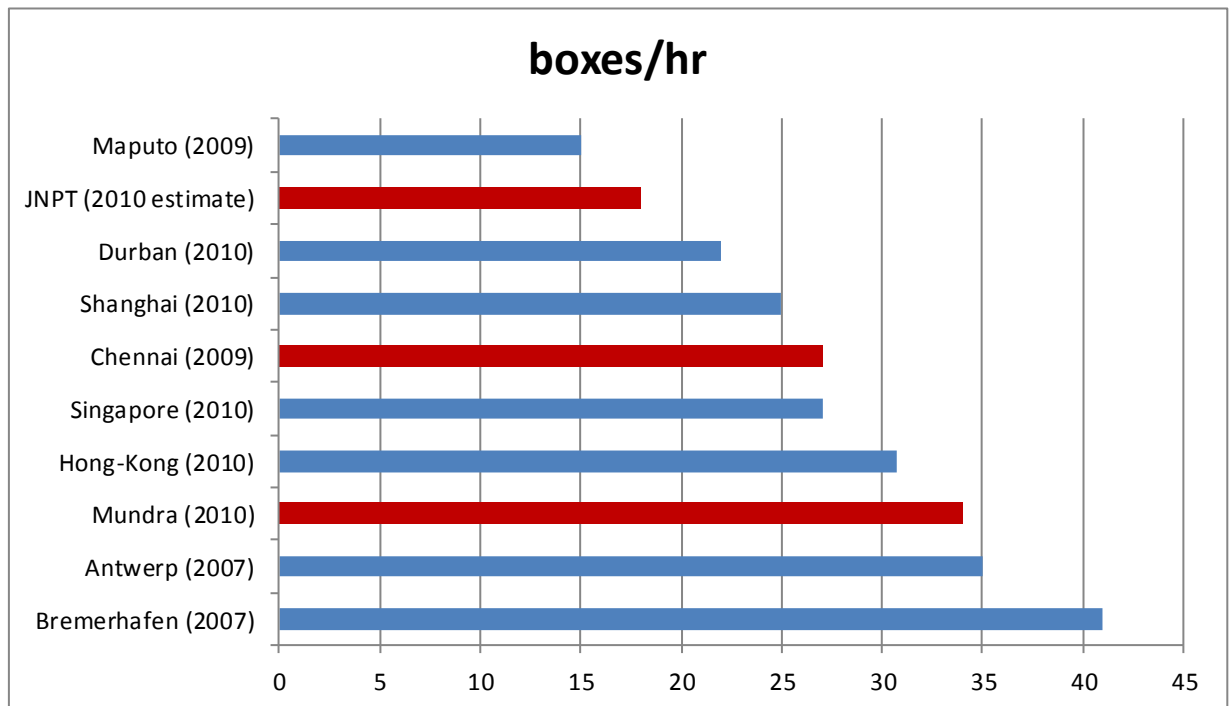
Generally speaking, the best port performance will be achieved in a competitive environment for terminal operators. Monopolistic situations tend to result in lower scores on Key Performance Indicators (KPIs). And privately operated terminals generally perform better than publicly operated terminals.

The following figures give a comparison of Indian container ports with container ports throughout the world, for two KPIs commonly used at container terminals:

- container crane output (expressed in boxes per hour, see Figure 8.5)
- container quay throughput (expressed in TEU per meter of quay per year, see Figure 8.6)

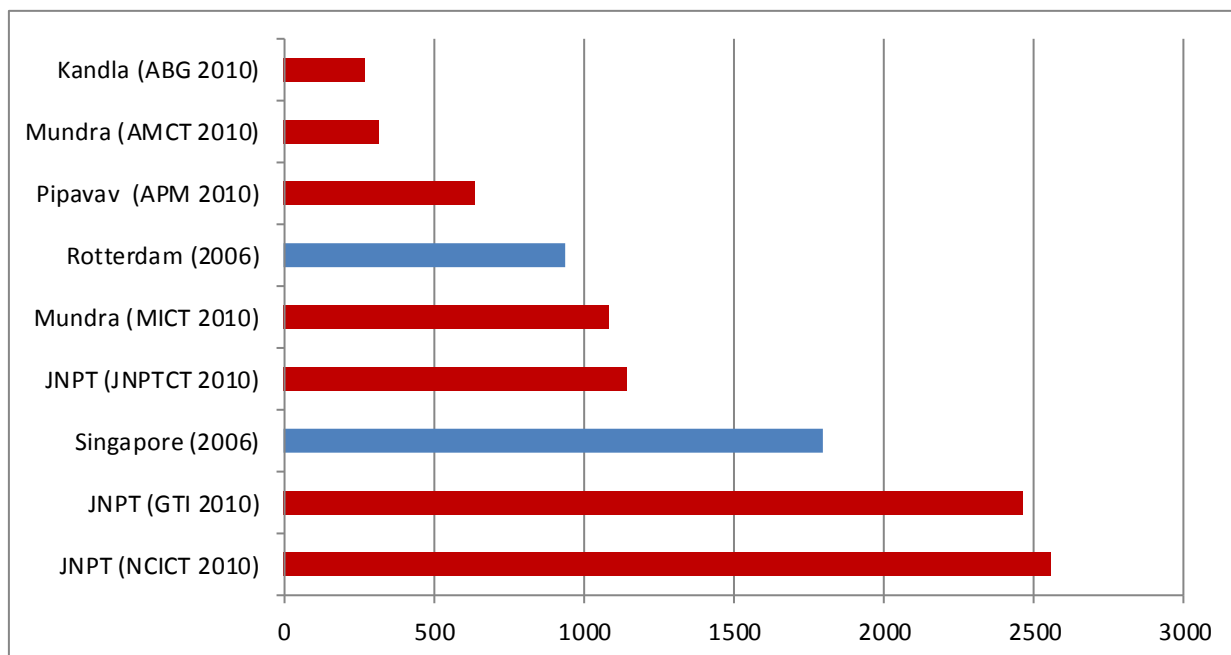
The figures show that there is quite a variation in the scores of Indian ports on these two KPIs, but that the same variation is found in ports throughout the world.

