Reforming the INDIAN PORTS SECTOR

JUNE 2013

THE WORLD BANK

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CONTENTS

List of Figures

List of Tables

ACKNOWLEDGMENTS

The report “Reforming the Indian Ports Sector” has been prepared by the World Bank South Asia Transport Group and funded by the AusAID-World Bank South Asia Infrastructure for Growth Initiative.

The task team comprised Mr. Binyam Reja, Mr. Arnab Bandyopadhyay, Mr. Shigeyuki Sakaki and Ms. Rashi Grover. The team acknowledges the expert inputs received from Mr. Paul Amos and the useful insights and guidance from Mr. Ben L. Eijberjen, Ms. Kala Gonzalez Carvajal and Mr. Bernard Aritua that greatly helped improve the draft. The two international consultants engaged for the study were ECORYS Netherlands and Policy Research Corporation, Netherlands. The task team would like to acknowledge the timely support, help and guidance of the South Asia Transport Sector Management and Transport Sector Anchor providing insight and direction on issues as needed. Valuable and expert contributions were received from Mr. Rajesh B. S. Dongol and Ms. Ritu Sharma who provided excellent administrative, editorial and logistic support during the preparation and finalization of this report. The task team also wishes to acknowledge the authors of the various reports that have been referred to in the study.

The work done by the international consultants engaged for this study and the study’s recommendations were shared with key stakeholders. Comments and views expressed by the stakeholders, key Government officials and private sector representatives during the data collection and interview phase are gratefully acknowledged by the team.

The pictures on the cover and back pages are courtesy the Adani Ports photo collection, and the team gratefully acknowledges the same.

EXECUTIVE SUMMARY

Background

Maritime transport carries more than nine-tenths of tonnage of world international trade. The international shipping industry, competitive and dominated by private companies, has delivered to trading nations increasing capacity, generally improving service levels, and declining unit shipping costs. To access and extract the maximum benefit from this vital transport resource each nation depends on the performance of its ports sector; not only on the capacity, quality and price of port services but also their connectivity to hinterlands and to the industrial and consumer markets they serve.

Ports in India, as in many countries, face continued pressure to handle higher throughput, adapt to larger and more specialized vessels, improve productivity, and adopt new technology and information systems that can meet the increasingly demanding service standards expected by shippers, logistics companies and shipping operators. As in all economic sectors, the success of ports depends not only on investment in its infrastructure but on supportive policy and regulatory structures, and on the effectiveness of the institutions that deliver services to customers.

This Report contains an analysis of the current status of India's ports sector, identifies potential constraints on the ability of ports to meet India's future development needs, and sets out a recommended policy framework to increase the efficiency and effectiveness of the sector. It abstracts from a number of more detailed analyses and Reports commissioned by the Bank and provided as annexes to the main Report.

The Record so Far

In the fifteen years to 2011, the value of India's international merchandise trade grew at an average annual rate of 15.3 percent, (imports by 16.3 percent/year and exports by 14.1 percent/year). This strong trade growth has both contributed to and reflects India's record of economic growth, second only to China among the major developing nations of Asia. Moreover, India's share of world merchandise trade has doubled since the year 2000, but it has been from a very low base, and is even now only about 1.4 percent of world exports and 2.1 percent of imports. There is clear scope and opportunity for India to increase both its volume and share of world trade.

India has nearly 200 ports of which 12 are classified as Major Ports[1] which fall under the jurisdiction of the Government of India (GoI) Ministry of Shipping (MOS) and 187 are non-

1 Kolkata (including the downriver Haldia complex), Paradip, Visakhapatnam, Ennore, Chennai, V.O. Chidambaranar, Cochin, New Mangalore, Mormugao, Mumbai, JNTP (a container port also at Mumbai) and Kandla.

Major Ports under the jurisdiction of individual maritime state governments. India's ports have met the rapidly expanding traffic task implicit in the nation's trade growth, handling 882 million tons of cargo in 2011 compared to 290 million tons in 1999. International cargo has grown at a much faster rate (12.4 percent/year) than domestic cargo (3.3 percent/year). Most of India's important ports experienced cargo increases but within the overall expansion, the non-Major Ports increased their share of traffic tonnage from 13 percent to 36 percent, growing at a rate three times that of the Major Ports. Collectively the 40 non-Major Ports in Gujarat in particular and the 12 in Andhra Pradesh have expanded and diversified traffic.

Commodity Trends

Measured in major commodity groups, containers have quadrupled as a proportion of tonnage from 4 percent to 16 percent since 1992, while coal tonnage increased from 13 to 15 percent of the total. By contrast, Petroleum, Oil and Lubricants (POL) tonnage declined from 41 percent to 37 percent of total tonnage, iron ore from 19 percent to 15 percent and all other cargo from 23 percent to 17 percent. The strong trend to containerization of general freight in India reflects the strengthening integration of Indian supply chains with the global container transport networks.

Growth and Capacity Outlook

The Maritime Agenda 2010-20 of the MOS foresees an average growth rate of 11 percent/year for maritime cargo in India in the period 2010-2020, with highest annual growth rates anticipated for coal (18 percent/year), containers (15 percent/year) and other cargo (13 percent/year). In terms of traffic distribution between ports the non-Major Ports are expected to surpass the Major Ports in aggregate tonnage handled, before the end of the decade.

The analysis presented in the Report suggests that if the capacity of India's ports is developed as planned they will be capable of handling expected merchandise trade volumes at least in the medium-term (to 2020). However, throughput is currently lagging, as per the 2010 MOS projections: in 2011, total traffic tonnage was 15 percent below forecast. But capacity enhancement is also lagging. Despite the current slowdown, MOS still expects volumes to grow by a factor of some 2.5 between 2010 and 2020. This is a plausible projection, and if it is to be met it will be critical to overcome evident implementation problems in port and terminal development plans.

Performance

Over the last twenty years, the Major Ports have significantly improved their performance: average vessel turnaround time has been reduced by around 80 percent and berth productivity (average ship-berth-day output in tons) has more than tripled. Contributory factors include more bulk cargoes, containerization of non-bulk cargoes, a greater

reliance on mechanized systems, and improved management, including greater private sector participation in terminal operations.

Pre-berthing delay has deteriorated marginally, partly reflecting the relatively high average berth occupancy, the proportion of time that a berth is occupied by vessels, at Major Ports (though there is wide variation between ports). At many of India's Major Ports, the berth occupancy ratios realized for certain types of berth are beyond the levels considered optimum, and thereby lead to 'queuing' and sometimes congestion. More effective use of scheduling agreements (the booking of berths for particular periods) can increase levels of non-congested utilization.

There is a wide variation in performance between India's ports but JNPT (Mumbai) scores well on most performance criteria. However, berth and crane handling rates (moves/hour) at India's ports are all generally lower than other ports in the region such as Singapore, Port Rashid/Jebel Ali, Khor Fakkan and Salalah, though heavy transshipment operations at the comparator ports contribute to elevating their performance statistics. Nevertheless, Indian ports have headroom for improvement, which would both boost return on existing investment and (for a period) defer the need for investment in additional infrastructure. But there is no doubt that even with higher berth productivity more investment in container terminal capacity, in particular, will still be required.

Future Challenges to the Sector

Despite a very creditable record of achievement in increasing both volume and performance over the last twenty years, India's Port sector is confronted with many challenges to its ability to meet future demand and to meet competition from larger and more efficient ports in the region. Five main challenges are highlighted in the Report: ability to handle the largest vessels; transport infrastructure linkages to ports; private sector participation; port governance structures; and the legal and regulatory framework in which ports operate.

Capability to Handle Large Vessels

Vessel drafts[2] that can be accommodated by India's Major Ports are generally limited; none can presently receive fully laden Capesize dry bulk ships (the largest ore and coal carriers) of more than 180,000 dwt, large tankers, or container ships of over 8,000 TEU[3] carrying capacity. The limitation of draft restricts the opportunities for India's shippers to gain the transport cost advantages of direct services by the largest vessels. Partly for this reason, India's ports are facing increased competition for direct shipping calls from major transshipment ports in the region which can berth larger vessels. Transshipped Indian traffic is then consigned to/from Indian ports by smaller vessels, adding a transport cost penalty.

2 The draft of a ship's hull is the vertical distance between the waterline and the bottom of the hull.
3 Twenty-foot equivalent units. A forty foot container is therefore counted as two units.

A fully laden Capesize vessel has a draft of 16 to18 meters. Only Chennai (17.4 meters) and Visakhapatnam (16.5 meters) have drafts that come near this at their dry bulk berths. All other ports have at best just enough draft to receive Panamax vessels (80,000 dwt with a draft of 12 meters when fully loaded). In the liquid bulk sector the situation is slightly better: Paradip (at its Single Point Mooring – or SPM), Cochin and Kandla offer drafts over 20 meters and Visakhapatnam and Chennai drafts of 17.2 meters and 17.4 meters respectively[4].

The draft issue is particularly serious for container trades. No major port in India is presently capable of receiving container ships capable of carrying more than 8,000 TEU. The implication of not having the capability to handle larger container ships could be that much of India's future containerized trade might not take place by direct service but instead be carried on transshipment routes using smaller vessels out of ports that can handle the largest vessels. For example, the new South Container Terminal in Colombo (a day closer than Mumbai or Chennai to international shipping routes) is scheduled to start operating in 2014 with 2.4 million TEUs of container throughput capacity and the ability to handle both New Panamax and Triple E super container vessels[5]. Not only in Sri Lanka but ports in the United Arab Emirates (UAE) have deeper drafts for container ships and will compete for the direct container service traffic at India's ports, which may add both time and international transport costs for India's trading enterprises.

Hinterland Connectivity

Good connectivity to/from the ports is an essential complement to the growing need for port capacity. Hinterland traffic to and from India's Major Ports is mainly carried by road when measured by tons (though probably more than half is carried by rail when measured by ton-km). Haldia, Paradip and Visakhapatnam carry more than half of tons by rail and V.O. Chidambaranar, Cochin and Mumbai less than 10 percent. A small amount of port-connecting transport is carried by inland waterways (mainly shipments of iron ore in Goa) and there is significant pipeline transport of POL traffic.

Road transport has greatest competitive advantage for small consignments over shorter distances and for more time-sensitive consignments, particularly in corridors where rail lines are congested. Railways are more competitive over most distances for large consignments of bulk raw materials (coal, ores and minerals, crude oil, sand and gravel, grains, etc.), over longer distances for semi-processed industrial goods (oil products, chemicals, iron and steel, cement, fertilizer) and for sufficiently dense flows of containers to/from ports.

4 JNPT has made a design for dredging up to 17 m draft in 2 phases, of which the first phase of up to 15 m is being implemented and the second phase to achieve 17 m draft is to be tendered in 2014. Mumbai Port will also get the benefit of this draft in their channel. This would enable ships of 50,000 to 80,000 TEUs capacity to be received directly by JNPT by 2018.

5 New Panamax vessels have capacity up to about 12,500 TEU, Triple E vessels up to about 18,000 TEU.

Roads. The low capacity and poor quality of roads in many corridors, low truck utilization (on average covering only 300 km/day) and delays at state borders add to hinterland transport costs. The Government of India, through the National Highways Authority of India (NHAI) and its flagship program, the National Highways Development Project (NHDP), is working to improve the Indian road network. The program includes specific port connectivity projects. Likewise, state governments are investing significant amounts in the roads sector, including port connectivity projects. However, there is no certainty that road infrastructure capacity growth will match traffic growth and road connections to ports can be expected to become more congested.

Railways. Railway sector productivity has increased substantially in recent years: since 1995, the average freight train load has improved by 40 percent, and locomotive and wagon productivity increased significantly. However, traffic congestion on main lines has become a serious traffic constraint. India's railways have been losing market share to road haulage due partly to insufficient physical capacity and partly to poor service quality, exacerbated by the need to fit freight train movements into a busy passenger service schedule. The key corridors of the Golden Quadrilateral connecting Delhi, Mumbai, Chennai and Kolkata and associated lines form 16 percent of the railway network's route length but carry more than 60 percent of its freight task. The government has therefore approved a comprehensive long-term plan to build Dedicated Freight-only Lines (DFCs), in parallel with the existing Golden Quadrilateral routes. The DFCs will allow trains to carry more freight, faster, more reliably and at lower cost, and those ports with good connections to DFCs will be at a significant advantage in terms of hinterland access. Construction of the Eastern DFC has commenced and construction of a Western DFC is expected to start soon.

Coastal shipping. There is scope for coastal shipping to contribute more to domestic distribution of international cargo, but progress is hindered by policy constraints, operational flaws, regulatory bottlenecks and short-sighted customs procedures, each detailed in the Report and Annexes. In particular, the current extension to coastal trades of the stringent regulations on vessel standards and manning levels that apply to international shipping damages the competitiveness and economic viability of coastal shipping. Major Ports also lack specialized berthing facilities for coastal vessels and both Major and Non-Major Ports have deficiencies in cargo-handling facilities. The GoI accepts the potential importance of a well-run coastal shipping system and has initiated certain improvements but a comprehensive policy to reinvigorate the industry, based on the specific needs of coastal shipping rather than ocean-going trades, is still pending. Unfortunately, it may take at least a decade or more before an agreement is reached on the main aspects of the policy and the first effective results become visible.

Inland Waterways. India has approximately 5,700 kilometers (which includes 500 kilometers of canals) of waterways suitable for mechanized barge traffic. These waterways consist of a number of separated water systems, not a national network,

and Inland Water Transport (IWT) at present handles only 1 percent of India's total inland cargo transport. When efficiently operated with large modern vessels, IWT is a safe, economic, fuel-efficient and environment-friendly form of transport. The main physical limitation on viable IWT on most waterways in India is inadequate navigation infrastructure (deep-draft shipping channels, river training and regulation, locks and sluices, navigation aids, loading and unloading points and other facilities). Most of India's existing navigable waterways cannot provide all year access to vessels of more than about 300-500 dwt, and provide access to vessels mostly less than that. Larger vessels would be required to deliver a long-term competitive advantage over other modes, particularly compared to railways that carry most bulk traffic in India. In those waterway corridors where market prospects are promising IWT could contribute more to port-hinterland connectivity if the economic case for the substantial public investment required could be sustained. The government's anticipated two-thirds private sector contribution to India's waterway development program does not seem feasible[6]. However, a series of supportive short- and long-term measures and proposals by GoI may be helpful in encouraging the barging industry to respond to market opportunities if adequate navigation conditions can be guaranteed the IWAI.

Corridor development. Ports are increasingly viewed internationally as nodes in multi-modal transport networks, rather than independent transport assets, so hinterland connections to industrial and development areas are essential in the development and marketing of ports. The government has in recent years promoted good transport connections between ports and their hinterlands, for example by its 'corridor initiatives'. The best example of an integrated freight corridor in India is the Delhi-Mumbai Industrial Corridor (DMIC). Developing the transport corridors between the ports around Mumbai and Gujarat and the major production and consumption centers in Rajasthan and around Delhi are a central element of the project. Integrated with industrial and regional policy, the DFC rail program may provide other opportunities for growth corridors or poles associated, based on improved port access.

Private Participation

The GoI has been encouraging private sector participation in ports since 1996 especially by awarding Public Private Partnership (PPP) concessions. They have been mainly on a Build, Operate and Transfer (BOT) basis with revenue sharing formulas, and include the construction of berths for cargo handling, container terminals, cargo handling equipment, warehousing and the construction of dry docks and ship repair facilities.

The MOS Maritime Agenda identified some 352 new investment projects in Major Ports for the period 2010-2020 with an estimated cost of Rs. 109,449 crore. Given the limited internal resources of ports and expected constraints on public budgetary support, the

6 In the main successful IWT regions of the world (China, the USA and the EU) most waterway infrastructure investment is made by the public sector and its rate of cost recovery from users is very low.

private sector is expected by MOS to provide around two-thirds of this capital investment. In the Non-major Ports a total of Rs. 167,931 crore is planned, of which the Government hopes that 96 percent will come from the private sector. India's trading success in the next 10-20 years will depend heavily on its success in attracting private sector participation and investment to ports.

Certainly, PPPs are being increasingly sought in both Major and non-major Ports and some of the leading terminal operating companies in the world have invested in Indian Ports. Nevertheless, progress in implementing PPPs so far has generally been sluggish, reflecting both perceived risk and tortuous process. Key risks perceived by private investors have been the role of the Tariff Authority for Major Ports (TAMP) in price setting, uncertainty that private investors can enjoy economic control of the facilities that they provide, and sometimes insufficient periods of exclusivity against the possible provision of competing infrastructure. In terms of process, projects have fallen foul of bureaucratic delays, uncertainty and indecision, statutory clearance problems, local community opposition, site squatting by concession holders and the opposition of small scale proximate port facilities.

PPP project frameworks must of course protect the users and stakeholders of ports, and also be seen to be implemented, in both substance and process, in the public interest. But this depends on clarity of principles and simplification of process. The Report suggests possible ways of improving the enabling framework for PPPs. The state of Gujarat has also demonstrated more success in bringing together public and private resources for the development of ports and related infrastructure facilities, convincing other state governments to use PPP for their port developments.

Even if the impediments to private sector investment are resolved it remains uncertain how fully the central government can rely on the massive level of investment that the private sector is expected to fund. It would be prudent to examine how further internal or public finance contributions might be sourced if private sector contributions do not materialize at the required rate or levels.

Ports Policy Framework

A reinvigorated policy framework for its ports sector would better serve India's trade needs in the changing market environment. Quite apart from the imperative of attracting private investment into port infrastructure, the changing features of global trading patterns and port requirements include: the globalization of manufacturing; demand by users for 'seamless' supply chains; increasing vertical and horizontal integration by transport and logistics companies; increasing vessel sizes driving the emergence of hub and spoke service patterns; more inter-port competition internationally; clustering of ports and associated industrial and logistics activities; technological improvements in vessel handling; and much more rigorous capture and use of information to manage freight and logistics efficiently.

Port policies that respond to these challenges must be embedded in an integrated national transport strategy coherent with, for example, road, rail and waterway systems and well-selected dry ports and Inland Container Depots (ICDs). But they must also seek a more effective balance between the role of the market and the role of regulation, the contributions of public and private sectors, and the creation of more commercially effective public port institutions.

The main elements of port reform strategies worldwide are 'liberalization and deregulation', 'corporatization' and 'private sector participation'. Liberalization and deregulation refer to the reform or partial elimination of governmental regulations that distort markets and hamper market entry, and so enable private companies to operate and compete in an area traditionally reserved for public sector monopolies. Corporatization involves transformation of a public port department or authority into the legal form of a commercial corporation (either under companies or a state-owned enterprises law). Private sector participation includes either the transfer of the ownership or operating rights of existing port assets from the public to the private sector, or participation in provision and/or operation of new assets.

The most prevalent mode of port governance reform internationally has been the corporatized 'Landlord Model', in which the public sector remains the owner of a port corporation which is a commercially-structured enterprise that manages basic port infrastructure and common areas, services and facilities. Cargo handling operations (and other activities like pilotage, towage etc.) are then contracted, leased or concessioned to the private sector. The Landlord is typically responsible for regulating port activities within that port but is not responsible for economic regulation of ports more broadly (see below). The Port Reform Toolkit published by the Public-Private Infrastructure Advisory Facility (PPIAF) and The World Bank in 2008 provides advice on the concept of the corporatized Landlord Model and more particularly how it can be implemented, including resolution of labor issues.

The corporatized Landlord Model is now a mainstream port governance structure worldwide and fast becoming the dominant port model in larger and medium sized ports. This is not surprising given that in nearly all productive industries, corporations have proven historically to be the most successful formula so far devised by modern economies for organizing industrial enterprises in competitive markets, even where the companies remain owned by the state.

In the early 1990s, GoI policy favored the corporatization of the Major Ports and transformation of their role to the Landlord Model, but even now Ennore Ltd. is the only one operating as a corporatized Landlord port. The current boards of the Major Ports generally oppose plans for corporatization and there are currently no plans for creating another port corporation in a Major Port. However, Indian ports will never be in a position to deliver world-class performance unless they adopt the world's best-performing

institutional structures. Of the different international experiences reviewed, the Australian approach is considered as having particular merit relevant to the Indian situation, and is recommended for further consideration by Indian authorities.

Port Economic Regulation and the Role of TAMP

The TAMP was established in 1997 under the auspices of MOS to determine both vessel-related and cargo-related tariff schedules at Major Ports. Its aim was to safeguard the interests of port users while providing a fair return to port operators. The Report discusses specific issues and criticisms of how TAMP has carried out what is clearly a very complex regulatory balancing act. But they boil down to the finding that TAMP regulation has almost certainly inhibited the development of Major Ports, particularly in regard to private sector participation, while encouraging the much more rapid development of the non-Major Ports which are not subject to its authority.

This is clearly a market distortion but its solution is less likely to be found in devising better formulae or data for regulatory tariff determination, but rather on questioning why an external tariff setting authority is required at all. Most major public ports in the world set their own tariffs in line with commercial and market aims, and any pricing regulation is by way of review or approval, not determination by a third party. 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. There will be specific circumstances of excessive local market power at Indian ports with regard to specific commodities or locations and these situations require a means of remedy if abused. But the notion that port users in India in general require blanket protection from monopoly power is not overly persuasive in a country served by nearly 200 ports.

Any shift in the role of the public sector, from port services provider to owner of corporatized landlord port would imply the need to consider what form and degree of regulation should be adopted to protect port users' and public interests. But its main aims should be competition-oriented: ensure that industry entry is not unreasonably restricted; promote conditions for fair competition among competing operators in a port or between ports; oversee mergers; and proscribe anticompetitive practices or abuses of market power.

Information Technology

Information Technology (IT) underpinning information exchange is essential to port efficiency and competitiveness in virtually all of its activities: movement of ships in the port; berth management; corporate and operational management; cargo handling; transshipment to other modes; customs; phyto-sanitary procedures; security and many others. MOS has adopted a series of important initiatives to improve the use of IT. A noteworthy component is the development of a Port Community System (PCS) for both

Major and Non-major Ports designed to integrate the electronic flow of information between all the stakeholders, save time and money, offer gains in tracking of shipments and provide service visibility. The creation of an integrated port management system by the Gujarat Maritime Board and the development of the IT Strategy and Programme Management by JNPT have also set examples that all Indian ports could usefully follow.

GoI Ports Policy Initiatives

Recognizing the challenges ahead and the deficiencies in existing arrangements, the GoI has sought to promote sector reform in a number of respects.

The Draft Indian Ports Bill 2011 is a comprehensive Bill aimed, inter alia, at greater liberalization of the port market, corporatization of Major Ports (either as government companies or public limited company) with better qualified boards, and regulatory oversight only of maximum tariffs rather than actually setting tariff schedules as happens now. The Bill would also permit extension in the duration of a private concession for major infrastructure beyond the present 30-year period and up to 99 years, providing a greater incentive to invest and innovate. Should the Bill be enacted it would be a major step in port reform, though it has perhaps missed the opportunity to cover other important aspects such as the setting up of a regulatory framework for safety, security and environmental standards.

The Draft Ports Regulatory Authority Bill, 2011 would enable creation of Regulatory Authorities to regulate tariffs for port facilities and services, and monitor the performance standards. The GoI would create a Major Ports Regulatory Authority and each maritime state government a State Regulatory Authority overseeing its own ports. Regulatory authorities would be empowered to formulate and notify tariff guidelines, set down the performance norms and standards for port operators (public and private), and advise government on issues such as the promotion of investment, efficiency and competition. A 'Forum of Regulators' consisting of the Chairs of the Major Ports Regulatory Authority and the State Ports Regulatory Authorities would discuss and evolve suitable (and presumably harmonized) approaches to the framing of tariff guidelines and performance standards. If enacted, the Bill might create a platform for improved economic regulation, but many of its provisions and its contemplated modus operandi appear complex and bureaucratic. Depending on how the regulatory authorities (individually and collectively through the forum) choose to use their powers, it could also lead to an overly intrusive and prescriptive regulatory regime bearing on both Major and Non-major Ports; in other words, a playing field leveled by saddling Non-major Ports with the same handicaps as Major Ports. In light of states' opposition, the Bill has been stalled, perhaps permanently. If so, it is a good time to revisit the issue to seek a simpler regulatory regime and a concept of the regulator as umpire, not player.

Land Policy for Major Ports, 2010 and Directives for Land Management by Major Ports, 2012. The policy is to encourage the best use of port land, which must be set out in a

port land-use plan approved by the port board. Land within the 'customs-bound' area can be allocated by license to activities directly related to sea trade and security, and land outside the customs-bound area can be allocated for other uses (but with a preference for port-related activities). The policy contains various safeguards to ensure legitimate allocation of port lands by competitive tender, with a reserve benchmark price based on notional market value. The draft Directives for Land Management by Major Ports are mainly further clarifications of the policy application. The GoI hopes the policy will improve the management and use of land at ports while ensuring legitimate allocation and pricing. It will be crucial in establishing the land-use plan, and awarding time-bound allocations to users, to ensure that sufficient land will be available, when it is needed, for the substantial increases in capacity required.

Recommendations

In summary, to facilitate trade and economic growth India needs to develop additional port capacity, invest in large vessel capability and continue seeking improvements in the efficiency and competitiveness of port and terminal operations and their connectivity with hinterlands. To pursue these objectives the report recommends that:

Sector Governance

i. The ports sector be liberalized to encourage competition between ports and, where feasible, between terminals within ports.

ii. As far as possible, public policies and regulations be harmonized to create a level playing field for Major and Non-major Ports so that the success of each port in attracting investment and traffic will depend upon its comparative market advantages and the success of its owners and managers in exploiting those advantages.

Corporate Governance

i. Existing port authorities be corporatized within a legal framework (e.g. The Companies Act, 1956) and with corporate charters that establish a clear commercial orientation while recognizing their public ownership and responsibilities.

ii. The corporate governance and management of such entities be underpinned by independent and professionally-qualified boards of directors, merit-based selection of managers, management accountability based on formal business plans, commercial management structures, greater pricing freedom, use of commercial accounting and auditing standards, and transparency of operational and financial performance.

Ports Business Model

i. Such port corporations progressively adopt the Landlord Model, adapted to their own circumstances and port development plans.

ii. They encourage private sector investment and participation in the port terminal's activities by lease and/or concession, and also by contracting out some of the port's own common and support services wherever this is expected to improve efficiency and competiveness.

iii. They give high priority to investment in state-of-the-art information technology and exchange of information so as to connect all the businesses and other stakeholders using, operating in or affected by the port, and facilitate the smooth and secure flow of cargo through ports and along the supply chain.

Private Sector Participation

i. By means identified in the Report and others, processes be streamlined to expedite the implementation of PPP projects and reduce the incidence of unforeseeable or unquantifiable regulatory risks.

ii. Tariffs of private terminal operations be normally governed by the provisions of concession agreements allowing that within those provisions flexible rates can be adopted to react to inter-port and intra-port competition.

Economic Regulation

i. An independent Ports regulatory body be established to promote and protect fair competition, between ports and between competing terminals within ports.

ii. Regulatory determination of tariffs by TAMP be discontinued and the new or transformed regulatory body empowered to review tariff schedules set by ports only against, for example, anti-competitive or market-power abuse criteria.

Hinterland Connectivity

i. Hinterland connectivity be improved in line with guidelines set out in Maritime Agenda 2020 for Major Ports including double-track connectivity to trunk rail network (and to DFCs where feasible) and minimum four-lane highway connections.

ii. Opportunities be sought for expanding the role of coastal shipping and inland waterway transport to relieve pressure of hinterland connectivity from road and rail systems.

iii. National and regional transport plans make provision for the integration of port investment with hinterland transport upgrading, and exploiting those axes to create industrial development corridors and growth poles.

BACKGROUND OF THE REPORT

The international ports sector is facing significant changes in economic and social conditions. These include growing inter-relationships between national economies as a result of increasing trade and the growing trend toward globalization of production. Major shifts in technology are also taking place in the ocean shipping sector, the most obvious of which are the increasing bulking of cargoes and the containerization of international trade. Ports are now competing with each other on a regional scale in terms of port efficiency, cargo handling costs, ability to handle large vessels and provision of integrated logistics services. Port authorities worldwide are also increasingly involving the private sector in port operations to make ports more effective.

Given India's ever increasing merchandise trade, it is of great importance for Indian ports to respond to these challenges and explore further opportunities so that Indian ports can continue to play their key role in the country's economic development. In this context, the World Bank commissioned an International Consultant in 2011 to carry out a study on Indian Ports. This included the following components:

- Presenting international case studies regarding four policy areas: (1) the role of government in the development of national port networks; (2) the role of national and provincial governments in the development of road and rail freight corridors; (3) the role of government in ensuring competition in the provision of port services taking into account the increasingly dominant role of the private sector in operations, and the responsibility of the public sector in the collection of rents and fees; and (4) the role of urban governments in the redevelopment of older port facilities.
- Updating of the World Bank's 2007 draft report on the Indian Port Sector.
- Preparation of two policy papers on: (1) port governance and (2) port stakeholder coordination, to explore options for the future development of India's port system.

