ESCAP is the regional development arm of the United Nations and serves as the main economic and social development centre for the United Nations in Asia and the Pacific. Its mandate is to foster cooperation between its 53 members and 9 associate members. ESCAP provides the strategic link between global and country-level programmes and issues. It supports Governments of the region in consolidating regional positions and advocates regional approaches to meeting the region’s unique socio-economic challenges in a globalizing world. The ESCAP office is located in Bangkok, Thailand. Please visit our website at www.unescap.org for further information.

The shaded areas of the map indicate ESCAP members and associate members.
IMPROVEMENT OF TRANSPORT
AND LOGISTICS FACILITIES TO EXPAND
PORT HINTERLANDS: POLICY GUIDELINES

United Nations publication
Sales No. E.04.II.F.16
Copyright © United Nations 2006
All rights reserved
Manufactured in Thailand
ISBN: 92-1-120370-8
ST/ESCAP/2299

This study report was prepared by ESCAP with assistance and consultancy inputs from the Korea Transport Institute.

The views expressed in this paper are those of the authors and do not necessarily reflect the views of the United Nations.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

This publication was originally printed in 2003 without formal editing.

Acknowledgements
Grateful acknowledgement is made to the Government of the Republic of Korea for the generous funding of this study.
# Table of contents

List of figures and tables viii

1 Introduction 3
Case studies 3
Challenges for Asian ports and suggested policies for governments 4

section A

Case studies 7

2 Los Angeles & Long Beach Ports 9
2.1 Background of the ports 9
2.1.1 Pioneers of intermodal development
2.1.2 Driving forces behind developments
2.2 Types of facilities: What has been done? 11
2.2.1 On-dock facilities
2.2.2 Inland intermodal facilities
2.2.3 Alameda Corridor
2.3 Challenges for the future 14
2.3.1 Volume and revenue shortfalls
2.3.2 Financial risk
2.3.3 Ongoing need for more infrastructure and facilities
2.3.4 Competition

3 Pacific Northwest: Vancouver, Seattle and Tacoma 19
3.1 About the ports 19
3.1.1 Competition and collaboration
3.1.2 Distribution centres and facilities
3.1.3 Railway networks
3.2 The role of Vancouver Port Authority 22
3.3 Deltaport 23
3.4 Future plans 25
3.5 The United States ports 25
3.5.1 Port of Seattle
3.5.2 Port of Tacoma
3.5.3 Collaborative strategies of Seattle and Tacoma
3.5.3 Challenges for the three ports
4  Brisbane Multimodal Terminal  31
4.1 The Port of Brisbane Corporation  31
4.2 The Brisbane Multimodal Terminal  31
  4.2.1 Early teething problems
  4.2.2 Institutional and operational reforms
  4.2.3 Business growth strategies
  4.2.4 Early signs of success

5  MetroPort Inland Port, New Zealand  39
5.1 Port of Tauranga  39
  5.1.1 Ownership structure, location and history
  5.1.2 Driving forces
  5.1.3 Land availability
5.2 MetroPort development  41
  5.2.1 Early history
  5.2.2 Operating principle and commercial arrangements
  5.2.3 Success factors
  5.2.4 Outcomes
5.3 Future development  46

6  Duisburg trimodal container terminal  47
6.1 Port of Duisburg  47
6.2 Multi-faceted trimodal terminal strategy  47
  6.2.1 Site acquisition
  6.2.2 Attracting other intermodal players
  6.2.3 Collaborative relationships with other ports
  6.2.4 Development of infrastructure
  6.2.5 Attracting investors
  6.2.6 Supporting services and initiatives
  6.2.7 Customers
  6.2.8 Impact on trade
section B

Overview of challenges and policy responses

7 An overview of challenges and responses
7.1 Recognition of the need
7.2 Some successful stories
7.3 Much remains to be done
7.4 The potential gain from better intermodal transport networks
7.5 Ports and the supply chain
7.6 What government can do

8 Policies to facilitate international trade
8.1 The challenge of restrictions to cross border exchange of goods and services
8.2 Facilitating cross border movement and the flow of goods
  8.2.1 Trade agreements
  8.2.2 Streamlining of documentation
  8.2.3 Harmonization of rules and standards
  8.2.4 Liability regimes
  8.2.5 Industry standards and the legal status of intermediaries

9 Policies to facilitate market access
9.1 Competition policy
  9.1.1 The challenge
  9.1.2 Policy guidelines
9.2 Government ownership and competition
  9.2.1 The challenge
  9.2.2 Pointers to the way forward
  9.2.3 Policy guidelines
9.3 Regulatory reform
  9.3.1 The challenge
  9.3.2 Pointers to the way forward
  9.3.3 Policy guidelines
10 Policies to support the development of intermodal systems

10.1 Defining and communicating the policy stance
  10.1.1 The challenge
  10.1.2 Possible roles for government
  10.1.3 Policy guidelines

10.2 Integrated network planning
  10.2.1 The challenge
  10.2.2 Policy guidelines

10.3 Prioritization of funding of strategic infrastructure development
  10.3.1 The challenge
  10.3.2 Policy guidelines

10.4 Enhancing the role of rail
  10.4.1 The challenge
  10.4.2 Pointers to the way forward
  10.4.3 Policy guidelines

10.5 Enhancing the role of inland waterways
  10.5.1 The challenge
  10.5.2 Pointers to the way forward
  10.5.3 Policy guidelines

10.6 The development of privately owned intermodal facilities
  10.6.1 The challenge
  10.6.2 Policy guidelines

10.7 Public private partnerships
  10.7.1 The challenge
  10.7.2 Pointers to the way forward
  10.7.3 Policy guidelines

10.8 Technology
  10.8.1 The challenge
  10.8.2 Policy guidelines

11 Policies with respect to institutions and people

11.1 Restructure of government agencies to have an intermodal focus
  11.1.1 The challenge
  11.1.2 Policy guidelines
11.2 Redefining the role of ports 97
   11.2.1 The challenge
   11.2.2 Policy framework

11.3 Labour Issues 99
   11.3.1 The challenge
   11.3.2 Policy guidelines

11.4 Enhanced commercial awareness and skills 102
   11.4.1 The challenge
   11.4.2 Pointers to the way forward
   11.4.3 Policy guidelines

11.5 Enhancing the professional standards of officials 104
   11.5.1 The challenge
   11.5.2 Policy guidelines

11.6 Policies with respect to environmental and social issues 105
   11.6.1 The challenge
   11.6.2 Policy guidelines

Appendix 107

WTO Symposium checklist of recommendations for improving cross border flows of trade 109
List of figures and tables

Figure 2.1 The Alameda Corridor, which opened for business in April 2002 after eighteen years of planning, design and construction, is a twenty-mile, high speed rail corridor that connects the ports to the railyards east of central Los Angeles and on to the United States transcontinental rail network 13

Figure 4.1 Brisbane Multimodal Terminal 34

Figure 4.2 Super B Double Container Truck 37

Figure 6.1 The DIT terminal is able to handle 200,000 TEU (twenty-feet equivalent units) each year and can be extended to handle 400,000 TEU 50

Figure 6.2 The new trimodal terminal is equipped with two 55 tonnes gantry cranes, four straddle carriers, a 330 m berth and four 750 m rail tracks with a start up capacity of 200,000 TEU per year 51

Figure 7.1 Concor’s intermodal network 58

Figure 10.1 Decision matrix for government actions 91

Table 10.1 The range of roles and actions that government can undertake 78

Table 10.2 Missing links on the Trans-Asian Railway 83

Table 10.3 Breaks-of-gauge on the Trans-Asian Railway 84
Improvement of transport and logistics facilities to expand port hinterlands
Introduction

This report documents the results of a study commissioned to examine the impacts of the development of inland intermodal transport network and logistics facilities on hinterland penetration of ports. The study was undertaken as part of the UNESCAP project on the Integrated International Transport and Logistics System for North-East Asia with financial support of the Government of the Republic of Korea.

The study comprised three main areas of investigation and research:

- identification of the impacts of the development of inland intermodal transport network and logistics facilities on hinterland penetration of ports, including case studies from North America, Europe and/or other regions;
- identification of infrastructure and institutional problems that limit the opportunities of ports in Asia to serve expanded hinterlands; and
- development of draft policy guidelines for the improvement of transport and logistics facilities to expand port hinterlands, which can be suggested to the governments of the Asian countries.

The structure of the report reflects these activities.

Case studies

Section A presents a series of five case studies on ports that have expanded their markets into hinterland areas or areas beyond their normal reach through the development of intermodal networks and logistics facilities.

The first case study focuses on the combined efforts of the Ports of Los Angeles and Long Beach over the last twenty years to position themselves as the key southwest coast gateway ports to the lucrative industrial Midwest centre of the United States of America. As well as capturing about 70 per cent of the United States West Coast container trade, the two ports have the largest concentration of intermodal rail facilities in North America.

A second case study on North American ports considers the strategies implemented by Vancouver, Seattle and Tacoma ports. Located near each other on the northwest coast of North America, they are an interesting illustration of the use of competition and cooperation to increase
hinterland market reach. Like the Ports of Los Angeles and Long Beach, they have been very successful in positioning themselves as gateway ports to hinterland markets. Unlike the Californian ports they have comparatively small local catchment areas, and as much as 80 per cent of the container volume moving through them is not for local consumption, but destined for other places such as the Midwest and even the North American East Coast.

Brisbane Multimodal Terminal, located in the Port of Brisbane, Australia is the focus of the next case study. Through a range of strategies the Port of Brisbane Corporation has been able to attract cargo owners and shipping carriers who would normally call at the Ports of Sydney or Melbourne to use its multimodal terminal to move freight by rail to and from the Port of Brisbane and the southern state hubs.

Perhaps the most provocative entrepreneurial business growth strategy is demonstrated by the Port of Tauranga in New Zealand, with the development of MetroPort Auckland, a dry port about 220 kilometres away, but only a few kilometres across the city from its main competitor the Port of Auckland.

The final case study is about an inland port, Duisburg Port, located in Germany, which is having some very promising early success in attracting container trade through its recently opened intermodal terminal, drawing it away from a number of major coastal ports including Rotterdam and Antwerp.

**Challenges for Asian ports and suggested policies for governments**

An overview of the challenges faced by Asian ports, as well as some of the early signs of success achieved by some of these ports in penetrating hinterland markets, is the subject matter of Section B. Also discussed in this section is a brief consideration of the potential benefits that can be gained from improved intermodal transport networks, as well as the role that ports, other transport chain players and governments can play in realising these benefits.

Chapter 8 through to Chapter 11 address in more detail a range of challenges faced by Asian ports, while offering a set of draft policy guidelines. One of the key sets of challenges faced by ports and their customers and intermodal partners is the plethora of inconsistent and time consuming systems, rules and procedures that must be adhered to in moving cargo across international boundaries. A related set of difficulties is caused by regulatory regimes and competition policies that make it
difficult for international intermodal and logistics specialists to gain adequate access to transport sector markets in Asian countries. These issues and a set of suggested policies are outlined in Chapters 8 and 9.

Inadequate rail, road and inland waterway infrastructure and supporting facilities and systems, coupled with poorly coordinated linkages between transport modes, make it difficult for many Asian ports and their intermodal collaborators to deliver the seamless, time sensitive door-to-door services that are being provided to cargo owners by ports in Europe and North America. Not only are these problems complex but they are also very expensive to address for many Asian countries. Chapter 10 discusses these challenges and suggests a number of ways in which Asian country governments can address them through the use of long-term planning and appropriate support, as well as the use of public-private partnerships.

The final chapter of the report, Chapter 11, is devoted to transport institutions, their employees and the communities that are affected by intermodal transport operations. The chapter discusses the importance of government transport agencies being structured with a broad and integrated focus on intermodal interests. It then focuses on a range of institutional and organizational issues related to ports. These include the need for Asian ports to have a strategic economic development role with the mandate to invest in the long-term growth of the port’s business, and the work practices and business skills to support their growth strategies, while also looking after the interests of community stakeholders and the environment. The chapter also discusses the need for Asian country governments to support ongoing improvement in specialist logistics capabilities among not only port managers but also other players in the intermodal transport network.
section A

Case studies
2

Los Angeles & Long Beach Ports

2.1 Background of the ports

2.1.1 Pioneers of intermodal development

The Ports of Long Beach and Los Angeles are both independent, self-supporting departments of their respective cities, Long Beach and Los Angeles, in California. Each port is under the control of a Board of Harbour Commissioners appointed by the Mayor and approved by the City Council, and administered by an Executive Director. Neither port is supported by taxes. Instead, they each earn revenue from fees for shipping services such as dockage, wharfage, pilotage, storage, property rentals, royalties and other port services.

Los Angeles is the busiest port in the United States and the eighth busiest in the world. If the two ports of Los Angeles and Long Beach are considered together, their combined container volume makes them the third busiest ports in the world.

While they have attracted considerable attention very recently because of their innovative collaboration in the development of the Alameda Corridor, for nearly twenty years the two ports have been at the forefront of the development of intermodal facilities both in their own right and by collaborative arrangements. This has allowed them to very successfully penetrate the highly industrialized Midwest markets of the United States and to capture rapidly growing import trade entering the United States, particularly from China.

About 70 per cent of the United States West Coast container trade passes through the two ports. The contribution of intermodal operations to this dominance is illustrated by the following facts:

- Between them, the two ports they have the largest concentration of intermodal rail facilities in North America.
- Apart from Tacoma and Vancouver, these two ports transport the highest proportion of their throughput by intermodal rail, the two ports handling over 9 million TEU a year between them.
- At Long Beach, 2.3 million TEU or 50 per cent of container trade is moved by intermodal rail and at Los Angeles 1.5 million TEU or 30 per cent of the port’s trade is transported this way.
2.1.2 Driving forces behind developments

Growth in export and import container volumes has been the pre-eminent driving force behind the development of intermodal facilities by these West Coast ports. Over the last two years the Port of Long Beach has experienced between 6 per cent to 10 per cent annual growth in the volume of containers handled, and the projected growth in throughput up to 2020 is estimated to be between 3 per cent to 6 per cent per year. This rate of growth will double 2002 volumes by 2020. The Port of Los Angeles has experienced even greater growth, with container volumes in 2002 increasing by 14 per cent after a 6 per cent increase the year before.

Port of Long Beach officials largely attribute the forecast for increased container cargo on the United States West Coast to gains in trade with China. Art Wong, a spokesman for Long Beach, stated:

The greatest growth in United States-Asian trade will be with China. The vast majority of United States-China trade will move through the West Coast ports. While trade with southern Asia is growing – with some of that moving through the Suez Canal and the United States East Coast – we don’t foresee a great deal of the Far East trade moving through the United States East Coast.2

Understandably each of the ports is keen to reap the financial and economic benefits of this growth in trade, but there are limitations in their capacity to do so by just developing more on-dock facilities. Firstly, they will both run out of land within the next twenty years; and even now, it is necessary to avoid major landfills because they tend to be environmentally sensitive and therefore subject to community challenge. So, part of the strategy will be to increase cargo handling capacity by making better use of existing land, making sure that new or refurbished on-dock and near-dock intermodal facilities focus on rapid cargo throughput from ship to rail.

Underpinning each port’s ability to fulfil these goals is long-term planning. The Port of Long Beach, for example, has a twenty year development plan for five new container terminals, a replacement road bridge, expanded rail and intermodal facilities and the provision of new cranes capable of servicing twenty-two container wide, 10,000 TEU-capacity ships.

---

2 Ibid.
2.2 Types of facilities: What has been done?

2.2.1 On-dock facilities

A crucial factor in the ports’ container movement dominance is their reliance on sophisticated near-dock intermodal rail facilities, which they have developed in conjunction with major railway companies such as Union Pacific Railroad (UP). The facilities are used to relay containers between the on-dock rail tracks and the off-dock rail facilities run by major railroads.

The first major intermodal facility to be developed in the United States opened in 1986, eight kilometres from each of the ports and near major railyards in Los Angeles. Built and financed by both ports and the Southern Pacific Railroad, the Intermodal Container Transfer Facility (ICTF), which is on 250 acres of land, allows two or more double-stack container trains, each carrying several hundred TEU, to be loaded or unloaded simultaneously. This can be done within hours of the containers being transferred to or from a vessel, thus reducing the bottlenecks caused by truck congestion, and increasing door-to-door consignment transit times for shippers.

As well as the high volume multi-user ICTF, several dedicated on-dock railyards have also been developed by the ports in response to demand by carriers such as Evergreen and NYK, each of which operates its own container transfer facilities at the ports. The Port of Los Angeles has developed the Terminal Island Container Transfer Facility (TICTF) at a cost of US$34 million. Adjacent to two major marine terminals in the Port of Los Angeles, the facility allows for quicker, more efficient transfer of containers between overseas ports and the United States interior.

Similarly, APL’s Global Gateway South terminal, built on 262 acres at the Port of Los Angeles, and which has been in operation since 1997, has on-dock rail operations with eight loading tracks that are capable of handling sixty-four double-stack railcars.

Intermodal facilities are also part of new mega Terminals being developed for Maersk Sealand at Los Angeles and for Hanjin at the Port of Long Beach. The 485 acre Maersk Sealand Terminal at Los Angeles’ Pier 400, the world’s largest dedicated container terminal, opened in 2002, and a second phase was scheduled to open in 2003. Operated by APM Terminals, it includes a forty acre intermodal facility, which has twelve loading tracks and a total capacity of 126 double stack rail cars. Similarly, the new 375 acre mega-terminal on Pier T at the Port of Long Beach, built for Hanjin Shipping Company, will also have an on-dock intermodal rail yard of a similar size.
2.2.2 Inland intermodal facilities

Supporting the on-dock and near-dock investments in intermodal facilities, the two port authorities have also benefited from investments made by railway companies such as BNSF and UP in developing inland intermodal terminals to meet the growing container trade volumes, especially moving in and out of the United States Midwest region where a high proportion of intermodal shipments either originate or have their final destination. This highly industrialized region handles approximately 25 per cent of all North American intermodal traffic. Many new facilities, as well as projects currently in progress, consist of logistics centres in addition to intermodal hubs or ramps.