Figure 8.5 container crane output at selected container terminals (boxes/hour)



Source: adapted from Container productivity at New Zealand ports, Ministry of Transport, 2011

Figure 8.6 container quay throughput at selected container terminals (TEU/meter/year)



Source data on Indian ports: Port efficiency change in container handling terminals: a case of ports in JNPT-Mundra range of ports in India, A. Bhatt & P. Gaur, 2010, Source data on Singapore and Rotterdam: Container port markets in the Middle East and South Asia to 2020, Ocean Shipping Consultants Ltd, 2007.

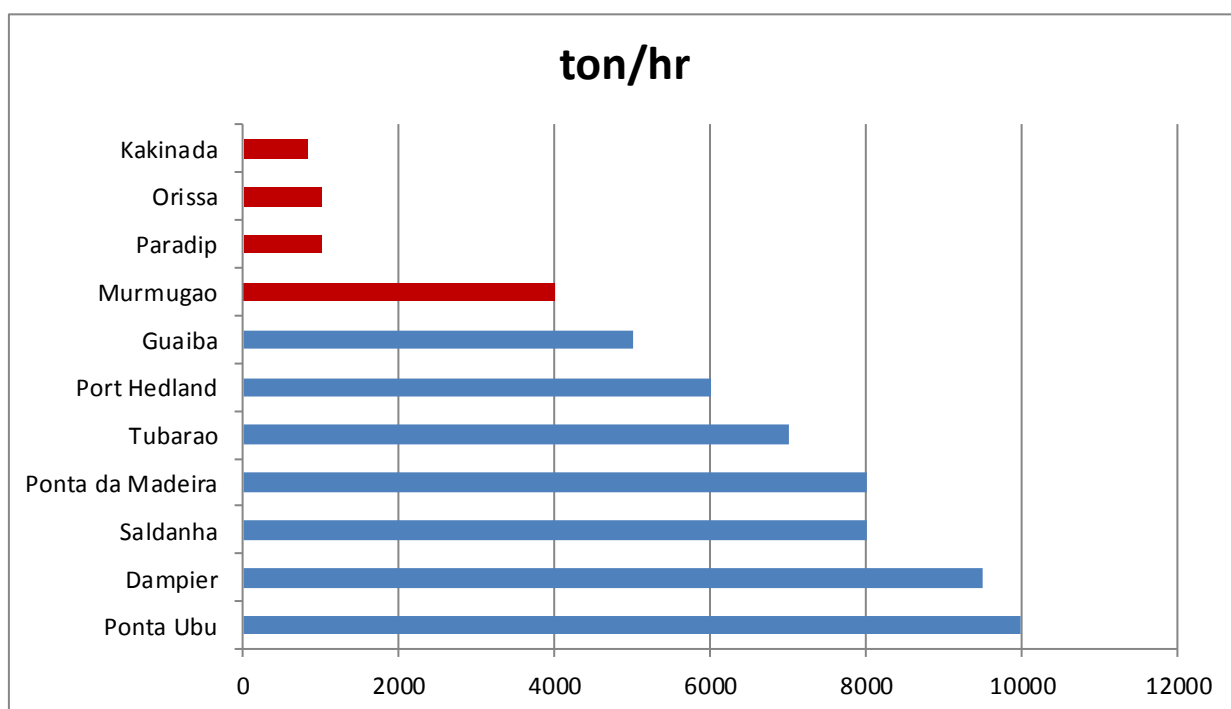
8.1.4 Comparison of bulk port performance

Bulk ports can be compared using loading or unloading rates as a KPI. The following figure shows the loading rates of a selection of major iron ore export ports throughout the world. These are gross loading rates; net loading rates will be lower due to the time needed to berth and unberth ships and to position loading equipment. All ports are major dedicated iron ore terminals using shiploaders, none of them uses grabs. The figure clearly shows that loading rates at Indian iron ore exporting ports are lower than those of similar ports worldwide.

It should be noted that the Indian ports in the review generally service smaller ships than the other ports. The maximum draft at Orissa and Paradip is 13m, at Murmugao it is 13.7m and at Kakinada it is 11m. This means the maximum vessel size at the first three ports is Panamax (70,000 to 80,000 dwt, 12m draft when fully loaded). In Kakinada handysize bulkers are the largest size that can be fully loaded (about 35,000-45,000 dwt and 10m draft). The other ports in the overview offer drafts of 19 to 25m, enough to handle at least capsized bulkers (180,000 dwt, 18m when fully loaded).

The question is whether the Indian ports do not handle larger vessels because the required draft is not available or because the markets they serve do not require larger vessels. Generally, for major bulks such as coal and iron ore, the rule of thumb is the larger the bulk ship the better. Economies of scale can greatly reduce transport costs per ton or TEU (see section 8.1.5). Some Indian ports use barges to load larger vessels offshore. From a logistics point of view however this is suboptimal, as it requires extra cargo handling from barge to ship.

Figure 8.7 loading rates at selected iron ore terminals (in tons/hour)



Source: Global iron ore load ports – information handbook, Wilhelmsen Ships Service, 2008

8.1.5 Ship size economies and comparison of port drafts

As indicated in the previous section, the employment of larger vessels can greatly reduce the costs of maritime transport per ton or TEU. Generally speaking, the largest possible ship should be used.