This set of reports also provided inputs for India's National Transport Development Policy Committee (chaired by Dr. Rakesh Mohan):

- Policies and 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.

The World Bank subsequently hired an International Consultant in 2013 to prepare a 'Consolidated Report on the Indian port sector' after reviewing each of the individual reports prepared in 2011/12 and consolidating the key findings and policy recommendations.

This report is intended as a general reference for professionals and stakeholders involved in the ports sector, and has **three sections:**

- Section I summarizes the present situation of India's Major and state-based Non-major ports in terms of trade growth, port demand and capacity needs, port capacity utilization and possible shortfalls in capacity performance, hinterland connectivity and attracting private investment.
- Section II identifies the key constraints on growth of the Indian ports sector. These constraints include issues in port governance, in the economic regulation of ports, key policies and legislations, issues relating to tariff setting for Major Port Trusts and Private Terminals. It also includes key lessons from international case studies which show how similar countries have tackled these challenges.
- Section III makes a number of recommendations with respect to port policies, the Port Authorities and the private sector to ease some of the above constraints.

The Executive Summary captures the key findings and policy recommendations.

The following **annexes** have been included in this report:

Annex 1: Forecast vs. realization by major commodities and regions

Annex 2: Details of proposed PPP projects

Annex 3: Port privatization in Gujarat with examples of APSEZ in Mundra and APMT in Pipavav

Annex 4: Port governance models in selected countries

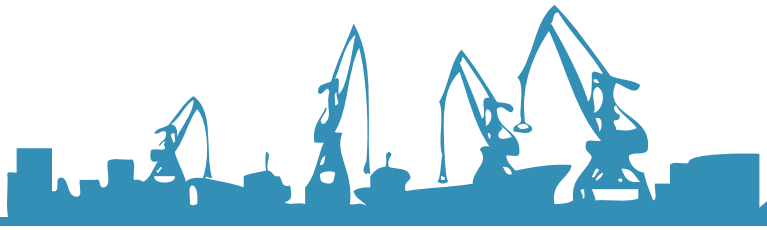
Annex 5: The concept of corporatization and issues for India

Annex 6: Draft guidelines for tariff setting for Major Port Trusts and Private Terminals – 2013

Annex 7: The development of a national port network in Turkey

Annex 8: The Maputo development corridor

Annex 9: Ensuring competition in the provision of port services



SECTION **ONE**

THE PRESENT SITUATION OF INDIA'S MAJOR AND NON-MAJOR PORTS

THE PRESENT SITUATION OF INDIA'S MAJOR AND NON-MAJOR PORTS

This section provides a picture of the present situation with regard to India's Major and Non-major ports. It discusses broadly the growth in merchandise trade in India and its share in world trade; cargo volumes and capacity growth in India's ports and the extent to which projections have been met; and finally the performance of Major and Non-major ports in terms of key productivity indicators.

1.1. Trade Growth and Port Development

1.1.1. The 'Merchandise Trade'

In the years 1996-2011 India's merchandise trade has grown strongly, accelerating since 2002 both for exports and imports. In 2002, the total value of imports stood at USD 57 billion equivalent and the exports at USD 49 billion. In 2011 they had reached USD 392 billion in imports and USD 303 billion in exports.

Table 1 shows the Compound Annual Growth Rate (CAGR) in value of India's total merchandise trade for the entire period between 1995 and 2011 and for three successive parts of that period. The slower growth in the period 2006-2011 is mainly due to a decline in trade in 2009 following the global financial crisis. In 2010 and 2011 growth seems to have returned. Table 1 also shows that throughout the period 1995-2011 imports have grown at a slightly higher rate than exports; and at quite a higher rate in the period 2002-2006.

The overall conclusion is that *Indian merchandise trade growth has been rather strong, particularly between 2002 and 2006, and that after the decline in 2009, growth has again been restored in 2010 and 2011 but at lower CAGRs than in 2002-2006*[7].

TABLE 1: CAGR of value of exports, imports and total merchandise trade in India

Period	Imports	Exports	Total
1995/2002	7.2%	6.8%	7.0%
2002/2006	33.3%	25.6%	29.9%
2006/2011	14.1%	15.9%	16.3%
1995/2011	16.3%	14.1%	15.3%

Source: Based on International Trade Statistics, WTO, Geneva, 2011.

7 Source: Indian Ports Association (IPA).

1.1.2. India's Economic Development

The Indian economy has grown faster than other major developing economies of Asia with the exception of China (see Table 2). *Since trade volumes are linked to GDP growth, this explains, to some extent, the recent growth in Indian trade volumes.*

Comparing India's share in the total global merchandise trade also provides insights into the developing trading role of India. Table 3 shows the shares in global merchandise trade of selected countries or groups of countries. Whereas Europe and North America have seen their share in both exports and imports decline, *India, China and the CIS countries have a growing share in the world merchandise trade*.

TABLE 2: Population, GDP and GNI growth for selected Asian countries and global groups of countries (2010)

Country	Population (billion)		GDP (current US$ trillion)		GNI per capita* (current US$)		GDP growth (annual %)	
	2005	2011	2005	2011	2005	2011	2005	2011
India	1.1	1.2	0.8	1.8	750	1,410	9.3	7
China	1.3	1.3	2.3	7.3	1,760	4,940	11.3	9
Indonesia	0.2	0.2	0.3	0.8	1,220	2,940	5.7	6
Upper Middle income	3.1	2.5	9.5	18.24	1,942	6,563	7.3	6.6
Lower middle income	2.5	2.5	2.1	4.8	914	1,764	6.9	5.7
Low income	2.4	0.8	0.2	0.5	339	569	6.1	6

* GNI per capita is calculated as per the Atlas method.
Source: World Development Indicators.

TABLE 3: World merchandise trade shares (2000-2010, %)

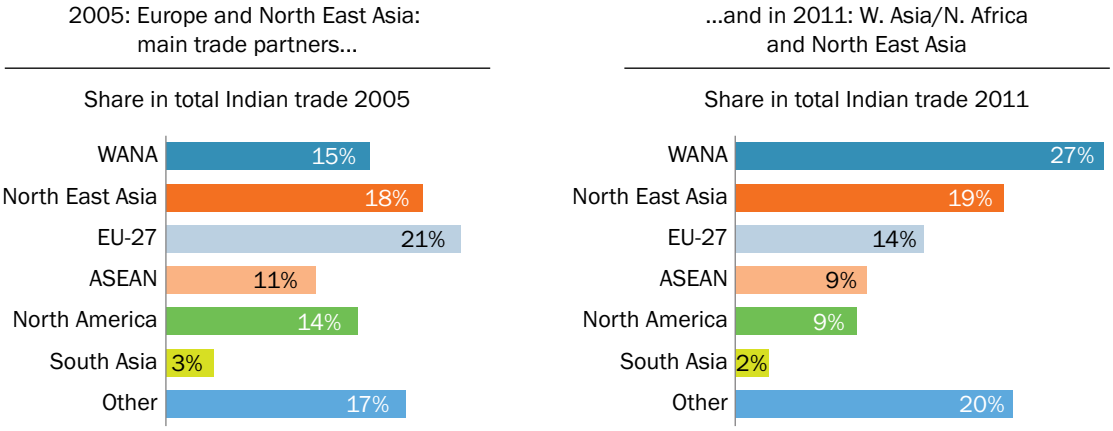
Exports	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
China	3.9	4.3	5.0	5.8	6.4	7.3	8.0	8.7	8.9	9.6	10.4
CIS countries	2.3	2.3	2.4	2.6	2.9	3.3	3.6	3.7	4.4	3.6	3.9
India	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.4
Europe	40.8	42.9	43.7	44.6	43.9	41.9	41.1	41.4	40.1	40.1	37.0
US & Canada	16.4	16.0	14.6	13.1	12.3	12.0	11.7	11.2	10.8	11.0	10.9
Imports	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
China	3.3	3.8	4.4	5.2	5.9	6.1	6.4	6.7	6.9	7.9	9.1
CIS countries	1.2	1.5	1.5	1.7	1.8	2.0	2.2	2.6	3.0	2.6	2.7
India	0.8	0.8	0.8	0.9	1.0	1.3	1.4	1.6	1.9	2.0	2.1
Europe	41.3	42.2	42.6	44.0	43.5	42.1	42.1	42.7	41.6	40.7	38.0
US & Canada	22.4	21.7	21.2	19.7	18.9	18.9	18.3	16.9	15.7	15.2	15.4

Source: International Trade Statistics, WTO, Geneva, 2011.

However, although having doubled, the share of India in global merchandise trade remains relatively small at 1.4 percent of exports and 2.1 percent of imports as its growth started from a low level. *There is still ample opportunity for India to further increase its share.*

India mainly trades with the main trade blocks (EU, ASEAN, China and USA/Canada) and with oil producing countries (West Asia/North Africa or WANA countries). Figure 1 shows that in 2005 India's main trading partners were the EU-27 and North East Asia. *In 2011, the WANA countries became the main trading partners.* This figure also shows that *Indian trade with the other countries in South Asia is relatively low, as compared to its total trade.* The share of South Asian trade even declined in 2011 as compared to 2005.

FIGURE 1: Indian trade shares by major partners in 2005 and 2011



Other includes unspecified countries

Note: In these trade figures the value of all goods and services is included.
Source: Ministry of Commerce & Industry, Department of Commerce, Export-Import Data Bank.

1.1.3. Cargo Volumes in India's Ports

Reflecting the growth in trade, the total cargo volume at India´s ports has more than tripled from 290 million tons in 1999 to 882 million tons in 2011[8]. In the same period, the share of the Major Ports decreased from 87 percent to 64 percent, indicating that the Non-major Ports have grown much faster than the Major Ports.
The CAGR of overall port cargo volume in this period was 10.6 percent, but it was only 7.7 percent for the Major Ports compared to 21.2 percent for the Non-major Ports (Table 4). *The conclusion is that both Major and Non-major Ports have witnessed significant trade growth, with the Non-Major ports taking a conspicuous lead over the Major Ports.*

8 Volumes stabilized in 2012, according to the Indian Ports Association (IPA), at about 885 million tons (only 0.3% over FY11).

TABLE 4: Cargo volume in major ports versus non-major ports, 1999-2011 (in million tons)

Year	Total volume	Major ports	Non-major ports	Share of major ports
1999	290	252	38	87%
2000	334	272	62	81%
2001	368	281	87	76%
2002	383	288	95	75%
2003	422	314	108	74%
2004	466	345	121	74%
2005	522	384	138	74%
2006	604	424	180	70%
2007	686	464	222	68%
2009	768	531	238	69%
2010	850	561	289	66%
2011	882	568	315	64%
CAGR 99/11	10.6%	7.7%	21.2%	

Source: Indian Ports Association statistics.

Table 5 shows the tonnage growth to and from international destinations versus those served by domestic shipping. International cargo has grown at a much faster pace than domestic cargo. The share of international cargo in the total volume has grown from 69 percent in 2001 to 83 percent in 2011, as the growth of international cargo in terms of volume (12.4 percent) surpassed the rather static domestic volume growth (3.3 percent). *The data shows that India's seaborne trade is increasingly reliant on international trading and proportionately less on domestic trading, though absolute volumes of domestic cargoes are increasing. While the main reason for the shift is clearly the strong international trade growth, the declining market responsiveness of Indian coastal shipping is also a contributing factor.*

TABLE 5: Cargo volumes in India (international versus domestic), 2011 (in million tons)

Year	Total volume	International	Domestic	Share int'l
2001	368	255	113	69%
2002	383	276	107	72%
2003	422	303	119	72%
2004	466	348	118	75%
2005	522	400	122	77%
2006	604	N/A	N/A	N/A
2007	686	N/A	N/A	N/A
2009	768	N/A	N/A	N/A
2010	850	695	155	82%
2011	882	731	151	83%
CAGR 01/11	10.2%	12.4%	3.3%	

Source: Indian Ports Association statistics, Annual Administrative reports of the major ports.

1.2. Demand and Capacity Needs

1.2.1. Evolution in Shares of Different Types of Cargo

It is important to consider the development of different types of cargo because this will impact the ports and the ports policy in terms of required facilities, infrastructure, superstructure and equipment. Table 6 shows the shares of major commodities between 1992 and 2011 for five major commodity groups. Petroleum, Oil and Lubricants (POL) declined from 41 percent to 37 percent of total tonnage, whereas coal increased in share from 13 percent to 15 percent. Iron ore reduced from 19 percent to 15 percent. The share of other commodities, which includes for example fertilizers, but also general and break-bulk cargo, has decreased from 23 percent to 17 percent. The share of containerized tonnage shows a large increase from 4 percent to 16 percent. *The growing share of container tonnages shows there is a strong increase in the containerization of maritime cargo in India. This is an encouraging sign of the increased integration of the Indian supply chains and trade networks to the global container transport networks.*

It may be expected that the share of other commodities that will be unitized will continue to increase, particularly containerized and Roll-on Roll-off (RoRo) throughput. When comparing EU with Indian throughput, for example, unitized cargo is a larger sector in the EU (27 percent in 2005) but the 'other commodities' is a smaller group (7 percent in 2005). The same is bound to happen in India with even stronger growth in containers (which already have a share of 16 percent in 2010-11) and a gradual decline in 'other cargoes'. Also the share of major and minor bulk commodities in India in 2010-11 was comparable to the EU figure. The share of POL in India is 37 percent, compared to 41 percent in the European Union. The share of dry bulk tonnage in the EU is 26 percent, whereas the combined shares of iron and coal in India add up to 30 percent.

1.2.2. Forecast Versus Realization of Cargo Volumes at Major Ports

This report assesses the extent to which the expected increase in Indian cargo volumes can be achieved. Table 7 presents the figures for the base year (2005), the realization (actual performance) in 2011 and the figures forecast for 2015. The figures suggest that the forecast for all-India trade volumes in 2015 could be achieved based on present

TABLE 6: Evolution in the shares of major commodities (all ports between 1992 and 2011, by tons, import and export)

	POL	Containers (tonnage)	Iron ore	Coal	Others
1992	41%	4%	19%	13%	23%
2005	37%	11%	19%	12%	21%
2011	37%	16%	15%	15%	17%

Source: Indian Ports Association statistics.

TABLE 7: Port cargo volumes and expected increase 2005/2015 versus realized increase 2005/2011

Regions	Port clusters	Volume (million tons)			Increase (Multiple)	
		2005 (Base)	2011 (Realization)	2015 Forecast	2005/2011	2005/2015
		(1)	(2)	(1*)		
Eastern	Kolkata	46	47	54	1.0	1.2
	Paradip	30	56	99	1.9	3.3
	Vizag	65	111	126	1.7	1.9
Sub-total		**141**	**214**	**279**	**1.5**	**2.0**
Southern	Chennai/Ennore	54	74	95	1.4	1.8
	Cochin/V.O.C.	31	44	86	1.4	2.8
	Mangalore	37	35	68	0.9	1.8
	Goa	39	65	49	1.7	1.3
Sub-total		**161**	**218**	**298**	**1.4**	**1.9**
Western	Mumbai	80	134	225	1.7	2.8
	Gujarat	139	313	327	2.3	2.4
Sub-total		**219**	**447**	**552**	**2.0**	**2.5**
Grand total		**522**	**882**	**1,129**	**1.7**	**2.2**

(1) World Bank draft Ports Report 2007 (2) Indian Ports Association (IPA) statistics* Forecast.
Note: Actual figures 2005 and 2010-11 do not add up due to rounding.

performance. In terms of regions, the Western region is well on track to grow beyond the forecast of 2015. The Eastern and Southern regions are more or less on track to realize the volumes forecast for 2015. Clusters growing notably faster than foreseen are Goa, Gujarat, Kolkata and Visakhapatnam. Most others are more or less on track, except Paradip, Cochin and Mumbai, which seem to be falling short of reaching the forecast for 2015. Mangalore even saw a decline between 2005 and 2011 from 37 to 35 million tons.

1.2.3. Commodity-Wise Forecast Versus Realization

A detailed analysis of commodity-wise cargo vs. realization across regions yielded the following broad conclusions (details are presented in Annex 1):

- Containers and iron ore have not developed as much as expected, whereas other dry bulk (notably coal) and liquid bulk have in 2012 already developed beyond levels expected for 2015.
- In the Western region, bulk cargo levels are already beyond those projected for 2015. In the container sector the Western region is lagging behind – in particular the Gujarat cluster is far from realizing projected 2015 levels.
- The Eastern region is on track with developments in the container sector, except in Kolkata where levels beyond those projected for 2015 are already achieved in 2012. Dry bulk is developing faster than foreseen, except for iron ore which develops more slowly. Visakhapatnam is already far beyond its projected 2015 levels, particularly for coal. Liquid bulk has been stagnant, but a shift of some 10 million tons was seen from Kolkata to Paradip.

- The Southern region is slightly behind with container traffic development, with the exception of Chennai/Ennore where the projections for 2015 have already been overshot. Dry bulk has developed beyond the 2015 projections; Goa in 2012 is already nearing double the volume foreseen for 2015. In the iron ore sector, both Chennai/Ennore and Mangalore have seen large decreases of volume. Liquid bulk is well on track to reach beyond the 2015 projections. Chennai/Ennore and Cochin/V.O.C. have already reached levels foreseen for 2015.

1.3. Port Capacity Utilization and Possible Shortfalls in Capacity

1.3.1. The Ministry of Shipping Maritime Agenda 2010-2020

The Maritime Agenda 2010-20 of the MOS foresees an average annual growth rate of 11 percent for maritime cargo in India in the period 2010-2020 (see Table 8). Growth is projected to be particularly high for coal, containers and other cargo. It should be noted that the projected volume for 2011-12 was 1,032 million tons, whereas the actual total in 2010-11 stood at only 882 million tons. *Actual growth to date, therefore, is currently slower than anticipated in the Maritime Agenda 2010-20.*

Table 9 shows the projected port volume versus the projected port capacity growth, according to the Maritime Agenda 2010-20. If things remain unchanged (e.g. regarding port regulation) Non-major Ports will probably surpass the Major Ports in their volume and capacity shares before the end of the decade.

The data in Tables 8 and 9 also suggests that planned capacity expansions would be sufficient to keep up with the expected growth. But both actual throughput and capacity enhancement are lagging behind MOS projections.

TABLE 8: Projected growth in key maritime cargo categories (in million tons)

Cargo category	2010-11 Actual	2011-12 Projected	2016-17 Projected	2019-20 Projected	CAGR FY10-17	CAGR FY10-20
POL	334	333	528	660	7%	7%
Iron ore	105	156	228	259	6%	6%
Coal	131	187	476	570	23%	18%
Containers	134	148	384	486	19%	15%
Others	178	208	403	520	15%	13%
Total	**882**	**1,032**	**2,019**	**2,495**	**13%**	**11%**

Source: Actual data: IPA statistics; Source projections: Maritime Agenda 2010-20, MOS.

TABLE 9: Projected volume growth versus capacity growth (in million tons)

	2011-12*			2016-17			2019-20		
	Cargo	Cap.	Util.	Cargo	Cap.	Util.	Cargo	Cap.	Util.
Major Ports	630	741	85%	1032	1328	78%	1215	1460	83%
Non-major Ports	403	499	81%	988	1264	78%	1280	1670	77%
Total	1032	1240	83%	2019	2592	78%	2495	3130	80%

Source: Maritime Agenda 2010-20, MOS.

* The table above shows projections, actuals for 2011-12 are lower (see Table 10).

The big question that remains to be answered is whether capacity expansion will be realized in time to keep up with throughput volume. At present, the Ministry of Shipping expects throughput figures to be somewhat behind expectations, but still expects that overall volumes will grow by a factor of some 2.5 between 2010 and 2020.

Although progress has been made in construction projects and PPP projects, there are serious concerns regarding the overall implementation of capacity expansion compared to the foreseen and required expansions. The National Maritime Development Plan (the predecessor of the Maritime Agenda) has not lived up to expectations and Greenfield port projects in the private sector have suffered from delays during bidding, pre-construction and post-completion stages. The reasons for these delays will be discussed in Section 2. Some problems have also been created by land acquisition and statutory clearances (coastal, forest, pollution and environment). The delays raise the question of how to implement proposals more effectively to realize the required capacity expansions.

1.3.2. Comparison of Port Throughput Volumes and Capacity in Major Ports

The existing and projected capacity of Major Ports is shown in Table 10. Both volume and capacity of Major Ports are expected to more than double in the next decade[9]. For 2012, the Maritime Agenda projections and the actual figures are given. Actual throughput volumes in 2011-12 fell short of projections except for containers, and actual capacity fell short of the projections, except for iron ore capacity. Unfortunately, iron ore is not a commodity sector where capacity is most urgently needed. Capacity shortage is much more urgent in the coal sector, where in FY2012 the throughput volume exceeded nominal capacity.

TABLE 10: Major Ports, existing and projected volume and capacity (in million tons)

	Volume				Capacity			
	2011-12 Existing	2011-12 Projected	2016-17 Projected	2019-20 Projected	2011-12 Existing	2011-12 Projected	2016-17 Projected	2019-20 Projected
POL	179.1	188.6	280.3	329.2	231.3	243.4	372.5	380.5
Iron ore	60.7	97.5	121.1	136.6	83.5	81.4	122.6	125.9
Coal	78.7	97.8	191.2	223.5	68.5	81.7	196.6	217.6
Cont.	120.2	116.4	244.8	279.9	139.4	146.0	313.7	373.7
Others	121.2	129.3	194.1	245.7	180.2	188.9	322.9	361.9
Total	**560.0**	**629.6**	**1031.5**	**1214.8**	**702.9**	**741.4**	**1328.3**	**1459.5**

Source: Actual data: IPA statistics; Source projections: Maritime Agenda 2010-20, MOS.

9 Source: MOS, Maritime Agenda 2010-20.

1.3.3. Comparison of Port Throughput Volumes and Capacity in Non-Major Ports

The throughput figures and capacity estimates of the main cargoes for Non-major Ports are presented in Table 11, while Table 12 gives the total actual and projected throughput volumes per maritime state for 2012, 2017 and 2020. Table 11 shows that actual volumes fall short of the projected volume in FY 2012 for Non-major Ports, except for POL. Table 12 shows that actual volumes fall short of projected volume in the same year for most states. *Overall, the picture for the Non-major Ports is rather similar to that of the Major Ports: volumes are generally developing fast but not as fast as expected.*

1.3.4. Capacity by Main Regions Between Major Ports and Non-Major Ports

Table 13 provides an overview of the distribution of capacity between Major and Non-major Ports for the different maritime states. In West Bengal the Major Ports (Haldia

TABLE 11: Non-major Ports existing and projected volume and capacity (in million tons)

	2011-12 Actual volume	2011-12 Projected volume	2016-17 Projected volume	2019-20 Projected volume
POL	153.6	144.2	248.0	330.5
Iron ore	42.4	59.0	106.8	122.9
Coal	58.2	89.3	284.8	346.4
Containers	20.2	31.1	139.7	206.5
Others	40.4	78.9	208.5	273.8
Total	**314.9**	**402.5**	**987.8**	**1280.1**
Projected capacity		499.0	1264.0	1670.0

Source: Actual data: IPA statistics, Source projections: Maritime Agenda 2010-20, MOS.

TABLE 12: Non-major Ports existing and projected volume per maritime state (in million tons)

	2011-12 Actual volume	2011-12 Projected volume	2016-17 Projected volume	2019-20 Projected volume
Gujarat	231.0	248.0	438.0	565.0
Maharashtra	14.9	30.6	124.3	172.7
Goa	14.6	14.2	14.9	15.4
Karnataka	3.1	10.0	52.0	67.4
Andhra Pradesh	43.3	63.9	162.0	202.0
Tamil Nadu	1.6	3.1	35.2	45.4
Kerala	0.1	0.3	11.4	27.3
Orissa	0.3	32.6	150.1	185.0
Others	6.1	N/A	N/A	N/A
Total	**314.9**	**402.5**	**987.8**	**1280.1**

Source: Actual data: IPA statistics, Source projections: Maritime Agenda 2010-20, MOS.

TABLE 13: Share in capacity of major ports per port cluster (2010-11)

Regions	Port Clusters	Capacity Major Ports	Capacity Non-major Ports
Eastern	West Bengal	100%	0%
	Odisha	77%	23%
	Andhra Pradesh	60%	40%
Southern	Tamil Nadu	96%	4%
	Kerala	99%	1%
	Karnataka	82%	18%
	Goa	75%	25%
Western	Maharashtra	74%	26%
	Gujarat	23%	77%
Weighted average		61%	39%

Source: IPA statistics.

and Kolkata) handle all cargo volumes. The situation in Tamil Nadu and Kerala is similar, with Major Ports handling almost all cargoes. On the other hand, in Gujarat the Non-major Ports handle about three times the volume handled by Kandla, the Major Port. The figure for India of 61 percent for Major Ports is heavily influenced by the divergent share of Gujarat. If Gujarat is excluded the India-wide figures result in a share of 81 percent for Major Ports. *The indication is, however, that more ports in other states could receive similar treatment as in Gujarat so that the overall figure for Non-major Ports instead of staying around 40* percent *could still increase considerably in the near future.*

Since 2005, a few clear developments have occurred at Non-major Ports: container volumes have tripled, though it is still the cargo type with the smallest cargo share in Non-major Ports; the share of coal has more than doubled; and the share of the category 'other' has declined considerably. POL and iron ore show only a small decrease. Looking at the role of different states, it is clear that the Non-major Ports in Gujarat and Andhra Pradesh have diversified commodity profiles. These states feature in most commodity categories as do the bigger states in terms of throughput volumes handled.

The throughput share of the private state ports in Gujarat is particularly high, indicating that the Non-major Ports handle more cargo volume than the state's Major Port of Kandla, and their proportion is still rising. But this effect is also visible for all Non-major Ports compared to the Major Ports. POL and crude products taken together are by far the number one commodity with coal at a significant distance as the second largest commodity group.

1.3.5. Berth Occupancy Ratios

Berth occupancy at Major Ports is high due to constraints such as the non-availability of area for capacity expansion. Kandla Port, the largest port in India by cargo volume, has

a relatively high average berth occupancy of around 70 percent, with peaks in the range of 90-95 percent for its general cargo jetties. This is high compared to other Major Ports, such as Mumbai for instance, with an average occupancy of 53 percent and hardly any peaks beyond 65 percent[10].

The high berth occupancy ratios indicate that many Major Ports suffer from congestion. The levels of berth occupancy that are considered healthy depend on the type of cargo, the number of berths available, and hence also on the expected service time of the vessels at berth. For a single berth configuration 60 percent is generally seen as the optimum for general cargo vessels. As demand increases beyond this it will involve queuing time, and the total waiting time will then grow exponentially when occupancy levels increase and no additional berths are available. Where 'schedule day' agreements have been signed between carriers and private operators (or Port Trusts), berth occupancy can reach higher levels without congestion, typically up to 80 or 90 percent depending on the number of available berths. The UNCTAD tables of waiting time show that at many of India's Major Ports, the berth occupancy ratios realized for different types of facilities are beyond the levels considered as optimum, and the fact that there is a high level of congestion for some berths suggests that there are no or few schedule day arrangements in place.

1.4. Performance of Indian Ports

1.4.1. Port Performance between 1991 and 2011

The Major Ports have in the period 1991 to 2011 significantly improved their performance. Table 14 presents the trends since 1991 in three performance indicators: the average vessel turnaround time; the average pre-berthing time; and the average output per ship and per berth. Two of these indicators show very substantial improvement (vessel turnaround time and berth output). Only the pre-berthing delay has deteriorated somewhat (i.e. increased) but oscillates from year to year. *The other two indicators show a gradual improvement thanks to a shift towards more bulk cargoes and containerization, a greater reliance on mechanized systems and concessions with private operators.*

TABLE 14: Performance improvements in major ports

Performance indicators	1990-91	1995-96	2000-01	2005-06	2010-11	2010-2011/ 1990-1991
Average Vessel Turnaround (days)	8.1	7.7	4.2	3.5	1.8	22%
Average Pre-berthing delays (hrs.)	50.4	86.4	N/A	27.2	55.7	111%
Average Ship-berth-day output (tons)	3,372	4,047	6,731	9,267	10,735	318%

Source: IPA statistics.

10 Source: IPA.

Table 15 shows the productivity of cranes and berths in selected container terminals in India and in countries in South and South East Asia. *Berth productivity at the Indian ports remains low when compared with the other ports in the Table.* It remains far behind the productivities achieved by the world's main hubs in the region such as Singapore, Port Rashid/Jebel Ali, Khor-Fakkan and Salalah. All of these other ports are of course mainly transshipment ports, and can therefore achieve higher productivity indicators. Major Ports in India handle Indian trade first and foremost and have not been able to expand sufficiently to attract large transshipment flows which could improve their overall productivity performance. Indian ports have considerable room for improvement in berth productivity, though in terms of crane productivity for small vessels, Indian ports are doing fairly well[11].