According to the Intermodal Association of North America (IANA), international intermodal traffic continues to take trucks carrying containers off North America’s highways. It is therefore not surprising that intermodal operations are forming an increasing proportion of railroad companies’ revenue and profit.

BNSF, for example, opened the first phase of a new 800 acre multimodal facility in October 2002 at Joliet, Illinois, about 100 kilometres south west of Chicago. The facility, which is part of a 2,200 acre industrial park, includes a huge warehouse, as well as an intermodal railyard called the CentrePoint Intermodal Center, which has a capacity of 400,000 lifts per year. The Joilet facility is the largest of its type in the United States. In a similar strategy, this year UP opened a new intermodal facility at Rochelle, Illinois, about eighty miles west of Chicago.

Collaboration between players has been a core theme in the story of not just the ports but also the railway companies. Their growth has in part occurred as a consequence of long-term agreements between rail companies to share rail corridors, and between railway companies and trucking companies to ensure a seamless door-to-door service. Another element of these collaborative arrangements is the emergence of alliances between railway companies and intermodal marketing companies to set a single price for the movement of freight from point of origin to destination.

Through the railway company investments in new inland intermodal facilities, as well as the achievement of improved efficiencies in the operation of existing facilities, transit times for long-haul transcontinental transit have been reduced by at least a day over the last few years.

2.2.3 Alameda Corridor

Cooperative partnerships have also been the hallmark of the development of the Alameda Corridor, which opened for business in April 2002 after eighteen years of planning, design and construction. The twenty-mile,
high speed rail corridor connects the ports to the railyards east of central Los Angeles and on to the United States transcontinental rail network. The corridor is intended to improve the passage and reliability of container traffic in and out of the ports by reducing delays at grade crossings and truck congestion on the local highways and at the port gates. In addition, the corridor is intended to improve the quality of life of Southern California’s 20 million residents by eradicating unsafe and slow road and rail crossings, significantly improving air quality and noise and vibration levels, and reducing the growth in truck traffic by 23 per cent.

Figure 2.1 The Alameda Corridor, which opened for business in April 2002 after eighteen years of planning, design and construction, is a twenty-mile, high speed rail corridor that connects the ports to the railyards east of central Los Angeles and on to the United States transcontinental rail network.

By consolidating trains from four lines onto one grade-separated railway, the Alameda Corridor aims to avoid congestion on the roads, and to allow trains carrying freight to travel faster – forty-five minutes from the waterfront to transcontinental railyards near downtown Los Angeles, instead of two to three hours. Between thirty and thirty-five trains use the corridor each day, but within the next twenty years, this number could increase to 100, reducing the number of trucks on the freeways and at the terminal truck gates.3

The project has been managed by the Alameda Corridor Transportation Authority (ACTA), which was established by the California Joint Powers

3 Ibid.
Authority – a special body itself created by the Cities of Long Beach and Los Angeles in 1989, and charged with the responsibility to acquire, implement, finance, construct and operate the corridor. A seven member board that represents the Cities and Ports of Long Beach and Los Angeles, and the Los Angeles County Metropolitan Transportation Authority governs ACTA.

The twenty-mile railway corridor includes a ten-mile trench, and replaces four branch lines and forty grade separations. With a total cost of US$2.43 billion the project is being financed through the contributions of all of the ACTA parties, as well as a US$400 million Federal Government loan (the project has been designated a national priority project), and a US$1,160 million bond sale.

The construction of the Corridor has attracted the establishment of over three million sq ft of new warehousing and distribution outlets in adjacent sites. Train volumes using the Corridor have risen by 30 per cent from when it opened in April 2002 to mid 2003. Train speeds have increased from ten to forty-fives miles per hour and train transit times have fallen from over two hours to forty-five minutes. In addition, train reliability has increased as a consequence of a 200 per cent reduction in regional train congestion.4

2.3 Challenges for the future

2.3.1 Volume and revenue shortfalls

One of the challenges in gaining public support for the Corridor has been that since its construction truck movements have increased rather than fallen. Critics are quick to point out that while the corridor can carry 100 trains per day it has only attracted thirty-five to forty, which is about 37 per cent of the ports’ cargo (the same percentage as before the construction of the Corridor), rather than the 50 per cent that was anticipated by the planners.

One explanation for the disappointing results is that between the early 1980s, when the Corridor was first conceived, and 2002, when it became operational, the ‘economics of the Southern California shipping industry changed, making it cheaper and easier to move containers by truck than by train’.5 While it is true that the corridor has not yet resulted in a modal


shift from road to rail, this observation needs to be counterbalanced by the fact that container throughput growth has outstripped forecasts. So there has been an absolute increase in the number of containers carried by rail, and it is not possible to say that this would have happened without the existence of the Corridor.

2.3.2 Financial risk

Another serious challenge is with the financing model, which imposes railroad user fees to the value of several million dollars per year to repay the revenue bonds. These fees are in turn being passed on by the railroad companies, BNSF and UP, to the ocean carriers. Again, critics of the Corridor argue that the cost savings initially expected to be gained by using the Corridor to move containers to the Midwest by rail may be less attractive to cargo owners now that they are being charged an extra US$15 per twenty foot container. Instead of using the Corridor, some shippers are placing their cargo on trucks and sending it to inland warehouses and distribution centres.

According to a report in Containerisation International, the planners of the Alameda Corridor:

underestimated...the extent to which shippers would ‘transload’, trucking the cargo to the approximately 300 warehouses inland, or destinations in Arizona and Nevada, where goods are reloaded into 48 ft or 53 ft containers before being placed on eastbound railroads.

The process allows shippers, which operate under JIT (just-in-time) delivery systems, to wait until the last moment before deciding which cargo should go in which containers and where they will ultimately be sent.

Toyota Motor Sales United States of America, for example, uses only trucks to haul more than US$1 billion in parts from the ports to its 750,000 sq ft warehouse in Ontario each year.

That approach saves corridor fees and cuts the handling time to between two and four hours (depending on traffic), from the day or more it would take to move the goods to the railyard, only to then load them on trucks for the drive to Toyota’s warehouse in Ontario.

Tony Minyon, Toyota’s national manager of parts logistics, revealed: ‘We’ve never considered the Alameda Corridor because the length of the haul is so short. You need to get outside a 500 mile radius for rail to be cost-effective'.

If payments from the new facilities do no meet projections, it will be the ports, not the carriers or the railway companies who will bear the bulk of the risks. One of the consequences of the shortfall in rail traffic using

---

the corridor is that the ports have to pay for the resulting shortfall in revenue of US$3.5 million each per year to meet the bond payment commitments. As such the ports are assuming a role akin to equity investors underwriting some of the risk of project overruns, a situation that Luberoff and Walder believe places too great a burden on these publicly owned bodies when other beneficiaries of the investment are much more protected from the financial risk if the Corridor fails to deliver anticipated revenues. Hence, although the Federal bonds are to be repaid with fees paid by the railroads, it is the assets of the two ports that secure the bonds.

While the public may be expressing surprise and dismay at the shortfall in the number of containers being carried by the Corridor, Luberoff and Walder argue that in 1999 pro forma projections clearly show that ‘the fees paid by the railroads will not be sufficient to service debt until 2018’ and that ACTA and the ports were well aware that they would need to make ‘shortfall’ advances to cover required payments on both the bonds and Federal loan until that date.

### 2.3.3 Ongoing need for more infrastructure and facilities

In a statement made in July 2003, the Metropolitan Transportation Authority (MTA), one of the parties responsible for building the Corridor, acknowledged that overall highway congestion relief is not a realistic outcome in the short term because of the overall growth in container traffic through the two ports. The Authority is therefore intensifying its efforts for a US$4.1 billion expansion of Long Beach’s freeway capacity, with the project due for completion by about 2010 if approval is given.

To further complement the Corridor, the Alameda Corridor Transportation Authority is also considering a proposal to build terminals for shuttle trains that would replace trucks by hauling cargo short distances to inland repacking centres, from where they would then be transported by road to their final destination.

The problems being experienced by the Ports of Los Angeles and Long Beach in developing adequate intermodal infrastructure to meet the

---

7 Monday 1st September 2003 *Containerisation International.*


9 Ibid.
massive growth in container trade are not exclusive to this Southern Californian gateway. According to Chuck Raymond the Chairman of the Marine Transportation National Advisory Council:

...in the past, United States manufacturers and retailers had generous on-site warehouse capacity to provide for market uncertainty. But today, industries rely on just-in-time delivery. Business plans are designed around short arrival times with little or no room for delay. By 2020, every major United States container port is projected to at least double the volume of cargo it will handle, with selected ports tripling or quadrupling in volume. In fact, there are many warning signs that point to serious shortfalls in our intermodal freight capacity and that future cargo volumes may very well overwhelm the nation’s infrastructure.\(^\text{10}\)

This is even though the railway companies in Canada and the United States continue to invest in bigger and more efficient intermodal facilities and have enjoyed significant growth in container volumes moving between the West and the East Coast. In the first six months of 2002, for instance, United States intermodal rail volumes were 4.9 per cent higher than the same period in 2001.

### 2.3.4 Competition

There is no doubt over the last twenty years the Ports of Los Angeles and Long Beach have both been very successful in establishing themselves as gateway ports that move both import and export trade beyond their coastal areas to and from the industrial hinterland markets of the mid west.

Some of this trade had previously reached the Midwest via East Coast and United States Gulf ports. Dissatisfied with the costs and inflexibility of the service, exporters pressured the container lines to service the Midwest market via the Californian ports. Agreement between Australian and New Zealand exporters was reached and carriage on the West Coast alternative route was underpinned by five main factors:

- avoidance of costly Panama Canal dues;
- shorter transit times allowed more voyages per year using the same number of vessels;
- provision of mini and micro bridge transhipment services by rail across to the Midwest and East Coast. East Coast cargoes went through on an East Coast bill of lading;
- the ability of carriers to maintain shipping schedules because of fewer interruptions and to support intermodal charges that were almost equivalent to the all-water rate through the East Coast ports; and

\(^{10}\) Reported in an article written by Dale Crisp, in *New Zealand Shipping Gazette*, 16th November, 2003.
the ability of United States importers (especially of meat) to re-sell the cargo while the container was ‘on the water’ and getting a new bill of lading for a minimal amount of US$100.

From the importers’ perspective, the arrangement meant that they received their cargo much more swiftly and therefore had to carry less money throughout the whole deal.

However, the Californian ports’ dominance over the West Coast ports may not be as secure as it has been in the last twenty years. Certainly they have been very successful in attracting huge volumes of export and import trade on the basis of investment in a sophisticated array of on-dock or near-dock intermodal facilities, including the Alameda Corridor, but the nation’s road and rail systems have not been able to keep up with this growth.

Even with more investment by the government in inland intermodal facilities that augment the Alameda Corridor, the two southern West Coast ports are not free from competition in this industrial hinterland from the East Coast ports. For example, New York and New Jersey Ports are also embarking on ambitious strategies to stretch their market reach through the development of a number of intermodal facilities. And, just as the Californian ports’ efforts are supported by the efforts of CN and BNSF to transport export and import container trade between the West Coast and the Midwest region, so too the East Coast ports are also targeting the Midwest region by embarking on similar strategies with the support of railway companies. These improvements to the West Coast port gateways are likely to attract the interest of cargo owners keen to move their freight in the most cost effective and timely way possible into the Midwest markets.

As Luberoff and Walder explain, the carriers’ assets are mobile and they can choose to move them wherever the market dictates. For example, the Logistics Manager of a major New Zealand meat exporter is currently negotiating freight rates with shipping lines for the next season on the basis of moving back to the East Coast.

The roads between the Ports of Los Angeles and Long Beach and the Midwest region are becoming choked with the weight of traffic for clients who want just-in-time deliveries and to keep their inventories low. By contrast, a number of fast and reliable shipping services are starting to use the East Coast ports of New York, New Jersey and Philadelphia where a comparative lack of road congestion is a more attractive option than the West Coast alternative.

---

11 Luberoff and Walder, op.cit.
12 Peter Carr, personal communication, November 2003.
3

Pacific Northwest: Vancouver, Seattle and Tacoma

3.1 About the ports

Vancouver, Seattle and Tacoma Ports are located close to each other at the northern end of the North American West Coast market. The geographical proximity of the ports has significant implications on both the competitive and cooperative dynamics affecting their attempts to extend their market reach beyond their local catchments.

Following a temporary fall in 2001, over the last couple of years each of the three ports has experienced a growth in container movements. During the same period they have all invested significantly in new infrastructure and water and land-based container handling capacity. There is evidence that a previous trend for carriers to transfer their business from the northwest coast to the Californian ports is again changing in favour of all three ports.

Supporting this shift in carrier behaviour are underlying changes in economic structure. It would also seem that a number of major United States retailers ‘which have historically been concentrated in southern California, are establishing new distribution centres in the Puget Sound area’. According to a Containerisation International report, this development will ‘fuel increased transpacific imports via the gateways of Seattle and Tacoma.’

The same report argues that Vancouver, Seattle and Tacoma ports share the advantage of having quite well balanced import and export container trade volumes. By contrast, the ratio of transpacific eastbound and westbound cargo volumes has approximately a 3:2 ratio of imports to exports.1

Compared to California, the Pacific Northwest has a small local population so intermodal strategies play a crucial role in expanding each port’s market by moving freight to distant Canadian and United States destinations. Collectively, as much as 80 per cent of container volumes

---

1 Northwest balancing act, Saturday 1st February 2003 Containerisation International.
moving through the three Pacific Northwest ports are not for local consumption but are destined for other places such as the Midwest and even the North American East Coast.

3.1.1 Competition and collaboration

The market for port services in the Pacific Northwest exhibits a complex mix of competition and collaboration. On the one hand there is a high level of competition between the three ports and, more particularly, between Vancouver and the other two, meaning that each of them is focused on strategies that aim to maximize their own market share at the others’ expense. Vancouver has emerged as a serious threat to the Tacoma and Seattle ports as an entry point for container trade destined for the Canadian and United States hinterland, for example. To cater for significant growth in container trade, each of the three ports is expanding its terminal capacity, as well as building on-dock intermodal facilities.

On the other hand, the ports have demonstrated a willingness to collaborate on key infrastructure initiatives. Seattle and Tacoma have combined forces to invest in improvements in the rail and road corridor between them.

3.1.2 Distribution centres and facilities

Apart from the significant investment by the ports themselves in intermodal infrastructure, the development of intermodal facilities and services by third party logistics specialists and major retailers have supported the ports’ ability to reach their inland markets. Both of these groups have been establishing warehousing, transloading and distribution outlets near Seattle and Tacoma. For example, major retailers such as Target, Wal-Mart, Safeway and Home Depot are either establishing or looking to establish distribution centres in the area.

3.1.3 Railway networks

Over the last decade or more both Canada and United States railway companies have had a very significant role to play in moving freight between coastal ports and inland markets in North America. As with the ports located elsewhere in North America, a combination of competitive and collaborative strategies has characterized the role railways have played in supporting the Pacific Northwest ports’ efforts to win competitive advantage.

Firstly, through a process of alliances, joint ventures and acquisitions the railway market has become highly consolidated, which in turn has increased the remaining railway companies’ capacity to provide extensive networked linkages between the West Coast ports and their Midwest and East Coast markets. But, as a Containerisation International report stresses:
In the intra-Canadian intermodal rail market, as well as in the crossborder trade between Canada and the United States, CN and CPR compete fiercely with each other. In the fast-growing trade corridors from Vancouver (BC) to Toronto (ON) and Montreal (PQ), as well as between Toronto/Montreal and the United States MidWest, these are the only Class I railroads operating.

The report goes on to say that on these routes the Canadian railway companies are also competing with road freight companies in an attempt to increase the volume of containers and trailers that they carry by rail. Although by April 2003 only 20 per cent of containers moved to and from ports in North America by rail, the West Coast ports have benefited from the railway companies’ ongoing efforts to forge linkages with them and cargo owners and shipping carriers.

For example, the Ports of Los Angeles and Long Beach gained a competitive advantage when in 2001, BNSF and Norfolk Southern Railway Company established a coast-to-coast intermodal service between southern California and Rutherford (PA) and Croxton (NJ) on the United States East Coast (USEC). BNSF’s network covers the western two-thirds of the United States, while NS operates in the eastern states. Consequently, BNSF provides the linehaul service between California and Chicago, and NS the linehaul from Chicago to USEC. Furthermore, intermodal connections between Tacoma and Seattle Ports are being improved as a consequence of a partnership arrangement which has seen BNSF and UP join a number of parties funding a corridor similar to the Alameda Corridor.

Secondly, there has also been an increasing tendency for the railway companies to form alliances with road operators to facilitate the seamless interchanges and door-to-door delivery that to some degree have met the increasing demands for just-in-time delivery by cargo owners keen to minimize their transit and inventory costs.

Thirdly, the railroad companies have established their own intermodal facilities and services, including those in and around Chicago where they are used extensively as rail interchange points for both the Canadian and United States railroads’ marketing alliances. Through these facilities, the rail operators’ customers benefit from reduced transit times of a day or more by eliminating the crosstown haulage of trailers over the city’s congested highways.

Railway companies also have a history of establishing intermodal facilities at ports. In the late 1990s Canadian Pacific Railway (CPR), for example, established the Vancouver Intermodal Facility just outside of Vancouver BC with the capacity to handle 120,000 containers and trailers a year, a

---

100 acre intermodal terminal in Calgary, and participated in the Deltaport terminal at Vancouver Port in collaboration with VPA, TSI Terminal Systems, and CN Rail.

Those ports that have forged partnerships with the railway companies through shared investment in on-dock or near-dock intermodal facilities have been able to attract trade away from ports that are more closely located to the point of production. This is happening, for example, with trade that originates near the Port of Portland in the Columbia/Snake river area. Instead of being shipped out through the Port of Portland, ocean carriers that do not serve Portland charge a nominal fee to shippers to cover the cost of transfer of the cargo by rail to Seattle or Tacoma ports. Northwest Container Services offers carriers including Maersk Sealand and the Grand Alliance this service using BNSF’s and UP’s networks.