The size of vessels is limited by:

- Draft limitations in ports and the access channels to these ports. For bulk shipping this means the ports on either side of the journey; for container shipping this means all ports along the route of the container vessel.
- Physical limitations elsewhere along major shipping routes, such as the Suez canal (maximum draft 20m), the Panama canal (maximum draft 12m, for the new locks from 2014 onwards 15.2m) and to a lesser extent the straight of Malacca (maximum draft 21m).

The design vessel of a port (i.e. the maximum ship size a port can take) is always a trade off between investment costs necessary to create sufficient draft and capacity in the port and the transport costs savings that can be realized by the employment of larger ships.

Table 8.2 gives a comparison of ships sizes (with main dimensions) and the transport costs per unit for bulk shipping. The table shows that the costs per ton in a capsized are at about 58% of the costs per ton in a handysize bulker. The costs of transporting a ton of coal from Richards Bay (South Africa) to Vishakapatnam with a capsized vessel for instance are 10 US dollar per ton than if a handysize would be used²⁵.

²⁵ Based on July 2009 freight rates

Table 8.1 comparison of ship sizes and transport costs for bulk shipping

Size category	Dwt	Draft	Indexed costs
Handysize	35,000	10m	100
Panamax	80,000	12m	76
Cape size	180,000	18m	58

For containers, Table 8.2 shows that the costs per TEU on a 14,000 TEU ship (Maersk E-class) are 67% of the costs of a TEU on a 6,000 TEU ship. Meanwhile, Maersk has 18,000 TEU ships on order (Maersk triple E class), which the company claims will result in a 25% cost saving per TEU compared to the 14,000 TEU E-class container vessels. It should also be noted that the hull design of the triple E-class is such that the maximum draft is 14.5m, compared to 15.5m for an E-class.

Table 8.2 comparison of ship sizes and transport costs for container shipping on a Far East-Europe round trip

Size category	Draft	Costs per TEU (USD)*	Indexed costs
6,000 TEU	14m	973	100
10,000 TEU	14.5m	760	78
14,000 TEU	15.5m	652	67

* Source: *Economies of size of large container ships based on internal and external costs*, S. Veldman, C. Glandsorp, R. Kok, paper presented at ECONSHIP 2011, 22-24 June 2011, Chios, Greece. Costs are based on an average roundtrip with 90% capacity utilisation

It should be noted that the drafts mentioned in the table are design drafts, based on the maximum weight that these vessels can carry. In practice, the draft is often lower as many containers are loaded with relatively light cargo (such as electronics or other consumer goods). It therefore is possible that 14,000 TEU vessels call at ports such as Antwerp or Hamburg, which both have a maximum allowed draft of 13m. Often, these vessels call at the port of Rotterdam (16.7m at container terminals) first in order to reduce their draft and then continue to ports that offer less draft.

Table 8.3 gives a comparison of drafts at various European, Chinese and Indian ports. It shows that the drafts at Indian ports generally match those at major European and Chinese ports, particularly for containers. In the bulk sector it can be seen that European and Chinese ports generally offer more draft.

Table 8.3 comparison of maximum drafts in various ports

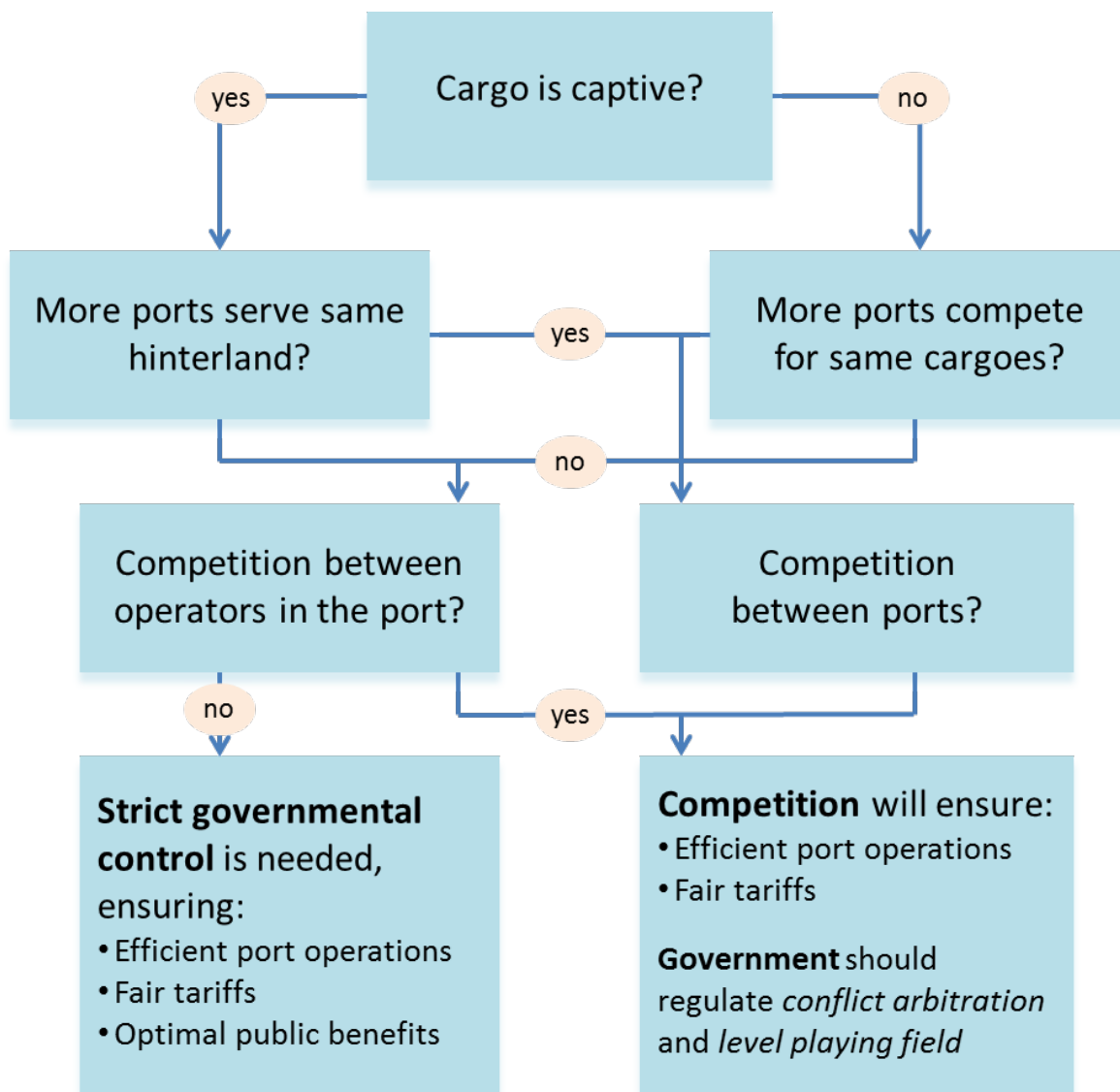
Ports	Draft(s)
European ports:	
Hamburg	13m
Rotterdam	16.7 (CT) and 23m (bulk)
Antwerp	13.1m (low tide)
Chinese ports:	
Shanghai	15m (CT Yangshan) and 12m (bulk)
Tianjin	18m (CT) and 22m (bulk)
Ningbo	21m
Qingdao	14m (Qianwan 18m)
Guanzhou	13.8m
Indian ports:	
Chennai	16.5m (liquid bulk) and 13.4m (CT)
Cochin	12.5m (22.5m at SPM)
JNPT	12.5m (liquid bulk and CT)
New Mangalore	13m (liquid bulk)
Paradip	12.2m
Tuticorin	10.9m
Vishakapatnam	16.5m (liquid bulk) and 14.5m (CT)
Mundra	16.5m (CT)
Dhamra	18m (ore)