Figure 2 shows a comparison of estimated container crane output levels of various container terminals around the world. It shows the Indian ports included in the figure performing reasonably well. However, it is not clear where and when the indicators for JNPT, Chennai or Mundra apply (for which terminal, for which type and size of ship, how these were figures measured, whether they are gross or net productivities, the number of cranes deployed per vessel, etc.). For Hong Kong and Singapore the performance data is current and in line with other confidential values. Performance data on Antwerp and Bremerhafen goes back to 2007 and may no longer be up-to-date. With supportive measures, India may continue to make gains in efficiency as all the other ports have been doing in the past few years. *Realizing these gains would enable Indian ports to improve return on investment and would slightly reduce the need for investment in additional*

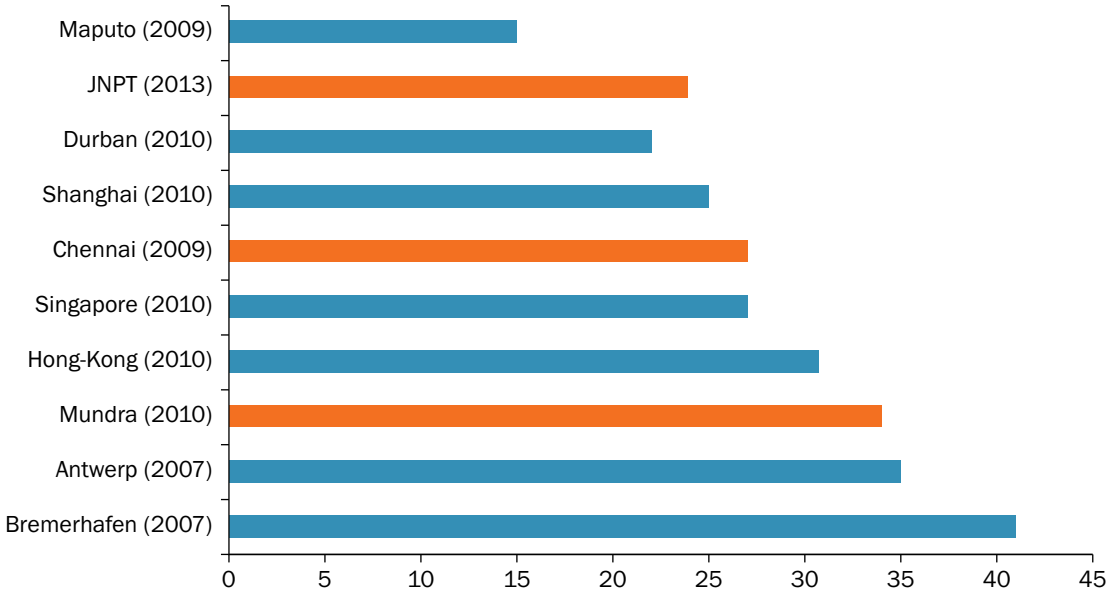
TABLE 15: Crane and berth productivity benchmark for selected container ports (moves/hour)

Port	For small vessels		For large vessels	
	Crane	Berth	Crane	Berth
Singapore - PSA Corporation	23	45	36	140
Port Rashid and Jebel Ali	22	40	30	110
Khor-Fakkan, Fujairah	20	32	28	100
Salalah, Oman	-	-	29	90
Indian and Neighboring Ports				
NSICT (DP World)	18	30	22	40
JNPCT (JNPT)	16	24	20	36
V.O.C.	14	14	-	-
Colombo – SLPA	14	23	18	45
Colombo – SAGT	13	25	24	-

Source: Maritime Agenda 2010-20, MOS.

11 JNPT's own Container Terminal (JNPCT) has made significant improvement in productivity of 24% in 2011-12 and 27.37% in 2012-13.

FIGURE 2: Crane performance at container terminals (boxes/hr.)



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

infrastructure. But there is no doubt that much more investment in container terminals would still be required.

1.4.2. Present Performance Levels in Major Ports

The performance of the Major Ports differs considerably as shown by figures supplied by IPA. For 2011, JNPT scores best in terms of least average idle time at berths (8 percent of total time at berth for container and 11.5 percent for all cargo)[12], whereas average idle time at Haldia is up to 50 percent. JNPT also scores high in average berth output per day (26,575 tons per day). In this category, Kolkata scores lowest (4,521 tons per day)[13].

1.5. Concluding Remarks

Section I of the Report has discussed the development of cargo volume in India's ports, the extent to which forecasts for throughput and capacity have been realized, and the performance of ports.

The conclusions with respect to trade growth are as follows:

- While India has already shown impressive growth of trade, it has started from a relatively low base and there is considerable scope for much higher trading levels.

12 JNPT has significantly reduced the pre-berthing delay from 22.8 hours in 2010-11 to 25 minutes in 2013-14.

13 It would be useful if statistics were provided in terms of TEU or number of moves achieved per hour.

- The growth in trade is clearly illustrated by the cargo tonnages handled by India's ports, particularly in the Non-major Ports.
- International cargo volumes have grown much faster than domestic cargo volumes showing an internationalization of port inflows and outflows.
- Drafts at major ports are generally limited; no major port can presently receive fully laden Capesize bulkers of more than 180,000 dwt, large tankers or container ships over 8,000 TEU. The limitation of draft restricts the opportunities for realizing economies of scale by using larger ships.

The major conclusions on throughput volume growth and capacity development are:

- Generally, capacity is sufficient to cater for demand, but the margins are small. There are differences between ports and sectors. Volumes in Non-major Ports have grown much faster than in Major Ports; the expectation is that the share of Non-major Ports will be larger than that of Major Ports before the end of this decade.
- This trend is mainly due to the development of Non-major Ports in Gujarat, which handle 77 percent of the state´s maritime cargo volume. Nevertheless, nearly two thirds of cargo volume of the Non-major Ports in Gujarat comes from throughput volumes in crude oil and POL, whilst containers are likely to lead future growth.
- The MOS's Maritime Agenda expects capacity to increase just enough to cater for demand, but again the margins are small. Both demand and capacity have not developed as much as expected in the past few years.
- Of the Major Ports, in Mumbai and JNPT volumes are over 100 percent of capacity; in Kandla, Mormugao and Visakhapatnam volumes are between 90 percent and 95 percent of capacity. Cochin and Ennore on the other hand are still just below 50 percent.
- In the Major Ports, coal volumes are already 10 million tons beyond capacity in 2012; all other major sectors still have sufficient capacity. In the Non-major Ports, POL is the only commodity of which the volume is already beyond capacity.

In conclusion, port performance in India has generally improved in the past decades, but there is still room for further improvement. There is quite a variation in port performance: some ports can already compete with world class ports whereas others have a long way to go.

> *Despite a very creditable record of achievement in increasing both volume and performance over the last twenty years, India's port sector is confronted with many challenges to its ability to meet future demand and handle competition from larger and more efficient ports in the region. Some of these constraints impeding the further growth of the Indian port sector are the subject of Section 2 of this report.*

SECTION **TWO**

ISSUES AND CONSTRAINTS

ISSUES AND CONSTRAINTS

This section presents the challenges that India faces in its ability to meet future demand and to meet competition from larger and more efficient ports in the region. Five main challenges are highlighted in the Report: ability to handle the largest vessels; transport infrastructure linkages to ports; private sector participation; port governance structures; and the legal and regulatory framework in which ports operate. The section ends with some key takeaways for India from case examples of how other countries have dealt with similar issues.

2.1. Vessel Drafts in Major Ports

While cargo volumes have grown, there are few Major Ports that have drafts adequate to receive the largest vessels for the main commodities such as POL, solid bulk cargoes, containers and general cargo (Table 16).

A fully laden Capesize bulker (180,000 dwt) has a draft of 16 to18 meters. Only Chennai (17.4 meters) and Visakhapatnam (16.5 meters) have drafts that come near this at their dry bulk berths. All other ports have at best just enough draft to receive Panamaxes (80,000 dwt with a draft of 12 meters when fully loaded). In the liquid bulk sector the situation is slightly better: Paradip (at its Single Point Mooring – or SPM), Cochin and Kandla offer drafts over 20 meters and Visakhapatnam and Chennai drafts of 17.2 meters and 17.4 meters respectively[14].

TABLE 16: Drafts at Major Ports by commodity category

Port	Location-cargo Type	Draft (m)
Kolkata	Kiddepore - General Cargo	7.4-9.2
	Netaji Subhash Dock - General Cargo	7.1-9.0
	Netaji Subhash Dock - Containers	8.0-8.6
	Netaji Subhash Dock - POL & other liquids	8.1
	Budge-Budge Jetties - POL & other liquids	9.1-13.7
Haldia	Multipurpose (general cargo, dry & liquid bulk)	6.8-8.3
	Container	

14 JNPT has made a design for dredging up to 17 m draft in 2 phases, of which the first phase of up to 15 m is being implemented and the second phase to achieve 17 m draft is to be tendered in 2014. Mumbai Port will also get the benefit of this draft in their channel. This would enable ships of 50,000 to 80,000 TEUs capacity to be received directly by JNPT by 2018.

Port	Location-cargo Type	Draft (m)
	Dry bulk	
	POL & other liquids	
Paradip	General cargo/multipurpose	11.0-12.5
	Dry bulk	12.5
	POL & other liquids (SPM)	12.7 (21.0)
Visakhapatnam	Inner harbor – general cargo/multipurpose	8.0-11.0
	Inner harbor – dry bulk	9.8-11.0
	Inner harbor – POL & other liquids	11.0
	Outer harbor – containers	14.5
	Outer harbor - dry bulk	14.5-16.5
	Outer harbor - POL & other liquids	14.0-17.2
Chennai	Dr. Ambedkar Dock – general cargo	8.5-12.0
	Dr. Ambedkar Dock – dry bulk	9.5-12.0
	Bharathi Dock – POL & other liquids	16.0-17.4
	Bharathi Dock – dry bulk	17.4
	Container Dock – containers	12.0-13.4
Tuticorin	General cargo	8.6-10.9
	Container	10.9
	Dry bulk	10.9
	POL & other liquids	10.7
Cochin	General cargo	9.1
	Container	10.5-12.5
	Dry bulk	10.5-10.7
	POL & other liquids	9.1-22.5
New Mangalore	General cargo	7.0-14.0
	Dry bulk	12.5-14.0
	POL & other liquids	10.5-14.0
Mormugao	General cargo	12.0-14.0
	Dry bulk	14.1
	POL & other liquids	13.0
Mumbai	Indira Dock – general cargo/multipurpose	7.0-9.1
	Indira Dock – Containers	10.0
	Indira dock – Dry bulk	8.8-9.1
	Jawahar Dweep – POL & other liquids	11.0-14.3
	Pir Pau (Old/new) – POL & other liquids	7.5-12.0
JNPT	General cargo	13.5
	Container	13.5
	Dry bulk	13.5
	POL & other liquids	12.0-13.5
Kandla	General cargo	9.1-12.0
	Container	12.5
	POL & other liquids	10.0-30.0

Source: Annual Administrative reports of the Major Ports.

For container vessels, only JNPT has drafts of 13.5 m. Although drafts of 12.5 m can receive full container vessels of maximum 5,000 to 6,000 TEU capacity, no Major Port is presently capable of receiving container ships beyond 8,000 TEU. *Thus the lack of draft limits at present the opportunity for realizing economies of scale through the use of larger ships.*

Container ships of up to 18,000 TEUs have since 2009 become the new generation of cellular vessels. With the introduction of the 'CMA CGM Marco Polo' at the end of 2012 (with a capacity of more than 16,000 TEUs) and the launching of the 'Maersk Mc-Kinney Möller' as the first triple E class vessel (with a capacity of over 18,000 TEUs), the way is set to receive these ultra large container ships in Sri Lanka, the Emirates and Oman, all ports competing with the Indian container ports and offering deeper drafts.

2.2. Hinterland Connectivity

One of the main challenges affecting India's port sector is the extent and quality of coastal and inland connectivity between the ports and the fore- and hinterland. Adequate connectivity to/from the ports is an essential complement to the growing need for port capacity. *Creating matching improvements in connectivity is a challenging task as many factors come into play, not least of all the modal distribution of traffic, the use of connectivity facilities, the feasibility of the proposed works, the financial returns which can be problematic, particularly for smaller ports, the technical effectiveness of the various plans and social resettlement where this is an issue.* In the next sub-sections the various alternative modes of transport will be briefly analyzed and ways to overcome the deficiencies discussed.

The Major Ports at present have mainly road and rail connectivity. The capacity and the quality of the existing connectivity demands much greater attention to ensure reliable incoming and outgoing flows. The National Highways Authority of India (NHAI) and the Ministry of Railways (operating through the Indian Railway Board as Indian Railways) are the main authorities responsible for improving connectivity by road and rail respectively, although in the past port trusts also made significant financial contributions to road and railway projects.

The level of connectivity plays a major role in port choice, particularly for container traffic. JNPT handles its entire container throughput through road and rail linkages, and the excellence of its hinterland connectivity, together with the frequency of vessel calls, makes it a prime choice for Indian shippers and receivers of containers.

2.2.1. Rail Transportation

Hinterland traffic to and from Indian ports operates mainly by road and rail. There is also a small amount of port-connecting transport that makes use of inland waterways

(mainly of iron ore in Goa) and some transport via pipeline, though detailed figures are generally unavailable. The government has in recent years acknowledged the role of good transport connections between ports and their hinterlands, as is illustrated by the 'corridor initiatives'. The shares of rail transport are readily available, though only at an aggregate level. Table 17 gives the shares of rail transport to/from the Major Ports in the years 2010 and 2011.

The three major eastern ports (Kolkata with 3.8 million tons, Haldia with 21.3 million tons and Paradip with 33.3 million tons in 2011) and Visakhapatnam (37.6 million tons) have most inland cargo on rail. *Overall however, the share of rail in inland transport has declined marginally and is less than that of road transport when measured in tons.*

2.2.2. Road Transport

Road transport is the major mode of inland transport for port cargo measured by tons carried. It is generally more competitive for transporting smaller consignment-sizes of cargo and on shorter distances. As distance and consignment volume increase, rail transport becomes increasingly competitive. There are also deficiencies such as delays incurred at state border crossings and the lack of good quality roads throughout India. Though significant investments have been made and are committed at the national and state levels, trucks on average still only travel around 300 km/day. This type of distance suits cargoes such as containers and break-bulk cargo and as a result road transport

TABLE 17: Share of rail transport in the major ports (volumes in 1,000 tons)

Port	2009-10			2010-11		
	Port total volume	Rail volume	Share of rail	Port total volume	Rail volume	Share of rail
Kolkata	13,045	3,918	30%	12,428	3,796	31%
Haldia	33,378	20,501	61%	41,791	21,278	51%
Paradip	57,011	34,569	61%	46,412	33,323	72%
Visakhapatnam	65,501	37,559	57%	68,041	37,559	55%
Ennore	11,009	416	4%	11,500	1,160	10%
Chennai	61,057	15,135	25%	61,460	10,280	17%
V.O. Chidambaranar	23,787	2,178	9%	25,727	1,370	5%
Cochin	17,429	289	2%	17,873	150	1%
New Mangalore	35,528	6,630	19%	31,550	4,710	15%
Mormugao	48,847	5,024	10%	50,022	6,925	14%
Mumbai	54,541	1,909	4%	54,586	2,773	5%
JNPT	60,763	14,064	23%	64,309	14,064	22%
Kandla	79,500	9,205	12%	81,880	12,152	15%
Total	**561,396**	**151,981**	**27%**	**567,579**	**147,819**	**26%**

Source: Annual Administrative reports on the Major Ports.

has managed to out-compete rail transport as the primary mode of transport. Now, with action being taken to increase the competitive position of the railways, this trend may change and the longer itineraries may also help increase the share of rail transport. *Nevertheless, road transport will remain a viable competitor because of its flexibility, its complementary nature and its ease in fitting in with the logistics chain, particularly over shorter distances.*

The Government of India, through the NHAI and its flagship program, the National Highways Development Project (NHDP), is working to substantially improve the Indian road network. This program includes specific port connectivity projects. Likewise, state governments are investing significant amounts in the roads sector, including port connectivity projects.

2.2.3. Planning Commission Estimates of Modal Distribution

The Planning Commission has prepared an estimate of the modal distribution of different types of cargo. Some types of cargo are more suitable for transport by rail than others. The Planning Commission figures are presented in Table 18.

TABLE 18: Planning Commission of India for estimating modal share per cargo category

Cargo category	Pipeline	Rail	Road	Inland Waterways	Conveyor
Crude oil	100%				
Other POL	50%	25%	25%		
LPG		50%	50%		
LNG	50%				
Thermal coal at port of loading		100%			
Thermal coal in port of unloading		20%			80%
Coking coal		100%			
Iron ore-Mormugao		20%		80%	
Iron ore-Mangalore	100%				
Iron ore at TN, AP, OR and WB		100%			
Food grains (raw)		70%	30%		
Fertilizer		33%	33%	17%	17%
Other dry bulk		30%	70%		
Other liquid bulk	20%	20%	60%		
Containers		45%	55%		
Break-bulk		20%	80%		

■ Blue = 75-100%, ■ orange = 50-75%, ■ light blue = 25-50%, ■ light orange = <25%.

Source: Planning Commission of India.

The optimum transport mode for different commodities depends on specific traffic volumes handled by each port. At JNPT where the specialization is in containers and POL, the optimal split should develop rail, road and pipeline infrastructure and systems. Kandla Port Trust trades in POL, coal and fertilizers, and it should focus on connecting with its hinterland by road and rail. The place of origin or delivery also affects connectivity requirements. Clearly, the transport modes that have been proven to be more energy-efficient and environment friendly should be encouraged if they can provide viable and competitive service.

The extent to which cargo is transported by rail from or to a particular port is not only the result of having an adequate rail connection, but depends on the quality and service levels of that rail link. Table 19 below, part of a report prepared for the 'Competition Commission of India', is an expression of this as it compares terminal-to-terminal transit times for five Major and State Port connections from Delhi. Remarkably, the rail connectivity from Gujarat (Mundra and Pipavav) is not as favorable as connectivity from JNPT. The distances are comparable but the transit times are significantly slower by road.

2.2.4. Corridor Initiatives

Ports are increasingly seen as nodes in multi-modal transport networks, rather than independent transport facilities, so hinterland connections are essential in the development and marketing of ports. This is frequently manifested as a corridor approach, where a port and the transport links to its main hinterland are considered as an integrated challenge so that the throughput capacity of the port and the transport capacity to and from the hinterland are balanced. The best example of an integrated freight corridor in India is the Delhi-Mumbai Industrial Corridor (DMIC) – see box 1. Though this is an economic development project, spanning more than transport network development alone, the transport corridors between the ports around Mumbai and Gujarat and the major production and consumption centers in Rajasthan and around Delhi are a central element in the development of the project.

TABLE 19: Distance, time and haulage costs for rail transit and inland haulage from Delhi

Port	Distance to/from Delhi (km)	Transit times by rail	Transit times by road (est.)	Haulage costs by rail (Rs./TEU)	Haulage costs by road (Rs./TEU)
		Hrs.	Hrs.		
JNPT	1,388	48	65	18,750	32,000
Mundra	1,295	80	60	16,650	20,000
Pipavav	1,333	70	62	17,000	24,000
Visakhapatnam	1,700	67	79	22,450	66,000
Chennai	2,100	90	98	30,000	70,000

Source: Competition Commission of India, 2008.

BOX 1: DELHI-MUMBAI INDUSTRIAL CORRIDOR (DMIC)

The concept of dedicated freight rail corridors is new to India, where passenger and freight trains have traditionally operated on the same rail lines. Amongst other dedicated freight lines planned, a dedicated freight line is now planned for Delhi-Mumbai with double stack container train capability and designed for longer and heavier trains with a 25 ton axle load. Bridges and fixed structures will be dimensioned at 32 ton axle loads. Loops will be dimensioned for double length trains and the whole line will have electric traction. The new freight line will allow trains to carry more freight, faster, more reliably and at lower costs.

The DMIC is planned as a dedicated freight corridor, from the ports to the hinterland, with the Western Dedicated Freight Corridor (W-DFC) stretching 1,483 km from Jawaharlal Nehru Port (Mumbai) to Dadri. It is being implemented by the Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL), a special purpose vehicle owned the Ministry of Railways but operating at arm's length under a Concession Agreement. At the same time, DFCCIL is effectively also responsible for the development of the Eastern Dedicated Freight Corridors (E-DFC), which will run from Ludhiana to Dankuni (1,800 km).

The capacity of the W-DFC is foreseen to be 140 trains per day in each direction. This should be sufficient until FY 2039. If all DMIC development plans are taken into account the line capacity is expected to be already fully utilized by FY 2028. According to the 'Perspective plan DMIC – Scott Wilson India – October 2009' study, the ports (existing capacity and planned expansions) are considered to have sufficient capacity until FY 2036, without the DMIC scenario, and until FY 2028 with the DMIC developments. As the DMIC plans are likely to at least partially materialize, the capacity of W-DFC and ports will most likely have to be expanded by 2030. These assumptions do not yet assume double stacked container trains, for which the W-DFC is designed. Ports where expansion plans were considered were JNPT, Mumbai, Hazira, Pipavav, Kandla and Mundra. Generally, only those traffic streams having a minimum lead of 200 km on W-DFC were assigned to it; other traffic streams were assumed to continue using the existing primary rail network. An alternative study done by JICA concludes that the PETS II is generally fairly moderate, but that the container volume is rather optimistic. JICA's estimates for container trains come at around 80% of those of the PETS II report.

2.2.5. Coastal Shipping Connections

In the European Union, United States of America, China and increasingly in some other countries such as Korea and Brazil, coastal shipping is recognized as an important part of the overall transport network. There is scope for the greater development of coastal shipping in India but progress is hindered by inherent policy issues, operational flaws, regulatory bottlenecks and the short-sighted customs procedures:

- The lack of an integrated transport policy in which coastal shipping might attain a much more significant share of attention and traffic.
- Lack of shipbuilding capacity to build appropriate coastal vessels of different types and sizes; at the same time government specifications that could be too strict for the construction of these vessels and lead to higher capital costs.
- The lack of financial mechanisms to assist in the acquisition of coastal vessels.

- The levy of corporate tax when deploying coastal vessels as compared to the tonnage tax for ocean-going vessels.
- Lack of quality manpower to run the ships and the coastal vessels' management.
- High operational costs of the vessels in service, many of which are in need of early replacement.
- Adding to the cost burden are the high import duty on bunker oil and spare parts.
- Lack of specialized berthing facilities for coastal vessels in the Major Ports and of inadequate cargo handling facilities for both Major and Non-major Ports.
- The continued imposition of a cumbersome and sometimes irrelevant set of customs procedures.

The Indian Government has accepted the potential importance of a well-run coastal shipping system and has initiated certain improvements such as: the exemption to file a bill of coastal goods at the loading ports and a bill of entry at the discharging ports; removal of the requirement by coastal vessels to pay light dues; provision of some dedicated terminals for coastal shipping in the major ports; and reduction in the vessel-related charges on coastal vessels and cargo-related charges for coastal cargo to some 60 percent of those charges applying to foreign-going vessels.

The Government has also begun drafting a coastal shipping policy based on the findings of a series of committees on coastal shipping. These policies would involve:

- The implementation of a cabotage law and separate laws for coastal shipping as well as for inland waterway transport.
- Manning scales and manpower which lead to the rationalization of manning norms and scales and the creation of a separate cadre of seafarers for the coastal trades.
- Regulations that would impose less stringent construction, survey load line and safety requirements; freedom from customs regulations; and application of an Indian coastal ship safety code rather than that of international regulations (in as far as such different safety codes can be applicable and not lead to two incompatible regimes).
- Fiscal and taxation regimes which include a special funding mechanism; providing tax concessions; exemptions from customs duty for fuel, equipment, spares and ship repair costs; volume-based incentives for multimodal operators and shippers who choose coastal transportation of their cargoes (certainly not an easy system to put in place for the entire Indian coastal economies); a centrally-sponsored scheme for the development of coastal shipping infrastructure around the coastline; separate and special rates at ports (which leaves the question of who should pay the difference between the costs for the port or the private operator and these no doubt reduced rates) and a waiver of lighthouse taxes.

- Specific infrastructure requirements to provide for the development of smaller ports, for ports reserved for the exclusive use of coastal shipping (the term 'berths' would probably fit the bill better than 'ports') and exclusive berths for coastal ships at all ports (though in some cases this might mean cost for extra transfers between incoming and outgoing vessels).

There are three major reasons why the coastal shipping industry is not contributing its full potential to India's transport system, each involving the application of stringent regulations for ocean-going vessels also to coastal vessels, making it very difficult to run a viable coastal service:

- Rules on manning: the crew size, the education and the training that are required do not match with the nature of coastal shipping. For example, the rules require highly trained chief engineers who are expensive and prefer to work on bigger ocean-going ships than on coastal vessels.
- Rules on equipment: the rules for example on safety equipment are not based on the actual conditions and risks that coastal shipping faces.
- Construction standards: these are too rigid for ships that do not have to cross the high seas and could be more adapted to the need of coastal vessels.

Another problem that makes coastal shipping comparatively less attractive is the fact that the externalities of road transport are underestimated – the price of diesel for trucks is subsidized and though trucks are commonly overloaded by some 25 to 30 percent they are not penalized. This artificially lowers the haulage price that can be offered by trucks.

Given the complexity of all the issues mentioned above, the rate of progress is bound to be more limited than anticipated by the committee constituted to prepare a draft coastal shipping policy. Hence it may take at least a decade or more before an agreement is reached on the main aspects of the policy and the first effective results become visible. There is a general feeling that the problems are well understood, but unfortunately insufficient steps have been undertaken to solve them.

2.2.6. Inland Waterways Connectivity

India has approximately 14,500 kilometers of inland waterways. About 5,200 kilometers are on major rivers (and 500 kilometers of canals) suitable for mechanized barge traffic. However, inland waterway transport at present handles only 1 percent of the total inland cargo transport, most of which is iron ore (5 percent of total iron ore carried) and fertilizers (15 percent of the total fertilizers carried).

There is a potential to carry other cargoes economically through inland waterways, in particular coal. The main potential advantages of using inland waterways are in the first

place that it is a low cost and environmentally friendly way to carry cargo (according to the Inland Waterway Authority of India – IWAI - inland waterways can carry some 105 ton-km per liter of fuel against rail with 80 ton-km and road transport with 25 ton-km), that it offers economies of scale with the increasing use of larger barges and pusher convoys, and offers a potential reduction of traffic congestion on road and rail networks.

Initially the IWAI had identified nine waterways for development, but of these five are now specifically included in the development program as shown in Table 20.

Even with further investment IWT cannot provide for more than a small proportion of port connectivity needs because:

- It is limited to specific and generally limited geographic areas.
- Most origins and destinations in terms of the places of production/manufacturing and consumption are not close to viable waterways.

For several reasons, the investment in inland navigation infrastructure projects and its potential return are generally not attractive for the private sector, and major government funding would be required to fund the development program as shown. For the 11th Five Year Plan the total government expenditure on this sub-sector was around Rs. 450 crore. This is considerably less than the budgets for the road and rail sector which total approximately Rs. 4,676 crore for the period 2010 to 2012, though it is much higher in proportion to their contribution to the national traffic task.

Some inland waterway projects have lower investment costs than equivalent road or rail infrastructure and also significantly lower external costs in transport operations in terms of accidents, air pollution, congestion, and the impact on agriculture and on urban development. According to the figures prepared by the Maritime Agenda 2020 the total investment foreseen in inland waterway projects is Rs. 30,710 crore of which ongoing projects account for Rs. 4,175 crore from the budget and Rs. 8,400 crore from private funding. For the new projects the figures are Rs. 6,630 crore from the budget and Rs. 11,805 crore from the private sector.

TABLE 20: Projects included in development program of IWAI

National Waterway	River/Canal	Route	Declared in	Distance
NW 1	Ganga	From Haldia to Allahabad	1986	1620 km
NW 2	Brahmaputra	From Dhubri to Sadiya	1988	891 km
NW 3	West Coast Central	From Kottapura to Kollam along the Udyogmandal and Champara canals	1993	205 km
NW 4	Godavari and Krishna	Kakinada – Puducherry stretch	2008	1078 km
NW 5	Brahmani river and Mahanadi delta	The East Coast canal	2008	588 km

Source: IWAI

The expected contribution from the private sector, some 65 percent, seems unrealistically high compared to international experience. Nevertheless, the role of the private sector in inland waterway transport may be strengthened by a series of government measures. These include immediate improvements and longer term schemes. In the immediate term, it is worth noting the following measures:

- The Income Tax Act enables investors in inland waterway transport to enjoy tax holidays.
- The authorization given to IWAI to raise bonds and borrow from the market.
- The assistance given to the state governments to implement 'Centrally-Sponsored Schemes' of inland waterway transport by way of a 90 percent subsidy.
- The further development of the dredging fleet with the addition of 6 more dredgers (although still considered far too few given the needs of the inland waterways).