Collectively these factors have greatly reinforced the capacity of the Pacific Northwest ports to expand their markets beyond their local catchment. It must be remembered, however, that the Californian ports, and indeed a number of ports on the East Coast of North America, are also able to challenge the Pacific Northwest ports’ control of the Midwest market through their access to a similar range of railway services.

### 3.2 The role of Vancouver Port Authority

In some instances, the extension of the port hinterland in North America has been facilitated by the role assigned to port organizations and the corporate governance arrangements.

Vancouver Port Authority, established under the Canada *Marine Act* of 1998, is a good example of the strategic whole-of-port collaborative manager. Its status as an authority is only recent. Previously it was a ‘crown corporation’, a government business enterprise that reported to the Canadian federal government.

Its growth strategies have been shaped by the need to compete with its Pacific Northwest neighbours, Tacoma and Seattle, the South West Coast ports of Los Angeles and Long Beach and the ports on the East Coast of Canada and the United States.

According to VPA’s president and chief executive officer, Captain Gordon Houston, insufficient access to capital for the infrastructure investments required to maintain competitiveness and capture business growth opportunities:
At the core of this challenge to remain competitive is the fundamental issue concerning the differences in tax structures. The VPA and its tenants pay some US$56 million in taxes to the local municipalities. Seattle on the other hand is a tax raising authority and assesses the residents in each and every household. This raises around US$50 million Cdn that the port of Seattle can use to fund infrastructure. They are also able to access Federal and State grants to provide further transportation benefits outside of their port areas.

By contrast with United States Ports Houston pointed out that:

Currently, we’re mandated to operate on a cost-recovery basis and deliver revenue to various levels of government. We’re compelled to act on the basis of often narrow and short-term revenue-maximizing considerations, and we have only a fraction of the investment capacity of competing ports in the United States.\(^3\)

### 3.3 Deltaport

The Port of Vancouver’s principal transport chain initiative has been the ambitious Deltaport development, which opened for business in 1997. As well as being a way of relieving congestion in the Inner Harbour area and allowing room for expansion in container traffic, the development of Deltaport was an important strategic response to improving intermodal integration to make Vancouver more competitive with the United States West Coast ports. Its development gave Vancouver the opportunity to offer a competitive service to Chicago and the United States Midwest.

This was a joint venture initiated by the (then) Vancouver Port Corporation to overcome congestion in the Inner Harbour and to give better access to the United States Midwest and Chicago. The Corporation acted as facilitator to get the new port development to the south of the city approved and operating. It carefully managed the issue of competition between its Inner Harbour stevedoring companies by offering involvement in Deltaport to stevedores, while bringing together the two competing Canadian railway companies.

Involving both railway companies took particular effort as they had previously had little contact and were traditional rivals. However, the Corporation was able to persuade them that it was necessary for their collective survival to put past differences aside and cooperate on the Deltaport venture and associated upgrading of rail capacity through the Rocky Mountains. Removal of historic restrictions on the railways’ ability

---

\(^3\) Vancouver Port Authority Website, December 5, 2001, Speech: Address to the Vancouver Board of Trade by Captain Gordon Houston, President & Chief Executive Officer, Vancouver Port Authority, Tuesday, December 4, 2001, http://www.portvancouver.com/media/news_2001_12_5.html
to charge cost recovering prices on grain traffic gave the port the capability to upgrade track through the mountains by improving tunnel grades and enlarging tunnels to accommodate double stacked container cars. The railways then further improved their capacity to serve the United States Midwest by purchasing smaller United States railway companies in this region.

One of the stevedores took up the offer to participate in the venture, which effectively created a means of ensuring coordination between the two ports.\(^4\) The stevedoring company was able to form a successful joint venture that has been a major contributor to the Port of Vancouver’s ability to expand and provide a competitive, alternative service to major United States markets.\(^5\)

Deltaport has improved Vancouver’s growth and has strengthened its position as a competitive threat to the United States West Coast ports. As a sign of the success of the Deltaport venture, in July 2001:

> three carriers started new transpacific services using Vancouver (BC) as the first eastbound United States port of call. OOCL, NYK and Lykes Lines are now using the port as a gateway to the United States Mid-West. For OOCL and NYK, this represents a change in their rotation within the Grand Alliance. Previously, Seattle was their first port of call, followed by Vancouver. The two carriers combine their loads to make a weekly call at Deltaport.\(^6\)

As with the efforts of all of the other ports that have successfully positioned themselves as gateway ports to other regions, the reason that the carriers moved away from Seattle to Vancouver was that Canadian Pacific Railway (CPR) established contracts with them to transship their cargo overland from Vancouver to Chicago, even though this involved a change in port rotation. At the time of the contract being signed, Bob Ritchie, president of CPR commented: ‘On the Pacific Coast, we offer the quickest and most efficient route between the port of Vancouver and Chicago’. Like his United States rail competitors, UP and BNSF, Ritchie’s vision at the time was to increase integration between the different transport modes in North America through a network of collaborative partnerships among rail and road operators.

As evidence of the success of the efforts of Vancouver to forge formal partnerships with the rail companies, which in turn have been reinforced by the development of formal arrangements between the rail companies

---

4 Ibid., page 86.
and the carriers, container volumes have continued to grow very strongly at Vancouver port over the last four years. In the first four months of 2000, container traffic increased by 24 per cent over the same period in the previous year.

By July 2002 container volumes had increased again. Imports increased by 21 per cent on the basis of strong consumer demand for Asian-produced goods, and export trade increased by 9 per cent. Twelve months later the port recorded another 21 per cent increase in its import trade in containers and a 3 per cent increase in exports.\(^7\)

### 3.4 Future plans

To meet the growth in container traffic being attracted to Vancouver, and to be in a position to compete with other West Coast ports for the burgeoning trade growth from South East Asia, China in particular, the port authority announced plans in late 2002 to improve efficiencies at its existing facilities at the Centerm Terminal, which is operated by Casco Terminals Ltd., the Vanterm Terminal, operated by TSI Terminal Systems Inc and Deltaport. As well as these efficiency improvements, the port authority will also expand the Deltaport facilities in the Roberts Bank region. As David Stowe, chairman of VPA explained at the time:

> Competition with the United States is fierce. The ports of Seattle and Tacoma are making major infrastructure investments to compete for this future business. If we want to increase jobs and stimulate the economy in British Columbia, we must be competitive. The reality is that we must start planning now, and look at expansion options, including those at Roberts Bank.

> The VPA’s first priority is to work with its terminal operators to increase existing facilities’ capacity through operating efficiencies and new equipment productivity.\(^8\)

Through consultation with local government and other stakeholders the VPA will also include economic development and highway improvement initiatives in its port development strategies.

### 3.5 The United States ports

In Washington State both of the Ports of Seattle and Tacoma are ‘eminent domain entities’ – a special level of local government, which has taxing powers over the citizens of its county. This creates a more complex set of relationships between local ratepayers and the port and between the port

---

\(^7\) Port of Vancouver Website, http://www.portvancouver.com/media/news_2003_archive.html

\(^8\) Ibid.
and other levels of government. As well as the usual trade creation roles, the port authorities in this case also have explicit state development and, in some cases, social objectives.

Despite these institutional differences, Tacoma and Seattle have much in common with Vancouver in their understanding of the role of port authorities. They assume responsibility for the overall efficient functioning of the port, for effective port marketing, and for managing the port’s relationship with the community and government. Moreover, they are prepared to take – and are expected by all parties to take – a very active approach in discharging these obligations.

### 3.5.1 Port of Seattle

With nearly 80 per cent of its container cargo being ultimately distributed across the United States by a combination of rail and road, like Tacoma and Vancouver ports, Seattle Port Authority’s source of competitiveness is as a gateway to hinterland markets throughout the United States. To maintain its capacity to act as a gateway port, especially to the lucrative Midwest markets, Seattle Port Authority has continued to pour huge investment into its on-dock and near-dock intermodal facilities.

These investments include the US$300 million completion of Terminal 18 in 2002, the largest container handling complex in the Pacific Northwest, which it built in conjunction with SSA Terminals. Nearly twice its previous size, the expanded on-dock intermodal rail facility can now handle four double-stack trains simultaneously, as well as provide a new truck access route, a container maintenance facility and additional refrigerated container storage capacity. Container lines calling at Terminal 18 include Cosco, China Shipping Container Line, SSAV/Norasia, Hapag-Lloyd, Matson Navigation Company, NYK, OOCL, P&O Nedlloyd, Yang Ming and Zim Israel Navigation.

Collectively the new infrastructure expands Seattle’s container handling capacity from 2 to 2.5 million containers per year, which should position it well to absorb projected growth in trade between the West Coast and inland markets, given that in 2001 the port handled 1.3 million containers.

According to carriers using the terminal the expansion is now delivering significant benefits to them. Don Esterbrook, Director of Sales for the PNW region at OOCL (United States) Inc, which is based at Bothell (WA), near Seattle, explained:

> There has been a big improvement, as the terminal was quite congested before, and close to capacity. As it is a stacked rather than a wheeled operation, you need to have mobility in the yard.⁹

On the basis of a ten-year lease with the Hanjin Shipping Company, the port has also committed about US$70 million to expand and improve facilities at Terminal 46, to accommodate the projected growth in container volumes carried by Hanjin.

According to the Port authority, Seattle’s position as an international business centre and gateway influenced Hanjin’s decision to expand and modernize the terminal. This year the port authority is expecting to grow its container trade by about 8 per cent and over the next fifteen to twenty years they expect to sustain an annual growth rate of about 4-5 per cent, which they argue they would not be able to achieve without the substantial long term investments in intermodal infrastructure that have been made over the last two years.10

3.5.2 Port of Tacoma

The Port of Tacoma is acutely aware of the importance of intermodal linkages and the efficient operation of the overall transport chain. Over the last ten years, Tacoma’s main problem areas have been inadequate rail tracks and tunnels through inland mountain ranges hundreds of kilometres away. Hence, its intermodal strategies for reaching Midwest markets are strongly affected by the development of intermodal facilities by its near neighbours Seattle and Vancouver, and the Californian ports of Los Angeles and Long Beach.

Tacoma also recognized the continuing threat of the improvements to the Canadian and United States rail systems and the increasing consolidation of railway sector ownership, including the purchase of central United States railways by the Canadian systems in the late 1990s, which has also strengthened the railway companies’ capacity to open up new routes into Washington State from eastern Canadian ports such as Halifax.11 These market changes have encouraged Tacoma Port to pressure Washington State to improve its rail links.

Over the last couple of years Tacoma has therefore invested in a range of upgrades to its intermodal services. These have included the completion of US$4 million worth of improvements to its North Intermodal Yard (NIM), which are designed to enhance movement of intermodal containers and other rail-dependent cargoes through the port. The port’s auto handling facilities have also been improved with a dockside intermodal rail yard.

---

10 Ibid.
11 Ibid.
Apart from other improvements to channel capacity and the extension of terminals, Tacoma has also benefited from construction of important transport infrastructure outside its gates funded by regional and federal governments. A new road overpass has alleviated congestion and increased road and rail capacity in and around the port. And construction of new railway tracks has been designed to further ease the movement of container cargoes in and out of the port.

In addition to these investments by the port and the municipal and state governments, the port is planning ongoing enhancements to support its on-dock intermodal facilities to the value of US$341 million over the next four years. Already there is solid evidence that this investment is paying off. This year the port authority expects to achieve a 9 per cent increase in container trade volumes and, like Seattle, anticipates maintaining an annual increase of about 4-5 per cent over the next fifteen to twenty years.12

3.5.3 Collaborative strategies of Seattle and Tacoma

While the ports of Tacoma and Seattle have traditionally behaved as competitors, over the last two years they have come together in collaboration to progress their combined competitiveness. Driven by the threat of competition from the Californian ports, in 2001 the ports established the Joint Inland Infrastructure Committee (JIIC) ‘to oversee and solve all regional access problems’. Perhaps the most significant of the JIIC’s initiatives is the Fast Corridor (Freight Action Strategy for Seattle-Tacoma Corridor) initiative. Based on the Alameda Corridor project, the Fast Corridor aims to ‘tie harbour terminals with rail mainlines as well as building grade separations and bridges to ensure a quicker and smoother flow of cargo from one to the other’.13

Whereas the Alameda Corridor was funded by the ports and government sources, in the Seattle-Tacoma project, public funding sources have been augmented by funds provided by the BNSF and UP railroads.

The first phase of the project, the Port of Tacoma road overpass, opened in 2000, and included building new railroad tracks parallel to State Route 509. The second phase will require investments of US$160 million over six years. Over the life of the project, which is expected to be completed by 2006, nearly US$400 million is expected to be spent by the regional and federal governments, the ports and the railway companies.

---

12 Ibid.

3.5.3 Challenges for the three ports

While east and westbound container movement volumes for all carriers are comparatively well balanced at each of the three ports, because much of the export trade is low value agricultural products destined for South East Asian markets they are challenged by low export container revenues, as well as decreasing revenues per container for import trade. So, even though Seattle Port’s import trade volume grew by 16 per cent in 2002, the port and the other two ports need to find ways of keeping revenues at a sustainable level to justify their substantial capital investments over the last few years.

A second set of challenges relate to the high cost of repositioning import containers from their Midwest and other destinations back to the Pacific Northwest ports. As a recent Containerisation International report comments:

> As the population base in the PNW is relatively small, a large proportion of containers are transported back (back to the West Coast) empty, although Maersk Domestic works to generate some backhaul revenue for Maersk Sealand. A priority for carriers is to reposition the containers back to Asia as quickly as possible, for them to be loaded with more profitable eastbound transpacific cargoes.\(^{14}\)

4

Brisbane Multimodal Terminal

4.1 The Port of Brisbane Corporation

The Port of Brisbane Corporation (PBC) is a state government owned corporation established in 1994. Previously a state authority with a landlord function, the corporation today has a very commercial, customer service orientation, focused on growing the business through alliances with port clients, and searching for solutions for its logistics supply chain customers. Located at Fisherman Islands which was built in 1994 at the mouth of the Brisbane River, a short distance from the capital city of Queensland, PBC positions itself as the trade gateway to south eastern Queensland.

With total infrastructure investment of more than US$600 million over the past 25 years, the Port of Brisbane is a deep-water port providing for a diversified range of commodities, 30 berths and nearly 7,500 metres of quayline. The port has been identified as a major driver of economic development in Queensland and plays a significant role in promoting employment through its contribution to overall job creation.1

As Australia’s third busiest container port, 23 million tonnes of trade move through it, with this figure likely to increase to 55 million tonnes by the year 2025.

4.2 The Brisbane Multimodal Terminal

One of the key ways by which the port offers an integrated supply chain service is through the Brisbane Multimodal Terminal (BMT), an interface between the marine terminals and road and rail, via dual rail gauges, providing access to Queensland and interstate.2

---


2 Rail systems in Australia were developed by colonial governments during the 19th century, at a time when Australia consisted of a number of separately administered colonies. As a result, the gauge of rail systems varies from state to state. While a network of nationally important rail links using ‘standard’ gauge has been progressively developed, intra-state lines in Queensland continue to operate on ‘broad’ gauge. The intermodal terminal is therefore ‘dual gauge’ – that is can services both standard and broad gauge systems.
Located in the centre of Fisherman Islands, it is close to:

the major Patrick and P&O Ports container terminals and the major container parks, warehousing, general cargo and vehicles trade areas and nearby bulk cargo facilities. Via direct linkages with the state and national rail systems it allows the efficient movement of import and export containers to and from the container terminals.3

Through subcontractors, the PBC also transfers the containers by road between the BMT and the riverside terminals.

Previously a number of rail spurs existed from the main rail line coming into the port and each of the terminals operated by the stevedores. In developing the multimodal terminal and eliminating the spurs, BPC was enabling the stevedores to make better use of their land and stevedoring assets. At the same time, the possibility of having containers transported into the port by rail potentially increased the asset utilization for the major rail operators Queensland Rail and Pacific National.

Built by the Port of Brisbane Corporation in 1994, the AUD$18 (US$9) million multimodal facility is a critical part of the port corporation’s landbridging strategy to position itself as Australia’s ‘gateway’ port by capturing cargo destined for ports in the southern states of Australia through Brisbane and transporting it by rail rather than by sea.

4.2.1 Early teething problems

The BMT was originally leased out to and operated by the state owned Queensland Rail under a five-year agreement. However, the Port Corporation took it over in 1999. In leasing out the terminal operations to Queensland Rail, the Port Corporation was attempting to avoid the risk of waterfront industrial relations issues affecting service delivery. While this was achieved, it came at a price for the Port Corporation in that by the late 1990s the multimodal business operated at a loss, with the costs accruing to the Port Corporation.

One of the key factors influencing the success of any multimodal terminal is the quality and accuracy of information about the containers moving through the terminal. When BPC took over the management of the Brisbane Multimodal Terminal the transmission of export receival advice from the cargo owner to the rail operator was late, inaccurate or incomplete, thus making it difficult for stevedores to effectively and efficiently transfer containers to intended ships.

Inaccuracies in export receival advice regarding when containers would reach the port, their content and weight, or the ship on which they were

---

3 Port of Brisbane Corporation Website, http://www.portbris.com.au
supposed to be loaded, resulted in container congestion, damage to perishable contents, containers being wrongly despatched or containers having to be double handled. Doubling handling in particular had a direct impact on the BMT’s costs because the Port Corporation was only paid for one lift per container.

One of the suggested explanations for these deficiencies was that although Brisbane Port Corporation’s vision was to provide a seamless door-to-dock service, Queensland Rail was still treating the new multimodal terminal as just another of its rail sidings rather than as a new business opportunity.

4.2.2 Institutional and operational reforms

In taking over the operations in late 1999, once rail safety accreditation from the Queensland Department of Transport had been secured, PBC implemented a highly participative change management process with the staff, which resulted in a smooth and effective transition to desired work practices.

To address the problem of unreliable information transfer on containers, BPC’s approach has been twofold. Firstly, the port corporation directly negotiated with shippers responsible for packing their containers and then with the train operators and the stevedores at Brisbane Port to include the multimodal terminal in the information flow and to manage information flows electronically. In addition, the BPC has extended these arrangements to establish direct electronic information linkages with P&O Stevedores at its Port Botany operation (in the Port of Sydney, over 1,000 kilometres to the south).