Source: web sites of various ports

8.2 Port competition and regulation

Competition in the port sector is not evident; sometimes the cargo is captive to a port and many ports are simply too small to host multiple operators. In other cases, multiple ports compete for the same cargo, and/or multiple operators within a port compete for the same cargo. Figure 8.8 gives a choice model on port competition, indicating the level of government control needed in different situations.

Figure 8.8 Choice model on port competition



Source: Ecorys

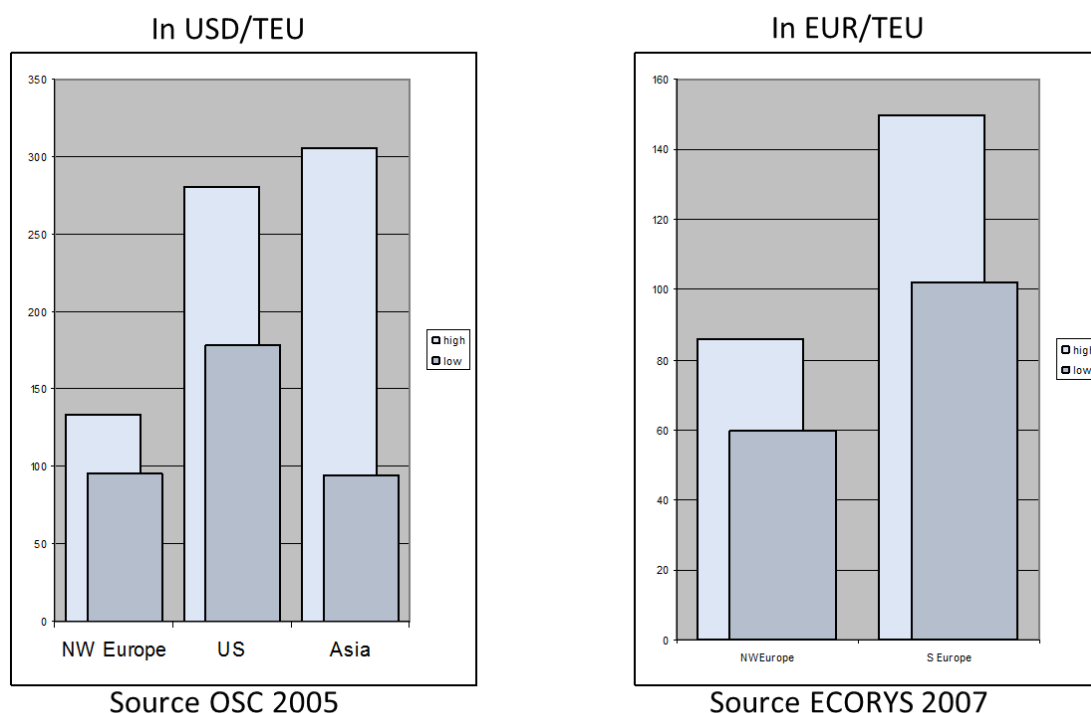
The port sector should have a suitable regulatory framework that assigns the various roles to proper government levels, (national, state, local) and that creates specific autonomous bodies if necessary. These roles are for instance:

- Provision of basic port infrastructure at strategic locations (breakwaters, fairways, basins and usually quays too). Such infrastructure is sometimes also provided by the private sector but in most cases they are considered strategic economic assets, to be kept under (a certain) government control.
- Enabling fair competition, to make sure port users pay fair prices. These directly result in public benefits as the cost of imports and exports in an economy partly depend on tariffs in ports. Gives examples of port tariffs, showing that port tariffs are generally higher in regions where there is less competition (Asia and the US compared to Northwest Europe, and Southwest Europe compared to Northwest Europe). The level of control that the

government needs to exert depends on the level of competition that is present in the market (see Figure 8.8).