In the longer term, the more significant proposals include:

- The development of commercially viable stretches of waterways through public-private partnerships.
- The enlarged role of the IWAI that should facilitate its participation in commercial joint ventures with equity participation by the public and the private sectors.
- The identification and implementation of cargo transportation projects that would rely on inland waterway transport and could be carried out with PPP funding.
- The capacity-building of IWAI personnel and their technical training.

At the same time a number of blockages in the improvement of inland waterway transport persist. One limitation on viable IWT on most National Waterways in India is weak navigation infrastructure (shipping channels, river training and regulation, locks and sluices, navigation aids, loading and unloading points and other facilities). This constrains the reliable year-round navigability of larger modern vessels that could deliver a competitive advantage over other modes, particularly compared to railways that carry most bulk traffic in India. Heavy investment may often be necessary to obtain adequate navigation standards, compounded by excessive siltation in the rivers due to erosion, tidal impacts and deforestation. Finally, there is the development of hydro-power stations on various major rivers which makes them no longer suitable to inland waterway navigation.

The opportunities for inland waterway transport in India are becoming more positive, despite the above challenges that could limit the scope of its implementation. In any event, inland navigation seems set for a period of development and greater exploration of market potential.

In summary, the main practical challenges to the use of inland waterway transport are suboptimal all-year navigability of most sections due to shallow draft and low bridges, a

lack of night navigation aids, lack of inland terminals with good intermodal road and rail connections, and lack of a well-developed barge industry, though this might be expected to respond if the market and navigation circumstances were in place. *The Government should therefore give the correct signs that these are being seriously considered and will be tackled. This means that significant resources would need to be made available to achieve the required changes as indicated above. In fact, the increasing pressure on India's rail and road network could partly be relieved by developing short sea-shipping using coastal and/or river-sea vessels in certain locations.*

2.3. The Investment Gap and Financing Issues

2.3.1. Investment Requirements in Major and Non-Major Ports

Tables 21 and 22 show the proposed investments in Indian ports for the period 2010-20. Given the paucity of internal resources and Government support as sources of funds, PPP are increasingly being used to finance port development in Major and Non-major Ports across all commodity sectors. About 67 percent of the proposed investments in Major Ports are expected to be from the private sector as part of PPPs, while the figure for Non-major Ports is as high as 96 percent. PPPs are to be used for Brownfield as well as Greenfield developments. Some details of PPP projects in Major Ports, PPP container terminal projects in the pipeline and PPP Greenfield projects are presented in Annex

TABLE 21: Projected investments in Major Ports (2010-20)

Performance indicators	No. of projects	Funding (Rs. Crore)
Investments in new projects (2010-2020)	352	109,449.41
Investments from PPP		72,878.16 (67%)
Investments from other sources (internal resources/EBR and Government budgetary support)		36,571.25 (33%)

Source: Maritime Agenda, 2010-20, MOS.

TABLE 22: Projected investments in Non-major Ports (2010-20)

	Estimated Cost	Source of Financing (Rs. Crore)		
	Rs. Crore	Internal resources	GBS, EBR & Others	Private sector
Gujarat	74,240.59	287.29	1,382.30	72,571.00
Maharashtra	20,417.55	634.05	1,334.59	18,448.91
Goa (Panaji Port)	202.70	0.00	202.7	0.00
Karnataka	7,058.00	300.00	0.00	6,758.00
Andhra Pradesh	33,540.00	0.00	0.00	33,540.00
Tamil Nadu	6,925.00	0.00	0.00	6,925.00
Kerala	1,811.00	0.00	0.00	1,811.00
Orissa	23,736.00	2,457.00	0.00	21,279.00
Total	**167,930.84**	**3,678.34 (2.2%)**	**2,919.59 (1.7%)**	**161,332.91 (96.1%)**

Source: Maritime Agenda 2010-20, MOS.

2. Port privatization in Gujarat transforming its minor ports into some of the main Non-major Ports in the country is showcased in Annex 3, where the development of Adani Ports and Special Economic Zone Limited (APSEZ) in Mundra and the APMT terminal in Pipavav is analyzed.

2.3.2. Financing Port Projects

The Maritime Agenda 2020 estimates a total investment plan in Non-major Ports worth Rs. 167,931 crore of which the Government hopes that 96 percent will come from the private sector. Up to 100 percent Foreign Direct Investment (FDI) in Indian ports is permitted and some of the leading terminal-operating companies in the world, such as Dubai Ports World, APMT and PSA have invested in the ports of JNPT, Mumbai, Chennai, Cochin, Visakhapatnam and Tuticorin. One of the largest FDI flows was expected for the fourth container terminal of JNPT by a consortium of PSA and ABG Ports with a total of Rs. 2,000 crore. This was, however stopped in September 2011 when JNPT announced that it was withdrawing the letter of award to PSA-ABG and would cash the US$ 12 million bid guarantee.

The PPP partnerships on which the Indian Government has set its hopes allow three possible alternatives within a certain time limit (transfer back to the Government or the Port Authority):

- The Port Authority adopts a 'landlord model' and builds all infrastructure financed by public funds and leases it to private concessionaires who invest in the superstructure of the terminal and operate it.
- The Government or Port Authority takes a minority stake in a joint venture with the private party taking on a majority stake in the equity and the management control.
- The private service model, in which the Government or Port Authority grants an all-inclusive concession to the private party to build all the infrastructure and superstructure, buy all the equipment and operate the port.

Several private port developers have chosen an Initial Private Offering (IPO) for raising the necessary funds required to execute very large port projects. Private equity investors invest in a start-up venture and then through an IPO try to make a significant profit on their initial capital outlay.

Finally, there are also government sources of funding. The first is tax-free infrastructure bonds worth Rs. 30,000 crore of which Rs. 5,000 crore is reserved for the ports sector. The MOS reports that JNPT and Ennore Port recently came out with their tax-free bond offerings (with issue sizes of Rs. 2,000 crore and Rs. 1,000 crore, respectively). The second is Viability Gap Funding in which the Department of Economic Affairs announced a scheme to support projects that have a high economic return and would result in the creation of substantial value for the public sector. This scheme would provide

grants to infrastructure projects that are undertaken by PPPs with a view to make them commercially viable. Up to some 40 percent of the total project costs could then be provided by Viability Gap Funding.

The Government of India has set up a High Level Committee on Financing of Infrastructure to come up with policy recommendations to meet the need for large capital resources for infrastructure projects. The Committee is, amongst other issues, required to assess the investments to be made by the Central and State Governments, the Public Sector Undertakings (PSUs) and the private sector in the ten major physical infrastructure sectors during the Twelfth Five Year Plan. Other recommendations include the role that government could play in developing the capital markets for intermediating long term savings for investment in infrastructure, the role of international capital flows in infrastructure financing and development, and appraisal of the regulatory and legal impediments that constrain private investment in infrastructure, and ways to facilitate their removal. The Committee submitted its interim report in August 2012 giving investment projections for the Twelfth Plan and recommendations for accelerating investment.

The major challenge of securing port financing implies the need to solve other constraints that could influence private investment in ports: the role of the TAMP in price setting; the guarantee that the private sector can enjoy full economic control of the facilities for which, for example, a concession agreement has been signed; and the periods during which they may be protected against the provision of competing infrastructure (for example the Port Authority may agree that for an agreed period of time – for example 5 years, or as long as a certain level of throughput has not been reached, no such additional facilities can be built by either the central government, the state government or a new concessionaire).

Even if the impediments to private sector investment are resolved, it remains uncertain how much the central government can rely on the massive investment that the private sector is expected to fund and whether there is a need for alternative plans in case these private sector contributions do not materialize.

2.4. Trends and Challenges Regarding Port Governance

2.4.1. Challenges Relating to the Governance Structure

Meeting the challenges the Indian ports sector is facing calls for reforms in port governance and a different regulatory framework. Relevant policies in this regard are already coming forth from policy makers in the Indian government.

Governments, Port Authorities, private sector operators and investors have to address significant changes that the international port sector faces today. The main trends and factors are:

- Advanced technology developments coupled with relatively low cost of transport have made it possible for companies to globalize their manufacturing.
- Main players such as shipping lines, shippers and receivers are being led towards vertical integration to gain control of whole sections of the supply chain.
- The main container carriers go for growth in ship sizes between the various hub ports in an increasingly dominant hub and spoke systems with interline transshipment.
- The hinterland transport costs, which make up a major share in door-to-door logistic costs, are increasingly determined by the shippers' route choices.
- Ports are focal points in the international logistics chains and this makes inter-port and intra-port competition a vital element in building up the role and scope of ports. Port competition is growing as hinterlands are enlarging and overlapping, and the captive trade in ports is declining.
- Clusters of regional ports and connected industrial and logistics activities are emerging, whereby port competition becomes 'cluster competition'.
- Continued technological changes in the handling of bulk traffic and containers call for more space in existing ports, but where such space is no longer available, the solution is for terminal operators to go to new port sites. Although this would mean higher costs for infrastructure and superstructure, they can be offset by much improved handling efficiencies and productivity gains. The growing conflict between cities and ports in terms of spatial demands, has given rise to the development of urban waterfront redevelopment projects by the cities and the private sector.
- Inter-modal transport whereby rail, road and barge corridors interlink with hinterland terminals in order to improve port operations and achieve the objectives of improved environment, increased safety and better security.
- Finally, ports tend to adopt a 'community approach' whereby governments, port authorities and private operators involve all port-related businesses and other stakeholders in their business processes or corporate relations. Also the wider use of 'Port Community Systems' whereby information is shared amongst these groups, helps to establish a 'single window' trading environment.

An effective port governance policy must reflect these trends and factors and the challenges they imply:

- Port policies embedded in a national transport policy with regional and local coherence with, for example, road, rail and barge connections and well selected dry ports and Inland Container Depots (ICDs).
- Clear responsibility for port governance, in particular who is responsible and accountable for the port's activities and functions.

- The role of both the public and the private sectors in ports, transport and logistics. The institutional design should be in line with the legal framework and the objectives of a Port Authority.
- A regulatory framework that provides a level-playing field between ports.
- Rules for environmental, safety and security conditions in ports.
- Stakeholder coordination at national, regional and local levels.

These imperatives apply equally to India but the challenges are somewhat different; reflecting its federal structure, India has two port governance policy systems, one at the national level for the Major Ports and one at the state level for the Non-major Ports.

International experience indicates that port governance is structured around the ownership, the administrative management models and the regulatory frameworks of ports. There are four major port governance models (Box 2):

- The public service port model
- The tool port model
- The landlord port model
- And the private sector port model (also referred to as the private sector service model)

By now, the landlord model is a mainstream port governance structure worldwide and becoming the dominant port model in larger and medium-sized ports. 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 organizations. Moreover, transition to the landlord model assumes a regulatory framework in place geared to encourage fair competition on a level playing field.

In India, in the early 1990s the decision was made to corporatize the major ports and to introduce the landlord model. However Ennore Ltd. is currently the only port operating as a corporatized landlord port. In the first decade of this century, plans were made to start a serious privatization process in the major ports, but these plans have also not been implemented. In the Non-major Ports, PPP projects have been developed under BOOT (build-own-operate-transfer) or BOT (build-operate-transfer) schedules, where the ownership of the land is (at least temporarily) transferred to a private party. In a landlord model, land always remains under the ownership of the landlord (thus only BOT project schedules are possible).

2.4.2. Modalities of Port Authority Reform

Governments and Port Authorities can select from amongst a variety of strategies for improving the organizational and operational performance of ports, as detailed in the

BOX 2: THE VARIOUS KINDS OF PORT GOVERNANCE MODELS

The public service port model

In this model, the Port Authority owns the land and the fixed and mobile assets, and performs all regulatory and port functions. The advantage is that development and operations are the responsibility of a single entity, which in principle makes for a cohesive approach, on condition that the Ministry does not exceed its controlling role. The lack of internal competition can lead to inefficient port administration, port operations and port maintenance. Moreover, there is often a lack of innovation and long delays in responding to the demands of the market. Finally, there is a heavy dependence on government funding which, if it cannot be accommodated, leads to underinvestment or a wasteful use of limited financial resources.

The tool port model

In this model the Port Authority owns, develops and maintains the port infrastructure and superstructure, including the cargo handling equipment. The operation of the port's equipment is mainly done by the Port Authority labor, although small private cargo-handling firms can work on board the ships and on the quayside. While this model results in an avoidance of the duplication of investments, the fragmentation in responsibility can lead to serious conflicts between the Port Authority and the operators if they both work as stevedores and/or quay operators. Also, the risk of underinvestment remains, as everything has to be funded by the Government or the Port Authority itself.

The landlord port model

The Port Authority retains the ownership of the port's infrastructure, but this is leased out (licensed) or given in concession to private operating companies. The private operating companies provide and maintain their own superstructures, their equipment and their information systems. The main benefit of this model is the fact that the private operator owns the cargo handling equipment and executes at the same time the operational activities, whereby planning is greatly improved and there is also a greater responsiveness to the needs and the changing conditions of the market. There may be both a risk of overcapacity (more than one operator for a similar type of facility) and under-capacity (one operator who does not want to invest in additional facilities for a specific type of cargo), although this can be solved through specific clauses in the concession agreement.

Private sector port model (private sector service model)

In this model, the public sector has no longer an interest in port activities, or it leaves port management and operations entirely to the private sector. Port land is owned or bought by the private sector and all operational activities are performed by the private sector. If there is regulation of the port it will be done by the private sector as well. The main advantage of this model is that port development and the tariff policies tend to be market-oriented. The main disadvantage of the private sector model is the risk of creating an abusive monopolistic system and the suppression of public involvement in the development of ports within a longer term economic policy.

Port Reform Toolkit published by the Public-Private Infrastructure Advisory Facility (PPIAF) and The World Bank in 2008.

The main elements of port reform strategies worldwide are 'liberalization and deregulation', 'corporatization' and 'private sector participation'. Liberalization and deregulation refer to the reform or partial elimination of governmental regulations

that distort markets and hamper market entry and so enable private companies to operate and compete in an area traditionally reserved to public sector monopolies. Corporatization involves transformation of a public port department or authority into the legal form of a commercial corporation (either under companies or a state-owned enterprises law). Private sector participation includes either the transfer of the ownership or operating rights of existing port assets from the public to the private sector, or participation in provision and/or operation of new assets.

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

Although there are significant regional differences, in countries with an open economy and trading policy, the Port Authority is usually corporatized, at 'arms' length' from the parent government entity (Ministry of Transport, MOS), with sufficient autonomy to pursue port regulation, whilst assuming the roles and functions of contemporary landlords. As such, the currently prevailing main port management model is the landlord model.

The shift in the role of the public sector from port services provided by a Public Service Port Authority to a Landlord Port Authority also assumes changes in the regulatory regime. In this case, it is of importance to note that the key function of economic regulation in or between ports is that of competition regulation and not tariff setting. As the face of competition between ports is changing from port to chain competition, and fewer situations remain where captive conditions warrant tariff regulation, under fair competition the market can be the regulator. Economic regulation can then pertain to the establishment of a level playing field: 'away from tariff regulation and to competition regulation'. *Issues with respect to corporatization in India are discussed in Annex 4. The final conclusion of weighing the advantages and disadvantages of 'corporatization' is strongly in favor of this approach.*

Corporatization typically delivers efficiency benefits in its own right and does not necessarily imply or require private ownership (something that no PPP port project in India has targeted, as the assets funded by the private sector such as berth infrastructure and superstructure, revert to the ports after the end of the concession period). Corporatization could help to lessen the budgetary burden of future port investments.

However, not much progress has been made on this issue in India. The MOS has no supportive policies and the administrators of specific ports do not want to be replaced by Boards of Directors selected in accordance with normal commercial practices. The current boards of the Major Ports (with two seats for the labor unions on each board) generally oppose plans for corporatization. There seems to be growing understanding of the merits of corporatization, but there are currently no plans for establishing another corporate port.

2.4.3. Lessons from Port Governance in Selected Countries

Port governance policies can be illustrated by looking at models in Australia and the European Union. Governance models in the United States of America, China and the port of Shanghai are also presented in Annexure 5.

Port ownership structure and port management – Australia

Key agencies and their role (Table 23) and port ownership structure and management in Australia are described below.

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 privatized in 2001. Queensland is also currently processing the privatization of the Port of Brisbane. Australian ports are, in the main, landlords to private terminal operators (stevedores) and are primarily only responsible for the management of

TABLE 23: Key agencies and their role in Australia

Key Agencies	Role
Department of Infrastructure, Transport, Regional Development	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)	Works 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 has developed a strategic blueprint for the nation's future infrastructure needs and – in partnership with the states, territories, local government and the private sector – facilitates its implementation. It provides advice to Australian governments about infrastructure gaps and bottlenecks that hinder economic growth and prosperity. It also identifies 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.

Source: 'Policy Paper on Port Governance' by Ecorys Nederland BV.

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): The 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. The Strategy was developed by Infrastructure Australia and NTC in consultation with a wide range of stakeholders. It recognizes 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.)

Port ownership structure and port management – EU

Key agencies and their role (Table 24) and ownership structure in various EU countries (Table 25) are described on the next page.

TABLE 24: Key agencies and their role in EU countries

Key agencies	Role
European Commission	The Commission's job is to represent the common European interest of 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 ensuring that member states put into practice the EU's common policies (like the common agricultural policy and the growth and jobs strategy) and manage the EU's budget and programs.
The European Sea Ports Organization (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.

Source: 'Policy Paper on Port Governance' by Ecorys Nederland BV.

TABLE 25: Port management in the EU member states

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

Light blue indicates the dominant model in a member state; light orange shows that minority models also occur.
Source: ESPO.

The ownership structure of the EU ports is fundamentally very different from country to country and port to port. 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, most notably in the UK. In other cases – a large majority in continental Europe – ports are managed by public entities or undertakings. Table 25 shows the Government level and type of port management (Government direct, Public Entity, Private entity) in EU Member States.

From Table 25 and experience in the EU countries a set of general conclusions can be drawn up with regard to the ports in the EU.

First, the landlord port is a port that essentially has the ability to contract land to third parties. Second, half of the corresponding Port Authorities (and specifically the majority of the larger ones) engage in urban real estate management and environmental land management. Third, 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. Fourth, the traditional Port Authority functions have gone through a substantial change. The operator function has made way to the landlord and regulatory functions, which have gained a strong community focus, social dimension and strong stakeholder involvement. This also leads the Port Authority to maintain in intensive contact with central and local government. Fifth, the Port Authorities transpose their functions beyond their own borders, through investments in hinterland networks, through equity stakes in other ports (a minority of the larger port authorities has taken this route) and in inland terminal development (an increasing number of big and small port authorities are taking this road).

In conclusion – worldwide, the landlord model has been adopted as the preferred 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. Further, while countries differ substantially in the governance models they adopt, the Australian model is outstanding in Ports Policy and Management, relevant to the Indian situation, and recommended for further consideration by Indian authorities. The system of major and minor ports leads to the existence of two different port governance systems in India and to distorted competition between Major and Non-major Ports. Transformation to a single port governance system, or to mutually compatible central and state systems, should therefore be supported.

2.5. Issues with Respect to Port Regulation

The shift in the role of the public sector, from port services provider to 'landlord port', calls for enhanced responsibilities from a third organization, as a regulator of activities that are not necessarily executed by public sector ports.

2.5.1. The Essence of Regulation in the Port Sector: Scope of Regulated Activities and Possible Entities of Regulation

The regulation of ports can take two possible approaches. Either it can control the behavior of port sector entities by general or specific rules or regulations. Or it may be achieved by orders issued by an executive authority, a regulatory agency or a Port Authority that has the force of law. Effectively, regulation may cover all activities of public or private behavior (economic, social, environmental, safety and security) that may affect the development and management of ports and terminals, including their access roads, rail links, pipelines and waterways. This section deals exclusively with the economic regulation of ports.

Economic regulation typically involves intervention in the functioning of markets in terms of: controlling market entry or exit; setting and controlling tariffs, revenues, and profits; and overseeing that fair and competitive behavior and practices are maintained within the sector. It differs according to the way in which the port functions have been shared out between the government, the Port Authority and private sector enterprises.

Specific port-related regulation can be exercised by one of the following entities:

- A competition regulator which makes regulations, and issues specific orders to prevent anti-competitive behavior in ports or abuse of the dominant position held by a Port Authority or private operators. It may also deal with mergers of port service providers which endanger fair competition in ports, and it can have the power to monitor tariffs according to lease, license or concession contracts as well as through the approval of its own tariffs.
- A wider maritime regulatory authority.

The main objective of the regulator is to ensure fair competition among ports and between competing operators in a 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.

However, 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 non-existent (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, may some pricing control be indicated.

2.5.2. Levels of Port Competition

Port competition will affect the level of regulation. There are effectively three categories of port-related competition: inter-port competition, container transshipment competition and intra-port competition. These are explained in Box 3.

BOX 3: LEVELS OF PORT COMPETITION

Inter-port competition arises when two ports in the same or in different countries compete for the same cargo. The scale of inter-port competition often depends on the size of the hinterland of the concerned ports and how far these hinterlands become more and more extensive. A good example is the competition that exists between the ports of Hamburg, Bremerhafen, Rotterdam, Antwerp and Le Havre for cargoes destined to or coming from North and Central Europe.

Competition with regard to container transshipment trades is specific for a whole region and often exclusively driven by the choices made by the main shipping lines or alliances. These choices are related to the lines' position with regard to transshipment traffic volumes, the lines' sailing schedules, the distances from the main shipping lanes, the equity share held by the lines in the container terminal operator's equity and so on. In the South Asian region, for example, container transshipment competition is considerable with the ports of Singapore, Tanjung Pelepas, Colombo, Dubai, Salalah and Vallarpadam, all vying for additional traffic and thus increased throughput levels. Governments or regulators should not get involved by interfering in transshipment competition, but leave these decisions to the shipping lines, the Port Authorities and of course the private terminal operators engaged in this traffic segment, which concerns in the first place containerized flows (and which cannot be separated from the domestic traffic and throughput).

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. Rotterdam will have three major container terminal operators with ECT, APMT and DPW. Antwerp has two major operators (PSA and DPW). Hamburg has also two operators (HHLA and Eurokai).

Intra-terminal competition can also refer to two or more stevedoring or cargo-handling companies competing within the same terminal. This situation is rare and usually only exists within small ports operating under the public service port model with independent stevedores.

In general, intra-port competition is favored by both government and port users, but is not always feasible as it depends on the volume of the cargo to be handled and the minimum capacity of the terminals to be provided. Thus, it may not be possible for two or more operators each to run a profitable and effective business and benefit from economies of scale. A single operator may then be the best choice.

Generally speaking, establishing inter-port and intra-port competition in the port sector requires four steps:

- Step one: the assessment of the sector unbundling, especially in the case of a public service port; it relates to the financial and economic feasibility of creating more than one terminal handling the same commodity.
- Step two: implementation of a new port management structure, if this is required.
- Step three: conclusion of a lease, licensing or concession agreement that includes some type of tariff regulation mechanisms, mainly when this becomes necessary by the absence of intra-port competition.
- Step four: introduction of a 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 market power to charge high tariffs (particularly for captive cargoes). This may justify tariff regulation and this regulatory function is then usually instituted by law. *The main objective of the regulator is to ensure fair competition among contesting operators in the port; control monopolies (including public ones); possibly supervise or oversee mergers of terminal operators; and prevent other anticompetitive practices.*

2.5.3. When and How to Establish a Port Competition Regulator

The guidelines mentioned in the World Bank Port Reform Toolkit propose a number of principles to enhance competition.

First and foremost the Government should have a clear understanding of the competitive environment of the port sector and its various sub-sectors (by type of trade, by type of facility, by type of ship). Next, a decision on economic regulation should be made based on the risk of anticompetitive behavior, or on evidence that monopolistic behavior is occurring and that other methods of intervention, such as cease and desist orders, sanctions or fines, are either not feasible, inadequate, or inappropriate.

Then, the regulator should clearly define what form of economic regulation (for example depending on the case either a rate of return or tariff setting) is to be applied and under what circumstances. Most important is to split the responsibilities for regulation of port operations on the one hand and regulation of port competition on the other. They should be formally separated and assigned to two different entities, for example for the first one to the Port Authority and for the second one to a Competition Authority.

In the event that economic regulation is imposed, the 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.

If it is determined that economic regulation is not necessary, but instead tariff monitoring or approval is justified, 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. Tariff monitoring as described above is not the same as imposing a tariff authority. The latter would create a lot of adversary discussions and probably lead to negative reactions both from the Port Authority and private operators.

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 as well as recourse for appeal on any decision made by the regulator.

In conclusion – the shift in functions of the public sector from providing port services to encouraging landlord and private ports implies the role of governments changing from having direct control to exercising indirect guidance through appropriate regulation. The key function of economic regulation in or between ports is competition regulation.

2.6. Policy and Legal Issues Impacting the Port Sector in India

This section analyzes recent developments regarding policies and regulations that the MOS is attempting to introduce, with a view to remodelling the vision and strategy of the ports in India. A number of issues regarding economic port regulation have been addressed by the Indian government in several draft bills and policies.

2.6.1. The 'Draft Indian Ports Bill 2011'

The MOS wishes to consolidate the regulation and promotion of the ports (the Indian Ports Act of 1908 and the Major Port Trust Act of 1963) into a single Act that would better meet current and future requirements. The MOS therefore invited stakeholders to provide their comments on the 'Draft Ports Bill 2011' so as to have a 'holistic view' of the proposed landmark Act which would affect the future of the Maritime Industry.

There were three basic purposes behind this exercise: to identify and amend or remove the provisions in the existing Statute that were redundant; to identify the changes that are needed in the existing act and new provisions that would be in harmony with the liberalization of the economy; and to examine the possibility of consolidating the various Statutes into one single Statute or Act.

The Draft Ports Bill is a comprehensive Bill in that it defines the terms contained in the 1908 and the 1963 Acts. It is further subdivided into three Parts. Part A and Part C are applicable to all ports (Major and Non-major Ports), whilst Part B and its provisions are applicable only to Major Ports. The Government may in future also extend this Act to any navigable rivers and channels leading to the ports.

The Bill enables the appointment of a 'Conservator' for each port who shall act with the power to ensure compliance with all the regulations relating to the operations of ports or those affecting them. The Bill vests the majority of powers and responsibilities in the 'Port Authority'.

What is important is that the Government or Port Authority or any other authority to which such powers are given by the Government, shall frame the maximum or 'ceiling' rates for the services provided by the Port Authority. Thus, this is the maximum rate for a given service to be provided to the port users and which cannot be exceeded by the Port Authority.

The 'Draft Indian Ports Bill 2011', by virtue of Chapter X Part B (relating to only Major Ports) empowers the central government to make regulations for the manner and the mode in which the ownership, control and management of any Major Port be vested in a company registered under the Companies Act 1956. It hereby states that the company can be a Government Company or a Public Limited Company.

Finally, there are a set of new specifications with regard to the constitution of the Board of trustees (in total 18 trustees per Board), trustees that shall be disqualified if they fall within a set of categories listed and the terms of Office of the trustees[15].

A number of features included in the proposed Act seem to have been welcomed by the industry. For example the fixation of rates by any authority for services rendered by BOT operators has been removed and specific interests have been defined to minimize appointment of Trustees with insufficient knowledge, expertise or interest in the Maritime sector.

As a consequence, the 'Draft Indian Ports Bill 2011' aims to enable the 'Corporatization' of the Port Authorities and to put these Authorities in a position to acquire financial autonomy and to protect the public interest. The Bill also has the intention to extend the duration of a concession above the present 30 year period with the possibility to extend it for major infrastructure up to 99 years. According to the Major Ports and the private operators, a 30 year period does not provide sufficient incentive to innovate, to invest in additional equipment or to replace present equipment with more efficient ones (for example electric driven RTGs, RMGs or automates stacking cranes; use of wind turbines or solar power; use of cold ironing; vehicle truck refits, etc.).

In conclusion, the new 'Draft India Ports Bill' would address the duration of the concessions and appears to abolish TAMP as the tariff regulator. It would have been beneficial to cover other important aspects such as the setting up of a regulatory framework for safety, security and environmental standards. It could also have allowed for self-policing and at the same time set much higher penalties for failure to comply with the above regulations.

2.6.2. Draft Ports Regulatory Authority Bill, 2011

The Draft Ports Regulatory Authority Bill, 2011 has as its main aim to provide for the establishment of Regulatory Authorities to regulate rates for facilities and services provided at the ports, to monitor the performance standards of port facilities and services, and for matters connected therewith or incidental thereto. It contains the following provisions.