To reinforce these improvements to communication, as the operator of the multimodal terminal, BPC also took control of the scheduling of container movements through the multimodal terminal by allocating the rail operators a window within which trains could arrive or depart. According to the Port Corporation this tactic has imposed a higher degree of discipline on the rail operators and Brisbane Port Corporation than was previously in place, a factor that the corporation emphasises is crucial for the successful operation of the multimodal terminal in terms of moving containers through the port according to agreed schedules, at the same time minimizing the number of containers remaining on the ground and creating congestion.

Another factor that contributes to the cost effectiveness of the Port of Brisbane’s multimodal service is the use of unit trains between Brisbane and its southerly destinations. Blocks of containers move on 30 wagons from the one port of origin to one destination per trip.
A third factor supporting the viability of BMT as an alternative means of transporting by rail is the presence of a complementary inland rail terminal at Acacia Ridge, which allows further penetration into the Queensland hinterland. The Port Corporation is currently exploring the possibility of establishing two other inland terminals, one in Queensland and the other in northern NSW, but these will not be progressed until climatic conditions improve.\footnote{Australia is currently suffering from a protracted drought, which has greatly reduced rural production and levels of the containerised primary produce that is critically important to the viability of inland terminals in Australia.} Earlier this year, however, the corporation attracted sugar cargo from Rochlea via another inland rail interchange at Acacia Ridge and another consignment of imports are now moving through Brisbane’s multimodal terminal back to Acacia Ridge.

![Figure 4.1 Brisbane Multimodal Terminal](image)

### 4.2.3 Business growth strategies

The objective in setting up the multimodal terminal was to grow trade through non-traditional catchments outside of Brisbane. In 1990 not many vessels from Asia or Europe called into Brisbane Port because, although they carried cargo destined for the Brisbane market, the potential container volumes were too low to make it worthwhile.

According to the PBC, the marketing strategy took a number of different turns before realizing that the best plan for attracting southbound trade away from Sydney or Melbourne Ports was to focus on high value electronics manufacturers from South East Asia. For these shippers the
shorter distance between the departure point in South East Asia and Brisbane meant that they could gain an advantage by getting their high value goods onto retailers’ shelves sooner, an advantage that would outweigh the costs of landbridging from Brisbane to the retail markets further south in NSW and Victoria. Spreading these costs over each unit in a box of computers or televisions would be far more acceptable than trying to convince shipping lines that they should pick up the additional cost of the landbridging when southbound freight rates were as low as US$300/TEU. In adopting this strategy, PBC management realized that the Port Corporation was challenging orthodox marketing beliefs: ‘Everybody sees landbridging as a shipping company decision, but that may not always be so’, he said.

Two key considerations in 1999 prompted the PBC to progress their plans to attract more trade through the Brisbane Multimodal Terminal. Sydney was suffering significant congestion problems, and with the Olympics being hosted by Sydney in 2000 this was not likely to improve. PBC saw Sydney’s problems as an opportunity to attract carriers to use the landbridging services provided through the multimodal terminal as a way of avoiding the potential risks of delays resulting from extra congestion caused by Sydney’s hosting of the Games.5

Secondly, PBC knew that during the 1998 waterfront dispute they had been able to move cargo by rail to the rail terminal in Chullora, Western Sydney in the same time it took for a ship to reach Sydney, but without enduring the inconvenience and cost caused by congestion problems at Botany and its adjacent roads. The Port Corporation, therefore, worked with the stevedores, rail operators and their management at BMT to develop detailed plans for attracting southbound carriers to the multimodal facility on the basis of a deal that would not imply significant cost differences.

The trade that has been attracted through the multimodal terminal includes southern bound trade coming from Asia carried by carriers such as MISC Shipping and Fesco and Columbus Lines, which find it cost effective to offload some of their cargo in Brisbane, from where it is then transported by rail to Sydney, Melbourne and Adelaide while the ships move on to New Zealand ports where they pick up valuable export trade which has travelled from Sydney and is destined for American markets. Similarly, MISC diverts import cargo through Brisbane by rail to Melbourne. Significant volumes of meat, cotton, grain and industrial products are transported via this means.

5 Competitors on their marks, Containerisation International, Wednesday 1st March 2000.
This gateway arrangement also means that import cargo that had previously reached the Brisbane market by being shipped to Sydney and Melbourne and then transported to Brisbane by road or rail is now being shipped to Brisbane directly and then distributed to Brisbane and a range of other destinations throughout Queensland via rail and road. This new trade has in turn attracted new warehouse and distribution facilities to the port business area, which are able to provide their services at very competitive rates both for transport within Queensland and between Brisbane and the southern states.

Because of the ‘the demographics of import distribution and seasonal peaks’ a high volume of empty containers go through Brisbane Port. As part of its niche marketing strategy, BPC has exploited the presence of the empty containers by encouraging carriers such as Sofrana Unilines and ANL to landbridge export cargo originating in Melbourne and Sydney via rail to Brisbane at very competitive freight rates and then ship the freight to Papua New Guinea. As well as these carriers, others such as Swire, Pacific Asia Express, P&O Nedlloyd, Columbus Line, ANZDL, MSC and Safmarine landbridged about 10,000 containers to and from Sydney and Melbourne though the BMT on Pacific National’s rail service to southern capitals in 2001/2002.6

In addition, in 2002 Maersk Sealand introduced new container services through Brisbane to the East Coast of North America and to South East Asia with a connection to Europe, and Hanjin and APL now feed cargo via their Asian services to connect with transpacific services in Asia, providing improved transit times over existing services via Sydney. Cumulatively, these services provided additional shipping for Queensland importers and exporters and assisted in ‘marginally increasing the total east coast container market share from 16.4 per cent to 16.5 per cent.7

To support this growth, Queensland Rail, Pacific National and InterRail have all increased the number of services provided each week. Pacific National, for example, runs five services per week to and from the port to Sydney, Melbourne, Adelaide and Perth with capacity to increase the number of services on demand. QR runs ten services per week between the Queensland hinterland and Brisbane, and InterRail provides two services a week between Casino in Northern NSW and Brisbane.

7 Ibid.
Also supporting ongoing improvements as the multimodal terminal, the Port Corporation introduced the use of Super B-Double trucks to increase efficiency and reduce environmental impact at the terminal in May 2002. While conventional vehicles only carry between one and three 20-foot containers (depending on weight) or one 40-foot container, the 30-metre-long Super B-Doubles can carry up to four 20-foot containers or two 40-foot containers. The subcontractors, K&S Freighters, initially bought three of these units while Transmutation Pty Ltd., bought one. As a sign of the growth of trade through the multimodal terminal, there are now thirteen of these vehicles in operation at the multimodal terminal.

### 4.2.4 Early signs of success

BMT throughput increased by 8.4 per cent to 78,718 containers, handling 14.5 per cent of all full containers exported or imported through the port in 2000-2001. Growth of trade through the multimodal terminal was promising in the first half of 2002 but was negative in the last six months, recording a throughput of 76,318 containers or 86,178 TEUs, this result being a consequence of drought conditions and the extended closure of Consolidated Meat Groups’ operation in Rockhampton, Queensland. Similarly, container throughput for the port as a whole grew by 6.35 per cent in 2002, which was a few percentage points short of the 10 per cent target. It was nevertheless considered a good result by the port, given the fact that much of the trade going through Brisbane consists of agricultural products that were affected by the drought.
By 2003, 90,000 TEU moved through the BMT. Although this was also a smaller proportion of the total volume of trade moving through the port, the minor slowdown in growth was again due to the drought that still persists, and the loss of containerized meat volumes because of the permanent closure of the Rockhampton based meat works.

Although the aggregate volume of trade moving through the multimodal terminal has increased slowly over the three years since BPC took over its management, the presence of a multimodal terminal has meant that the corporation has been able to attract trade that is outside its traditional catchment. Furthermore, the multimodal terminal has resulted in significant efficiency improvements for container movement through the port.

PBC anticipates that once the effects of the drought disappear, growth rates will improve, as will the corporation’s return on its investment in the multimodal terminal. There are sound reasons for this optimism. In 1999 the multimodal terminal operated at a loss of AUD$2.5 million. By contrast, in 2003 it is running just AUD$250,000 over budget and is anticipated to break even next year.
5

MetroPort Inland Port, New Zealand

5.1 Port of Tauranga

5.1.1 Ownership structure, location and history

The Port of Tauranga, situated at Mount Maunganui on New Zealand’s North Island, emerged in the mid 1950s, mainly servicing the fledgling log export industry. As time has passed, the port has also played a major role in the export of locally produced dairy products and fruit. Much of this business was in conventional ships until the creation of the Sulphur Point container facility in the mid 1990s, when a two crane facility was opened. Its position near Auckland means Tauranga is the second largest container handling port in the country, with recent growth occurring as a result of decisions by shipping companies to use its intermodal MetroPort facility and a policy change by the dairy industry to use ports that are near to the product source.

The port is quoted on the NZ Stock Exchange, with 45 per cent of its shares publicly tradable. The remainder are held by a local regional council under a nominee company. Throughput sees Tauranga handling 23 per cent of the nation’s containers (Auckland 45 per cent), 30 per cent of export tonnage (10 per cent) and 12 per cent of import tonnage (22 per cent). Tauranga has also diversified, with a 50/50 joint venture holding in the timber export port of Northport and an advisory input to the Port of Marlborough.

5.1.2 Driving forces

According to the Business Development Manager at the Port of Tauranga:

In the 1960s and 1970s the New Zealand container terminals were established in the four main commercial centres at that time – Auckland, Wellington, Lyttleton and Dunedin. The logic, particularly in the North Island, was that the vessels would call at the main import centres, with export cargo being aggregated to those ports for shipment.¹

The consequences of this arrangement were significant. Firstly, exporters located near Tauranga in the highly productive area of the Bay of Plenty and the Waikato region were subjected to significantly high inland transport costs to get their cargo to Auckland Port, sometimes driving straight past the Port of Tauranga. But they had little choice as the ships only called at Auckland, which, with 30 per cent of New Zealand’s population, dominated import trades.

Secondly, congestion on Auckland’s roads was causing considerable problems for business in the inner commercial area, including for manufacturers who had to move their export containers through overcrowded road corridors to reach the port. Thirdly, the Maunganui community and the Port of Tauranga missed out on the financial and economic benefits of direct calls from container shipping operators in the port.

As the Port of Tauranga’s Business Development Manager points out, the idea of MetroPort turned the original concept around:

Have the ships call where the export cargo is and move the import cargo to its destination – in our case, Auckland.

Hence, the MetroPort concept was based on reversing the practice of ships calling at a commercial centre that was primarily an import cargo port. Instead the idea was to attract shipping lines to call at the export-dominated Tauranga Port to drop off import cargo, which would then be transported for 220 kilometres by rail to an intermodal hub based in the industrial and commercial centre of Auckland, from where the cargo would then be distributed by road or rail to its ultimate destination.

Additionally, and perhaps even more importantly, the MetroPort hub is located in South Auckland, virtually at the doorstep of some of Auckland’s biggest exporters. Using MetroPort could save these exporters the time, inconvenience and cost of crossing the city on a relatively congested road system to Auckland Port. Finally, Tauranga’s CEO believed that there was a good chance of attracting shipping lines away from the Port of Auckland to Tauranga to pick up exports. While the import business was static, New Zealand’s primary produce-driven exports were growing strongly, and many of those exports originated in the Bay of Plenty region adjacent to the Port of Tauranga.
5.1.3 Land availability

Over the last twenty years the volume of container traffic moving through Auckland has outstripped the Port of Auckland’s available land capacity to hold or store empties or to cater for the growing need for container repair facilities. To meet this demand a number of storage and repair facilities have grown up, generally in the area near to industrial Penrose, with an emphasis on cheap, unpaved land and a ready labour force rather than easy access to the road system or motorways.

TranzRail and its predecessor New Zealand Railways (NZR) had long held a very large piece of land on which were housed the main marshalling lines and cargo transfer sheds for collating the mainly import freight traffic, most of which was heading south of Auckland.

As the container picture started to emerge, the NZR (as it then was) elected to go into the container storage business. In the early 1980s NZR opened a facility called Auckland Box, which provided all the usual container storage facilities, with repair services being provided by other companies on contract.

In the early 1990s ANZDL had attempted to encourage the then New Zealand Rail (NZR) to develop a landbridging operation which would have allowed the transportation of cargo between Tauranga and Auckland by rail, but NZR displayed little interest. Because the road transport alternative would not have been viable, ANZDL stayed with the Port of Auckland.

5.2 MetroPort development

5.2.1 Early history

The privatization of NZR as TranzRail was accompanied by a more entrepreneurial, service driven management style which meant that when in the late 1990s the CEO of the Port of Tauranga suggested the possibility of a joint venture, TranzRail was keen to negotiate.

Tauranga reached agreement with TranzRail for train paths, access, hook-and-pull services and rolling stock for a dedicated shuttle between Tauranga and South Auckland. Port of Tauranga Ltd., effectively underwrote TranzRail’s involvement by making a NZ$7.5 million capital payment, an advance on a five-year service contract. Existing land, rail tracks, roads and office accommodation were utilized, but with land ownership remaining with TranzRail.

Called MetroPort Auckland, the new inland intermodal facility opened for business in June 1999 in an area of rail-served land in the heart of railway
facilities at Penrose, Auckland. The decision to establish the inland terminal well within the traditional hinterland of the key competitor of the Port of Tauranga was consistent with this port’s growth strategy which was aimed at extending operations beyond its local reach of the Bay of Plenty.

The strategic location of the MetroPort intermodal facility in the heart of Auckland’s industrial belt has proved popular with shippers and road carriers because of its proximity to Auckland’s industrial centre, as well as its ease of access and fast and efficient turnaround.

Shipping lines contracted to use MetroPort call at the Port of Tauranga where import cargo destined for the busy industrial area of Auckland is offloaded at the Tauranga Container Terminal and then railed to the intermodal facility before being distributed by road or rail to its final destination. The same process happens in reverse for Auckland sourced export cargo. It is aggregated at MetroPort, railed to Tauranga and loaded onto the vessel.

The first customer of the new facility was CP Ships-owned Australia New Zealand Direct Line (ANZDL), which moved to Tauranga shortly after its establishment for weekly weekend calls, bringing with them an annual 50,000 containers. This resulted in the nucleus of a significant container handling operation. From the perspective of ANZDL, the inland terminal offered significant value because it allowed the shipping line to reduce the costs of low value export containers. The then CEO of ANZDL, Michael Beard suggested:

In Australia and New Zealand, the balance of trade was changing. For the first time in the history of the countries, exports were exceeding imports. However, the value of a typical import container could be US$500,000 to US$600,000 (as it would be filled with manufactured goods) but an export container might be worth only US$100,000 (raw materials or farm produce).

Thus the export container has an inability to stand high costs, and both the shipper and carrier looks for any way to keep those costs down....The closer the point of origin is to the point of shipment, the more those costs can be contained, for mutual benefit. If import container costs can be equalized (with existing arrangements) then the export proximate port can succeed.2

By early 2001 the port made an agreement with TranzRail to extend the service to operate during the remainder of the week, as the initial ship service changed its call pattern. This was also successful in attracting a second customer to the service. By March 2001 a third carrier was attracted from Auckland for this facility and within another two months

yet another. The combined effect of these and similar moves was that MetroPort Auckland became an alternative port service in the Auckland region with six shipping line customers rather than one.

As an example of the market reach that the MetroPort facility has created for the Port of Tauranga, one of its major customers is FESCO’s Asian service FNZEL. The MetroPort facility enables FNZEL to provide a competitive service to shippers from Brisbane, Manila and Hong Kong, China, and places within the reach of Tauranga access to a wide range of feeder services throughout South East Asia.

### 5.2.2 Operating principle and commercial arrangements

The inland intermodal facility was originally developed on the business principle that any major container customer that chose to work through the Port of Tauranga, and agreed to use the port’s own organization for shipside stevedoring, could utilize the regular train services available at the weekend. The facility was not open for use by those ship owners who elected to use other stevedores at the port’s shipside terminal. The rationale for the weekend restriction was that the national rail operator, TranzRail, had an abundance of unused container wagons at this time after their busy five-day working week.

The principle of the MetroPort facility is that a simple railhead terminal serves to load a number of standard length container trains, which shuttle backwards and forwards to and from Tauranga with both exports and imports. Standard length units move full or empty as a way of minimizing the cost otherwise incurred by breaking them into varying lengths. The exporters only pay to take their containers to the Penrose railhead with the port picking up the costs for onward movement (and vice versa for imports).

### 5.2.3 Success factors

Apart from the improved access and turnaround times, there are a number of factors that have contributed to the success of MetroPort. According to David Knowles, the Port of Tauranga is ‘particularly fortunate to exist in a deregulated environment, with a forward-thinking, commercially oriented Board of Directors’ which is free of the bureaucratic outlook that tends to characterize other New Zealand ports that have a significant local authority shareholding.

A second factor is that the service is delivered as a single package with the Port of Tauranga in full control of the whole process, a condition demanded by ANZDL in shifting from the Port of Auckland to Tauranga and MetroPort in 1999.
A third factor that Tauranga’s business manager believes should not be underestimated is the focus on building relationships with individuals within the target customer companies, among suppliers and with both permanent and contracted employees throughout the logistics chain, and nurturing these relationships by collaborating to develop innovative solutions to problems. This capacity to collaborate helped Tauranga deal with the early teething problems.

It is perhaps fortunate that Tauranga Port does not have the concern of nearby residents or encroachment on hitherto ‘green’ areas to create major issues at the MetroPort site. The area is, and has been for many years, heavily industrial. By contrast, in 2002 Sydney Ports Corporation went public with its proposal to build a rail hub about eighteen kilometres inland from Port Botany as a way of moving container traffic off the roads. Its attempts were thwarted by community disapproval of the hub in their leafy suburbs.