- Ensure nautical safety, in the form of traffic control.
- Ensure public access. In many countries, maritime access is considered a public good. This does not exclude private operators at terminals, but it does exclude single user facilities (which can under some circumstances be a perfectly efficient solution).

Figure 8.9 Comparison of port tariff levels



The port sector needs to have a proper division of roles between the public and private sector. In many ports, the landlord model is applied or being introduced. Basically, in the landlord model the basic infrastructure and land is owned by the public sector, that also fulfills a regulatory role. Superstructure and operations are in private hands. Private parties have concessions for the use of port infrastructure and land. Thus the government keeps control of maritime access and can control maritime safety, whereas port operations are efficiently carried out by the private sector.

Lack of intra-port or inter-port competition could result in:

- Higher cargo handling fees due to monopolistic market conditions. Higher cargo handling fees result in higher costs of imports and exports.
- Less efficient terminal and port operations, resulting in longer waiting times for ships, longer dwell times for cargo and less efficient use of space. These effects too translate into higher costs of imports and exports.
- Wrong investment choices, which may result in a suboptimal use of capital.
- Higher costs of living for the communities that depend on the port, as ultimately higher the above points will translate into higher costs of imports and exports, which may restrain economic growth.

8.3 Improved data handling in ports

Improved (electronic) data handling in ports will facilitate trade flows. This section discusses best practices in Electronic Data Interchange (EDI) and VTMS (Vessel Traffic Management Information Services) in Europe and indicates to what extent these help to facilitate trade.

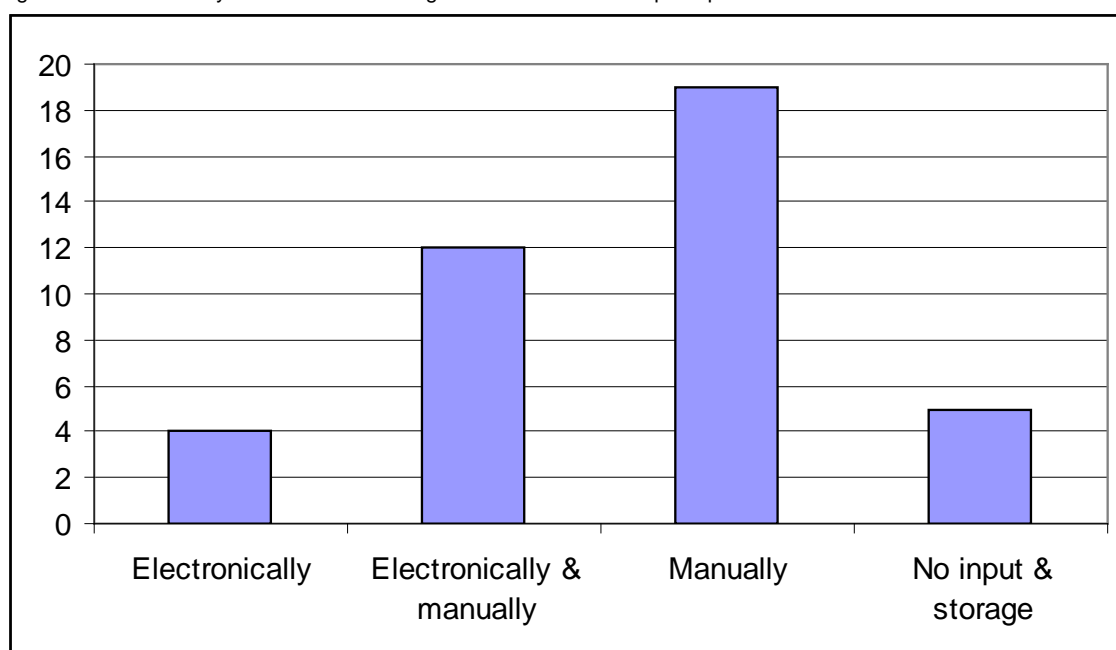
Vessel traffic management systems (VTMS) are increasingly used to manage traffic in ports and in busy maritime traffic lanes (such as the English Channel). The 'I' was added to the abbreviation when the application of VTMS expanded to more than traffic management only; nowadays VTMS systems are also used to convey data on the vessel and its cargo. This makes it possible to pre-clear cargo on the basis of the cargo manifest, to use cargo data in terminal planning, etc.

The AIS (Automatic Identification System), which is compulsory on board of all ships over 300 GRT, provides the information that is used in VTMS. AIS transfers data on the ship, its status and journey.

EDI (Electronic Data Interchange) refers to the linkages of data systems of various port stakeholders, often related to cargo movements but not excluding ship and shipping data.