15 Chair Person and Deputy Chair Person as long as desired by the central government, other trustees for a period of 3 years or at the age of 65 years and with possible reappointment to a maximum of 2 consecutive years.

The central government would have the right to constitute an Authority to be called the 'Major Ports Regulatory Authority'. It would be a body corporate, having perpetual succession and a common seal with power to acquire, hold and dispose of property, both moveable and immoveable and to contract including to sue and be sued.

Every Maritime State Government may also constitute a Regulatory Authority for the state – the State Ports Regulatory Authority, as is the case with the Major Ports Regulatory Authority.

The Major Port Regulatory Authority shall have jurisdiction over all the Major Ports and a State Port Regulatory Authority shall have jurisdiction over all ports, other than the Major Ports located within the concerned state.

The Appropriate Regulatory Authority shall discharge the following functions:

- To formulate and notify tariff guidelines, prescribing the methodology, approach and other conditions governing the setting of rates for different facilities and services by the Port Authorities and Private Operators functioning therein.
- To lay down the performance norms and standards of quality continuity and reliability of services to be provided by the Port Authorities and Private Operators and monitoring actual performance and services provided with a view to secure compliance of the prescribed norms and standards by both the Port Authorities and the Private Operators.
- To discharge such other functions as may be assigned under this Act.

The appropriate Regulatory Authority shall advise the appropriate Government on all or any of the following matters such as the promotion of efficiency and competition in the Ports Sector, the promotion of investment in the Ports Sector and on any other matters referred to by the concerned appropriate Government.

The Major Ports Regulatory Authority shall:

- Specify the common principles, approach and methodology to be adopted by the State Ports Regulatory Authorities in their tariff guidelines and prescribe performance standards.
- Furnish necessary clarifications on the implementation of the tariff guidelines and the enforcement of performance standards based on a reference to it by a State Ports Regulatory Authority.

The central government shall constitute a 'Forum of Regulators' consisting of the Chairperson of the Major Ports Regulatory Authority and the Chairpersons of the State Ports Regulatory Authorities. It would be the Chairperson of the Major Ports Regulatory Authority that shall be the Chairperson of this forum. The office of the Major Ports

Regulatory Authority shall act as the secretariat of the Forum and this should meet at least once in six months to discuss and evolve suitable approaches to the framing of Tariff Guidelines, the setting of the Performance Standards and all other issues arising from the implementation of these activities, besides any other common matters relevant to the efficient discharge of the functions assigned to the Regulatory Authorities under this Act.

The Draft Ports Regulatory Authority Bill, 2011 may be seen as a means for the central government to control the state government ports in respect of tariff setting and performance standards. The relative freedom of the Non-major Ports could then be restricted and the tariff setting freedom actually reduced.

There are strict and possibly excessive clauses included in this draft bill with the aim of appointing exclusively the Chairperson and two full-time members by the central government[16]. To select the Chairperson and other members the central government must constitute a search committee. The end result is that the past practices of nominating high ranking central government officials would probably continue, though this is no longer considered a preferred or appropriate option in most ports of excellence worldwide.

The constitution of the Chairperson and other members of the State Ports Regulatory Authorities is equally complicated, but this time the Chairman and members must have held the post of Chief Secretary or Principal Secretary to any state government or Chairperson of a Major Port in the case of members. Once more, a selection committee has to be constituted. Then, the central government or the state government can still remove from office a Chairperson or any other member, for example, who has acquired such financial or other interest as is likely to affect prejudicially their functions as a member; or that they have so abused their position as to render continuance in office prejudicial to the public interest.

To make matters look even more complicated, the Bill also calls for the establishment, by the central government, of an 'Appellate Tribunal' that will adjudicate any dispute between two or more service providers or between a service provider and a group of consumers. The Chairperson and the members of the 'Appellate Tribunal' have to be public servants within the meaning of section 21 of the Indian Penal Code. These public servants have then to make decisions on disputes between service providers or amongst them, or between a service provider and a group of consumers. These are basically issues which are directly related to pricing, performance standards or entry into the market of service providers and are imminently related to the management, marketing and operational aspects of the port's activities. The proposed public servants of the

16 These can for example not be appointed by the central government unless they have held the posts of Secretary of the Government of India or equivalent for the Chairperson and Additional Secretary or Chairperson of a Major Port in the case of Members.

'Appellate Tribunal' do not therefore seem to be the best choice for settling this type of litigation.

At present, due to the opposition from state governments, the 'Draft Ports Regulatory Authority Bill, 2011' is, at least unofficially, off the table according to some sources, and not really off the table but just not in the public domain according to other sources. *In fact, the ideal solution could be that the Bill would indeed create a level playing field, not by placing the Non-major Ports under federal control, but by allowing the Major Ports to obtain more freedom in their management.*

2.6.3. Land Policy for Major Ports, 2010 and Directives for Land Management by Major Ports, 2012

In January 2010 the MOS approved the Land Policy for Major Ports for immediate implementation and the Land Policy issued in 2004 was superseded by the new one.

Major Ports in India have a combined land asset base of 2.58 lakh acres of land of which 20 percent is not yet in use and could be leased out. Ports, internationally, tend to allocate land for carrying out economic activities and so that there is enough captive cargo to ensure the viability of that port. One of the uses of port lands is the establishment of Special Economic Zones which aim to encourage industrial and logistics development in and around the port zones. Ports are thus expected to utilize their land areas, as a first priority, with port-related activities and as a secondary priority, activities which add value to the first. The optimum utilization of port land is a matter that concerns all ports and therefore is the primary purpose of the 'Land Policy for Major Ports'.

The most important points emerging from the new policy are:

- Every Major Port must have a land use plan approved by its respective Board.
- The allotment of land in the custom-bound area may be on a license basis for activities which directly relate to the operation of the port or for activities which are not directly port-related but assist the port activities, the sea trade and the security of Indian ports. The allotment must conform to the Scale of Rates or to rates approved by the competent authority.
- The license of land outside the custom-bound area may be up to 30 years or even up to 99 years, if it is approved by the Ministry. This is valid for the both the port-related and non-port-related activities but with a preference for the first group.
- Land should normally be leased out through a competitive bidding process. The annual reserve price of such plots of land will normally be 6 percent of the market value in accordance with the ready reckoner published by the state government, or the rates obtained in recent tenders for comparable lands, or the Scale of Rates (SOR rates) prescribed by TAMP. Nevertheless, the Port Trust Boards are empowered

to reduce these rates in specific cases, depending on the circumstances and for reasons that have to be recorded in writing.

- Land can be allotted on nomination basis to, for example Government Departments or to private parties, in accordance with the SOR rates approved by the competent authority which has given it due justification.
- Land can be leased upfront by the Port but only with the approval of the Board of Trustees. Upfront means a one-time consideration amount for the lease period and a nominal lease rent to be collected every year for the term of the lease period.
- Specific procedures for the lease have to be followed; in fact the port should consider renewing the lease only if it does not require the land for its own use, and on condition that the renewal is consistent with its land use plan.

The main reason for the revision of the Land Policy of 2004 was the fact that it allowed the management of the Major Ports the freedom to lease out land below the market price. The problem of course is that it is difficult to ascertain whether the rate is on the 'Scale of Rates' approved by the competent authorities or a land rate in the adjacent areas of the concerned ports. Thus the difficulty is in ascertaining whether the determined rate is the current market value or not. The Ministry seems to favor a transparent auction process in order to discover the market rate of land in every case.

A number of questions remain unresolved. First there is the question that this new policy could result in more centralization rather than decentralization of the land allotment power. More important is the doubt whether the utilization of land will improve, and this can only be answered in due course. The third question concerns the protection of the port's financial interests and how this will work out in the medium and long term.

The following are the main differences between the Land Policy for Major Ports, 2010 and the draft Policy Directives for Land Management by Major Ports, 2012. They deal with some specific adjustments to clauses or sentences and not with the four main questions raised in the discussion of the 'Land policy for Major Ports, 2010'. The policy is applicable to all Major Port Trusts (with a few specific exceptions) and would also be relevant for land allotment to all BOT projects. Land can be allotted either on license or lease basis as per approved land use plan or zoning. The changes are marked in bold script.

Land inside the custom area

Land use plan of Major Ports shall be reviewed by the Board once in every 10 years.

Land inside custom bound area shall be given on license basis only. ***Wherever feasible, such license shall be issued by inviting tenders and the guidelines for determining such feasibility shall be framed and approved by the Board of the Port.*** Any concession ***or incentive on rates*** shall be given only with the approval of the Board. The license can be renewed by the Chairman ***up to two times.***

Permanent structures like tank farms, godowns and warehouses ***shall not be permitted*** except for Major Ports which do not have area outside the custom bound for operational purposes (again with the approval of the Board). Such allotments may be on tender basis or for captive use. Alternatively, ***wherever feasible,*** ports may create such infrastructure on common user facility basis and recover charges from the port users either on a monthly basis or per unit basis.

Land outside the custom bound area

Land can be leased up to a maximum period of 30 years by the Port with the approval of the Board.

Concerning the license, ***wherever feasible, such license shall be issued by inviting tenders, the guidelines for determining such feasibility shall be framed and approved by the Board.***

For leases with respect to social or educational purposes and ***for sports/recreational purposes related to maritime activities,*** not run on commercial lines, allotment may be made in accordance with the land use plan and conditions applicable to such allotments as decided by the Board.

When entering into a joint venture for improving port connectivity, with any public authority, land required for such projects may be provided at nominal value. ***Wherever feasible*** the differential value between the market rate or the updated SOR and the nominal value should be treated as equity share in the joint venture; where it is not feasible, the Board may take a suitable decision, after recording the reasons therefor.

Land should be leased through a ***tender cum auction*** competitive bidding process and the reserve price of such plot deals shall ***be the updated*** SOR prescribed by TAMP.

Land can be leased by the Port with the approval of the Board of Trustees only on upfront basis. Upfront basis would mean one time consideration amount for the lease period and a nominal lease rent to be collected every year for the currency of lease period. In case this is not possible, this may be done on annual lease ***payment*** basis with the approval of the Board, after recording detailed reasons for the same.

General rules applicable to existing and new areas

In case of leases granted on upfront basis

The lessee may be allowed to transfer the lease ***as per extant laws*** after obtaining prior approval of the Board of Trustees....

In the case of those lands which were originally on lease on upfront basis (rent), the transfer ***as per extant laws*** may be allowed subject to the transferee agreeing to pay.....

In case of leases which were originally granted on annual lease rent basis transfer may be allowed subject to the payment of.....

(E) No Objection for Conversion can be granted for mortgage or leasehold interest, along with the structures erected by the lessee thereon in favor of **reputed** financial institutions/**scheduled banks**….

Administrative Reforms

(ii) The allotments through tender cum auction shall be done through e-tendering

In conclusion – the comments contained in the draft Policy Directives for Land Management by Major Ports are mainly further clarifications of the Land Policy for Major Ports, 2010 and they therefore assist in providing clearer or improved directives.

2.6.4. The Tariff Regulator's Role under Discussion

Finally, a major issue affecting India's Major Ports, is the role of the TAMP since its inception in 1997. Specifically the positive and negative impact of TAMP's regulations on the Major Ports' trade levels and the impact of its rules on private investment (which affect negatively the Major Ports and positively the Non-major Ports) are significant. The issue is treated in some detail with comments from TAMP, the Major Port Trusts and the private operators.

The MOS published on the 7th of March 2013 'Draft Guidelines for tariff setting for Major Port Trusts and Private Terminals, 2013' and asked thereby for the comments of all concerned. There is a manifest understanding given by the MOS that the TAMP would continue to set the tariffs for Major Ports and private terminals in these ports. A review of the main aspects of these draft guidelines (see Annex 6) shows a certain lack of sensitivity to the operational realities involved in the development and running of terminals by the Major Port Trusts and the private sector. It also reconfirms the belief of the MOS that a tariff authority can still work in the Major Ports, notwithstanding that in virtually all other major ports in the world the ports are allowed to set the tariffs in line with both the market demand and supply balance and the intra-regional and inter-regional competition levels.

The general feeling in the port sector is that if the tariff regulation is applicable to Major Ports it should also cover all ports. Otherwise, private players will be hesitant to come and bid for PPP projects at the Major Ports because they know that their operations could be impacted by the TAMP tariff regulations. Therefore, there should be a level playing field between Major Ports and Non-major Ports. The Major ports support the stand to negate the advantage enjoyed by the Non-major Ports (those controlled by the coastal states) that are free from such regulation and hence considered a better investment proposition than Major Ports.

Private firms running cargo handling terminals at Major Ports are now more and more opposed to tariff regulation which was initially introduced by TAMP in 1997, by the guidelines issued in 1998 which were vague and did not spell out a formula for tariff

fixation, by the 2004-05 guidelines which were more detailed with the tariff being fixed on a 'cost plus basis' and by the 2008 guidelines which turned out to be a departure from the 2004-05 guidelines as the tariff has now to be fixed upfront for the entire period of the concession and the retained bidders are expected to make their proposals taking this upfront tariff into account.

Although a number of revisions have been added, and officially the functional tariff regulation is met, it is felt by nearly all parties that the guidelines have not been able to ensure that the objectives are met. This is so because of a flawed approach, illogical or erroneous arguments and a patchwork of solutions that can never meet all the different aspects of port tariff fixing in a wide variety of ports and terminals, handling very different cargoes under quite different circumstances.

TAMP has fixed the tariffs at maximum capacity, thereby capping profits and leaving no reward for efficiency. TAMP has adopted the highest levels of efficiency as standard norms. That leads to a gross understatement of the capital costs on a per unit throughput basis. The terminal operators feel that the system for setting a tariff for 30 years is flawed because it omits the fact that the future conditions cannot be forecast with accuracy and there are no mechanisms in the policy guidelines to correct for inaccuracy.

The current regulatory regime effectively benefits shipping lines because there is no mechanism to ensure that the benefits of lower rates imposed by TAMP on the terminals are passed on by the shipping lines (the only customers of the terminals) to the trade (exporters and importers). Meanwhile, The Energy and Resources Institute (TERI), which was mandated by the Shipping Ministry to frame new guidelines to be followed by TAMP to set rates for port services, submitted its report in March 2012. This report does not solve the problems of terminal operators, but it makes one key suggestion by asking the Shipping Ministry to consider "whether the private terminals and cargo-specific terminals at (Major) ports should be freed from tariff setting and allowed to compete between themselves and Non-major Ports".

The relatively sluggish global business climate coupled with TAMP's restrictive policies on setting tariffs in Major Ports are both pressing factors affecting the outlook for ports projects in India.

Therefore, the TAMP's future has been the subject of much debate in the last year and the solutions range from abolishing TAMP as a tariff authority, to giving it regulatory powers, to strengthening its power under a new law.

2.7. Issues with respect to PPPs in Indian Ports

The Government of India has been encouraging private sector participation in ports since 1996 especially by awarding PPP concessions. Some of the PPP models which are available worldwide are:

- The concession models such as:
  - Build-Operate-Own-Transfer (BOOT)
  - Buy-Build-Operate (BBO)
  - Build-Own-Operate (BOO)
  - Build-Operate-Transfer (BOT)
  - Build-Lease-Operate-Transfer (BLOT)
  - Design-Build-Finance-Operate-Transfer (DBFOT)
  - Operations License-Design-Build (DB)
- The Annuity Method
- The Royalty or Revenue Share Method
- The Finance Only Method
- The Special Purpose Vehicle

The major areas that have been opened for private investment, mainly on a Build, Operate and Transfer (BOT) basis with revenue sharing formulas, include the construction of berths for cargo handling, container terminals, cargo handling equipment, warehousing and the construction of dry docks and ship repair facilities.

Up to 100 percent FDI in Indian ports is permitted and some of the leading terminal-operating companies in the world, such as Dubai Ports World, APMT and PSA have invested in the ports of JNPT, Mumbai, Chennai, Cochin, Visakhapatnam and Tuticorin. The central government has also brought in a level of uniformity and transparency in the PPP process by issuing Request for Qualification (RFQ) and Request for Proposal (RFP) documents. The central government has modified the tariff setting mechanism to go in for upfront tariff fixation before the projects are bid out, although this is not necessarily in line with the principle of the relative tariff setting freedom that was promised for all Major and Non-major Ports.

The state of Gujarat has demonstrated success in bringing together public and private resources for the development of ports and related infrastructure facilities, convincing other state governments to use PPP for their port developments.

PPP helps increase the pace of development, allows faster decision-making, leads to more advanced operational and technological developments and reduces bureaucracy in management. In general terms, the outsourcing to the private sector also allows the port to function as an operating port for specific port services such as pilotage and towage, as it helps to reduce the operating costs and improve the efficiency of these activities. One of the concerns raised against PPP projects in India is that the private investors obtain rates of return which are higher than the central government bond rate. However,

apart from ignoring the benefits of private sector participation, the fallacy in this criticism is that the government can deliver all public infrastructure needs at a cost of financing which is equal to its risk-free borrowing rate.

In 2010-11, some 20 projects with private sector participation were under consideration in Major Ports. The estimated total cost of these was Rs. 10,348 crore and they would add some 171.45 million tons of capacity. At present for the year 2011-12, a total of 35 PPP projects have been awarded to the Major Ports.

Despite the various measures and initiatives being taken, the overall progress of PPP projects in Indian ports has been well below expectation. The slow development of such projects is primarily due to bureaucratic delays, uncertainty, indecision and a host of clearance problems, local community opposition, site squatting by concession holders and the presence of small scale proximate port facilities.

There is clearly a need for PPP project frameworks to increase the level of protection to stakeholders against the suppliers with significant market power offering poor service levels and excessive charging. It is doubtful that excessive regulation is needed to ensure that service standards are maintained, consumers get timely upgrades on their shipments, asset maintenance and replacement are provided and steps to protect the environment are being implemented. *It would be much better to have a greater level of competition and freedom for setting prices.*

A further issue is the possibility that the high revenue shares offered by PPP bidders to win the concession can drive up the port service cost to the shipping lines, industry and trade. A first reaction to this is that TAMP sets the tariffs, but this is anyhow changing today. In fact, revenue shares are currently reaching levels that may undermine potential viability. Then the risk becomes real that these PPP projects may not be built.

There is also the argument that high revenues and high tariffs are not a problem for industry and trade as long as the service is good and reliable. But this ignores the fact that the handling contracts are negotiated and agreed upon between the shipping lines and the terminal operator. Hence, if the price goes up faster in Indian ports than elsewhere in the region, then transshipment activities in the other ports will gain by adding to their transshipment the Indian throughput volumes.

2.8. The use of Information Technology in Ports

Ports are required to provide a wide range of services, from the movement of ships in the port to the movement of cargoes to and from ships, the onward movement by various modes of transport and the compliance with custom and phyto-sanitary procedures. Ports must be able to efficiently allocate berths, terminals and jetties. They must allow anchorage to ships. They must follow cargo in or out of transit storage or of warehouses. They must maintain details of personnel working in the ports shift after shift, or on a

monthly basis as the case may be. And they must collaborate with all stakeholders to set up a Port Information System (PIS) and a Port Community System (PCS). Thus, the ports are required to coordinate, collate and disseminate innovative systems in which the users will be able to optimize their planning and decision-making processes. The use of Electronic Data Interchange (EDI) supports the efficient organization of the data flow that accompanies the physical transport flows.

With the expected increases in the Indian ports' throughput volumes, more challenges lie ahead with the use of information technology. At present, the MOS has set up a series of tasks to use information technology for meeting the above challenges. These include, amongst others: the fully integrated use of Port Community Systems with all stakeholders both for Major Ports and for Non-major Ports; Vessel Traffic Management Systems (VTMS) for all ports handling import and export cargoes and for the Gulf of Kutch; and the introduction of advanced security systems in the ports with surveillance and Closed Circuit Television (CCTV), Radio Frequency Identification Data (RFID) and Optical Character Reading (OCR).

In a number of areas information technology has been added, amongst others, in modules dealing with integrated vessel services and control management, integrated cargo management and accounting systems, integrated container handling and tracking systems, terminal operating systems, etc. Other non-operational areas in which IT has been integrated to achieve quality performance are payroll processing, accounting functions, Provident Fund accounts, Income Tax and Materials Management.

In the Maritime Agenda the MOS has identified a series of steps to promote information technology such as the application of Enterprise Resource Planning and the computerization of Land Management processes.

Ultimately, the PCS in Indian ports (both Major and Non-major Ports) which integrates the electronic flow of information between all the stakeholders, has inherent major advantages, such as saving time and money, improving the speed of services and offering gains in tracking of shipments and service visibility. *The creation of an integrated port management system by the Gujarat Maritime Board and the development of the IT Strategy and Programme Management by JNPT have set examples that all Indian ports should follow to upgrade their services to meet upcoming technological changes.*

2.9. Lessons from Case Studies

Annexes 7 to 9 present three case studies which cover the following themes:

Case 1: Development of national port networks (Turkey)

This case study gives insights into the role of the government during a period in which the demand for port capacity was expanding due to the 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).

Lessons for/parallels with India: *The situation in India has obvious parallels with the Turkish situation. Both countries are developing economies that have experienced 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.*

Case 2: Development of road and rail freight corridors (The Maputo Corridor)

Railway infrastructure is an important prerequisite for shipping goods from and to seaports. Due to its economies of scope, rail transport is particularly important for the transport of bulk goods, such as coal and iron ore. Without rail access, transportation of these goods would become too expensive. Rail transport can also be used for the shipment of concentrated flows of containers between ports and inland. 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.

Lessons for India: *Contrary to the situation in India, this corridor includes a border crossing which used to form a barrier (and to a certain extent still does). Corridor development efforts were therefore partly focused on removing the barriers caused by border crossing. In the case of India this would, of course, not be necessary. Apart from this minor difference, a corridor development organization would thus be an excellent instrument to develop freight corridors in India.*

Case 3: Ensuring 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, port charges set by the port authorities also do not always reflect fair pricing. Governments try to compensate for 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.

Lessons for India: *With regard to regulating port services in India, the regulatory regime of the EU seems to be comparable, since most of the Indian ports are also under*

government control, although of course the question that can be asked is whether this government control of the Major Ports is not a negative aspect rather than a beneficial one. The profile of the ports, and their differences in handling volumes, commodity types and navigational access may require some level of differentiation. Furthermore another question to be answered would be whether to apply the same regime for Major and Non-major Ports. Finally, the 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 of ports (public and private) could be envisaged.

2.10. Concluding Remarks

Concluding remarks on hinterland connectivity include:

- Matching improvements in connectivity is a challenging task as many factors come into play, not least of all the modal split; the use of connectivity facilities; the feasibility of the proposed works; the financial returns which can be problematic; in particular for smaller ports; the technical effectiveness of the various plans and social resettlement where this is an issue.
- The Major Ports at present have mainly road and rail connectivity. The capacity and the quality of the existing connectivity demands much greater attention so as to ensure regular and continuous incoming and outgoing flows.
- Road transport is India's major mode of inland transport for port cargo. However, as distance and volumes increase, rail transport becomes increasingly a major competitor. Nevertheless, road transport will remain a viable competitor because of its flexibility, its complementary nature and its ease in fitting in with the logistics chain, particularly over shorter distances.
- Ports are increasingly seen as nodes in transport networks, rather than autonomous goals in themselves. This is frequently expressed as a corridor approach – the best example of a dedicated freight corridor in India is the DMIC.
- Given the complexity of the regulatory issues surrounding coastal shipping, the rate of progress is bound to be limited.
- The main practical challenges to the use of inland waterway transport are a lack of buoys to allow night time navigation; a lack of barges; badly navigable rivers and a lack of inland terminals with excellent road and rail connections. This means that significant resources need to be made available to achieve the required changes as indicated above.

Concluding remarks on governance include:

- Worldwide, the landlord model has been adopted as the prevailing model of port management today, although there are still quite a number of exceptions, particularly in developing economies, but also in Japan.

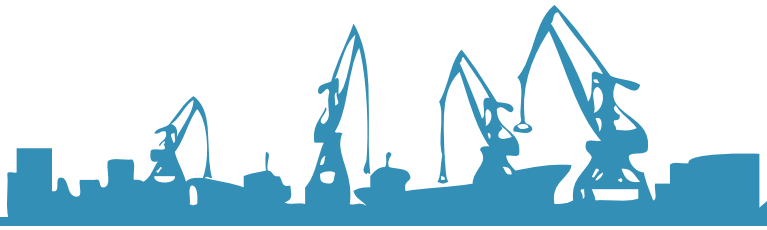
- The present-day port authority is usually a corporatized entity with a sufficient degree of autonomy and financial independence to pursue the port business and impose regulations at the local or regional level.
- Economic port regulations pertain to inter-port competition and intra-port competition. In both cases a competition regulator may be needed: for inter-port competition there is no need for a price regulator, but for intra-port competition a regulator of fair trade is necessary to prevent abuse of monopolistic power while ensuring common access to the port.
- A port policy shall be embedded in a national integrated and intermodal transport policy.
- Worldwide, port authorities at the local or regional level seem to be best placed to deal with the roles of landlord and regulator. First, they are also in a better position to execute enhanced functions such as the shaping of supply chains with the hinterland, involving hinterland intermodal corridors and inland terminals. Secondly, they are also taking responsibility for the planning and financing of port development, port-related industrial development and port-related urban (re)development.

Concluding remarks on the Regulatory Framework include:

- The shift in functions of the public sector from public port services to landlord ports with private operators running terminals implies that the role of governments is changing from having direct control over state-owned and operated ports to exercising indirect guidance through appropriate regulation.
- The key function of economic regulation in or between ports is that of competition regulation and not of a tariff authority.
- 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 (such as setting of maximum tariffs, establishing "price caps").
- Rather, under fair competition, the market is the regulator. Economic regulation shall pertain to the establishment of a level playing field: 'away from tariff regulation and to competition regulation'.
- With respect to intra-port competition, there seems to be a tendency for major international mining, manufacturing and logistics 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 of these companies, while ensuring common access.
- It is the central government's responsibility to draft regulatory legislation. As regards India, it is noted that a number of queries regarding economic port regulation, in

particular the controversial issue of tariff regulation have been addressed in the 'Draft Regulatory Authority Bill, 2011' and in the document concerning intra-port competition in India under the heading 'Policy for preventing private sector monopoly in Major Ports' by the MOS (2010).

This section has analyzed some of the challenges facing the Indian port sector today, and also drawn lessons from other countries that have walked a similar path as India. How some of these core challenges may be addressed, so that India moves towards a remodeled vision and strategy for its port sector are discussed in the final section 3 of this report.



SECTION **THREE**

RECOMMENDATIONS FOR INDIA'S FUTURE ROLE WITHIN A REMODELED VISION AND STRATEGY

RECOMMENDATIONS FOR INDIA'S FUTURE ROLE WITHIN A REMODELED VISION AND STRATEGY

This section presents key messages and recommendations that would help remodel the vision and strategy for the Indian port sector.

The key conclusions and messages for India include:

- India needs to develop additional port capacity to facilitate imports and exports and to support the growth of its economy. The balance between capacity and demand will be fragile at best in the coming decade, and capacity expansion realization is threatened by delays in PPP projects. The additional capacity needed concerns bulk and containerized cargoes and the need to provide adequate draft for the largest ships.
- The Indian economy needs efficiently organized and efficiently operated ports, to make sure that the maritime infrastructure is used optimally. The management of ports in India should be changed to allow for more efficient planning and operation of ports, and the participation of the private sector, particularly in port operations, should be further increased. A new port hierarchy should be considered based on emerging traffic flows and demand/supply patterns of both production and consumption centers.
- Competition in the port sector should be promoted, and where necessary regulated, as competition will lead to efficiently organized and operated ports.
- The logistics flow of trade through ports (and in fact along the entire transport chain) should be supported by efficiently organized information exchange.
- The increasing pressure on India's rail and road network could partly be relieved by developing short sea-shipping as an additional, sustainable alternative mode of transport. Nonetheless, also hinterland infrastructure should be seamlessly adapted to growing port-related traffic volumes.
- Ports should be developed as international connection nodes in structural economic development, aimed at strategically positioning ports as nodes in transport and economic corridors. A good example already exists in the form of the Dedicated Freight Corridors Project.

Some of the detailed suggestions and recommendations are discussed below.

3.1. Governance and Business Model

Sector governance

1. **The ports sector be liberalized to encourage competition between ports and, where feasible, between terminals within ports.**

Liberalization and deregulation refer to the reform or partial elimination of governmental regulations that distort markets and hamper market entry, and so will enable private companies to operate and compete in an area traditionally reserved to public sector monopolies. *The Draft Indian Ports Bill 2011* is a comprehensive Bill that aims, amongst other things, at greater liberalization of the port market.