5.2.4 Outcomes

The MetroPort development has significantly increased Tauranga’s participation in the container shipping industry. It has been estimated that MetroPort has now achieved the status of being the fifth largest container terminal in the country after Auckland, Tauranga, Napier and Port Chalmers, and further container handling machinery is being purchased to support greater expansions.

*By the start of 2003 the facility was handling 50,000 containers per annum, and by comparison with the previous year’s throughput, it had increased the number of containers handled by 26 per cent. ANZDL used to move 50,000 TEU through Auckland Port to and from all destinations, not just Auckland. About 20,000 TEU of product, especially meat, came up from the South Island. Thus the difference of 30,000 containers is the growth that the facility has achieved. Over the same period total container throughput at the Port of Tauranga rose by 8.5 per cent to 349,796 TEUs.*

The growth in exports ultimately going through Tauranga as a result of MetroPort has come in two ways, firstly through the MetroPort facility and secondly through dairy exports that were sourced in the Waikato (near Hamilton) and the Bay of Plenty (near Tauranga and Rotorua). These used to come up to Auckland but now go direct from the dairy factories to the Port of Tauranga (but not using MetroPort). The service has resulted in savings for exporters, except where the container is going to a shipping line that used to call at Auckland. The strategy has resulted in more trucks on the roads of Auckland, but a significant reduction in

---

*David Knowles, op.cit.*
the number of trucks on the road between Auckland and Tauranga. According to the Chief Executive of the port Jon Mayson in June 2003:

*As well as providing our shippers with cost-effective access to the Auckland market, METROPORT’s operation allows us to reduce congestion within our main Tauranga terminal and on local, regional and national roads. It is certainly a win-win for both parties, our customers and the community as well.*

However, while the transfer of container traffic from road to rail is a win for other road users, it is one that will only be sustainable if shippers remain satisfied with the service standards provided by rail. For example, prior to the current management team improving TranzRail’s approach to service, the company lost container traffic customers to road at the Port of Auckland because of perceived service problems. In 1998 the Port of Auckland moved 27 per cent of their container traffic in and out by rail. In 2003 it is down to 12 per cent across over half a million containers.

Tauranga may also face some challenges in maintaining rail share. Should the growth maintain its present course, the shortage of wagon supply experienced by TranzRail could curtail or frustrate the level of throughput. The very recent takeover of TranzRail by the Australian based Toll Holdings carries with it an agreement with the government that the operator will promptly inject NZ$100 million into new rolling stock. This change of owner/operator may well come just in time to keep the MetroPort activity up to its desired growth levels.

The terminal has succeeded in maintaining a high level of service to road operators depositing and collecting containers. Truck turnaround times average ten minutes and entry into the port’s website permits viewers to see the actual times of truck turnaround achieved, by truck, in the preceding sixty minutes.

By providing customers with a choice of ports, Tauranga is also providing them with a greater choice of shipping lines, dates of departure and routes. The competition implicit in this choice means that not just Tauranga and Auckland but also other ports are encouraged to strive to provide better quality service at competitive prices.

As an example of competition driving innovation, while no real challenger to MetroPort has yet emerged, Auckland Port attempted to negotiate a deal with TranzRail to establish a rail hub service at Palmerston North as a way of taking traffic away from the ports of Wellington, Napier and New Plymouth. The contract was never consummated and the idea remains currently in abeyance. Nevertheless, it is clear evidence of a competition driven attempt to improve service. In addition, discussions

---

4 Ibid.
have occurred between TranzRail and the secondary South Island port of Timaru about the possibility of establishing a hub ‘that would cover the bigger centres of Christchurch (Port of Lyttelton, north of Timaru) and Dunedin (Port Otago, also including Port Chalmers, south of Timaru’.

Poor connections to adjacent motorway services are being improved both to the north and the south and the facility now services not only Auckland sourced or destined containers but many from other parts of the country. These services, especially those by rail, link in with TranzRail’s abundant and time critical north-south rail services using trains of fixed lengths.

## 5.3 Future development

In mid 2003 Tauranga Port also announced a further expansion of the service to permit acceptance of the material growth in traffic. This was facilitated by two developments. The first was the ten year extension of the MetroPort operating agreement with TranzRail, which in turn provided a platform for the announcement in October 2003 of a joint venture between the Port and TranzRail whereby the rail company’s container storage and repair facility came under the umbrella of both organizations, under the name of MetroBox Auckland Limited. As part of the extended operating agreement, MetroBox will invest NZ$3 million to develop the new facility.

The availability of extra space at MetroPort achieved through the addition of the eight hectare MetroBox site will permit lower stacking of containers, thus making individual containers more accessible for loading. It will also enable the separation of truck and rail interfaces, which will in turn reduce congestion and improve loading and turnaround times for both road and rail operators. The joint venture partners also anticipate that improvements to the way the MetroBox container storage and cleaning business operates will enable it to improve its market share.

Another major strategic move is the establishment of a joint venture with Northland Port Corporation (NPC), which controls the ports of Whangarei, Portland and Marsden Point, 400km north of Tauranga. NPC and Tauranga have joined forces to develop a new deepwater port at Marsden Point, via a 50:50 joint venture called Northport Ltd., which is managed by Tauranga. The joint venture company, Northport Ltd., has also entered into an agreement with Carter Holt Harvey, the new port’s major exporter, forming an operating company to manage the on-wharf forest industry terminal for the new facility.

---

5 Ibid.
Duisburg trimodal container terminal

6.1 Port of Duisburg

The Port of Duisburg is located in the state of North Rhine Westphalia, in the commercial and transportation centre of the Rhine/Ruhr region, which is Europe’s largest industrial centre, with over 300,000 companies from a wide range of industries operating in the area, including 200 transportation and logistics companies. In addition, the area boasts four intermodal terminals and 330,000 sq.m. of warehousing area.

With inland waterways, railroad tracks and highways linking the port with most parts of central and eastern Europe, the Port of Duisburg positions itself as a strategic hinterland hub of major North Sea ports, including Rotterdam and Antwerp.

Some 2000 river-going ocean vessels with a capacity of up to 4,500 DWT enter the port each year. Direct sea connections exist between Duisburg and more than 100 ports in the UK and Scandinavia, on the Iberian Peninsula, in Western Africa, as well as on the Baltic and the Mediterranean. Lash services provide regular links with the ports on the Eastern Seaboard and the Gulf coast of the United States.¹

6.2 Multi-faceted trimodal terminal strategy

In the 1990s the Port of Duisburg realized that with bulk cargo being replaced by higher value general container cargo, it needed to redefine its growth strategy. It therefore developed a plan to attract new services and new cargo and to transform the port company into a transportation and distribution hub serving central Europe. Growth markets identified included container and coal importation operations and its strategies included fostering business relationships with other major ports as a way of attracting cargo flows.

¹ Duisport, Port & Logistics Center, A magazine published by Duisberger Hafen AG, December 2002.
6.2.1 Site acquisition

To progress its goals the port embarked upon a highly entrepreneurial journey, which began in 1998 with the purchase of a steel mill site in Rheinhausen, which was made vacant by its closure by Krupp Steel. The port then established the company called Logport for the purpose of marketing the site.

6.2.2 Attracting other intermodal players

The first success in the development of the new infrastructure at the hub was the decision by New Wave Logistics GmbH, a subsidiary of Japanese shipping line NYK, to use the Logport location. New Wave Logistics converted existing buildings into a new distribution centre and built a new warehouse. Then P&O invested in the new business. Complementing these early developments, backfilling operations were competed on 125 acres immediately adjacent to the container terminal and the combined transportation railroad station.

Later, other intermodal service providers set up operations at the site, increasing its capacity to fulfil its goals of attracting trade through other ports and with regions outside its local catchment. One of these service providers, Eurologistik GmbH, a company of the Hamburg Mackprang Group, has built one of Europe’s largest warehouses with mobile racks on the Logport site.

6.2.3 Collaborative relationships with other ports

The port’s networking strategy was progressed when it completed a number of contracts with seaports not just in Europe but also in the United States. For example, in December 1999, the ports of Duisburg and Antwerp signed a memorandum of understanding; and shortly afterwards the Duisburg Port company acquired an interest in a proposed new container terminal in Antwerp. Agreements were also established between Duisburg and EDM/Zeeland Seaports in the Netherlands, which were also supported by the State of North-Rhine Westphalia and the Province of Zeeland through an addendum. In late 2000, the port company established a third relationship, this one with the Latvian Free Port of Ventpils, when the two port organizations agreed to ‘strengthen ties’. In the United States, agreements were reached with the ports of Memphis and Pittsburgh to promote transportation between the two cities and the hub on the Rhine.

6.2.4 Development of infrastructure

Complementing Duisburg’s development of collaborative relationships with other ports, at the end of 1999 the Government of the State of North-Rhine Westphalia expressed its support for the collaboration between the ports of Duisburg and Antwerp by planning the re-activation of the
railroad line between the two cities. Early the next year both Gerhard Schröder, the German Chancellor, and Wolfgang Clement, the Prime Minister of North-Rhine Westphalia, attended a ceremony to celebrate an agreement reached between Duisburger Hafen AG (the new name adopted by the port company) and the P&O Group in Rheinhausen. The British company agreed to operate the trimodal Duisburg Intermodal Terminal (DIT). While both parties would build the new terminal, Duisburger Hafen AG would construct the railroad through the establishment of its own railroad company, Duisport Rail GmbH. The rail company now offers railroad services over a distance of about 50 kilometres around Duisburg.

6.2.5 Attracting investors

In early 2001, the Rhenus group became the third investor in DIT. In May 2002, the consortium made up of the P&O Group, the Rhenus group of Dortmund and Duisburger Hafen AG (the Port of Duisburg) formed the Duisburg Intermodal Terminal GmbH. P&O and the Rhenus Group each had a 37.5 per cent share in the new operation while Duisburger Hafen AG had the remaining 25 per cent share. Strategically situated at the cross border junction of the Rhine, Ruhr and Maas region, the 120,000 m\(^2\) trimodal container terminal opened in October of the same year.

In late 2002 the Dutch Heuvelmann Group became the fourth investor in the DIT when it acquired a 5 per cent interest in the trimodal terminal business from Duisburger Hafen AG, thus reducing this party’s shareholding to 20 per cent.

According to the Duisportal news, Duisport’s web-based newsletter:

*The Heuvelmann Group is in the shipping, sea and inland shipping tonnage trade and company-owned and public port cargo transfer business and is one of the most important barge operators in the Netherlands.*\(^2\)

Located at the heart of the Logport site, the terminal is a trimodal ship, train and truck interface and serves as a hinterland hub of the sea ports of Rotterdam and Antwerp as well as a number of other European ports and regional centres. These ports need excellent links to their inland customers as well as buffer storage capacity as they approach their own capacity limits. The DIT terminal is today able to handle 200,000 TEU (twenty-feet equivalent units) each year and can be extended to handle 400,000 TEU.

\(^2\) Ibid.
Figure 6.1  The DIT terminal is able to handle 200,000 TEU (twenty-feet equivalent units) each year and can be extended to handle 400,000 TEU.

The new trimodal terminal is equipped with two 55 tonnes gantry cranes, four straddle carriers, a 330 m berth and four 750 m rail tracks with a start up capacity of 200,000 TEU per year, which is expected to reach its full capacity in three to four years, after which point the intention is to expand the facility to handle 400,000 TEU. 3

According to Erich Staake, the Port of Duisburg CEO, one of the benefits of the terminal is that it will help to shift major quantities of freight from the road networks to ships and trains.

In July 2003 the forthcoming opening of a new railroad terminal with six tracks adjacent to the trimodal facilities was announced by the Federal Minister of Transportation, Dr Manfred Stolpe, who lauded the development of the country’s railroad system infrastructure as:

> a model application of the German Federal Government’s strategy of shifting cargo to the railroads which are more environmentally friendly than other modes of transportation.

According to Erich Staake, the Chief Executive Officer of Duisburger Hafen AG, the railroad terminal is essential to optimize the effectiveness of the trimodal container terminal.

---

3 Anitra Green, Anglo/German intermodal consortium founded in Duisburg, by Containerisation International Online, (www.ci-online, co.uk), accessed 30/05/03.
Figure 6.2 The new trimodal terminal is equipped with two 55 tonnes gantry cranes, four straddle carriers, a 330 m berth and four 750 m rail tracks with a start up capacity of 200,000 TEU per year.

To complement the operational efficiencies at the trimodal container terminal, a marshalling yard within the immediate vicinity of the railway station and the terminal is also being reopened and upgraded. The facility is to be used for receiving and dispatching Duisport railroad cargo for Logport companies. In a deliberate attempt to maximize the area available for logistics activities, and hence to reduce train handling and turnaround times, there is no parking on the Logport site itself. Instead, marshalling and classification operations are being transferred to the new railroad station, which is expected to open in early 2004.

6.2.6 Supporting services and initiatives

It is not just Duisburg Port’s own investment in infrastructure that is likely to support this port’s position as a European hub. To facilitate a predicted 7-8 per cent per annum growth in worldwide container transportation, the Netherlands Government is constructing the Betuwe rail line. Twin tracks built exclusively for cargo trains moving over a distance of 160 km will connect the Netherlands and Germany at Zevennaar on the Dutch-German border.

From the perspective of Duisburg Port, it is also significant that the Dutch and German Ministries of Transportation have developed two separate treaties aimed at improving cargo and passenger railroad transportation systems between the two countries. The first of these has resulted in a
project to upgrade the Dutch track system for 200 km per hour high speed trains, and an increase in the capacity of the German railroad section serving traffic to the Netherlands.

With a second treaty, signed in 2002, the Federal Republic of Germany, the State of North Rhine Westphalia and Deutsche Bahn signed an agreement that will mean that a third track will be constructed on the Betuwe line for 72 kilometres on the German side of the border. While Duisburg Port would rather that the line were completed long before its planned completion date of 2010, it nevertheless believes that the railway infrastructure will give the export dependent North Rhine Westphalia state in which Duisburg is located a more secure and efficient gateway linkage with the Rotterdam, the European market and international cargo networks.

Another company, Conliner, which develops and operates shuttle train services for seaport hinterland traffic between the container ports of Antwerp and Rotterdam, has recently initiated strategies for improving connections between the German and European hinterland and the ports on the western seaboard. As a key hub for these ports, Duisburg is hoping to benefit from these improvements.

The co-location of the railway station and the trimodal container terminal will not only give Duisburg access to trade moving in and out of Rotterdam, Antwerp and Amsterdam, the new facilities will also connect the Duisburg region with the ports of Hamburg and Zeebrugge, as well as regions such as Ludwigshafen and Leuna. These connections will be managed by Rail4chem, a private-sector railroad operator, which, in conjunction with Duisport rail, will make Duisburg a hub in its national and international railroad transportation network and the centre of its regional operations.

Also contributing to Duisburg’s strategic position as a hub port was the establishment of a Westphalia/Rhine shuttle service in early 2002. Barges regularly transport containers via the Duisburg and Kresfeld multimodal hubs to Rotterdam and Antwerp. The shuttle service handles cargo that was previously transported directly by truck from the eastern part of the Ruhr region to the North Sea ports. Not only is this shift to barges more environmentally friendly, but it is also more cost effective, especially given the introduction of a truck road toll in Germany in 2003. Canal barges carry 54 TEU with containers stacked two-high, calling at several ports, with Kresfeld and Duisburg serving as hubs, where the containers are reloaded onto Rhine vessels.
6.2.7 Customers

One of the first customers to be attracted to the terminal and its rail connections with major ports such as Rotterdam was the chemical group Bayer. It reached agreement on a series of deals with the inland port’s new rail company, Duisport Rail, to use the container shuttle run by Hupac between Duisburg and Rotterdam. Initially, Duisport Rail is to move freight from Bayer’s Krefeld-Uerdingen plant to Duisburg to connect with the Hupac shuttle. Both services operate four days a week, moving a number of rail cars from Rotterdam to the two Bayer factories.

When the train from Rotterdam has arrived at the DeCeTe terminal in Duisburg, Duisport rail moves a number of cars to the two Bayer factories. On the way back, the cars from the preceding day are taken to Duisburg and connected to the train to Rotterdam in the early morning. This approach makes sense to Bayer. Because of the firm schedule, the time required for the service can be calculated exactly and the round trip is competitive when compared with previous alternatives.4

Bayer has commented that the new rail link reduces transport costs and gives a competitive turnaround time. In addition it is estimated that the Bayer deal will result in at least 1,000 annual truck drives being replaced by railroad shipments. Bayer and Duisport Rail are also planning a service between Bayer’s Dormagen plant and Duisburg, at which point shuttle frequency to Rotterdam will then increase to five or six per week.5

Early in 2003, the Duisburg Intermodal Terminal won interest from the privately owned Belgian rail operator DLC (40 per cent owned by Swiss intermodal operator Hupac) to run a shuttle direct from the port of Antwerp to the Logport area of the Duisburg trimodal terminal, carrying up to 90 TEU per trip. DLC’s leading customers are BMW in Bavaria and the Mediterranean Shipping Company, which moves more than 1 m TEU each year, and it is keen to attract other customers from the chemical industry.6

Other customers to take advantage of the intermodal facilities at Duisburg over the last year include the furniture manufacturer Ikea, which has benefited from a railroad link that it established between its central warehouse in Sweden and Duisburg in 2002.

4 Duisport, Port and Logistics Center, Magazine, December 2002.
5 Anitra Green, Rail connection deals boost Duisburg/Rotterdam shuttle, Containerisation International Online (www.ci-online.co.uk) accessed 27 October 2003.
6 Anitra Green, Antwerp-Duisburg link to start operations next week, Containerisation International Online (www.ci-online.co.uk).
6.2.8 Impact on trade

By April 2003, the inland port operating group Duisport was expecting an 11 per cent volume increase at the Port of Duisburg on the previous year’s trade of 360,000 TEU. While some of this was a consequence of the expansion of facilities at the Port’s DeCeTe terminal and its Rhine-Ruhr Terminal, part of the success is attributed to the trade moving through the Duisburg Intermodal Terminal.