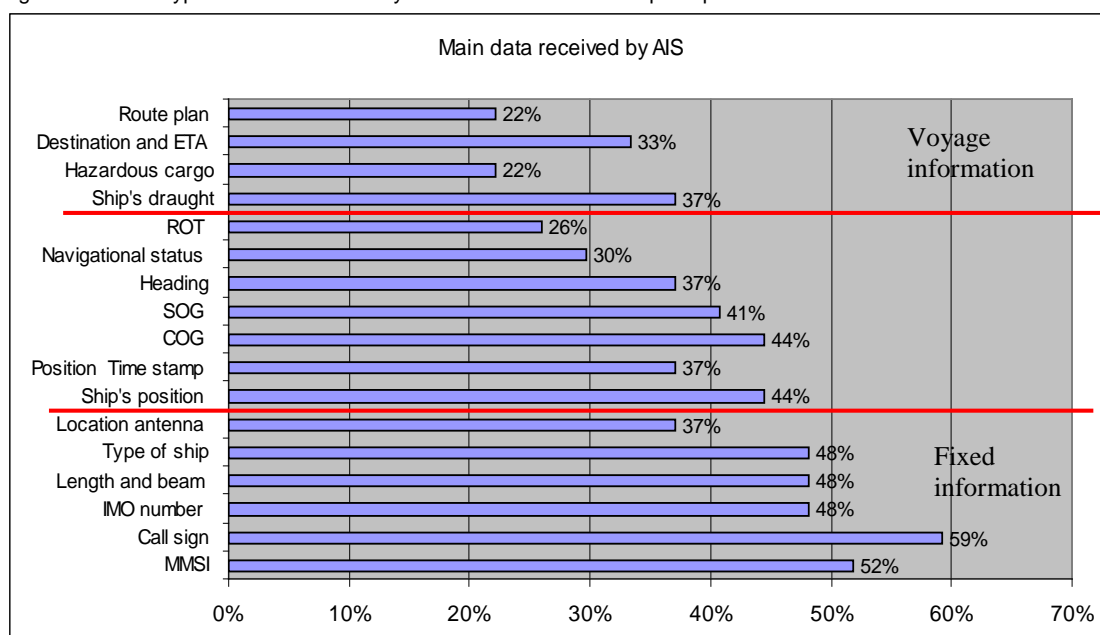
Increasing application of VTMS and EDI requires the creation of uniform systems. Many port stakeholders started computerization by developing their own in-house systems; the integration of these systems into uniform communication systems is therefore a difficult process. Practice shows that uniform systems cannot be developed without some form of sector wide guidance. Another obstacle is a certain resistance to change in the sector; a conservative approach that likes to keep things done the old way.

Figure 8.10 Use of IT systems and data storage in a selection of European ports



Source: database of 40 EU ports, Ecorys 2007

Figure 8.11 Main types of data received by AIS in a selection of European ports.



Source: database of 40 EU ports, Ecorys 2007

8.4 Short sea shipping potential

In some countries or regions, Short sea shipping (SSS) is an important logistic solution for cargo flows. The EU for instance actively promotes SSS as an alternative to road transport in order to reduce road congestion and to reduce the environmental footprint of freight transport. Elsewhere in the world, similar policies can be found, such as in the US and Vietnam.

In the EU, about 30% of all maritime shipping was short sea shipping (978 million tons out of 3,333 million tons), where short sea shipping is defined as intra-EU and domestic shipping. In practice, the short sea shipping share may be slightly higher as some of the intercontinental shipping in the EU would also classify as short sea (short distance) shipping, particularly shipping services in the Mediterranean and the Black Sea, where short sea transport takes place between EU-member states and neighbouring states.

The main bottlenecks to the use of short sea shipping for cargo movements are:

- Lack of infrastructure: specific short sea terminals.
- Lack of service levels: frequencies and intermodal connections
- Lack of logistics service providers offering a door-to-door service
- Traditional stance with cargo owners: it is perceived easier to arrange door-to-door road transport than to arrange an intermodal transport chain.

The EU has targeted these bottlenecks with a variety of policies and programmes and policies. Short sea shipping is explicitly mentioned in the European White Papers on Transport as a means of reducing road congestion and of reducing the environmental footprint of transport, both in the 2001 and 2011 white papers.

8.4.1 Marco Polo

In its 2001 white paper on transport, the EU launched the Marco Polo programme as a follow up of the PACT (Pilot Action for Combined Transport) programme that was used to promote combined transport during the years 1997-2001. Though in principle aimed at promoting modal shift from road

to other transport modalities, Marco Polo specifically made efforts to harness the advantages of short sea shipping. The Marco Polo programme financially supported new intermodal services, covering initial losses of services that were expected to be commercially viable in the long term. The programme has in some cases been criticized for creating unfair competition and market distortions, as existing intermodal operators claimed they lost tonnage to Marco Polo supported services. Following this, the criteria for Marco Polo support have been tightened to make sure the intermodal services that received support indeed contributed to the objective of removing freight tonnage from the roads. In the 2011 white paper on transport, Marco Polo is no longer mentioned.

8.4.2 Motorways of the Seas

The Motorways of the Seas (MoS) concept was introduced in the 2001 white paper too. Whereas Marco Polo was aimed at intermodal (in particular short sea) services, MoS was aimed at the maritime infrastructure needed for the promotion of short sea shipping as an alternative to freight transport on road motorways, hence its name. The aim was to develop Motorways of the Seas as a real alternative to land transport, thus improving access to markets in Europe and relieving the overstretched European road system. Again, MoS does not exclude rail and inland waterways, but it is primarily aimed at short sea shipping. The EU defined MoS corridors and integrated these into the TEN-T network (Trans-European Network for Transport). This means 57 EU ports have been designated as TEN-T ports, explicitly indicating their position in the TEN-T network.