2. **As far as possible, public policies and regulations be harmonized to create a level playing field for Major and Non-major Ports so that the success of each port in attracting investment and traffic will be its comparative market advantages, and the success of its owners and managers in exploiting those advantages.**

The *Draft Regulatory Authority Bill 2011* would enable the creation of Regulatory Authorities to regulate tariffs for port facilities and services and monitor the performance standards, and it seeks, among other functions, that the tariff setting and performance monitoring for the *Non-major Ports be under the ambit of the respective state port regulatory authority*. The main rationale of this measure would then be to provide a level playing field to all players, the Major Ports and the Non-major ports. Depending on how the regulatory authorities (individually and collectively through the forum) choose to use their powers, it could also lead to an overly intrusive and prescriptive regulatory regime bearing on both Major and non-Major Ports; in other words, a playing field leveled by saddling Non-major Ports with the same handicaps as Major Ports. In the light of states' opposition, the Bill has been stalled, perhaps permanently. *If so, it is a good time to revisit the issue to seek a simpler regulatory regime and a concept of the regulator as umpire, not player.*

There are various grey areas with respect to the modalities of implementation of this Bill and opposition from the various affected parties. Already these risk delaying its implementation and could lead to interminable discussions on the Non-major ports' policies and on the operational and financial effects on the private sector involved in these projects. *It is therefore recommended to review completely this Draft Port Regulatory Bill and possibly rewrite the key clauses with a view to making all Indian ports and their facilities truly competitive in a free market environment, as demanded by the users and the operators.* The latest on the 'Draft Regulatory Authority Bill' is

that, unofficially, it is off the table or at least it is no longer in the public domain anymore.

Corporate governance

1. **Existing port authorities be corporatized within a legal framework (e.g. The Companies Act, 1956) and with corporate charters that establish a clear commercial orientation while recognizing their public ownership and responsibilities.**

In the early 1990s, GoI policy favored the corporatization of the Major Ports and transformation of their role to the Landlord Model, but till now Ennore Ltd. is the only one operating as a corporatized landlord port. The current boards of the Major Ports generally oppose plans for corporatization and there are currently no plans for creating another port corporation in a Major Port. However, Indian ports will never be in a position to deliver world-class performance unless they adopt the world's best-performing institutional structures.

Of the different international experiences reviewed, the Australian approach is considered as having particular merit relevant to the Indian situation, and is recommended for further consideration by Indian authorities. Australian ports are, in the main, landlords to private 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.

2. **The corporate governance and management of such entities be underpinned by independent and professionally-qualified boards of directors, merit-based selection of managers, management accountability based on formal business plans, commercial management structures, greater pricing freedom, use of commercial accounting and auditing standards, and transparency of operational and financial performance.**

The Draft Indian Ports Bill 2011 is a comprehensive Bill aimed, *inter alia*, at greater liberalization of the port market, corporatization of Major Ports (either as government companies or public limited companies) with better qualified boards, and regulatory oversight only of maximum tariffs rather than actually setting tariff schedules, as happens now. The Bill would also permit extension in the duration of a private concession for major infrastructure beyond the present 30-year period and up to 99 years – providing a greater incentive to invest and innovate. Should the Bill be enacted it would be a major step in port reform, though it has perhaps missed the opportunity to cover other important aspects, such as the setting up of a regulatory framework for safety, security and environmental standards.

Ports business model

1. **Such port corporations progressively adopt the Landlord Model, adapted to their own circumstances and port development plans.**

The most prevalent mode of port governance reform internationally has been the corporatized 'Landlord Model', in which the public sector remains the owner of a port corporation which is a commercially-structured enterprise that manages basic port infrastructure and common areas, services and facilities. Cargo handling operations (and other activities like pilotage, towage etc.) are then contracted, leased or concessioned to the private sector. The corporatized Landlord Model is now a mainstream port governance structure worldwide and becoming the dominant port model in larger and medium sized ports.

2. **They encourage private sector investment and participation in the port's terminal activities by lease and/or concession, and also by contracting out some of the port's own common and support services where this is expected to improve efficiency and competitiveness.**

The major areas that have been opened for private investment, mainly on a BOT basis with revenue sharing formulas, include the construction of berths for cargo handling, container terminals, cargo handling equipment, warehousing and the construction of dry docks and ship repair facilities. Up to 100 percent FDI in Indian ports is permitted and some of the leading terminal-operating companies in the world, such as Dubai Ports World, APMT and PSA have invested in the ports of JNPT, Mumbai, Chennai, Cochin, Visakhapatnam and Tuticorin.

3. **They give high priority to investment in state-of-the-art information technology and exchange to connect all the businesses and other stakeholders using, operating in or affected by the port and facilitate the smooth and secure flow of cargo through ports and along the supply chain.**

The MOS has adopted a series of important initiatives to improve the use of IT in Indian Ports. A noteworthy component is the development of a PCS for both Major and Non-major Ports designed to integrate the electronic flow of information between all the stakeholders, save time and money, offer gains in tracking of shipments and provide service visibility. The creation of an integrated port management system by the Gujarat Maritime Board and the development of the IT Strategy and Programme Management by JNPT have also set examples that all Indian ports could usefully follow. Other initiatives for the use of IT underpinning information exchange are essential to port efficiency and competitiveness in virtually all of its activities.

3.2. Private Sector Participation

The PPP projects in the Indian ports sector have not met expectations because of various policy-related obstructions and restrictions, at all stages. At the pre-award stages the main problems have involved a lack of clarity regarding the bidding framework, the qualification criteria and the exact meaning of the bidding terms. The introduction of a final model document was generally assumed to be a positive step in resolving the most critical issues. In the bidding stage the process has been protracted by the bureaucratic procedures that exist in most Major Ports, which have often led to cancellations and re-bidding. At the post-award stages there have been delays in the execution of projects due to the time taken to obtain environmental and other statutory approvals. In the post-commissioning phase the BOT terminals have faced serious operational problems because of their high dependency on common services provided by the Port Trusts, such as capital dredging, pilotage and vessel movement. This has sometimes reduced the efficiency and competitiveness of new projects.

Some of the areas in which improvements in PPP policy could be considered are:

- *Processes be streamlined* to expedite the implementation of PPP projects and reduce the incidence of unforeseeable or unquantifiable regulatory risks.
- Tariffs of private terminal operations be normally governed by the provisions of concession agreements, allowing that within those provisions flexible rates can be adopted to react to inter-port and intra-port competition.
- *Open competitive bidding* should become the preferred way for selecting the private operator. The prequalification of terminal operators should give weight to submissions by parties that can demonstrate clear achievement in terminal development and port operations.
- *Revisions to the existing PPP model* may effectively become necessary during the 30 years period of a concession or a lease, in order to help the facility respond to changes in the market and the economy. The guidelines should vary depending on location, financial status or type of cargo handled.
- There is a need to attract more private sector funding for facilities other than just container terminals. There could be a system of *fiscal incentives* for this type of investment (e.g. tax incentives for port equipment would support modernization of the ports and the development of Greenfield sites).
- Major Port Authorities could *invest surpluses through fully owned subsidiaries* in other Indian ports or Greenfield sites. But this would currently exclude some Major Ports which have very limited surpluses.

- Port accesses and connectivity with rail and road *should not be loaded* onto the project, which make them less viable and thus less attractive.

3.3. Economic Regulation

1. An independent ports regulatory body be established to promote and protect fair competition, between ports and between competing terminals within ports.

The Draft Ports Regulatory Authority Bill, 2011 would enable the creation of a Major Ports Regulatory Authority and a State Regulatory Authority for each maritime state government overseeing its own ports. Regulatory authorities would be empowered to formulate and notify tariff guidelines, set down the performance norms and standards for port operators (public and private), and advise government on issues such as the promotion of investment, efficiency and competition. A 'Forum of Regulators' consisting of the Chairs of the Major Ports Regulatory Authorities and the State Ports Regulatory Authorities would discuss and evolve suitable (and presumably harmonized) approaches to the framing of tariff guidelines and performance standards. If enacted, the Bill might create a platform for improved economic regulation but many of its provisions and its contemplated *modus operandi* appear complex and bureaucratic.

It is recommended that the main tasks and responsibilities of the Competition Regulator include, but not be limited to, the following:

- Upon complaint by any port user, to investigate and make orders in relation to complaints concerning alleged anti-competitive practices or abuse of a dominant position.
- Upon complaint by 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.
- Upon notification to the Competition Regulator prior to any merger of a shipping line and a terminal operator; a marine services provider with another marine services provider; or 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.
- 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.
- 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 government involvement and have its own sources of income. It is generally not recommended that the functions of a port competition regulator be included in those of a generic Competition Authority, Commission or Agency because the structure and characteristics of the port sector fundamentally differ from those of the telecom, electricity and railways sectors.

2. Regulatory determination of tariffs by TAMP be discontinued and the new or transformed regulatory body empowered to review tariff schedules set by ports only against, for example, anti-competitive or market-power abuse criteria.

In India, tariff regulation is performed by the TAMP for the Major Ports. If regulatory determination of tariffs by TAMP is discontinued and the new or transformed regulatory body empowered to review tariff schedules set by ports against anti-competitive or market-power abuse criteria, then a number of important consequences have to be taken into consideration:

- First, tariff setting for port authority services should remain with the Port Trust (Port Authority) on the basis of the long-term financial sustainability, whilst taking into account the competitive position of the port in an Indian or wider regional level.
- Secondly, tariff regulation for private terminal operations should be governed by the provisions of the concession agreement allowing that within those provisions flexible rates can be adopted to react to inter-port and intra-port competition.
- Thirdly, the structure of any 'royalty' to be paid by the terminal operator to the Port Trust (Port Authority) should be straightforward and based on TEUs, moves or tonnages annually handled through the terminal facilities.
- Lastly, it may be also necessary to corporatize the Port Trusts into Port Authorities, under the Companies Act 1956, so that they function under the same regulatory rules and principles as the privately operated terminals.

The B.K. Chaturvedi Committee set up in February 2010 to review and recommend revisions in the Model Concession Agreement recommended a three-pronged approach to improve the tariff setting mechanism as follows: streamlining TAMP procedures and building in-house capacity in the short term; delegating the tariff setting function to the respective Port Trusts over the medium term (1 to 2 years); and allowing market forces to determine tariffs over the long term (after 2 years) with the role of port authorities being limited to the oversight of the tariffs. This proposal was formulated more than two years ago but has not yet been implemented.

The 'Draft Tariff Guidelines for Tariff Regulation for TAMP' seek to give an answer to the requests by many parties to end the role of TAMP in price setting. The answer is, at least for the moment, no change in the TAMP's tariff setting.

3.4. Hinterland Connectivity

1. **Hinterland connectivity be improved in line with guidelines set out in Maritime Agenda 2020 for Major Ports including double-track connectivity to trunk rail network (and to DFCs where feasible) and minimum four-lane highway connections.**

In the Maritime Agenda 2020 various measures have been announced to improve connectivity and reduce the negative aspects of deficient connectivity. These measures aim to ensure better coherence with regard to connectivity and include the following:

- Each Major Port should preferably have double-track rail connectivity. Such projects, aimed at improving connectivity, could be taken up by Indian Railways or as BOT projects, and could also be realized through the formation of Special Purpose Vehicles in which the ports could be equity holders.
- Toll rates for highway port connectivity projects should be established jointly by the NHAI and the MOS.
- Each Major Port should have a minimum four-lane road connection; these projects could be taken up through the NHAI or possibly be executed on a BOT basis, with the possible formation of Special Purpose Vehicles comprising all of the stakeholders.
- The NHAI should undertake port connectivity projects (i.e. within 50 kilometers) on a BOT basis where possible.
- Viability Gap Funding or budgetary assistance may be considered for projects that have a negative or low rate of return.
- Ongoing projects would be monitored on a quarterly basis and approvals for pending projects would be expedited.

All the measures announced in the Maritime Agenda 2020 are for the Major Ports only. Clearly there would be considerable benefit if the state governments would also work out an identical approach for Non-major Ports so that inland connectivity for these ports could also be considerably improved. It would thereby also create additional port competition between the Major and the Non-major Ports, something that would make port regulation and tariff setting much less relevant.

2. **Opportunities be sought for expanding the role of coastal shipping and inland waterway transport to relieve pressure of hinterland connectivity from road and rail systems.**

As mentioned in the report, given the complexity of issues surrounding the development of coastal shipping and inland water transport, the rate of progress has been more limited than anticipated and while the problems are well understood, insufficient steps have been taken to solve them. That said, the opportunities for inland waterway transport and coastal shipping in India are becoming more positive, despite the challenges that

could limit the scope of their implementation. The government should therefore give the correct signs that these are being seriously considered and will be brought about. This means that significant resources would need to be made available to achieve the required changes. In fact, the increasing pressure on India's rail and road network could partly be relieved by developing short sea-shipping, using coastal and/or river-sea vessels in certain locations.

3. **National and regional transport plans make provision for the integration of port investment with hinterland transport upgrading, and exploiting those axes to create industrial development corridors and growth poles.**

Ports are increasingly seen as nodes in multi-modal transport networks, so hinterland connections are essential in the development and marketing of ports. This is frequently manifested as a corridor or growth pole approach, where a port and the transport links to its main hinterland are considered as an integrated challenge so that the throughput capacity of the port and the transport capacity to and from the hinterland are balanced. National and regional transport plans should increasingly account for these developments.

4. **Improved coordination between the different modes of transport and better multi-modal collaboration.**

One possible measure to address this is by improving the use of tri-modal links through investment in '*transferia*'. These are transfer places where container barges that come from the mainline vessels in the major load center ports, can be offloaded for onward transport to their final destination through road, rail and inland waterways, or, in case of export containers, for onward transport to the mainline vessel in the load center ports. There is also the possibility of including clauses with respect to the use of multi-modal transport in terminal concession contracts between the Port Trust and the selected terminal operator, specifying an increasing percentage of containers to be carried by inland waterway transport and rail, resulting in a reduced reliance on transport by road.

> *Some of the key messages from this section of the report are – to facilitate trade and economic growth India needs to develop additional port capacity, invest in large vessel capability and continue seeking improvements in the efficiency and competitiveness of port and terminal operations and their connectivity with hinterlands.*

ANNEXES

FORECAST VS. REALIZATION BY MAJOR COMMODITIES AND REGIONS

This annexure discusses forecast vs. realization volumes at Indian ports by major commodities and regions[17].

Container Volume

Between 2005 and 2011 the world throughput in containers increased by 47 percent. The shares of the different regions of the world are changing, with Asia dominating the figures. South Asia is a small player with 2-3 percent of total world volume in container trade, but the containerized cargo volume in India has grown in the period 2005 to 2011 by 130 percent.

The development of container throughput volume is generally closely linked to the development of a country's GDP. As an economy advances, the demand for, and production of goods that are prime container cargoes generally increases, as does the penetration of containers in the transport logistic chains. It is therefore reasonable to expect that the development of container volume to and from India will continue to grow in the years ahead.

The domestic destinations for containers are primarily located in the north-west of India, where some 70 percent of container volume is generated. This container volume is mainly routed through the ports of Gujarat and Maharashtra. With industrial activity growing in these and nearby states, it may be expected that their predominance will remain. Developments such as the Delhi Mumbai Industrial Corridor together with Dedicated Freight Corridors may strengthen that position.

In the 2015 forecast made in 2007 by the World Bank, the estimated demand for container throughput – and not the container volume handled – was expected to increase from close to 5.5 million TEU in 2005 to about 22 million TEU by 2015[18]. This now seems impossible to achieve by 2015, mainly because of a lack of first-rate container handling facilities (at least when compared, for example, with the top class facilities for handling container ships in Chinese ports). When looking at the Indian regions, the picture is not much different. It should be noted that in particular the Western region falls short of expectation. When looking at the clusters, the picture is very mixed. Kolkata, Paradip, Chennai/Ennore and Mangalore have already reached volumes higher than foreseen for 2015. Goa seems to be more or less on track; all other clusters fall short of realizing the

17 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation.

18 The World Bank applied a conversion factor of 1 TEU = 12 tons.

forecast for 2015. In particular Visakhapatnam and Cochin/V.O.C. lag far behind, and to a somewhat lesser extent both Western region port clusters Mumbai and Gujarat fall short of expectations too. These figures are depicted in Table 26.

Whereas elsewhere some ports saw their container volumes substantially reduced in 2008 and 2009, Indian ports overall merely noted stagnation during the years 2007-08 and 2009-10 (see Table 27). Many ports continued to grow during this period. Whereas

TABLE 26: Container volumes and expected increase 2005/2015 versus realized increase 2005/2011

Regions	Port clusters	Volume (million tons)			Increase (Multiple)	
		2005 (base)	2011 (realization)	2015 forecast	2005/2011	2005/2015
		(1)	(2)	(1*)		
Eastern	Kolkata	4.4	9.0	8.5	2.0	1.9
	Paradip	0.0	0.1	0.1	-	-
	Vizag	0.6	2.6	12.9	4.3	21.5
Sub-total		**5.1**	**11.6**	**21.5**	**2.3**	**4.2**
Southern	Chennai/Ennore	9.9	29.2	25.3	2.9	2.6
	Cochin/V.O.C.	5.5	12.6	46.3	2.3	8.4
	Mangalore	0.1	0.6	0.4	6.0	4.0
	Goa	0.1	0.2	0.4	2.0	4.0
Sub-total		**15.6**	**42.6**	**72.4**	**2.7**	**4.6**
Western	Mumbai	31.3	57.1	116.7	1.8	3.7
	Gujarat	6.11	22.5	57.5	3.7	9.4
Sub-total		**37.4**	**79.5**	**174.2**	**2.1**	**4.7**
Grand Total		**58.1**	**133.7**	**268.1**	**2.3**	**4.6**

(1) Original report. (2) IPA statistics. * forecast.

TABLE 27: Container volume 2006-07 to 2010-11 in Indian ports (1000 TEU)

	2006-07	2007-08	2008-09	2009-10	2010-11
Kolkata	239	297	302	378	377
Haldia	110	128	127	124	149
Paradip	2	4	2	4	4
Visakhapatnam	56	71	88	97	145
Chennai	886	1,128	1,144	1,216	1,524
Tuticorin (V.O.C.)	377	450	439	440	468
Cochin	227	254	261	290	312
New Mangalore	17	21	29	32	40
Mormugao	13	14	14	17	18
Mumbai	138	118	92	58	72
JNPT	3,298	4,060	3,953	4,092	4,270
Kandla	178	165	137	147	160
Total	**5,541**	**6,710**	**6,588**	**6,895**	**7,539**

Source: IPA statistics, Annual Administrative reports of the Major Ports.

this will not have solved the problem of congestion, it has bought Indian ports some additional time before growth could pick up again in a big way.

Table 27 also shows that container trade in India is concentrated in a few of the Major Ports (Mundra and Pipavav do better but are Non-major Ports). JNPT alone handles 56 percent of all container volume. The largest two Major container ports, JNPT and Chennai, together handle 77 percent of the total. All other ports are (well) below half a million TEU.

Dry Bulk Volume

Table 28 shows the volumes of dry bulk in Indian ports by region and cluster. The levels reached in 2011 are already beyond those expected for 2015. On a regional level, the Western region is seeing much higher volumes in 2011 than were foreseen for 2015, whereas the Eastern region is not yet at the levels foreseen for 2015. However it is clear that this region too will exceed the 2015 forecast.

Between the clusters, there are large differences. Visakhapatnam, Goa and Gujarat realized 2011 levels already well beyond the 2015 forecasts. Kolkata is on its way to go beyond the 2015 forecast, whereas Chennai/Ennore and Mumbai are more or less on track to reach the foreseen 2015 levels. Paradip and Mangalore will probably perform less than expected. The exception is Cochin/V.O.C. which registers a decline in 2010-11 with respect to the 2005 figures.

TABLE 28: Dry bulk volumes and expected increase 2005/2015 versus realized increase 2005/2011

Regions	Port clusters	Volume (million tons)			Increase (Multiple)	
		2005 Actual	2011 Actual	2015 Forecast	2005/2015	2005/2011
Eastern	Kolkata	13.0	16.2	17.0	1.3	1.2
	Paradip	23.0	37.0	76.0	3.3	1.6
	Vizag	28.0	73.2	49.0	1.8	2.6
Sub-total		**64.0**	**126.3**	**142.0**	**2.2**	**2.0**
Southern	Chennai/Ennore	22.0	25.4	31.0	1.4	1.2
	Cochin/V.O.C.	6.0	5.4	8.0	1.3	0.9
	Mangalore	13.0	14.6	33.0	2.5	1.1
	Goa	37.0	76.1	44.0	1.2	2.1
Sub-total		**78.0**	**121.5**	**116.0**	**1.5**	**1.6**
Western	Mumbai	8.0	21.5	36.0	4.5	2.7
	Gujarat	14.0	72.2	40.0	2.9	5.2
Sub-total		**22.0**	**93.7**	**76.0**	**3.5**	**4.3**
Grand Total		**164.0**	**341.6**	**334.0**	**2.0**	**2.1**

Source: IPA statistics, Annual Administrative reports of the major ports.

Iron Ore

Overall, iron ore volumes have not developed as expected but regionally there are differences. The Western region has already reached the volume of the 2015 forecast in 2010-11, whereas the Eastern region is lagging far behind and the Southern region has seen a decline.

Looking at clusters within regions, as shown in Table 29, some shifts can be seen. In the Southern cluster, Chennai/Ennore could be achieving the 2015 forecast; Mangalore has strongly declined, whereas Goa has increased well beyond its 2015 projection. In the Western cluster, Mumbai is stagnant whereas Gujarat has grown beyond its 2015 projection. In the Eastern region, Kolkata is developing as expected and Visakhapatnam is slightly ahead. Volumes in Paradip on the other hand have shrunk where initially massive growth was foreseen.

Coal

Table 30 shows that in the coal sector, throughput levels are generally higher than those forecast. In particular the Eastern and Western clusters are developing faster than projected and are likely to achieve higher volumes than the 2015 forecast. The Southern cluster is marginally behind its 2015 projection.

TABLE 29: Iron ore volumes and expected increase 2005/2015 versus realized increase 2005/2011

Regions	Port clusters	Volume (million tons)			Increase (Multiple)	
		2005 Actual	2011 Actual	2015 Forecast	2005/2015	2005/2011
Eastern	Kolkata	5	6	7	1.4	1.2
	Paradip	9	7	40	4.4	0.8
	Vizag	18	25	29	1.6	1.4
Sub-total		**32**	**38**	**76**	**2.4**	**1.2**
Southern	Chennai/Ennore	10	0	15	1.5	-
	Cochin/V.O.C.	0	0	0	-	-
	Mangalore	13	5	16	1.2	0.4
	Goa	33	44	40	1.2	1.3
Sub-total		**56**	**49**	**71**	**1.3**	**0.9**
Western	Mumbai	5	5	9	1.8	1.0
	Gujarat	4	12	9	2.3	3.0
Sub-total		**9**	**18**	**18**	**2.0**	**2.0**
Grand Total		**97**	**105**	**165**	**1.7**	**1.1**

Source: IPA statistics, Annual Administrative reports of the Major Ports.

Again, large differences between the clusters can be seen. Visakhapatnam is already far beyond the 2015 projection, whereas Paradip has not developed as well as expected. Goa is also well beyond its 2015 projection whilst Chennai/Ennore are nearly on track. Mangalore has not taken off as projected and Cochin/V.O.C. has declined. Gujarat has already developed beyond its 2015 projection and Mumbai, despite impressive growth figures, is far from developing towards its expected 2015 levels.

Table 31 shows the volumes of production, domestic consumption and imports of thermal coal. India consumes more thermal coal than it produces and this gap has been increasing over the years. This is compensated by increasing imports. It should also be noted that production and imports add up to more than the domestic consumption, which means that the stockpile has been growing as well.

TABLE 30: Coal volumes and expected increase 2005/2015 versus realized increase 2005/2011

Regions	Port clusters	Volume (million tons)			Increase (Multiple)	
		2005 Actual	2011 Actual	2015 Forecast	2005/2015	2005/2011
Eastern	Kolkata	8	8	10	1.3	1.0
	Paradip	14	19	36	2.6	1.4
	Visakhapatnam	10	31	20	2.0	3.1
Sub-total		**32**	**59**	**66**	**2.1**	**1.8**
Southern	Chennai/Ennore	12	15	16	1.3	1.3
	Cochin/V.O.C.	6	5	8	1.3	0.9
	Mangalore	0	3	17		
	Goa	4	7	4	1.0	1.6
Sub-total		**22**	**30**	**45**	**2.0**	**1.4**
Western	Mumbai	3	9	27	9.0	3.0
	Gujarat	10	33	31	3.1	3.3
Sub-total		**13**	**42**	**58**	**4.5**	**3.2**
Grand Total		**67**	**131**	**169**	**2.5**	**2.0**

Source: IPA statistics, Annual Administrative reports of the Major Ports.

TABLE 31: Thermal coal production, consumption and import (million tons)

Year	Production	Domestic consumption	Imports
2006-07	430.8	463.9	43.1
2007-08	457.1	504.3	49.8
2008-09	492.8	549.0	59.0
2009-10	532.0	582.3	67.8
2010-11	533.1	616.1	92.0

Source: Ministry of Coal, Annual Report 2011-12.

Petroleum, Oil and Lubricants and Other Liquid Bulk

Table 32 shows that the overall forecast for 2015 for liquid bulk, primarily Petroleum, Oil and Lubricants (POL) has already been exceeded in 2010-11. The Western region is far beyond the forecast levels for 2015, whereas the Eastern region is stagnant and the Southern region is more or less on track to realize the forecast levels.

Considering the clusters, Kolkata has shrunk to even less than its 2015 forecast predicted. Mumbai and Gujarat already exceed by a large margin their forecast levels for 2015, as to a lesser extent do Cochin/V.O.C. and Paradip. Chennai/Ennore are likely to do better than their 2015 forecast levels while Mangalore could be on track to meet the 2015 throughput expectation. Also notable is the slow growth of Visakhapatnam and Goa.

TABLE 32: Liquid bulk cargo volumes and expected increase 2005/2015 versus realized increase 2005/2011

Regions	Port clusters	Volume (million tons)			Increase (Multiple)	
		2005 Actual	2011 Actual	2015 Forecast	2005/2015	2005/2011
Eastern	Kolkata	21.5	11.7	14.8	0.7	0.5
	Paradip	0.8	13.0	14.1	17.6	16.3
	Vizag	24.5	22.1	35.7	1.5	0.9
Sub-total		**46.8**	**46.8**	**64.6**	**1.4**	**1.0**
Southern	Chennai/Ennore	12.1	16.0	16.9	1.4	1.3
	Cochin/V.O.C.	10.9	12.8	12.3	1.1	1.2
	Mangalore	20.2	21.6	27.4	1.4	1.1
	Goa	1.0	0.9	1.6	1.6	0.9
Sub-total		**44.2**	**51.4**	**58.2**	**1.3**	**1.2**
Western	Mumbai	22.1	38.4	30.4	1.4	1.7
	Gujarat	78.6	197.2	154.7	2.0	2.5
Sub-total		**100.7**	**235.6**	**185.1**	**1.8**	**2.3**
Grand Total		**191.7**	**333.7**	**307.9**	**1.6**	**1.7**

Source: IPA statistics, Annual Administrative reports of the Major Ports.

DETAILS OF PROPOSED PPP PROJECTS

This annexure discusses details of existing and proposed PPP projects in the Indian ports sector[19].

Since the late 1990s, PPP projects have been introduced in the Indian ports sector to enable capacities for handling coal, POL, iron ore, fertilizers and containers to be scaled up, as the capacity available in major ports was insufficient to meet the incremental traffic anticipated, and the reliance on budgetary support for the large scale investments was unsustainable. Additionally, the involvement of the private sector was also considered a major benefit in terms of improving operating productivity, performance and efficiency.

As of early 2011, some 29 PPP projects had been completed in Major Ports, with a total investment of approximately Rs. 9,200 crore. The most prominent PPP projects include the Nhava Sheva Container Terminal at JNPT (1999), the third GTI container terminal at JNPT (2006), the second container terminal at Chennai port (2009), the iron ore and coal terminals at Ennore (2011) and the ICTT at Cochin Vallapardam (2011). Another 20 PPP projects with private sector participation are under consideration for an investment of over Rs. 10,348.29 crore and include the construction of an offshore container berth and a BOT terminal in Mumbai (awarded in 2009), the development of a container terminal at Ennore (awarded in 2010), three deep-draught berths for coal, iron ore and clean cargo at Paradip (awarded in 2010) and two berths at the port of Visakhapatnam for coal handling (awarded in 2011). Finally another 24 PPP projects with a total possible investment of Rs. 14,000 crore are in the planning/bidding stage including a third mega container terminal in Chennai.

PPP Projects in Major Ports

Table 33 gives an overview of private sector investments in India's Major Ports on a PPP basis. The total value of these projects is approximately Rs. 19,206 crore (about USD 3.7 billion) for a total added capacity of 344.5 million tons of cargo.

Both bulk and containers were the main recipients of private sector investments in the ports of Paradip, Visakhapatnam, Chennai, Ennore, Cochin, JNPT and Kandla. A review of the PPP projects in Major Ports is presented in Table 34.