The DIT facility allowed the inland port operator to establish 15 new international and domestic rail shuttles in 2002, including the new Kombiverkehr and Conliner links between Rotterdam and Antwerp. From the perspective of one of the three shareholders, P&O Nedlloyd, its use of DIT is the first step in creating an inland European logistics network, based around a limited number of strategic hubs. It believes that because DIT can handle a large volume of cargo in one location, it is cutting costs of transporting import and export cargo between Duisburg and the ports of Rotterdam and Antwerp. DIT’s terminal manager shares this view by arguing that DIT will become a central point in the ‘gateway concept’, transporting large volumes of containers from deep sea ports by inland water and rail to the new terminal and redistributing them for onward transport by road, water and rail.

This aspiration was progressed in September of 2003 when European Rail Shuttle (ERS) launched a new Rotterdam-Duisburg rail link. Co-owned by P&O Nedlloyd and Maersk, ERS began the shuttle service with a five time per week schedule to complement an existing five time a week shuttle to Neuss, located on the west bank of the Rhine, south of Duisburg.

In late November, 2003, DIT strengthened its position as an important intermodal hub when it attracted the secondary fuels company Gesellschaft für Umweltdienste (GUD), which will barge about 8,000 TEU per year from both Rotterdam (75 per cent) and Antwerp (25 per cent) Ports to Duisburg, from where it will then be moved directly to GUD’s planned plant by the intermodal terminal’s straddle carriers, thus avoiding truck haulage for the company.

---

7 Anitra Green, Duisburg expects to top 400,000TEU this year, *Containerisation International Online*, (www.ci-online.co.uk) accessed 27 October 2003.


9 Harry de Wilt, DIT Duisburg and Logport land 8,000TEU customer, ci-online, Wednesday, 26 November 2003.
Overview of challenges and policy responses

Overview of challenges and responses, including policies to facilitate international trade and market access, and to support the development of intermodal systems and change in institutions and people
7

An overview of challenges and responses

7.1 Recognition of the need

A number of significant lessons can be gleaned from the experiences of the case study ports that have been successful in generating trade growth in hinterland markets and other areas outside of their natural catchments. In pursuing their growth strategies, the ports have all implemented ways of moving cargo as efficiently as possible through the port and on to rail or road transport corridors so that it reaches customers with minimal turnaround time and at minimal cost.

None of the ports has been able to achieve these outcomes alone. They have all depended on the development of an innovative range of relationships and arrangements with other transport and logistics providers such as railway operators, inland hub and distribution centres, third party logistics providers, trucking companies and public and private road builders to form an integrated intermodal service. Without the development of interconnecting road and rail systems, as well as flexible and responsive service delivery arrangements, the ports’ capacity to attract cargo owners and shipping carriers and penetrate inland or distant markets would be seriously impeded.

Another major factor in their success has been the support of regional and federal governments that have in large part provided or underwritten the significant amount of capital that is needed to cover the cost of investment in infrastructure.

Not just in South East Asia and China where export and import trade is growing rapidly, but also throughout Asian countries as a whole, high quality intermodal services are needed to support the effective and efficient flow of goods between manufacturers and customers. There are signs that awareness of the need for integrated transport infrastructure is growing. For example, a China Daily article of 6 June 2000 reported a government official as stating that China’s logistics industry had not kept pace with the country’s rapid economic development and the shift to a market economy. The article stressed the importance of a rapid development of the logistics industry to improve the quality and structure of the national economy. It put forward the view that the development
of the logistics industry was necessary to meet the expected demands of growth in international trade expected from the People’s Republic of China’s entry to the World Trade Organization.

### 7.2 Some successful stories

While transport infrastructure has developed rapidly in many Asian countries over the last ten years, integrated linkages between road, rail, inland waterways and seaports, along with logistics services and facilities such as inland container depots and hubs, are not common. Nevertheless, a number of countries, including the People’s Republic of China, India, Thailand and Malaysia, have implemented a range of successful initiatives.

For example, the ICD facility at Lard Krabang in Thailand, which now handles a significant share of Thailand’s international container traffic, provides an example of the effective implementation of intermodal policy involving the financing, construction and operation of new infrastructure.

In India, where intermodal operations are mainly in the hands of the Container Corporation of India Ltd., (Concor), the practice of ports having access to intermodal networks to reach hinterland markets is well established. Since 1989 Concor has developed thirty-one export/import terminals and nine domestic terminals handling over 900,000 TEU. At these ICDs, containers are stuffed and sent via a combination of road and rail to the port of exit, including those at Chennai, Kandla, Haldia (Calcutta), Visakhapatnam and Shalimar (Kolkata), as shown in Figure 7.1.

![Figure 7.1 Concor’s intermodal network](image)
Part of Concor’s development of these intermodal links has been through partnerships with shipping companies such as Maersk India, with whom it is soon to open one of Asia’s largest inland container depots at Dadri near New Delhi.¹

When fully developed, the depot will operate as an intermodal logistics hub that will be serviced by six railway lines. With the Dadri operation, Concor is taking a landlord position and providing space to other logistics firms, container freight station (CFS) operators and shipping lines to set up their own facilities within the premises. Concor and Maersk have already formed a 49 per cent/51 per cent joint venture firm called Star Track Terminals with an equity of Rs 160 billion to set up an independent CFS on the premises.² The Dadri development is part of Concor’s plans to establish container handling terminals also at Dhappar, Mirzapur, Kota, Agra, Ankleshwar, Gandhidham, Tirupur, Raipur and Bhopal.³

In 1999, Malaysia’s national rail operator KTM Berhad and the State Railway of Thailand (SRT) launched their joint landbridge project. Designed to promote import and export traffic moving between the two countries, the landbridging arrangement has extended Port Klang’s hinterland beyond Malaysia’s border into Thailand and South East Asia. Under the terms of the 1999 agreement, the two parties utilise compatible rail networks to make Bangkok a land hub and Port Klang a sea hub. Using more than thirty weekly routes, other landbridge services operate between Singapore and Bangkok (via Malaysia) and between Singapore and Port Klang.⁴

Cargo crosses the border stations between Malaysia and Thailand every day in Padang Besar, Perlis and Rantau Pahjang, Kelantan without having to be unloaded and with only a brief pause for customs clearance due to the cooperation of customs and immigration officials of both countries. Freight services are ided by the State Railway of Thailand and KTM Berhad.

7.3 Much remains to be done

The level of sophistication in logistics and intermodal operations varies greatly across the ESCAP region. In Singapore, and Hong Kong, China, ports have access to intermodal services that rival those in the

¹ The map showing Concor’s intermodal network in India is taken from the Concor website at http://www.concorindia.com/
³ Christopher, Paul, CONCOR unveils growth strategy, available at http://www.ci-online.co.uk/
United States and Europe. As previously noted, India has quite an extensive network of intermodal services that are being continuously upgraded and expanded. Ports on the west coast compete with Chennai Port and others located in the Bay of Bengal area for cargo moving to and from the Far East, Delhi and the provinces of northern India. Malaysian container ports compete for cargo moving in and out of the ports located in southern Thailand.

However, these examples are the exception for Asia. Although most Asian countries have relied on marine transport because industrial development has tended to occur along the coastal regions, there is little physical or organizational infrastructure for moving goods from the ports into the hinterland. A number of factors combine to make it very difficult for Asia to achieve integrated intermodal operations on the continent-wide scale that is emerging in Europe and United States, at least in the short term.

For example, although there have been a number of intergovernmental initiatives to facilitate the smooth flow of goods within one country and across borders into other, landlocked countries, political fragmentation and difficult to reconcile regulatory and transport system differences still remain significant barriers. Geographical barriers, such as inland waterways that are too shallow or narrow, or landmasses that impede efficient transport connections are expensive for governments with scarce capital resources available.

These inherent difficulties are compounded by the fact that many Asian countries are also challenged by skill shortages, and retain institutional arrangements (particularly in the port sector) that tend to be centralized and bureaucratic. As a result, most Asian ports (with the major exceptions, the transhipment hubs) remain bound to a relatively small and well-defined hinterland.

### 7.4 The potential gain from better intermodal transport networks

The initiatives that will be required to develop high quality intermodal systems spanning the Asian continent are wide-ranging and complex. They traverse the bounds of responsibility between transport policy and administrative organizations on the one hand, and customs and immigration authorities on the other. The effective resolution of many of the problems will therefore require coordinated actions by both groups.

However, the potential gains available from promoting the type of intermodal integration that would allow Asian ports to develop effective and efficient linkages beyond their traditional hinterland markets are extensive and multi-faceted. Benefits and challenges of greater intermodal integration include:
- the reduction of the high dwell times currently experienced both within ports and at inland border checkpoints, resulting either from slow customs inspection, slow document transmission, intermodal transfer delays, operational delays, or all four of these;
- reduced congestion of the land transport accesses to ports through the relocation outside ports of certain container handling/processing activities, such as container stuffing/stripping and customs inspection;
- improved rail (and sometimes road) access to ports resulting in reductions in the number of times containers are handled;
- cost savings through improved coordination of rail and road loading/unloading activities in ports;
- removal of institutional blockages to the free flow of transit vehicles and cargo in the hinterland (i.e. between borders) through better coordination of customs and immigration procedures on either side of land borders;
- more efficient methods for transhipping containers or cargoes between different railway gauges;
- simplification of documentary requirements for door-to-door consignments involving more than one mode; and
- a more consistent approach to railway tariff setting in international transport corridors, removing the competitive disadvantage currently suffered by rail compared to other transport modes, and encouraging model shift from road to rail.

### 7.5 Ports and the supply chain

Of the many changes brought about by globalization, one of the most obvious is the importance that logistics plays in developing and maintaining a competitive advantage for a business.

Businesses have been forced to improve their supply chain management systems and in particular their ability to achieve a rapid response to an order placement or to meet increasingly shorter delivery times. This has been accompanied by a continual search for reduced handling and transportation costs. The increased use of intermodal terminals and facilities has the potential to contribute to both of these goals.

This in turn requires a transformation of a port’s view of its role – a transformation that has not yet been fully accomplished. In some instances, the port sector has been slow to realize that ports are not an end point in themselves, but rather that they are links in a supply chain. It is the performance of all the elements of the chain in meeting the customers’ needs, not just the performance of facilities within the port, that will determine the path that freight will take.
Although this change in attitude requires ports to take a broader view of their role than has traditionally been the case, a clear understanding of the limits of the port organization’s influence is also essential if both funds and management attention are to be properly focussed. Ports can take steps to influence microeconomic factors and reduce costs and improve supply chain performance by integrating their operations with both the upstream and downstream links of the supply chain, but they have very limited ability to make changes to macroeconomic factors that influence industry competitiveness and performance.

7.6 What government can do

Governments can play four major roles in assisting the development of effective intermodal operations. They can:

- work in the international sphere to reduce the costs of political fragmentation by reducing impediments to international trade and exchange;
- establish policies which foster market conditions that encourage competition and efficiency;
- establish policies that actively and specifically encourage the development of intermodal facilities and services; and
- facilitate the development of new industry and work practices by direct and indirect support of education and training, and research and development initiatives.
8
Policies to facilitate international trade

8.1 The challenge of restrictions to cross border exchange of goods and services

The potential hinterlands for many ports in Asia traverse one or more borders. While there are many economic and social benefits to be derived from cross border transportation linkages, there are also a number of challenges, including the need to reconcile differences in political and legal systems.

There is a range of reasons why governments need to control the flow of goods across their borders, and it is generally accepted that there will always be a range of measures which, either by accident or design, impede the cross border movement of goods. These include legitimate restrictive practices, such as those related to quarantine and security, as well as increased application of a variety of other rules and regulations, for example, anti-dumping procedures such as the WTO safeguard rules. 1

However, it is in the interests of all concerned that these restrictions be the minimum required to achieve their social and environmental goals. The phenomenal post-1945 increase in international trade and the improvement in living conditions that has accompanied it, particularly in Asia, has been linked to and driven by the adoption of an open, liberal system of international economic relations under the auspices of the General Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO) regime.

While tariffs have been progressively reduced under the influence of GATT and the WTO, the same is not true of non-tariff measures. These are less transparent than tariffs, and far more difficult to define, identify and quantify. Furthermore, trade in services, including transport services, has not been subject to GATT/WTO rules.

A number of important reforms related to trade liberalization were planned for discussion at the Doha round of talks. However, the main

1 In 2003 the European Union has accused Australia of using its quarantine regulations as a barrier to trade and United States has restricted steel imports under the WTO Safeguard provisions.
stumbling block at the trade talks at Cancun in September 2003 was whether to commence negotiations on the four Singapore Issues: investment policy, competition policy, transparency in government procurement and trade facilitation. A number of developing nations, including ESCAP members, felt that there were significant national reasons for not wishing to negotiate on these items.

Comment on some of these issues by the secretariat of a WTO Trade Facilitation Symposium held in 1998, captures well the complexity of the challenges faced by cargo owners wishing to move their trade across borders in Asian countries:

Innumerable documentation requirements and official regulations exist for the import and often also the export of goods. Approximately 60 documents are used in an average international trade transaction. Although these documents have different purposes, around 80 per cent of the information contained within them is the same. Frequently, documentation requirements are ill-defined and traders are not adequately informed on how to comply with them, thus increasing the potential for errors. The resulting lack of transparency of formalities creates an environment conducive to irregularities and malpractice. Non harmonized and excessive documentation requirements in certain countries increase paperwork four-fold, while the time lost waiting for border release in many regions accounts for up to 20 per cent of total transport time and up to 25 per cent of total transport costs. At the same time, it is questionable whether the large number of information requirements is effective in curtailing dishonest practices.

8.2 Facilitating cross border movement and the flow of goods

Governments can undertake a number of specific actions to facilitate efficient cross border flow of goods, including the mutual recognition of the standards and procedures used in the manufacture, handling and transportation of goods and the establishment of trade agreements.

---

2 Named for the location of the discussions by a number of nations including India.

3 Comment made in WTO Council for Trade in Goods, 21 April 1998, checklist of issues raised during WTO Trade Facilitation Symposium, note by the Secretariat.

4 The WTO’s Agreement on Technical Barriers to Trade (TBT) includes the Code of Good Practice for the Preparation, Adoption and Application of Standards. The TBT Agreement recognizes the important contribution that International Standards and conformity assessment systems can make to improving efficiency of production and facilitating international trade.
8.2.1 Trade agreements

Countries often find that the benefits of trade agreements, be they multilateral, such as that exemplified by the WTO; regional, for example, ASEAN; or bilateral, such as a Singapore-United States agreement, produce significant increases in trade. Whilst multilateral trade agreements have been the most effective at increasing international trade, the slow pace of agreement and the significant impediments, such as the need for reform of agricultural subsidies and or the opening up national markets, have sometimes brought the pace multilateral trade talks to a standstill.

Trade agreements have both direct and indirect relevance to the issue of extending the effective hinterlands of Asian ports. Indirectly, all measures that increase the general level of trade between Asian countries, and hence the volume of cross border flows, expose and put pressure on traditional processes and practices that inhibit these flows and accelerate the need for their improvement. More directly, recent trade liberalization measures have extended to liberalization of trade in services, including transport services. Measures that allow transport operators to freely conduct their business across national boundaries directly facilitate the development of seamless intermodal services and the expansion of port hinterlands. The absence of restrictions on such operations has been a vital element in the development of intermodal services in both the European Union and in the United States; and, since NAFTA, within North America as a whole.

There are a number of concerns that bilateral and regional trade agreements can undermine the idea of a most favoured nation (MFN) approach to global trade. The MFN principle of the GATT stipulates that all member nations must be treated equally by each other. Bilateral and regional trade agreements undercut that concept because countries that secure free trade with neighbours may be less motivated to seek broader based liberalization in its own right or to reduce their preferential ties with the neighbours with whom they do not have a trade agreement.

On the other hand, there are views that bilateral and regional trade agreements actually help the multilateral approach. For example, bilateral and regional trade agreements among countries can encourage others to pursue multilateral progress in order to level the playing field of trade benefits in a region. Moreover, sometimes countries have no choice but to enter those agreements. Singapore, for example, turned to bilateral agreements following the failure of the WTO meeting in Seattle in 1999 and completed bilateral trade agreements with New Zealand in 2000, Japan in 2002, and the United States and Australia in 2003. The recent failure of the Doha round of trade talks at Cancun may see a rise in the number of bilateral trade agreements.
8.2.2 Streamlining of documentation

As well as harmonizing international cargo movement requirements, governments can enhance the overall efficiency of trade flows by agreeing to look for ways of reducing the number of documents related to international movement of cargo by road, rail and waterways between ports and their hinterland markets. Improvements could be achieved by:

- harmonizing export and import documents, or using commercial documents already used for export purposes for import clearance as well;
- adopting a single format for documents in line with the United Nations Layout Key for Trade Documents and other UN standards, including UN/EDIFACT;
- replacing the compulsory presentation of some documents for low risk consignments at borders with post clearance audits and self assessment for some trusted traders;
- adopting standardized wording on compulsory labelling and using the languages of both the importing and the exporting countries; and
- introducing electronic systems for filing, processing and communication of data and payment of fees related to border crossing.

8.2.3 Harmonization of rules and standards

The challenge

Increased economic interdependence, arising not only from the liberalization of international trade and investment regimes, but also from technological change, has expanded international market opportunities for a diverse range of firms, in transport no less than in goods markets.

However, as firms providing transport services have moved into new markets, they have increasingly encountered barriers to entry arising from country specific rules and regulations rather than from tariffs or quotas. These measures can range from the legal restriction on the operations of foreign firms because of government policies for the selection and use of transport services to the lack of recognition for the standards and protocols used in other countries.

A common method to restrict the operations of foreign firms is to establish a technical barrier to trade, including a wide variety of environmental, security and safety measures that may have their origin in genuine concerns over the deleterious effects of particular technologies, products or practices, but which operate in a way that restricts trade in goods or services.

There has also been a rise in the use of security protocols to impede the flow of goods. The recent unilateral moves by the United States to impose
greater levels of security have seen the development of a two standard approach to the handling of United States bound cargos depending on the point of origin or transit of both the cargo and crew. This is likely to restrict the flow of goods from a number of non-Western countries.