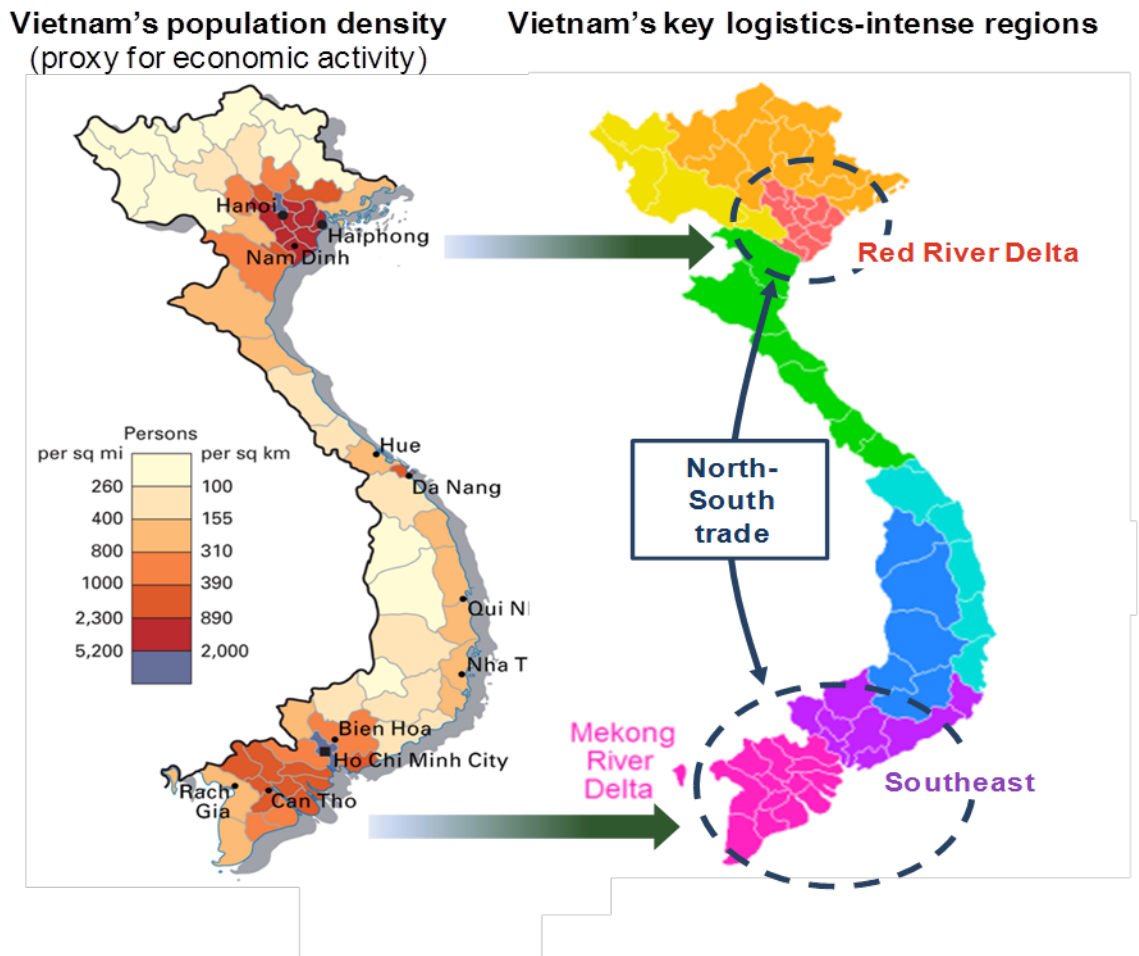
8.4.3 Short sea network

The European Shortsea Network (ESN) exists of a series of national short sea promotion offices. In the last years of the nineties, several EU countries established shortsea promotion offices. These offices have the advantage of being much 'closer' to the market than the Brussels institutions of the EU, thus better positioned to actively promote short sea shipping in these countries. Their tasks are to inform cargo owners and transport providers about the possibilities that short sea shipping has to offer, to provide information on national and EU support programmes, to keep an updated inventory of intermodal services and to take away biases against short sea shipping in the transport market. In 2000, the ESN was established to provide coordination and support to the national organisations.

8.4.4 Short sea shipping in Vietnam

Due to its geographical shape, a long and narrow country with a long coastline, Vietnam is very suitable for developing coastal shipping. Its main economic centers in the North (Red River Delta/Hanoi) and South (Mekong Delta/Ho Chi Minh City) are connected by a highway and a railway line, but these cannot cope with the increasing demand for traffic. Freight transport per coastal shipping therefore experienced a rapid growth; currently over 90% of all freight transport between the North and the South is by coastal shipping.

Figure 8.12 Population density and key logistics intense regions in Vietnam



8.5 Ports and corridor development

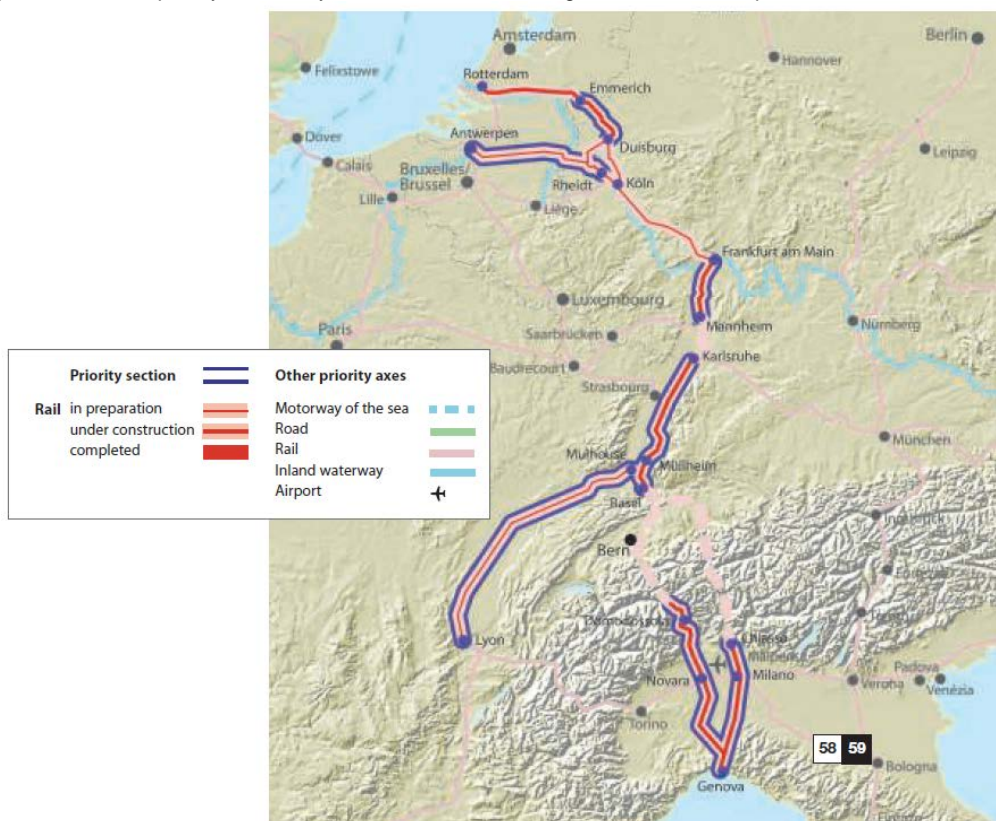
Ports need to be seen as nodes in a transport network instead of as goals in themselves. The performance of a port is strongly related to its hinterland connections, whose capacity needs to match that of the port. This means policy makers increasingly aim at developing transport corridors. Characteristics of transport corridors are:

- Transport corridors often cross national borders, which calls for the realization of efficient customs procedures that disturb logistic flows as little as possible.
- Transport corridors connect various economic production and consumption centres.
- Transport corridors often offer multimodal solutions: combining various transport modes into door-to-door logistics.
- Transport corridors are not only about the transport infrastructure needed to cover distances, they also require strategically placed inland terminals (sometimes referred to as dry ports). If run in conjunction with maritime ports, these can take up the role of satellite ports, receiving cargo in large efficiently organized transport flows from the maritime port for further distribution in the hinterland.
- Ports are important nodes in transport corridors, where maritime transport connects with other transport modes

8.5.1 Priority axes in the TEN-T network

In the previous section, it was already indicated that the EU regards its ports as nodes in the TEN-T network of transport corridors. The policy is clearly aimed at developing transport corridors, in which ports play a role as nodes.

Figure 8.13 TEN-T priority axis 24: Lyon/Genoa-Basle-Duisburg-Rotterdam/Antwerp.



Source: TEN-T priority axes and projects 2005

Figure 8.13 shows the TEN-T priority axis 24, a corridor connecting the Italian port of Genoa and the French economic centre around the city of Lyon with the ports of Antwerp and Rotterdam. The river Rhine forms an important part of this corridor, connecting Rotterdam (and Antwerp) with major industrial and population centres in Germany (Rhine-Ruhr area and the region around Mainz and Mannheim) and Switzerland (Basle). Along the Rhine, major road and rail connections complete the corridor. The connections between Basle and Genova and Basle and Lyon consist of rail and road links.

The TEN-T priority axis concept is an umbrella for several projects along the corridor, aimed at upgrading infrastructure. Examples are:

- Construction of dedicated rail freight connections from Rotterdam to the German rail network (Betuwe line) and from Antwerp to the German rail network (Iron Rhine).
- Upgrading or expanding existing railway lines (that usually cater to passenger and freight demand).
- Upgrading rail systems, such as the introduction of ERTMS (European Rail Traffic Management Services) at rail sections along the corridor.
- Creation of high speed passenger rail connections.

Priority axis 24 is very much aimed at creating efficient (freight) rail connections, as the inland waterways in the corridor are already well developed. Other priority axes aim at a mix of infrastructures. In Central and Eastern Europe, where the road network is partly underdeveloped, priority axes include motorway development. Figure 8.14 shows priority axis 18, aimed at developing an inland waterway connection between the North Sea and the Black Sea, along the rivers Rhine, Meuse, Main and Danube.

Figure 8.14 TEN-T priority axis 18: Rhine/Meuse-Main-Danube inland waterway axis



Source: TEN-T priority axes and projects 2005

8.5.2 Corridor development agencies in Africa

In Africa, several ports have dedicated corridor development agencies, aiming to develop ports in conjunction with the hinterland transport corridors. Examples are:

- Maputo Corridor Logistics Initiative (MCLI) in Mozambique, aiming to develop the corridor from the port of Maputo to its South African hinterland. Creating efficient customs procedures is therefore one of the key objectives of MCLI. MCLI is discussed in detail in Chapter 5 of this report (case study on Maputo corridor development).
- Dar es Salaam Corridor Group in Tanzania.
- Walvis Bay Corridor Group in Namibia.

8.5.3 The Mumbai-Delhi industrial corridor in India

In India, a good example is the Delhi-Mumbai Industrial Corridor Project. This is actually more than the development of a transport corridor, as the project is aimed at creating an industrial zone along the line Delhi-Mumbai, spanning across six Indian states (Delhi, Uttar Pradesh, Haryana, Rajasthan, Gujarat and Maharashtra). The project aims to develop six industrial zones of 200 km² each, connected by road, rail, maritime and air transport infrastructure.

8.6 Concluding remarks

7. India needs to develop additional port capacity to facilitate imports and exports and to support the growth of its economy. This additional capacity concerns bulk and containerised cargoes and needs to provide sufficient draft for the largest ships;
8. The Indian economy needs efficiently organised and efficiently operated ports, to make sure that the maritime infrastructure is used as optimal as possible;
9. Competition in the port sector should be promoted, and where necessary regulated, as competition will lead to efficiently organised and operated ports;
10. The logistics flow of trade through ports (and in fact along the entire transport chain) should be supported by efficiently organised information exchange;
11. The increasing pressure on India's rail and road network could partly be relieved by developing short sea shipping as a sustainable alternative mode of transport;
12. Ports should be developed as international connection nodes in structural economic development, aimed at strategically positioning ports as nodes in transport and economic corridors.

Figure 8.15 on the next page gives an indication of the search areas for strategic ports in India: in these areas basic port infrastructure should be selected, planned and created.

Figure 8.15 Sear areas for principle strategic ports in India



Source map: Perry Castañeda Library Map Collection



P.O. Box 4175
3006 AD Rotterdam
The Netherlands

Watermanweg 44
3067 GG Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com

W www.ecorys.nl

Sound analysis, inspiring ideas