19 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation.

TABLE 33: PPP projects in major ports (FY 2011-2012) – capacity in million tons per annum

Port	Value (Rs. crore)	Capacity
Kolkata	330	6.00
Paradip	2,186	53.00
Visakhapatnam	2,154	36.97
Chennai	895	33.60
Ennore	2,536	41.00
V.O. Chidambaranar (ex Tuticorin)	481	18.30
Cochin	5,678	47.50
New Mangalore	507	12.02
Mormugao	502	14.00
JNPT	2,065	46.90
Kandla	1,872	35.20
Total Major Ports	**19,206**	**344.49**

Source: Maritime Agenda 2010-2020, MOS.

TABLE 34: Review of the PPP projects in major ports

Port/project	Value (Rs. crore)	Capacity (mpta)
Kolkata	**330**	
Multipurpose berth no. 4 A	150	1.50
Multipurpose berth no. 12	30	0.50
Mechanization at HDC berth no. 2	75	2.00
Mechanization at HDC berth no. 8	75	2.00
Paradip	**2,186**	
Captive fertilizer berth	26	2.50
Mechanization of cargo handling project -1 at Paradip Port	37	2.00
Mechanization of cargo handling project - 2 at Paradip Port	25	2.00
Construction of SPM captive berth	500	15.00
Captive fertilizer berth to PPL	100	2.50
Construction of deep draft iron ore berth	591	10.00
Construction of deep draft coal berth	479	10.00
Mechanization of Central Quay-III Berth	40	4.00
Multipurpose berth project	387	5.00
Visakhapatnam	**2,154**	
Container terminal Outer Harbor	108	1.74
Multipurpose berths - EQ 8 & EQ 9	196	2.00
Development of Western Quay (WQ-6), northern arm of Inner harbor	114	2.00
Development of EQ-10 berth in Inner Harbor for handling liquid cargo	55	1.85
Mechanized coal handling facilities, at general cargo berth, Outer Harbor	444	10.18
Development of EQ 1 in Inner Harbor to handle steam coal	323	5.60
Development of EQ 1A in Inner Harbor to handle thermal coal	313	5.60

Port/project	Value (Rs. crore)	Capacity (mpta)
SPM by HPCL	600	8.00
Chennai	**895**	
Container terminal at Chennai	400	24.00
Development of 11th container terminal	495	9.60
Ennore	**2,536**	
Marine liquid terminal at Ennore	249	3.00
Development of an iron ore terminal on BOT basis at Ennore (1st Phase)	360	6.00
Development of coal terminal for users other than TNEB on BOT basis	399	8.00
Iron ore terminal (Phase II)	120	6.00
Development of container terminal	1,407	18.00
V.O.Chidambaranar (formerly Tuticorin)	**481**	
Container terminal (berth No. 7)	100	5.00
Construction of coal berth at NBW for NLC-TNEB on captive basis	49	6.30
Construction of NCB-II	332	7.00
Cochin	**5,678**	
ICTT at Cochin Vallarpadam (1st Phase)	1,262	12.50
Crude oil handling facility	703	7.50
International Container Transshipment Terminal (ICTT) (Phase II and III)	518	25.00
LNG Regasification Terminal	3,195	2.50
New Mangalore	**507**	
Construction of captive jetty for handling coal by Nagarjuna Power Corp Ltd.	230	5.40
Setting up of mechanized iron ore handling facilities at Berth No. 14	277	6.62
Mormugao	**502**	
Bulk cargo berth No. 5A & 6A	250	5.00
Development of berth no. 7 for handling bulk cargo	252	7.00
Jawaharlal Nehru	**2,065**	
Container terminal NSICT	965	15.00
BPCL Jetty	200	5.50
Third container terminal	900	26.40
Kandla	**1,872**	
Fifth oil jetty (IFFCO)	22	3.00
Oil jetty related facilities at Vadinar (Essar)	750	12.00
Oil jetty awarded to M/S IOCL	21	2.00
Container freight station	41	3.00
Container terminal (Phase - 1 & II)	447	7.20
Development of 13th multipurpose cargo berth (other than liquid & containers)	188	2.00
Development of 15th multipurpose cargo berth	188	2.00
Development of 16th multipurpose cargo berth	189	2.00
Development of captive barge jetty for IFFCO	27	2.00

Source: Maritime Agenda 2010-2020, MOS.

PPP Container Terminal Projects in the Pipeline

Many container terminal projects are presently under implementation, proposed or constitute new developments. These PPP container terminal projects are summarized in Table 35.

In total, the Maritime Agenda 2010-2020 foresees some 20.7 million TEUs additional capacity up to 2022-23. Whether the capacity data and the estimated time of development will be maintained will depend on a certain number of issues. These are, amongst others, the agreed conditions of the concession agreements, the retained concessionaires, possible delays in providing general port infrastructures, delays in providing access roads and rail tracks, etc.

TABLE 35: PPP container terminal projects in the pipeline for implementation, proposals or new developments

Port	Project/ Terminal	Type of development	Capacity (in 1000 TEU)	Estimated commencement of development
Chennai	Chennai mega container terminal	New	4,000	2015/16
Ennore Port Ltd.	Bay of Bengal Gateway Terminals Ltd.	Under implementation	1,500	2014/15
Ennore Port Ltd.	2nd terminal	Proposed	1,500	2018/19
Ennore Port Ltd.	3rd terminal	Proposed	1,500	2022/23
Kattupalli CT	Phase I	Under implementation	900	2011/12
Kattupalli CT	Phase II	Proposed	1,500	2012/13
JNPT	4th container terminal	New	4,800	2014/15
JNPT	330 meters toward North of JNP	New	800	2013/14
V.O.Chidambaranar	Conventional 8th berth as container berth	New	600	2013/14
Adani Hazari Port	Hazira Port	Greenfield	600	2013/14
Mumbai Port	Mumbai Offshore Container Terminal	Under implementation	1,500	2013/14
Krishnapatnam	Phase I	Under implementation	600	2011/12
Krishnapatnam	Phase II	Greenfield	600	2013/14
Nargal, Gujarat	Bid stage	Greenfield	900	2015/16
Total			**20,700**	

Source: Maritime Agenda 2010-2020, MOS.

Finally, the Maritime Agenda 2010-2020 also shows a number of PPP Greenfield projects that are in their application phase. These are summarized in Table 36.

Additional to these, the Government of India plans to commission two more new Major Ports, one in Andhra Pradesh and another in Karnataka. These will further increase the capacity in the Major Port segment.

TABLE 36: State greenfield PPP projects at application phase

Project	Port	Capacity	Cost in Rs. Crores
Multipurpose all weather port at Tadadi	Tadadi, Karnataka	34.05	2,231
Greenfield port at Nargol	Nargol, Navsari District, Gujarat	15.00	1,750
Beypore port	Beyport, Kerala	3.00	200
Vizhigam Port	Vizhigam, Kerala	15.00	2,500

Source: Maritime Agenda 2010-2020, MOS.

PORT PRIVATIZATION IN GUJARAT WITH EXAMPLES OF APSEZ IN MUNDRA AND APMT IN PIPAVAV

Gujarat has broken new ground with different forms of privatization, ranging from the private provision of port services to the completely private ownership of newly established ports. The development started with the major economic reform policies enacted by the central government in New Delhi in the early 1990s. Gujarat took advantage of a constitutional loophole to convert its minor ports into some of the major Non-major Ports in the country by greatly improving the availability and efficiency of port infrastructure, superstructure and equipment. Additionally, it facilitated the development of industrial centers and later on of Special Economic Zones (SEZs), as well as the development of new rail links from the major Non-major Ports to the hinterland. This annex looks at two examples of port privatization in Gujarat - APSEZ in Mundra and APMT in Pipavav[20].

The Profile of APSEZ in Mundra State Port

The case of Mundra port is an example of the successful development of a Non-major Port with private participation. The immense expansion of maritime infrastructure that is needed in India can only be financed through the successful implementation of PPP structures. However, the case of Mundra is not only an example of how private participation can successfully contribute to the realization of maritime infrastructures, it is also illustrative of the much higher growth levels that are realized at some Non-major Ports compared to a number of Major Ports.

APSEZ (before January 6, 2012, it was known as the Mundra Port and Special Economic Zone Limited), has become the first private sector port in India. It was promoted by the Adani Group, having interests in ports, logistics, power generation, energy and oil, mining, etc. It is located in the State of Gujarat and it is considered the largest port based on the multi-production of the SEZ.

APSEZ is the developer and operator of the Mundra port under a 30-year Concession Agreement with the Gujarat Maritime Board (GMB). This concession remains valid till February 2031. Currently 77.5 percent of the company's equity is held by Adani Enterprises Limited (the flagship of the Adani Group) while the balance is with the public. APSEZ commenced trial operations at Mundra port in 1998 and commercial operations in 2001.

In ten years the port has grown to become the largest port in the country by cargo handling capacity (the current capacity is some 165 million tons). The port offers handling services for all kinds of cargoes viz. bulk-dry and liquid, crude and containers.

20 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation.

Apart from the port operations, APSEZ is also the approved developer of a multi-product Special Economic Zone at Mundra and its surrounding areas. Further, through its majority/wholly owned Special Purpose Vehicles, APSEZ has a presence in the logistics business (container trains and ICDs) and is associated with Indian port and/or terminal developments in Dahej, Hazira, Mormugao and Visakhapatnam.

In June 2011, APSEZ completed the acquisition of a coal terminal located at Abott Point in Australia at a cost of AUD 1.8 billion (USD 2 billion ~ Rs. 10,000 crore at Rs. 50/USD). The 50 million tons capacity coal terminal with a 99-year lease was acquired through an international competitive bidding process and is held through a 100 percent owned subsidiary called Adani Abbot Point Pty Limited (AAPPL). It is of interest to pinpoint here some of the strengths of this terminal as these may also play a role in future PPP projects in India:

- Its good location with proximity to the two main coal mining areas viz. the Bowen and Galilee basins.
- The existence of take or pay arrangements (ramping up from 26 Million Metric Tons Per Annum (MMTPA) in 2012 to 50 MMTPA by 2016).
- Scope for further expansion to 80 MMTPA.
- Cash generation capability by way of spot cargo handling.
- Savings on operating costs.
- And the possibility of free pricing on cargo beyond 2018.

Mundra port is an all-weather port with a natural deep water draft ranging from 17.5 meters to 32 meters. On the bulk handling facilities the port can handle vessels of up to Capesizes (150,000 DWT and above). A number of advantages are linked to the use of Mundra, particularly the ability to handle larger vessels which translates into ocean freight savings for the users of the terminals. Moreover, there is the availability of mechanized cargo handling techniques which results in quicker turnaround, the disposal of large backup and storage areas and good multi-modal connectivity with the provision of value-added services. It places Mundra therefore in a strong competitive position vis-à-vis the other ports on the western coast. Ports like Kandla, Pipavav, Jawaharlal Nehru Port and Mumbai have relatively shallow draft, are affected by high congestion and face many constraints on the expansion of the facilities due to space restrictions.

Cargo at Mundra port has continued to show a robust growth trend notwithstanding the difficult operating conditions and the low industry growth experienced in 2009 and 2011. Over 2011, APSEZ's cargo volumes increased by 28 percent to 52 million tons (comparatively the overall growth in Indian port cargo for this period was 4 percent with Major Ports showing a low 2 percent year on year increase and Non-major Ports showing a 9 percent increase). The operating income for 2011 was Rs. 1,887 crore with a net profit of Rs. 986 crore at standalone level.

The throughputs in the port of Mundra in the first half of 2011 and 2012 are shown in Table 37 and point at significant increases in total cargo handled and in TEUs, of 26.5 percent and 20 percent respectively.

For the first nine months of 2012, the company handled 49 MT of cargo and reported an operating income of Rs. 1840 crore with a net standalone profit of Rs. 838 crore.

APSEZ's ability to exhibit a superior cargo growth rate may be attributed to its diverse cargo mix (with minimal exposure to iron ore), the existence of long term contract arrangements which give it assured cargo volumes, the strong presence of captive cargo and a strong primary hinterland.

The estimated cargo handling capacity at Mundra will be increased to 240 MT over the medium term as shown in Table 38.

Finally, the port of Mundra also gives value-added services though the evacuation/ receipt of cargoes through road and rail. It has built a private railway siding of some 57 kilometers to connect it to the Indian railways network at Adipur. Through subsidiaries it also provides services like running private container trains and ICDs at strategic locations to facilitate customs examination and to pack, unpack and store goods inland.

TABLE 37: Mundra port throughput in first half of FY 2011-2012

Commodities	First half 2011-2012	First half 2010-2011	% Increase
Cargo in million metric tons	31.88	25.2	+26.5
Containers in TEU's	707,889	591,444	+20.0

Source: APSEZ

TABLE 38: Mundra port capacity today and with proposed capacity additions

Facilities	Capacity in million MT
Multipurpose terminals	25
Container terminals	30 (2.5 million TEUs)
Single Point Mooring	50
Dedicated coal terminals	60
Total existing capacity	**165**
Proposed bulk	52
Proposed 3rd container terminal	18 (1.5 million TEUs)
Proposed LNG terminal	5
Total proposed capacity additions	**75**
Total existing and proposed capacity	**240**

Source: APSEZ

The APM Terminals (APMT) Pipavav State Port

Port Pipavav is a public-private enterprise that is emerging as another gateway port in Gujarat, on the west coast of India for handling containers, bulk and liquid cargo. It is located just 152 nautical miles or 10 hours steaming time away from Nhava Sheva.

With a 43.1 percent stake APMT is the largest shareholder in Port Pipavav and it has taken over the complete operation of all three types of cargo. Port Pipavav went public in September 2010 and raised capital of Rs. 500 crore from the markets. Other key shareholders are New York Life International India Fund (Mauritius) LLC; Infrastructure Development Finance Company (IDFC) Infrastructure Fund; The Infrastructure Fund of India; IL&FS Trust Company Ltd.; Jacob Ballas Capital India Pvt. Ltd.; Industrial Development Bank of India and India Infrastructure Fund. The shares on June 30, 2012 are thus effectively distributed as follows: APMT 43.01 percent; Institutional investors 21.11 percent, FIIs 26.21 percent; corporate bodies 6.02 percent and others 3.65 percent.

With a total land area of 631 hectares, Port Pipavav has large portions of land available for development and expansion of port-related services. There are opportunities, both within and just outside the port premises, for companies to establish or operate a range of facilities or businesses.

Considerable tracts of land at Port Pipavav have been earmarked and zoned for specific activities, depending on the requirements of different companies. Specifically, areas have been earmarked for: tank farms (for liquid bulk cargo, edible oil, etc.); warehousing; CFS facilities; and FTWZ (Free Trade Warehousing Zone). A significant portion of property has been leased to Port Pipavav's anchor tenant, Pipavav Shipyard Ltd., which is involved in shipbuilding activity. Another tenant – Central Warehousing Corporation – owns and operates warehouses at the port, while Shell operates a tank farm. Port Pipavav has also leased out land in the port to private reefer technicians, who offer repair, maintenance and pre-trip inspection services.

The location of Port Pipavav in southern Gujarat means that it is well situated to take advantage of a rich hinterland. First there are the key markets that comprise this hinterland (from Rajkot, Jamnagar, Porbandar, Veraval, Amreli, Ahmedabad, Surat, Baroda, Bhavnagar and Mahuva), and then there are the markets of Rajasthan, Delhi and Punjab in the northwest. The key commodities handled in Port Pipavav include industrial goods, agri-products, reefer cargo, minerals, fertilizer, textiles, coal, soda ash, handicrafts and many other products.

At present the container terminal has two quay lengths with a total berth length of 735 meters. It is equipped with 5 Post-Panamax quay cranes and 18 RTGs. The multipurpose berth has three berths with a length of 690 meters, and is equipped with rail-mounted and mobile harbor cranes. There is one berth for liquid cargo with a length of 200 meters.

Pipavav has invested Rs. 260 crore for dredging purposes. These funds are used for guaranteeing a 14.5 meter draft which clearly improves the accessibility to the port. A deeper draft at Pipavav offers a safe port for the larger container vessels that cannot call at Major Ports in India.

Connections by road and rail are excellent, with a four-lane expressway that connects to the National Highway 8E and links to the national network. Since 2006 the port became the first to serve double stack container rakes in India. APMT has invested in a 50:50 joint venture with the Indian Railways, the 'Pipavav Railway Corporation Limited', a first of its kind PPP in rail transportation in India. Throughput in the port has been steadily increasing as shown in Table 39.

Bulk cargo increased in 2011 by 12 percent and containers gained 31 percent. This is the result of the addition of new services by the container shipping lines and improved business opportunities from the hinterland area which did not affect the state port as much as it did the Major Ports.

TABLE 39: Throughput at Pipavav port

Cargo handled	Year 2011	Year 2010	% growth 2011/2010
No. of vessel calls at the port	1,315	1,076	+ 22%
Bulk cargo handled (in MT)	3,793,881	3,383,588	+12%
Containers handled (in TEUs)	610,243	466,138	+31%

Source: APM Terminals Pipavav - Annual Report.

PORT GOVERNANCE MODELS IN SELECTED COUNTRIES

This annex discusses port governance models in the USA, China and the Port of Shanghai[21].

The United States of America

Table 40 provides information on the two key agencies that determine port governance in the USA, namely the Department of Transportation (DoT) and the U.S. Maritime Administration.

Port Governance Structure

The majority of ports are owned and managed by counties and municipalities (local level governance), but port operations are mainly in the hands of private enterprise.

Government Policy Documents Relevant to ports and Freight

The document '*America's Ports and Intermodal Transport System (2009)*' issued by the US Maritime Administration 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.

TABLE 40: Key agencies and their role in the United States

Key Agencies	Role of the Agency
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 in the future. Oversees federal highway, air, railroad, and maritime transport 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.

21 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation and 'Policy Paper on Port Governance' by Ecorys Nederland BV.

Framework for a National Freight Strategy (2010)

This document, issued by the Department of Transport, outlines the objectives, strategies, tactics and activities used for improving freight transportation efficiency and competitiveness in the U.S.

China

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

The first period, 1979–1984, was characterized by the 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, because of a lack of funding, restricted the development of the ports and did little to innovate in new terminal types.

From 1984–2004, China began to decentralize control of its ports. The year 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 port sector experienced an even greater level of decentralization and entered an era of corporatization. The '*Port Act of the People's Republic of China' ('Port Law')* was adopted in 2003 and can be seen as evidence of the great importance attached since then 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) for port development. Today the central government is no longer involved in the ownership of ports but it retains an oversight role in strategic planning.

In the current situation in China, ports generally feature open access, are managed at the municipal level, with local governments taking a substantial interest in corporatized operations.

The Port of Shanghai

In 2003 Shanghai's port oversight body was restructured into the 'Shanghai Port Administration Bureau' and the 'Shanghai International Port Group'. The former has the responsibility for port planning, administration and regulations, whilst the latter is designated as port manager and operator, and also given responsibility for the operation and management of Yangshan's first five berths.

Today the 'Shanghai Municipal Transport and Port Authority' has the authority to:

- Implement guidelines and polices and enforce laws, rules and regulations.
- Formulate plans and strategies for the Shanghai harbor (including Yangshan).
- Enforce trade regulations applicable 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.
- Carry out vessel management.
- Set port tariffs.
- Supervise and administer pilotage within the port.
- Conduct cooperation and technical exchanges between the Shanghai Port and other domestic and foreign ports.
- Administer technical and vocational training, including examinations and the issuance of certificates for workers engaging in port activities.

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

THE CONCEPT OF CORPORATIZATION AND ISSUES FOR INDIA

This annexure discusses the concept of corporatization of ports and advantages and disadvantages of the same for India[22].

The concept of the 'corporatization' of ports is brought up whenever there is a discussion of the need for a change in the status of the ports. In India the focus is on the corporatization of the Major Ports from 'Port Trusts' to 'Port Companies with Limited Liability'. These would be registered as corporate bodies and this brings up a whole new set of issues. This section will discuss some of the more salient ones.

Whilst corporatization in India has been discussed for more than ten years, its implementation has been at a very slow pace. The concept was originally considered for JNPT, New Mangalore Port Trust and Tuticorin Port Trusts. But the first corporatized port of India is the Greenfield port of Ennore. JNPT is still expected to be corporatized and then other ports may follow, depending on the success or the resistance to the implementation of the concept. The *Draft Indian Ports Bill, 2011* seeks to enable the conversion of Union Government controlled ports into corporate entities, but the maritime workforce remains divided in its view of corporatization of ports.

Some sections of the maritime industry such as the port users and port managements are generally in favor of corporatization, whilst another section, namely the workers and their unions, state that corporatization is just another method 'to expand its ambit of the exploitation of ports and raise the level of profit'.

It is possible is to list the general advantages and disadvantages claimed for and against corporatization in India. On the side of the advantages there are:

- **Transparency and flexibility:** The companies registered under the Indian Companies Act, 1956 have to comply with many disclosures and they have to report minute details of their operations in their Annual Reports. The Directors of the company are fully responsible for the state of affairs and the functioning of the company. Furthermore, the Income Tax Act and other laws require a high level of transparency. Raising of finances and issuance of debt instruments require that various rules and regulations are followed. Thus in essence the Company gets regulated to be transparent in its affairs and it can be deduced that better corporate governance would ensue.

22 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation and 'Policy Paper on Port Governance' by Ecorys Nederland BV.

- **Adoption of corporate planning practices:** Several practices like the drawing up of financial business plans, yearly business plans, performance-measurement target-oriented planning, a focus on cost reduction and measures to improve profitability are key to planning practices that should also be applied to port operations. They would undoubtedly result in greater operational and financial discipline.
- **Acquisition of immovable property:** Currently the process under the Act is that the Board of Trustees has to request the acquisition of immovable assets from the central government which after due consideration will start the process. It is an unwieldy and time consuming effort and requires a lot of paperwork. Corporatization of the port trusts would remove these obstacles and instead a majority decision in the meetings would be sufficient to start the acquisition process.
- **Application of Human Resources Development planning:** Both the need for the development of skilled manpower and the existence of a technologically competent workforce are drivers of competition. To actually cater to developing the manpower, an adequate assessment of the required human resources needs to be carried out, mapping those requirements against the current employees' capabilities. From this follows planning for the training and capacity building of the human resources. These are all HRD functions but they could be carried out far more effectively with a corporatized structure. Career planning and management development are key elements in a port modernization strategy, but many ports have either failed to introduce career planning and career development in the organization or else have omitted to make the correct link between these two activities.

On the side of the disadvantages, the following can be mentioned:

- Port workers see the move towards corporatization as the **first step towards privatization**, and consider the change in institutional structure of the ports as opening up the way to a greater involvement of the private sector in running and financing ports. The port workers forget thereby that the PPP systems that have been applied in Indian ports, do not constitute privatization but that the results of PPPs are in general very positive for the ports that have introduced them.
- A number of workers' organizations consider the involvement of foreign and private investors as a **threat to internal security**, i.e. as a threat of terrorist groups and the possible negligence of private companies towards the safety of the ports and port workers.
- The third argument made against corporatization is that the private companies are **using expensive equipment beyond their replaceable life time**. This is not a persuasive argument. Studies carried out in respect of Indian ports even before corporatization was discussed, pointed to the excessive age of port facilities and equipment that was in use in the Major Ports and that could not be written off or taken away from the quayside or the wharfs because of redundant laws still in force.

- Finally, several labor unions and other welfare associations have **suggested measures to strengthen the current institutional structure** of the port trusts. These include the allocation of full functional and operational autonomy to the port trust; that the Chairman and the Executive body of the port trusts must have considerable experience and knowledge of the functioning of ports; and to allow the ports to define their tariff regimes themselves.

The final conclusion after weighing the advantages and disadvantages of 'corporatization' is strongly in favor of a general go ahead with the process. Efficiency through corporatization need not pave the way for privatization (which is something that no PPP project in India has aimed at, as the concessions, in which the private sector invests in berth infrastructures and superstructures, come back to the ports after the end of the concession period). The conviction remains that corporatization would help to lessen the burden on the governments and Ports' treasuries by financing a substantial part of the funding.

At the moment no further progress has been made on this issue. The MOS does not seem to pursue the matter and the administrators do not want to delegate as they want to keep control over the Major Ports. The current boards of the Major Ports (with two seats for the labor unions on each board) generally oppose plans for corporatization. There seems to be some progress in getting the opposing parties (labor unions but also internal bureaucratic forces) to reduce their opposition, but it could take either six months or even ten years before another port obtains a corporate model.

DRAFT GUIDELINES FOR TARIFF SETTING FOR MAJOR PORT TRUSTS AND PRIVATE TERMINALS 2013

This annexure presents the key messages from the 'Draft guidelines for tariff setting for Major Port Trusts and Private Terminals 2013'[23].

With the publication for comments on the new 'Draft guidelines for tariff setting for Major Port Trusts and Private Terminals – 2013', the MOS requested comments on these guidelines to be received before the 25th of March 2013 as these will become applicable after the 1st of April 2013 or after these guidelines come into effect, whichever is later.

In this document there are effectively four sections that require further explanation: the notification of a reference tariff, the actual tariff to be levied by the PPP operators, the payment of a revenue share by PPP operators and the levy of tariffs by the Major Port Trust-owned terminals. Additionally, two other issues are discussed namely the Grievance Redressal from a PPP operator or a Major Trust Port and the mandatory disclosure by the PPP operators.

Notification of Reference Tariff

The first section that requires some comment concerns the 'Notification of Reference Tariff' which will be notified port-wise for different commodities by TAMP for a five year period. To notify the Reference Tariff for a particular commodity, TAMP will take the highest tariff fixed for that commodity (under the 2008 guidelines). But where the situation gets more complex is where TAMP should specify the minimum efficiency standards such as the average ship output per berth-day; the average turnaround time (which must effectively be dependent on, amongst others, the tonnage or number of containers to be handled); the percentage idle time to total time of vessel at port; and for container berths the additional average number of moves per crane hour. In fact TAMP will have to specify minimum standards but without having to specify the number of cranes that simultaneously operate the vessel. This does not really seem rational. The stipulation that minimum efficiency standards would be specified by TAMP after duly considering the best international practices as well as local conditions leaves too much freedom to set these standards at almost random levels and further complicates the evaluation of bids for the award of PPP projects.

The Reference Tariff is indexed to inflation but only to 60 percent of the 'Wholesale Price Index' between the year the tariff was originally notified and the 1st of January of

23 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation and 'Policy Paper on Port Governance' by Ecorys Nederland BV.

the subsequent relevant year. The 60 percent is a figure that is not from an accounting point of view defendable but probably most terminal operators can live with it as the full reference tariff need not be adjusted as a number of fixed costs increase less than the wholesale price index.

There is also the case in which no tariff has been fixed for a particular commodity in a particular Major Port. TAMP can then notify that the highest tariff is the one in the nearest Major Port along the coast. This clause does not really ensure that such a tariff would be relevant for that commodity in the Major Port in question.

Actual Tariff to be Levied by PPP Operators

Officially, the 'Draft guidelines' would allow the PPP operator to freely fix the market-linked tariff or Actual Tariff at either higher or lower than the Reference Tariff. It is, however, unlikely that any PPP operator that bids for a terminal could be convinced about having a chance to obtain the concession contract, if the Reference Tariff is set in advance whilst other bidders are aware that effectively a tariff cap has been set at the Reference Tariff levels. In this case they are not likely to propose Actual Tariffs that are higher than the Reference Tariff.

If the concession contract were still to be given to a PPP operator at an actual tariff that is higher than the Reference Tariff, he must inform TAMP 90 days before the beginning of the financial year and would have to include the upgraded efficiency standards that he would maintain. Then TAMP has two working days to publish this Actual Tariff on its website and invite comments from the various stakeholders. Based on these, TAMP can then modify the original Reference Tariff and the linked efficiency standards.

In reality, this looks like a perfect way to impose a cap on the Reference Tariff and make sure that no PPP operator tries to obtain more favorable Actual Tariffs which he might well be required to ask in order to obtain a reasonable return on his investment. One final complicating element is the norms for the calculation of quay capacity and yard capacity. Changes in various parameters are quite likely in a terminal but they have not been recognized in the 2008 guidelines. For example, in the case of a container terminal the optimum quay capacity does not really allow for any significant improvement in the number of gantry cranes working the vessel[24]. The same remarks can be made for determining optimal quay capacity for iron ore, coal, liquid bulk and multi-purpose

24 The parameters are: the number of cranes to be equal to the berth length meters divided by 100 which in the case of a berth length of 300 meters would mean 3 gantry cranes; the number of working hours of the gantry cranes which is taken as 24 hours during 365 days and which does not make a lot of common sense as the working hours will normally be less than the 70% optimally allowed for calculating the quay capacity; the average number of moves per gantry crane which is set at a gross value of 25 moves per hour, but does not take into account twin lifts or tandem lifts; and the TEU ratio which is set at 1.30 but has a tendency to increase significantly where cargoes become less dense – proportions in Hong Kong, Singapore, Rotterdam, Hamburg and Antwerp are typically between 1.60 and 1.70.

berths/terminals (where a capacity of 0.7 for the berth occupancy is taken without any reference to the actual number of berths that is available, the service time at the berth and the respective waiting to berthing values).