**Pointers to the way forward**

As a means of facilitating national and international land transportation in the ESCAP region, twenty-eight of its member countries adopted resolution 48/11 at the 48th Commission of UNESCAP. The resolution recommended that the countries accede to seven international conventions in the area of national and international road and rail transportation facilitation. Progress is gradually being made towards the achievement of the goal of complete accession to the targeted conventions.

A number of subregional framework agreements focused on improving the movement of goods, people and vehicles across borders are also being developed by countries in the ESCAP region. These agreements include:

- the ASEAN Framework Agreement on the Facilitation of Goods in Transit;
- the Greater Mekong subregion Agreement for Facilitation of Cross border Transport of Goods and People;
- the Basic Multilateral Agreement on International Transport for Development of the Europe-the Caucasus-Asia Corridor (TRACECA);
- and
- the Economic Cooperation Organisation (ECO) Transit Transport Framework Agreement.

**Policy guidelines**

The current delays resulting from the difficulties of dealing with a plethora of complicated requirements for the movement of goods could be reduced if governments were to establish a common set of requirements and a common process for completing inbound and outbound clearances of goods. Taking existing international agreements that relate to individual modes of transport and translating these into a single multimodal, multilateral code would enhance efficiency of cross border movement of cargo.

These clearance requirements and the accompanying processes should cover the border crossing and should extend across the whole intermodal journey of the cargo between point of departure and point of destination. This means that they should include a common set of regulations and reporting requirements for:

---

5 A number of shipping lines have recently reassigned or removed non western crews from United States destinations.
the efficient movement of vessels in and out of ports;
- improved access of foreign transport companies;
- road traffic, driver licensing and vehicle standards;
- fees related to the border crossing;
- visas needed by drivers; and
- the carriage of hazardous goods.

These could be based on the IMO Convention on the Facilitation of International Traffic (FAL). Also, the leading body for the development of international standards has been the ISO (International Organization for Standardization), which is the world’s largest developer of standards.

ISO standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer. They provide governments with a technical base for health, safety and environmental legislation.6

The use and acceptance of ISO or other international standards could reduce the barriers to foreign goods and speed up or even obviate many customs procedures.

8.2.4 Liability regimes

The challenge

The lack of suitable and affordable liability insurance cover for multimodal transport operators in the region has been a serious constraint on the growth of multimodal transport. Many countries in the ESCAP region still need to determine whether liability rules and limits should be established through a mandatory or voluntary regime of liability.

Pointers to the way forward

ASEAN countries have opted for a mandatory regime and are in the process of finalizing an ASEAN framework agreement on multimodal transport, which incorporates the basis of liability in the UNCTAD/ICC rules.

In Nepal, the Nepal Multimodal Transport and Trade Facilitation Project supported the development of an appropriate legal regime defining clearly the carrier’s liability and the insurance coverage, whereby all the stakeholders are assured of their respective rights and obligations:

6 www.iso.org
For the purpose, the project has been instrumental in drafting the legislation for, (a) rail carriage of goods, (b) carriage of goods by road, and (c) multimodal transportation of goods. Moreover, the project proposed revision of the existing insurance act, and drafted a separate marine insurance act. The project has come up with recommendations for eliminating unnecessary documents, merging of documents, cutting down lengthy procedures and standardizing some documents according to the United Nations Layout Key (UNLK).  

Policy guidelines

In order to facilitate the expansion of port hinterlands governments can promote the development of a legal framework clearly defining the liability rules that apply to parties moving cargo across borders. As far as possible, the framework should mirror established international standards and conventions, and UNCTAD/ICC rules.

8.2.5 Industry standards and the legal status of intermediaries

The challenge

The lack of mandatory standards for the multimodal transport industry can also inhibit the development of an active and effective multimodal sector. With ESCAP, there is at present a complex mix of emerging subregional standards, nationally enforced standards and no standards at all. Several countries, including India, the Philippines, the Republic of Korea and Viet Nam have standards imposed by Government. National associations established in the majority of ESCAP member countries play an important role in the self-regulation of the sector.

Pointers to the way forward

The draft ASEAN framework agreement on multimodal transport will provide legislative support for establishing minimum qualifications and certification for multimodal operators, in terms of asset requirements, skills and liability cover. Recognition of appropriate industry associations is also essential, and the majority of countries have moved to embrace registered associations of freight forwarders and multimodal transport operators.

Policy guidelines

Governments can promote appropriate industry standards among intermodal operators by establishing international agreements among trading nations on:

---

- definitions of responsibilities that fall to the operators and to consignors of cargo;
- the use of an agreed multimodal transport document as *prima facie* evidence of the multimodal transport operator having taken charge of cargo specified in the document;
- the information that is required on cargo consignments, including the nature, weight and apparent condition of goods, and details about the consignee, the intended journey route and mode of transport and places of transhipment and place of delivery of the goods;
- the assignment of the legal responsibility to the multimodal operator for the actions and omissions of any person acting on his behalf and making multimodal operators legally liable for any loss or damage resulting from these acts or omissions;
- the establishment of a time period after which goods not delivered would be deemed lost and the consignee would be entitled to claim for loss on the basis of the current commodity exchange basis or according to the current market price; and
- mechanisms for resolving disputes between consignors, consignees and the multimodal operator, as well as giving the plaintiff the option of initiating action in a court which, according to the law of the country where the court is located, is competent and within the jurisdiction of the place of business, the plaintiff, the multimodal operator or the consignee or the consignor.

As well as these elements of a legal framework for multimodal operators and their customers, Asian country governments can provide a range of supports for national and international forwarder organizations in the form of sponsorship of educational programmes and research and development.
9

Policies to facilitate market access

9.1 Competition policy

9.1.1 The challenge

Adequate competition legislation – and a commitment to enforcement of that legislation – is a vital element in fostering the development of a vigorous market in multimodal transport services. Competition, in the form of rivalry between buyers and sellers, generates substantial public benefit. It forces businesses to improve quality and/or lower prices. It also forces them to adapt quickly to new technologies and consumer demands.

Competition policy may take the form of national anti-trust legislation applying across a wide range of industries, including transportation. Alternatively, anti-trust legislation may be of an industry specific type, outlawing a range of unfair business practices in a particular mode or modes of transport.

Without adequate competition legislation, entry of new intermodal transport firms into various markets may be made much more difficult, for international as well as domestic entrants. The lack of a strong pro-competitive framework can therefore form a serious impediment to the development of innovation and the fostering of innovation in transport services, and consequently to the development of a strong and effective intermodal system.

The effect on industry competition is a critical concern when considering mergers and acquisitions in the intermodal sector. The trend, not just in the maritime sector but also in the rail sector, as seen in the United States and Canada, has been for a dramatic consolidation of ownership through a series of mergers and acquisitions which have resulted in concentrated market power, through either a reduction in the number of market players or through the vertical integration of either upstream or downstream activities.

The nature of competition policy differs as between ESCAP member countries. Not all countries have a formal, clearly articulate competition policy or generally applicable anti-trust legislation. Amongst those that do there are important differences in stance towards specific anti-competitive
business practices, including mergers, acquisitions and market dominance, predatory pricing and access to essential facilities.

9.1.2 Policy guidelines

Competition policy is not usually managed at an industry level, rather there are a number of general competition principles that apply to all industry groups and a central body that is responsible for oversight and enforcing the principles through regulations and court actions where required. This is usually helpful because it reduces the danger that those responsible for the administration of competition policy will be dominated by or effectively captured by powerful vested interest groups within the regulation industry.

Governments can assist in fostering the development of a strong and innovative intermodal sector by:

- developing and enshrining in legislation clear rules for the protection of competition, and ensuring that intermodal operations, whether conducted by national or foreign operators, are subject to these rules;
- ensuring that the competition framework permits mergers and acquisitions within the sector that would result in significant increases in market power only if a clear social benefit would result;
- prohibiting market behaviour that is intended to and likely to lead to a significant lessening of competition (such as predatory pricing);
- prohibiting market behaviour that is likely to reduce the effectiveness of competition in stimulating the growth of intermodal operations (such as collusion in pricing); and
- ensuring that access to essential infrastructure, including critical intermodal terminals, is available to actual and potential competitors on equitable terms and conditions.

9.2 Government ownership and competition

9.2.1 The challenge

There are many reasons why governments may wish to have some involvement in the development of intermodal operations, particularly during the initial stages of development of the sector. However, it is useful to recognize that direct government involvement in the provision of commercial transport services brings with it significant dangers.

In many Asian countries one of the constraints on the development of adequate intermodal facilities is the lack of competition in transport operations, especially when these are owned and operated by government. Government monopoly on transport operations can stifle innovation, and, in particular, act as a barrier to the injection of international expertise in the intermodal sector.
9.2.2 Pointers to the way forward

Historically, although the Chinese government has been conscious of the need to overcome infrastructure and regulatory obstacles that stand in the way of attracting high quality logistics providers, the central government has maintained control over the logistics industry, generally by insisting that foreign transportation and logistics operators operate through joint ventures that are majority owned by government-owned enterprises. This has had the effect of reducing effective competition in the sector.

However, China’s entry into the WTO has led to a significant relaxation of these restrictions, and authorized foreign operators are now able, at least in principle, to operate inland services in their own right. This is expected to lead to an ‘influx of foreign company involvement, investment and the competition’ that will help to drive an expected increase of 15 per cent a year in international import and export throughput carried by the Chinese rail network over the next decade.1

9.2.3 Policy guidelines

Governments can assist the development of a vigorous intermodal industry by encouraging private sector participation in intermodal activities, ensuring that:

- viable commercial operations are practical;
- private sector control does not lead to undesirable monopolization of key infrastructure; and
- government-owned organizations compete with private sector companies on a level playing field.

9.3 Regulatory reform

9.3.1 The challenge

The licensing of operators in many areas of intermodal operation is necessary to protect public safety and the environment, and it may be necessary in some sectors to ensure appropriate standards of service quality are maintained. However, licensing requirements can be applied inappropriately, and can lead to significant inefficiencies in the supply chain.

The potential impact of inefficient or inconsistent licensing arrangements can be severe. The Chinese government is planning to spend at least US$120 billion on improving existing roads, and building more than 200,000 km of new roads, especially in the western provinces, by the end

---

of 2006 because the road transport mode has proved itself to be far more flexible and reliable than other modes in terms of door-to-door delivery options and freight pricing. While this investment in the road system will contribute to enhancing the country’s distribution networks between China’s major provinces, a high level of bureaucratic regulation in the form of provincial licensing and toll systems still restricts the free movement of trucks and significantly impacts on the cost of moving cargo between ports and their hinterland.

The difficulty of navigating the licensing system effectively is reported to have deterred many companies from participation in the market, and some that have made the investment are finding it difficult to deal with the regulations. According to APL Logistics, regulatory restrictions are the biggest constraint on third party logistics specialists wishing to move into China. Licenses are required for many activities that a North American or European based company would take for granted. For example, licenses are needed for the right for trucks to travel in certain provinces or for foreign companies to acquire Chinese transportation and logistics services providers, an issue that is exacerbated by the fact that there is no single pan-Chinese authority that issues those permits and licenses; rather it is done on a regional province and city-by-city basis.

9.3.2 Pointers to the way forward

Until recently, about half the 13,000 container trucks that cross the Hong Kong, China – Shenzhen border daily are empty because mainland regulations have prohibited them from taking cargo back out of the People’s Republic of China. Hutchison Port Holdings (HPH) operates an inland container depot at Guanlan in the Baoan district of the People’s Republic of China, about 32 kilometres northwest of Yantian International Container Terminals. The Guanlan Inland Container Depot is strategically located in the middle of Shenzhen’s major cargo gateways, Yantian Port, Huanggang border crossing, Shekou and Huangtian Airports. The inland container depot is also near a number of large industrial areas, allowing consolidators and freight forwarders to provide supply chain services, including quality inspection and customs clearance to their customers. Its position also provides empty container storage services for shipping lines. To take further advantage of the depot, in September 2003 Hutchison Whampoa subsidiary Logistics Network Enterprise (LINE) negotiated a license with Guandong and Hong Kong, China authorities that allows Guanlan Inland Container Depot to provide trucks with full export containers in return for empties.

2 Joon San Wong, Transport Link cuts 15 per cent from shipper costs, Containerisation International News, 11 September 2003, http://www.ci-online.co.uk
9.3.3 Policy guidelines

In many cases, licensing requirements no longer meet contemporary needs: they were introduced at a time when commercial, technological and political circumstances were very different from those that prevail today. Yet inconsistent, cumbersome or unnecessarily restrictive licensing arrangements can significantly inhibit the development of intermodal systems and the effective expansion of port hinterlands.

Governments can control this risk by ensuring that:

- all licensing requirements relating to intermodal transport are subject to periodical review to ensure that licences continue to be necessary on economic, social or environmental grounds;
- where licensing continues to apply, the requirements for the issue of a licence focus on the objectives of the licensing arrangement and do not include unnecessary conditions, especially where these conditions would have the effect of limiting competition or inhibiting entry into the industry;
- as far as possible licence requirements are consistent across the country;
- licence application procedures are as simple and straightforward as possible; and
- licence criteria are clear and unambiguous and readily available to potential applicants.
10 Policies to support the development of intermodal systems

10.1 Defining and communicating the policy stance

10.1.1 The challenge

In fostering the development of the intermodal sector, the challenge for government is to develop a series of appropriate measures and policies that are both consistent with its overall aims and objectives and meet the challenges posed by developing an integrated multimodal logistics system.

A key task for government is to articulate clearly its role and expectations with respect to intermodal transport. The private sector needs a degree of certainty when making investment decisions, particularly those involving infrastructure construction which have long lead times, significant capital investment, limited salvage value and long payback periods. Government can reduce the risk faced by private investors by developing and clearly communicating its intentions with respect to such matters as:

- the general role that government intends to play in fostering intermodal development;
- taxation and other financial policies that impact on intermodal investments;
- public infrastructure funding priorities; and
- licensing and other regulatory arrangements.

Unless governments provide the required level of confidence that they will meet their promises and obligations in the specified timeframes, potential investors may seek more certain investment conditions elsewhere.

10.1.2 Possible roles for government

The general role that government may play in the development of the intermodal sector may range from a wide-ranging involvement in the operations of the industry to a complete ‘hands off’ approach in which everything is left to the market.

A sample of some of the possible roles that governments may or may not elect to play, and of actions consistent with those roles, is provided in Table 10.1.
Table 10.1: The range of roles and actions that government can undertake

<table>
<thead>
<tr>
<th>The different roles government can play</th>
<th>nil</th>
<th>support with national initiatives</th>
<th>creating a positive investment climate</th>
<th>promotion of access</th>
<th>public-private financing</th>
<th>regulation of market</th>
<th>provision of market services</th>
</tr>
</thead>
</table>

| Range of actions by government consistent with its chosen role | laissez faire do nothing | send signals to industry about the future to provide certainty | measures to stimulate the market i.e. labour or fiscal reform | acquisition of land for access or future projects | simulate and participate in the building of new assets | provide control over the actions of the market and operators | build own operate facilities and provide core market services |

10.1.3 Policy guidelines

What may be appropriate at one time and place may not be appropriate at another, and indeed a strong case can be made that the role of government should change over time in response to both market maturity and institutional developments.

What is critically important is that:

- the general stance that the government intends to adopt with respect to the intermodal sector is clearly articulated; and
- the nature of the actions that government is prepared to take in order to support the development of the sector is communicated to other actors, in particular to private sector investors.

10.2 Integrated network planning

10.2.1 The challenge

In many ESCAP countries a lack of inland transport infrastructure, particularly road and rail connections between the main cities, their adjacent ports and areas of production and consumption inhibits the capacity of ports to reach hinterland markets. Poor infrastructure and limited transport capacity are relatively high cost items for ports and other companies relying on the services of ports. The limitations can affect investor confidence and inhibit industrial development. This is particularly significant in Asian countries because they are heavily reliant on foreign investment.

Intensifying the problems of the cost of investment in transport infrastructure to support ports’ capacity to reach inland markets is the fact that only a few Asian governments have formulated integrated transport management and multimodal transport policies. Governments are
beginning to recognize that in utilizing logistics to create value, domestic firms will also improve their international competitiveness and that this is critical to underpinning a country’s planned future economic growth.

While these are promising signs that the need for effective, long-term planning of an integrated transport system is being recognized, there is still a tendency for resources to be spent inefficiently on the development of transport infrastructure. In turn, this means that the transportation of cargo, including containerized cargo, by rail is under-utilized in comparison with road transport. This is even the case in places such as China, India, Japan and Malaysia where some inter-city rail freight service networks exist and offer a range of competitively priced services for shippers and road transport operators, encouraging some competition among the ports in these countries.

India and China, in particular, face significant transport challenges in developing inland road, rail and waterway networks that can meet their growing international trading links.

India

With growth prospects for container trade expected to be about 10-11 per cent per year between now and 2006, Indian ports can anticipate increasing their throughput from 3 m TEU to about 4.8 m TEU over the next three years (second highest growth rate among Asian economies). Given that almost two thirds or 3.2 m TEU of this trade will originate from, or be destined for, locations 300 kms or more from the ports, there is an urgent need to develop inland intermodal linkages between the ports and the hinterland destinations. Currently, India’s railways handle about 40 per cent of total port throughput, and while the volume of international cargo carried by rail grew by more than 13 per cent in 2001, the switch from road to rail has not reached its full potential because of inadequate infrastructure and institutional restrictions.

Concor is embarking on an ambitious investment programme of more than 14 billion rupees over the next five years. The programme includes: the acquisition of new, larger and faster wagons; improving existing inland container depots while building 14 more over the next five years, each with modern warehousing and distribution facilities; upgrading railway lines, particularly those on the Chennai/Delhi corridor, to accommodate fast shuttle train services to and from Delhi and its main gateway ports on both the east and west coasts. While this investment will go some way to meeting the country’s intermodal needs, liner operators believe that significantly higher levels of government funding are still required and that there is a need to relax the Multi-modal Transport Act 1997 to encourage private sector investment in the country’s rail business.
China: The Pearl River, a short case study

Pearl River Delta, situated in the province of Guangdong, and forming a triangle with the cities of Hong Kong, Macau and Guangzhou, is critical to the industrial development of China. It is at the centre of three special economic zones (SEZ) - Shenzhen, Zhuhai and Shantou - which have experienced double digit export growth over the last four years and account for about 40 per cent of the value of China’s exports. Hence the ports of the Pearl River Delta are crucial southern gateways to the country’s hinterland, especially given the fact that big manufacturers including Proctor and Gamble, Nestle, Coca-Cola, Mitsubishi, Honda, PepsiCo and Colgate Palmolive have their production bases here. To meet the massively growing demand for integrated transport services in the Guangdong province, the Chinese government is investing in new roads, bridges, terminals and information technology networks.