This suggests lack of operational experience of TAMP and its advisors. In the case of defining the number of berths required to handle the volumes forecast, the total available capacity will normally be less than actually needed capacity. This would then lead to berth waiting times that are not acceptable to the owners and/or operators of the vessels which probably demand no waiting time for their scheduled vessels.

Payment of Revenue Share by PPP Operators

The first issue regarding the payment of revenue concerns the case in which the Actual Tariff is higher than the applicable Reference Tariff and where the PPP concessionaire has to pay a percentage over the incremental revenue of at least 50 percent, or the percentage of the revenue share that was indicated in the Concession agreement. In the event that the Actual Tariff is lower than the Reference Tariff, the revenue share will be as per the received winning bid. This effectively ensures that in every case the revenue share of the Port Trust is a minimum of 50 percent. The issue that high tariffs can be the result of high bids because of the high revenue shares that have to be paid to the Major Port Trusts (50 percent and maybe more) is not solved and remains another challenge that the MOS one day may have to tackle.

Levy of a Tariff by Major Port Trust-owned Terminals

The Major Port Trusts would be free to fix a market linked Actual Tariff and as is also the case for PPP operators; this could be higher or lower than the Reference tariff. In the Major Ports this will be limited to terminal facilities developed in the past, but having a considerable time frame still to serve. In the case of new concessions there would always be different bidders and then the specification regarding the tariffs of PPP operators would apply fully and leave little space for the Port Trust to intervene.

Grievance Redress

Both the PPP operator and the Major Port Trust can appeal to the MOS against modifications carried out by TAMP in the proposal for Actual Tariff submitted to TAMP or against the efficiency standards specified. The MOS will pass its orders on the appeal within 30 days and these are final and binding on all parties. The solution might then be to appoint an organization independent from MOS who handles this type of appeal.

Mandatory Disclosures by Operators

PPP operators will have to give both the Major Port Trust and TAMP monthly reports on cargo traffic (actually cargo throughput), berth-day output, percentage idle time to total time at berth, average dwell time of the vessel at port (which does not necessarily have

a direct relation with the PPP operator), the average moves per crane hour for container berths, the Actual Tariff levied for each berth or terminal and any other information that TAMP may wish, from time to time, to be handed over. These disclosures have to be submitted within 15 days following the end of the month. For the Major Trust Ports operating their own facilities the same disclosures are required also within 15 days after the end of the month.

THE DEVELOPMENT OF A NATIONAL PORT NETWORK IN TURKEY

This case study gives insights 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 case involved is the port network in Turkey[25].

Introduction

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 Turkish economy has grown rapidly in the last years. Important energy, trade and transport networks run through the country, connecting 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 as basic industries, banking, transport and communication. These sectors are the 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 sectors. 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 to increase its port capacities and transform the ports into logistical centers where combined transport can be realized whilst ensuring the efficient management of the ports. In particular, 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.

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. Only a small part of the country is located on the European continent. The European and Asian parts of Turkey are separated by the Dardanelles Strait, the Sea of Marmara and the Bosporus, which

25 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation and Case Studies prepared by Ecorys Nederland BV.

connect the Aegean Sea with the Black Sea. Particularly the Dardanelles Strait and the Bosporus, 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 Bosporus, safety is an important issue, as fully loaded tankers have to navigate the narrow and curving Bosporus right through the middle of Istanbul.

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 kick-started an era of strong growth – averaging more than 6 percent annually until 2008, when global economic conditions and tighter fiscal policy caused GDP to contract by 5 percent in 2009. Inflation by 2009 was down to 6 percent, a 34 year low (in comparison in 2002 the inflation was 30 percent). In 2010, the economy bounced back to growth at 9 percent and the 2011 growth figure is 8.5 percent.

In May 2006, the first oil emerged from the Baku-Tiblisi-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 to address 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 program 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; traditionally the largest Turkish export sector of textiles has meanwhile been surpassed by the automotive, construction and electronics industries. Exports have grown from USD 36 billion in 2002 to USD 114 billion in 2010. In 2023, the value of exports is expected to hit the USD 500 billion mark.

Cargo Volume Development

As an expected 90 percent of Turkish trade will move by ship, this places 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 to by an efficient ports system, linked to the main consumption and production centers of the country by an efficient hinterland network of roads and railways.

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 earlier.
- Efficient operation and efficient administration.
- Improved safety and security.
- Integration with European and neighboring economies.

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

Port Infrastructure

The Turkish maritime policy vision aims to develop ports at the right place, at the right time and with maximum economies of scale. They need to be developed into logistics centers 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 multi-modal 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) program. 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 break-bulk and 0.9 million TEU in 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 land-bridge as an alternative to maritime transport through the Bosporus.

Other Transport Infrastructure

Though not part of the ports network, a road and rail network that connects ports to the major production and consumption centers 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.

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.
- Improvement of 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 percent, compared to 85-90 percent for the most advanced economies, so there is still room for further containerization).

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 canceled 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 and 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 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.

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 program 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 runs 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.

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 being drawn up, but is yet to be enacted.

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.

THE MAPUTO CORRIDOR DEVELOPMENT

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[26].

Introduction

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. The distance between the port and the South African border at Lebombo (Mozambique)/Komatipoort (South Africa) is only 100 km.

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 industrialized and productive area of South Africa. The densely populated Gauteng area (Johannesburg-Pretoria) is an important centre 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 41 shows the distances between a few of these production or consumption centers and the ports of Durban, Richards Bay and Maputo.

TABLE 41: Distances by rail between major centers 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.

26 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation and Case Studies prepared by Ecorys Nederland BV.

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 gain 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.

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 million tons of cargo per year, a fair share of which was South African 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 be around 11.5 million tons and the port has plans to further upgrade and expand capacity to about 30 million tons by the end of the decade.

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 drought in 1983, practically paralyzed 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 USD 1,000 (2010 figure) and an estimated 54 percent of the population below the poverty line. However, the economy has been growing at a rate of 6 to 7 percent 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), a brain drain, 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 percent (annual GDP growth), but the crisis resulted in a decline of 1.8 percent in 2009. 2010 GDP growth bounced back to positive figures with 2.8 percent.

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 BRICS grouping of countries in April 2010.

Cross Country Comparison

Comparison to India

As is the case with 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 the ports for its imports and exports, and that there is a border crossing in the Maputo corridor which forms an obstacle.

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 percent mark and during the crisis growth only slowed down to just under 6 percent. Yet, comparable to South Africa, the country has an economy that is rapidly expanding and modernizing.

Transformation in the Physical Infrastructure

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

- Maputo port was given in concession 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 upgradation of its capacity is still ongoing.

- The road connection consisting of the N4 toll road running from Johannesburg (with a branch from Pretoria) to Maputo was constructed in the years 1998-2001.

Port Infrastructure

The port of Maputo was given in concession 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 it 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 planning the port's development. The fact that (part of) the port authority function, that previously exclusively rested with CFM, is now part of the concession is unique. Commonly concessions concern stevedoring and terminal management activities, but not the marine function or port planning which are generally port authority functions. MPDC has several sub-concessions: DP World Maputo (container terminal), Grindrod (Matola bulk terminal) and STAM (sugar terminal).

The port nowadays consists of the main port in the center of the city and the bulk terminals at Matola, about 6 km 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, break-bulk cargo, cars and a series of smaller bulk cargoes, such as sugar, sized coal, chrome ore, ferrochrome, phosphate rock, manganese, etc. Larger bulk flows are handled at Matola, such as coal, magnetite, aluminum 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 the 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 bulk terminal at Matola has presently a capacity of 6 million tons per annum. By the end of 2012, the terminal capacity will have been expanded to 7.3 million tons through 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 14.5 m by 2014, which will allow fully loaded Panamax vessels to leave the port.

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 the increase in 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.

Road Infrastructure

A good quality toll road, the N4, from Johannesburg (and a branch from Pretoria) 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 contract in 1997 for a 30 year period. TRAC operates 6 toll plazas along the stretch of 600 km of N4 road; 2 in Mozambique and 4 in South Africa.

Objectives that Guided the Transformation

Several objectives of various stakeholders have guided the transformation. MPDC wishes to promote the port of Maputo amongst South African cargo owners as an alternative to Durban or Richards Bay. CFM wishes to upgrade its railway connection to South Africa and to attract cargo to it. South African cargo owners are looking for alternative and efficient routes to export or import their cargo. Government organizations are 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.

Maputo Corridor Logistics Initiative (MCLI)

MCLI is a non-profit organization 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, DP World 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, inform on market developments and 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 it explicitly includes the creation of a favorable 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 organizations and companies: government departments, cargo owners, road haulers, 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.
- Organizing 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 utilize and benefit from the corridor.
- Developing a corridor supporter and service provider directory and website;
- Organizing strategic quarterly forums.
- Organizing service provider forums.

It should be noted that MCLI has no power to take decisions concerning investments in infrastructure, development and enforcement of regulations. 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.

Evolution in Institutional Relationships

The institutional relationships along the Maputo corridor are not particularly different from those elsewhere in the world. The exception is perhaps the fact that MPDC also holds part of the concession of the port authority function for the port of Maputo. 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 do 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 farther 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, and 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; particularly in the field of government bodies this 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 to the table to discuss their mutual interests.

Underlying Governance Structure

MCLI is incorporated in South Africa as a non-profit membership organization, which positions the organization to facilitate inclusively between all stakeholders – public and private and 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 about other stakeholders' needs and wishes.

The development of the physical infrastructure was realized with the help of the private sector, such as 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, as mentioned, 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 avoids the need to work with two different concessionaires for each country, thus eliminating the risk that both concessions are not being 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.

Legislative Changes

Whereas MCLI cannot propose or impose any legislative changes, it can lobby for appropriate adaptation of legislation. 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 is currently facilitating 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 decreases.

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 organizations, such as the Walvis Bay Corridor Group or the Dar es Salaam Corridor Group.

Contrary to the situation in India, this corridor includes a border crossing which used to form a barrier (and to a certain extent still does). Corridor development efforts were therefore partly focused on removing the barriers caused by border crossing.

In the case of India this would of course not be necessary. Apart from this minor difference, a corridor development organization would thus be an excellent instrument to develop freight corridors in India.

ENSURING 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[27].

Introduction

The nature of this annex differs from the others in that it does not concern changes in physical infrastructure but rather regulatory changes that are realized over time. For this reason a different reporting structure has been chosen.

- First, the scope of port services is explained: which services are being considered.
- Then, what reasons are there for regulating competition in the provision of these services? For example, what are the underlying reasons calling for government action in this field?
- Subsequently, we zoom into the European Union: how is the issue being tackled, which process was followed and which choices were made?
- Based on the European Union approach, what are the expected impacts on port services provision, costs and competition within and between ports?
- Separately, the situation in the UK is analyzed, and although it is a member of the European Union, it has a different position because of its historical organization of ports.
- Also for the UK possible impacts on port services, costs and competition are being made.
- Finally, conclusions are drawn based on the European Union and the UK lessons and the relevance for India is addressed.

The Scope of Port Services

The port services cover services of a commercial value which are provided against payment by port users in a seaport and whose payment is not normally included in the

27 Source for this annexure: Extracted from 'Consolidated Report on the Indian Ports Sector' by Policy Research Corporation and Case Studies prepared by Ecorys Nederland BV.

charges collected for being allowed to call at or operate in a port. These include 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.
- Environmental services.

These services are clustered in services termed "on the ship", "on the cargo" and "other services".

Services Provided 'on the Ship'

Both port authorities and (semi)-private companies provide port services 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 specialized 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 or operate in a port" (COM(2004)654).

Table 42 provides an overview of all port services on the ship, the related port tariff and the generally involved authority. The services that are considered part of the scope of this case study are highlighted in bold.

TABLE 42: List of port services and charges 'on the ship'

Description of service	Related port tariff	Authority involved
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	Harbor Master
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	Harbor Master
Pilotage services. Pilotage from the station outside the port to the berth or in opposite direction and also movements of ships from one berth to another within the port	Pilotage tariff	Pilotage company/ Harbor master

Description of service	Related port tariff	Authority involved
Towage services	Towage tariff	Towage company Harbor Master
Connecting the ship cords and mooring on the quay or buoy and un-mooring	Mooring/un-mooring tariff	Pilotage company/ Mooring/unmooring company
Occupation by the ship of the assigned berth, whether quay, buoy or if mooring on the lock	Berth tariff	Port Administration
Shipping different merchandise (general merchandise/ solid/dry/liquid etc.) from the quay to the ship and unloading merchandise from the ship to the quay with use of cranes and ship equipment	Stevedoring Loading unloading tariff Cargo handling on board	Private or public stevedoring company
Providing additional services to load and unload the merchandise, which require special care, whether due to their special nature or the way they are shipped, e.g. for frozen merchandise refrigerating containers	Special cargo handling tariff Extra movement tariff	Specialized stevedoring company
General use by the passengers (incoming or travelling) of the facilities and services intended for them like (passenger rooms and stations/means of transport, etc.)	Passenger dues	Private companies Port Administration
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 Port Administration

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

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 are shown in Table 43. Again, port services which are part of the scope of this case study are highlighted in bold.

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 by 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.

Other Types of Services and Charges

To complete the overview of port services, some other types of services offered by the Port Administration or private companies are distinguished. They cover the rent of forklift

TABLE 43: Services provide by the terminal-handling operator

Description of Service	Related Port Tariff	Authority Involved
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
Cargo handling on quay related to receiving and delivery of cargo Other handling of goods	Cargo handling tariff	Terminal handling operators/Port Authority
Transshipment of merchandise in the port stores and spaces of the port after the authorized period	Transshipment tariff	Port Administration
Storage of merchandise in the port stores and spaces of the port after the authorized period	Cargo storage tariff	Port Administration/Private or public companies
Providing the other services for the merchandise	Other cargo services tariff	Port Administration Free Zone Companies

trucks, cranes and other equipment; the rent of trailers and launches; firefighting and rescue equipment and use of land, buildings, silos and other constructions.

The Problem: Competition Issues in the Provision of Port Services

In ports, services such as stevedoring, cargo handling or pilotage are often performed by one or a few firms. 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 from 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.

In the field of port services, an inventory of European ports shows that in many ports a certain pattern comes back:

- In the sector of the pilotage services, in many European ports there is only one supplier of these services. In many cases these services have not been tendered out, but concessions have been awarded to former (semi)-governmental bodies, now active in an intricate mix of public and private interests.
- Also in the sector of towage and mooring this same 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 intra-terminal transport) the situation differs per type of cargo. Though it is shown that in container handling the tariffs of North West Europe are comparatively low when compared to other parts of the world, it can also be demonstrated that price differences within the whole of Europe are still considerable. These cannot be explained by cost differences only. The same applies,

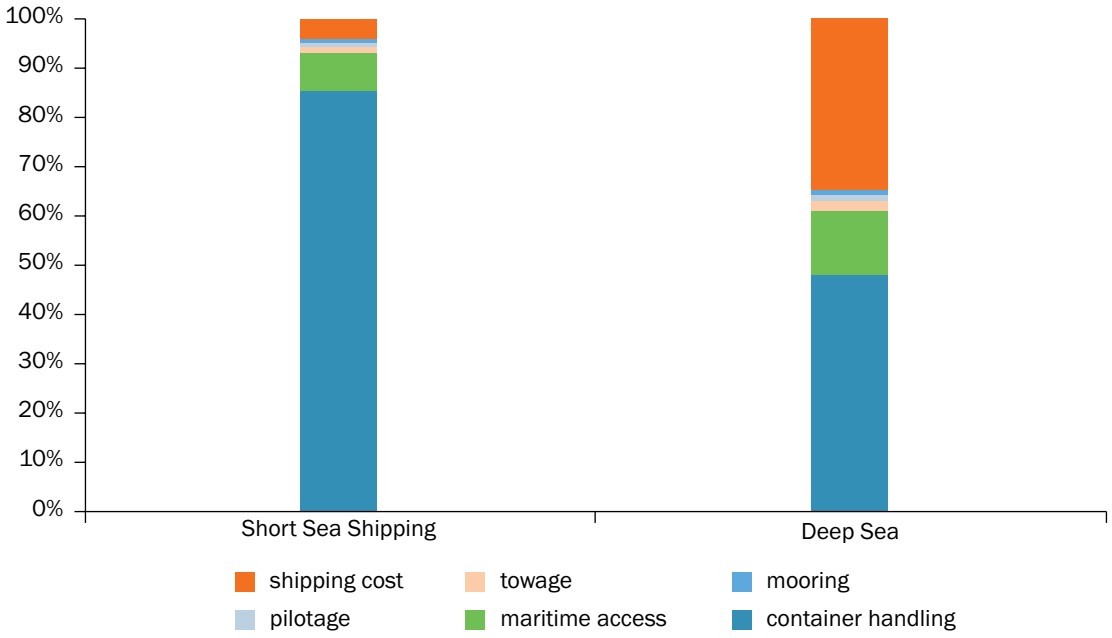
maybe even to a larger extent, for non-containerized cargo handling (liquid bulk and dry bulk), though factual information in this sector is even less easily available.

- Moreover it has been shown that in several instances labor in ports is relatively well paid when compared to relevant job alternatives in the same region outside the port area.
- Port services however only account for a small share of total shipping costs. Price differences in individual port charges therefore will only have a small effect on shippers in their choice of port, in as far as they have a choice, thus assuming it is not the shipping line that decides which port is chosen.
- This is shown in figure 3, 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 short sea-shipping than for deep sea-shipping because of their high value relative to port-to-port shipping costs.

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

- Limited number of service providers in a port.
- High level of tariffs compared to other competitors.
- High level of wages compared to other sectors.
- Procurement procedures.

FIGURE 3: 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.

An inventory in 47 EU ports has shown that for many services only one operator is available. For most ports however it appears difficult to have more than one active operator, simply because the scale of operations 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.

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) there are three categories of solutions:

- Separating the monopoly portions from those activities that can be efficiently opened up to competition.
- Creating competition through vertically integrated providers.
- Achieving 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 there is significant competition between ports. Please see box 4 for an example of privatization of pilotage services in the port of Rotterdam.

BOX 4: PRIVATIZATION OF PILOTAGE SERVICES IN THE PORT OF ROTTERDAM

At a national level, there has also 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 privatized in steps. This was preceded by intense discussions and policy preparations in the decade before. The result was that the Pilotage Authority became an independent non-civil-servant organization. Results were directly seen: entrepreneurship changed the work ethos and freed pilots from the restrictive resting and 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 in 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. So far the tariff levels have turned out to remain below average. For the future, a unified tariff 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 have invested in new vessels, since their fleet was not modernized for several decades as the state did not invest prior to privatization.

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

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 (none) competition within a seaport.

Finally, the role of the 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 what other ports are available but also to their accessibility, the 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. Furthermore in many ports more than one container handling operator is active (sometimes even more than 10), suggesting an amount of intra-port competition. In most ports, however, there is in fact one dominant operator and a few smaller operators that are active. Still, large differences are seen between the typical container handling rates in Europe, North America and Asia as shown in Table 44.

Note that in the United States, the organization of ports is not centralized, but regulatory authority tasks are dispersed throughout the three government layers: federal, state and local. Ownership models also vary across 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.

Regulatory Solutions Developed in the European Union

Beforehand, it is noted that the regulatory process in the European Union is still ongoing and no final implementation has been realized at this time. This implies that the

TABLE 44: Price ranges in container handling – 2005 values

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

Source: OSC 2005.

description given below is in a state of play and does not give a final take on the current and expected future impacts of the process.

In its White Paper of 2001, 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 expected dramatic growth of freight volumes in the coming decades.

The Legislative Process Until Date

In recent years, important steps have been taken 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'.

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 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 on safety grounds).

The stated aims of the Directive II 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.

Specifically, the Directive seeks to establish common rules for:

- Implementation of the principle of freedom to provide port services.
- Prior authorization for port service provision.
- Limiting the number of port service providers.
- Self-handling.
- Duration of individual authorizations.
- 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 (authorization) 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 authorization would 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 second port package again led to an extensive debate among stakeholders. Especially the port workers were very opposed to aspects regarding labor policy (self-handling by customers), and organized protests in the streets of Brussels. In January 2006, the European Parliament again rejected the text of the Port Package II. Then the Commission proposed a 'Communication on Port Policy' in 2007 which was well received by amongst others ESPO (European Seaports Organization). This is based on soft laws and best practices, but did not bring regulation closer to its set legislative aims. This is explained in Box 5.

BOX 5: 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 labor 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.

The ambitions of the 'Transport White Paper' of 2011 clearly go beyond what has been reached until now. Action 4 of this Paper is aimed at improving both efficiency and quality of the 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 Slim 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 there is still no strict Community regulatory framework for port services. Despite the freedom 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".

Regulation of Port Services Provision in the UK

Although the UK 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, privatized 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 impact of local regulation may however be felt at a wider geographical level, causing impacts 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.

In the 1980s former state-owned ports have been privatized and the seaport industry has been deregulated. One reason was the financial burden of port development on 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 (Box 6).

BOX 6: REGULATION OF PORT SERVICES IN THE UK

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

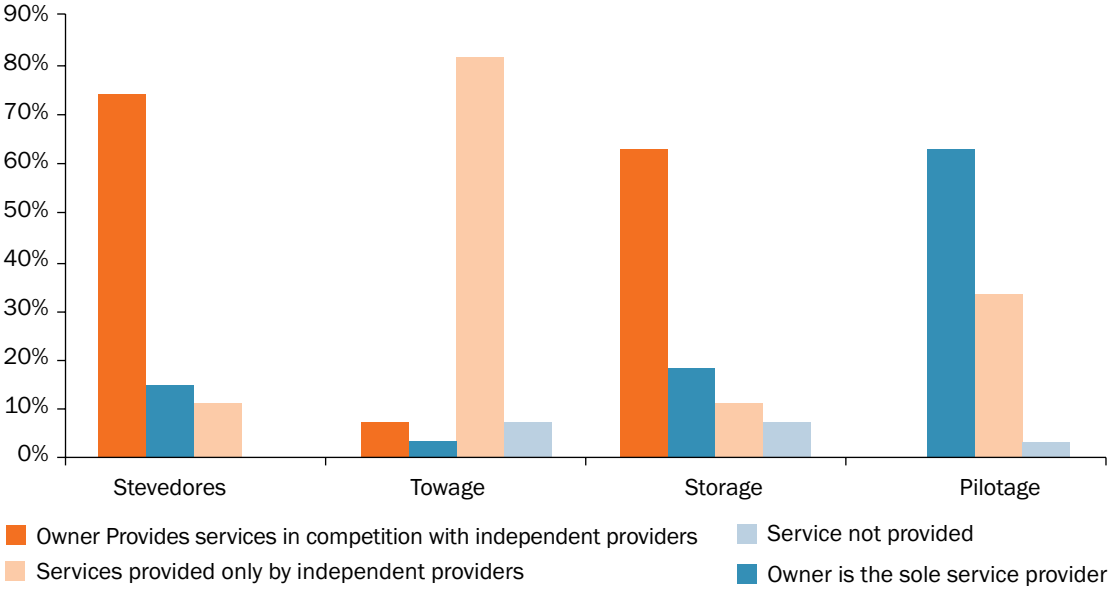
1. Role of the private sector: the majority of the large commercial ports are financed and operated by the private sector, whereas in mainland Europe in most cases the port authority is a government agency or government-owned enterprise.
2. Ownership relations between ports: in the UK most of the large 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 harbor operation. The economic regulation of ports is laid down in the Harbor'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).

Ports under private ownership account for 64 percent of the total port throughput volume in 2009 (see Figure 4 in 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 4: Provision of port services in UK ports



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

For assessing competition for services, a 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 million tons of throughput per annum or 25 percent of the total UK port throughput. Significant other private port operators are Felixstowe, Thamesport and Harwich under Hutchison Port Holdings and Southampton and London Gateway under DPW.

Impacts of the UK Approach to Port Services Regulations

Compared to mainland European ports the UK ports are a 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 are on average 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. 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. For example, 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 than the EU, 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 liberalization is welcomed. In the UK this is not an issue since ports and the port services therein are already liberalized. Some examples of possible negative impacts that relate to the ownership and operational structure of UK ports are the following:

- 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 percent of port service providers are small firms (less than 50 employees). Therefore introducing public tendering is not expected to result in increased competition. Hence for smaller ports regulation could create inefficiencies rather than efficiencies.
- The market entry process set out may still be complex, leading to potential new entrants 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 are considered to be 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.

Conclusions with Regard to the Indian Ports

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 thirteen Major Ports, and in most of them the handling of liquid and dry bulk commodities constitutes 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 that there is sufficient intra-port competition. On the other hand, some of the Major (and Non-major) Ports seem located close enough to each other or having similar quality of 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, although of course the question that can be asked is whether this government control of the Major Ports is not a negative aspect rather than a beneficial one. The profile of the ports and their differences in handling volumes, commodity types and navigational access may require some level of differentiation. Furthermore another question to be answered would be whether to apply the same regime for Major and Non-major Ports.

Finally, the 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 of ports (public and private) could be envisaged.

REFERENCES

APM Terminals Pipavav, *Gujarat Pipavav Port Limited Annual Report 2011*, 2011.

Brooks, Mary R. *The Governance Structure of Ports*, Review of Network Economics: Special Issue on the Industrial Organization of Shipping and Ports, 2, 2, 169-184, 2004.

De Langen, Peter *Ensuring Hinterland Access; The Role of Port Authorities*, OECD International Transport Forum 2008, 2008

Deloitte Touche Tohmatsu India, *National Conference on Ports and Shipping 2011*, 2011

Deloitte Touche Tohmatsu India, *National Conclave on Shipping 2012*, 2012

Ecorys, *Complementary Economic Evaluation study on the Commission proposal for a Directive on market access to port services*, 2006.

European Commission, Directive *of the European Parliament and of the Council on market access to port services*, COM (2004)654, 2004.

Indian Ports Association, *Major Ports of India: a profile 2011-2012*, 2012

Van Krimpen, Christiaan. *Regulation of the Indian Port Sector*, World Bank, Washington, DC, 2011.

MARAD, *America's Ports and Intermodal Transportation System*, 2009.

Ministry of Shipping, *Draft guidelines for tariff setting for Major Port Trusts and Private Terminals – 2013*, 2013

Ministry of Shipping, *Land Policy for Major Ports*, 2010.

Ministry of Shipping, *Policy for preventing private sector monopoly in Major Ports*, 2010.

Ministry of Shipping, *Maritime Agenda 2010-2020*, 2011

Committee, *Report of the Committee under the Chairmanship of Shri B K Chaturvedi – Member of Planning Commission Government of India –on Port Sector September 2010,* 2010.

Tariff Authority for Major Ports, *Guidelines for upfront tariff setting for PPP Projects at Major Port Trusts 2008*, 2008

World Bank, *Port Reform Toolkit*, 2003.

World Trade Organization, *International Trade Statistics,* (annual publication), 1995-2011.

LIST OF ABBREVIATIONS

APSEZ	Adani Ports and Special Economic Zone Limited
BOT	Build Operate Transfer
CAGR	Compounded Annual Growth Rate
DFCCIL	Dedicated Freight Corridor Corporation of India Limited
DMIC	Delhi-Mumbai Industrial Corridor
DWT	Deadweight Tonnage
EBR	Extra Budgetary Resources
E-DFC	Eastern Dedicated Freight Corridor
EoI	Expression of Interest
EU	European Union
FY	Fiscal Year
GBS	Gross Budgetary Support
GDP	Gross Domestic Product
GMB	Gujarat Maritime Board
GNI	Gross National Income
ICTT	International Container Transshipment Terminal
IPA	Indian Ports Association
IPPTA	Indian Private Ports & Terminals Association
IWAI	Inland Waterways Authority of India
JNPT	Jawaharlal Nehru Port Trust
MGC	Minimum Guaranteed Cargo
MGR	Minimum Guaranteed Revenue
MGT	Minimum Guaranteed Throughput
MOS	Ministry of Shipping
NHAI	National Highways Authority of India
NHDP	National Highways Development Project
NTDPC	National Transport Development Policy Committee
PCS	Port Community System
PIS	Port Information System
POL	Petroleum, Oil and Lubricants
PPP	Public Private Partnership
PRC	People's Republic of China
PSU	Public Sector Undertaking
RFP	Request for Proposal
RFQ	Request for Qualification
SEZ	Special Economic Zone
SOR	Scale of Rates
TAMP	Tariff Authority for Major Ports
TEU	Twenty-foot Equivalent Unit
USD	United States Dollar
WANA	West Asia North Africa
W-DFC	Western Dedicated Freight Corridor

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