While the growth in infrastructure has been enormous, it has not been without its critics. Regional planners have criticized a lack of overall planning, fed by rivalry among cities and regions, which has led to construction of too many roads, airports and ports. This in turn has meant that these facilities are working below capacity.

10.2.2 Policy guidelines

Governments can assist the development of effective intermodal systems by clearly identifying and communicating their aims and objectives for the freight transportation network. In particular governments should identify what they believe will be the most effective methods of moving freight. This includes both the mode of transport and the freight path.

National infrastructure plans

The development of national infrastructure plans is a common way of involving relevant stakeholders. However, it has only been recent practice for non-industry stakeholders such as community groups to be involved in their creation.

The intermodal network needs to be compatible with the rest of the transport network and therefore its impact on the transport system needs to be assessed. Key questions that need to be asked during the development of a national infrastructure plan include:

- Are the road and rail capacities adequate for the volume that the intermodal network will generate?
- Will there be a need for complementary infrastructure?
- Can connectors to the port and related facilities be readily obtained?
- Is scheduling an issue that needs to be addressed i.e. conflict with passenger trains and other non-freight transport services?
Can access and land needs be met both now and in the future?

What are competing priorities for the land or assets? Key threats include urban encroachment or other activities which would be in conflict with intermodal activities.

To be effective a national infrastructure plan should contain the following elements:

- identification of the current and future freight tasks;
- the drivers behind the growth and any known or foreseeable impediments to the future growth in freight;
- the location of the freight task, both current and into the future for both upstream and downstream paths;
- the current and planned capacities and methods for handling the freight task;
- the gaps between capacity and demand for freight services;
- the translation of the identified gap into a series of infrastructure projects that include the allocation of land and access for new infrastructure development;
- the arrangements for access to facilities, i.e. are they going to be common or dedicated users;
- the cost recovery/pricing mechanisms and other commercial arrangements for users;
- the level of government control and governance arrangements that will be imposed; and
- the timelines and phases for the delivery of the infrastructure development.

10.3 Prioritization of funding of strategic infrastructure development

10.3.1 The challenge

Investment in intermodal facilities and networks is often so large that decisions are only undertaken with government initiative or support. This is most likely to be the case in less developed countries where private capital is scarce, and in the early phases of intermodal development where concepts are seen by the private sector as unproven, and therefore high risk in a particular context.

The typical constraints on the number and size of public sector investments mean that governments have to prioritize their spending. This means that, although the government can control the location of a facility, it will usually be relying on the private sector to commit to building complementary services and facilities.
10.3.2 Policy guidelines

Governments can help to ensure that public funds committed to the development of intermodal facilities are optimized by:

- developing clear criteria for assessment of public sector intermodal developments, including, but not limited to, cost benefit analysis; and
- developing clear procedures for the consistent application of these criteria.

10.4 Enhancing the role of rail

10.4.1 The challenge

The combination of rapid growth in the container sector in many ESCAP countries and underdeveloped and congested road networks implies that rail will play an increasingly important role in the inland movement of containers. However, few rail networks in the region operate at anywhere near world best practice. Improving rail efficiency will require both extensive investment in infrastructure and structural reform of institutions.

A cluster of network limitations present serious barriers to the capacity of ports to use intermodal linkages to move freight to hinterland markets within individual Asian countries and between one Asian country and another.

One of these is the fact that some links in major transcontinental railway networks are missing, making end-to-end movements impossible for some cargoes. Sometimes the missing links result from natural geographical barriers, such as a lake or a mountain, or because the link has never been constructed. Such is the case, for example, between the People’s Republic of China and Myanmar. Alternatively, the links may cease to exist because of political events such as those that have occurred between the Republic of Korea and the Democratic People’s Republic of Korea.

To address these barriers, it is imperative that the traffic-generating potential of each route compares well with the cost of constructing the necessary infrastructure. Another challenge in addressing the barriers will be achieving the necessary bilateral cooperation and understanding between the governments of each of the countries concerned.

Another major limitation is the existence of break-of-gauge points along specific railway linkages. A break-of-gauge occurs when the railways of neighbouring countries have different track gauges as, for example

---

1 The track gauge is the distance between the inner surfaces of each rail and is conventionally measured in millimetres.
between the People’s Republic of China and Mongolia, or the Russian Federation and the Democratic People’s Republic of Korea. However, discontinuity of track gauge also occurs within individual domestic railway networks. Such is the case, for example, in Bangladesh and India. Break-of-gauges always constitute interruptions in rail operations since they impose additional stoppages to the movement of passengers and cargo.

Table 10.2 summarizes the missing links in the TAR network, as well as indicating the countries concerned and the status of the link. The corridors present different characteristics in their configuration and operational readiness. In the Northern Corridor, with the notable exception of the missing link between the northern and southern parts of the Korean Peninsula, there is a high level of operational readiness. In the Southern Corridor, the numerous missing links hamper the development of international traffic.

### Table 10.2 Missing links on the Trans-Asian Railway

<table>
<thead>
<tr>
<th>Between...</th>
<th>And</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPR of Korea</td>
<td>Republic of Korea</td>
<td>Under construction</td>
</tr>
<tr>
<td>Thailand</td>
<td>Cambodia</td>
<td>Under consideration (within framework of Singapore-Kunming Rail Link project)</td>
</tr>
<tr>
<td>Thailand</td>
<td>Myanmar</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>Viet Nam</td>
<td></td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>Myanmar</td>
<td>Under consideration (within framework of Singapore-Kunming Rail Link project)</td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>Lao PDR</td>
<td>Under consideration (within framework of Singapore-Kunming Rail Link project)</td>
</tr>
<tr>
<td>Myanmar</td>
<td>Bangladesh</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Islamic Republic of Iran</td>
<td>Pakistan</td>
<td>Under construction</td>
</tr>
</tbody>
</table>

2 Dual gauging of tracks means inserting a third rail between the rails of the broader of the two gauges. In a ‘composite track’ configuration, the inner rail of one gauge is laid within the rails of the other gauge. This means that there are four rails laid on two sleepers of extra length than those normally used for the broadest of the two gauges.
Table 10.3 shows the breaks-of-gauge that exist in the Trans-Asian Railway network.

Table 10.3  Breaks-of-gauge on the Trans-Asian Railway

<table>
<thead>
<tr>
<th>Between...</th>
<th>And</th>
<th>Gauge transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>The People’s Republic of China</td>
<td>Viet Nam</td>
<td>1,435 mm ⇔ 1,000 mm</td>
</tr>
<tr>
<td>The People’s Republic of China</td>
<td>Russian Federation</td>
<td>1,435 mm ⇔ 1,520 mm</td>
</tr>
<tr>
<td>The People’s Republic of China</td>
<td>Kazakhstan</td>
<td>1,435 mm ⇔ 1,520 mm</td>
</tr>
<tr>
<td>The People’s Republic of China</td>
<td>Mongolia</td>
<td>1,435 mm ⇔ 1,520 mm</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>DPR Korea</td>
<td>1,520 mm ⇔ 1,435 mm</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>Islamic Rep of Iran</td>
<td>1,520 mm ⇔ 1,435 mm</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>Islamic Rep of Iran</td>
<td>1,520 mm ⇔ 1,435 mm</td>
</tr>
<tr>
<td>Armenia</td>
<td>Turkey</td>
<td>1,520 mm ⇔ 1,435 mm</td>
</tr>
</tbody>
</table>

10.4.2 Pointers to the way forward

ESCAP is facilitating the Trans-Asian Railway component of the ALTID Project, a series of studies that aim to solve this and other technical problems related to rail transport and to achieve seamless north-south and east-west rail corridors between Asian countries and Europe.

In the Indo China and ASEAN subregion, the development of subregional rail linkages, including the construction of the missing links between the railway networks concerned, is being actively pursued under the Singapore-Kunming Rail Link Project conducted by the ASEAN secretariat. However, funding remains a critical issue. In the North-South Corridor linking Northern Europe to the Persian Gulf, activities are being undertaken by the countries concerned to promote traffic along the corridor in an effort to capitalize on shorter transit times by rail as compared to maritime shipping.

The development of the TAR network shows a growing acceptance that rail has an important role to play in the national and international movements of goods and people. A number of features speak in favour of a greater utilization of rail transport in Asia:

- Twelve of the 30 landlocked countries of the world are located on the Asian continent with the nearest ports often several thousands of kilometres away.
- The distances linking the main origin and destination, both domestically and internationally, are of a scale on which railways find their full economic justification.
- There is a reliance on ports to connect national economies to the world’s markets, with the need to clear landside port areas quickly to avoid congestion, especially in the context of growing containerization and the development of intermodal transport.
- A number of countries are major exporters of mineral resources and rail transport plays a crucial role in the related logistics.
- There is a continuing surge in the volumes of goods being exchanged.
- Rail has been recognized as an environmentally friendly and safe mode of transport.

There are signs also that the importance of railways is being recognized in China. A recent article published in a Containerization International supplement on the Kowloon and Canton Railway Company notes that ‘putting more of Hong Kong’s containerized freight traffic on the railways is a strategic objective of the Kowloon and Canton Railway Company’.

The rail service network is also being expanded. Over recent years, the Kowloon and Canton Railway Company has extended the scope of its container shuttles, in conjunction with the Chinese Ministry of Railways, and now operates to twenty-three locations in mainland China from Hong Kong, China. In addition, the Company is offering a new international rail container service to the Russian Federation and the Commonwealth of Independent States, providing fifteen day transit times between Hong Kong, China/South China and Ulan Bator, twenty days for Almaty, twenty-eight days for Moscow and thirty days for Kiev.

While the company has made important strides towards developing the intermodal side of the business, one of the factors constraining the growth of its container traffic is the reluctance on the part of ocean carriers to allow their containers to go deep into mainland China on the rail system. This can involve lengthy delays, periods of unproductive idle time for their container assets or misplacement of containers, which the lines are understandably keen to avoid. As part of the government’s tenth five-year plan, these issues are being addressed, but progress is very slow.

Part of the progress in China has included significant investment in the planned development of a nationwide network of distribution hubs by the Chinese Government. Complementing this development is the establishment of agreements between the China Railway Container Transport Centre (CRCTC) – the Ministry of Railway’s wholly owned company that has responsibility for intermodal container transport – and a small number of ocean carriers including OOCL, Maersk Sealand, Cosco

---

and China Shipping Container Lines (CSCL) to ‘run dedicated block-train services between ports and selected cities’.  

Over the last two or three years all of these carriers have introduced new intermodal services, including those for reefers that link inland cities such as Chengdu, Harbin Xi’an and Kunming with the international ports of Dalian, Yantian and Shanghai. Also, third party logistics operators, such as APL logistics, have established joint ventures with road and rail transport specialists in an attempt to win a share of the domestic logistics market as a means of improving door-to-door service for their international freight.

10.4.3 Policy guidelines

Governments of the region can address the challenges related to the role that rail networks play in an integrated intermodal transport system that combines the use of roads, coastal and inland waterways and rail in the most cost effective and environmentally sustainable way possible. They can:

- set targets for a shift of container cargo from road to rail and make the upgrade of rail corridors that link ports and strategic inland hubs a national planning and funding priority;
- liberalize investment policies to encourage foreign investment in railway infrastructure, especially among transport chain stakeholders such as shipping carriers, private port operators, railway companies and logistics specialists that have an inherent interest in making long-term investments in building transport networks that increase the efficiency of the movement of import and export container freight between ports and inland markets;
- improve the national network of intermodal facilities and systems by planning to integrate railways with ports, roads, warehousing and distribution facilities, and electronic communication and software development;
- facilitate agreements with bordering nations and participate in multinational initiatives such as the TAR project to address international network problems such as break-of-gauge points and missing linkages; and
- foster more commercial management practices among publicly owned railway organizations by setting national performance standards and sponsoring training strategies that focus on multi-party relationship development with their connecting ports, and other transport operators that contribute to the development of efficient intermodal transport of cargo between ports and inland markets.

---

10.5 Enhancing the role of inland waterways

10.5.1 The challenge

One of the factors that affect the capacity of Asian ports to reach hinterland markets is access to inland waterways as an alternative to road or rail transport for carrying freight. Inland waterways play a vital role in the economic development of remote rural areas and in the welfare of their inhabitants, who are usually among the lowest of low-income groups in the region. In the absence of river and other forms of inland waterway transport, many remote, underprivileged communities would be inaccessible or too costly to service by other means.

Asia is generously endowed with navigable inland waterways. Some are canals, some single rivers, while others form parts of major deltas. Some of them, such as the Ayeyarwady, Ganges, Jamuna-Brahmaputra, Lancang-Mekong, Volga and Yangtze rivers are world famous for the enormous contribution they have made to national and regional development. Others, including the Pearl River in People’s Republic of China, the Mandovi and Zuari rivers in India, the Thanlwin River in Myanmar, the Fly River in Papua New Guinea, the Chao Phraya River in Thailand and the Red River in Viet Nam, are less famous, but equally important for their contribution to national economies and people’s daily lives.

There are fifteen countries in the ESCAP region where inland waterway transport (IWT) plays a significant role in transportation. There are other countries which, despite having relatively low usage of their inland waterways for freight transport (as compared with other modes), nevertheless have enormous volumes of freight transported on their inland waterway systems each year.

In the People’s Republic of China and the Russian Federation, the annual volume of freight carried by IWT is about 690 and 155 million tonnes, respectively. Use of the Yangtze alone is increasing at 40 per cent per year. In the People’s Republic of China, the volume of containers moved on the inland waterway system has grown at a significantly faster rate than the container volumes carried by other modes serving port hinterlands. In 1999, the volume of containers transported by inland waterway transport in the People’s Republic of China totalled 1.88 million TEU, up from 100,000 TEU in 1990 (a rate of growth averaging nearly 40 per cent per year).

Inland waterways are still an underutilized linkage in the transport chain between Asian ports and their hinterland markets because of a number of interrelated factors:
inadequate draft and other natural impediments to navigation;  
poor navigation systems; and  
poor cargo handling facilities.

For example, 72 per cent of the navigable length of the inland waterway system in Bangladesh provides for vessel drafts of 0.91 m or less during the dry season. In effect this means that navigation of the major part of the system is limited in the dry season to small vessels of 100 deadweight tonnes or below. A number of initiatives are under way in Bangladesh to either improve the depth of existing channels or to build new waterways around Dhaka as a result of the just concluded five-year plan of the Bangladesh Inland Water Transport Authority (BIWTA).

Apart from the effects of monsoon on channel depths, the natural characteristics of some inland waterways can impede their navigability. For example, until recently, nine rapids and ten scattered reefs in the section of the Mekong River that borders the Lao People’s Democratic Republic and Myanmar, severely endangered navigation safety. In a project funded by the Chinese Government in 2002, these impediments were removed so that 150 tonnes vessels can now safely travel through the affected parts of the river.

Inadequate navigation systems impede twenty-four hours use of channels in some countries. For example, about two thirds of the 31,000 km length of Indonesia’s inland waterways are navigable, with the predominant ‘life line’ uses in Sumatra and Kalimantan, where there is no rail system. IWT freight activity is anticipated to treble to 20 million tonnes during the current five-year plan period. Nevertheless, Indonesia suffers from a severe lack of navigation marks and appropriate charting of the rivers to permit greater time use of the system. This has been recognized and, together with the Asian Development Bank, the Indonesian government is addressing these issues. In addition a large number of new and upgraded cargo handling facilities are being put in place.

10.5.2 Pointers to the way forward

Good examples of the potential offered by inland waterways are shown in Europe where inland waterways are carrying an increasing volume of container traffic across a number of international borders. More particularly, the case study on Duisburg Intermodal Terminal is a good illustration of the way that transport linkages can be forged between an inland port and major coastal ports such as Rotterdam and Antwerp through the coordinated use of rail and waterway transport by barge.

There are a number of projects underway in countries such as Bangladesh, Thailand, Indonesia and the People’s Republic of China to improve the
navigability and commercial attractiveness of inland waterways for freight transport.

The Greater Mekong River System, one of the world’s great navigable waterways, has long been under utilized because of the lack of adequate infrastructure, navigational aids and lack of consistency in rules and regulations. An agreement on commercial navigation on the Lancang-Mekong River among the four Greater Mekong Subregion countries – the People’s Republic of China, the Lao People’s Democratic Republic, Myanmar and Thailand – that was signed in 2000 is expected to promote substantial investment and river traffic growth.

As part of the Lancang-Mekong Navigation Cooperation Agreement, the four contracting parties have constructed a number of ports to support the emerging river traffic:

- The Republic of China has upgraded three ports – Simao, Jinghong, and Guanlei – that will serve both passengers and freight traffic.
- The Lao People’s Democratic Republic set up a new economic development zone near the Golden Triangle area, which consists of construction of the Ban Mom Port, new urban area development and bank protection. The port infrastructure was completed in 2001 and others will be completed in 2008 and 2010 respectively.
- Myanmar has designated two ports for international traffic on the Upper Mekong River, Wan Seng and Wan Pong. In addition, a port at Soploi has been built on the same scale as the Jinghong Port and opened for operation in 2002.
- The Government of Thailand is building two ports in Chiang Saen, both of which are expected to be completed in the near future. The private sector of Thailand has also built some terminals along the Upper Mekong River in the Chiang Rai Province.

10.5.3 Policy guidelines

As with the development of railways and their related systems, so too governments of the ESCAP region can foster improved use of inland waterways and ports in Asian countries by:

- including the enhancement of channel depths and navigation systems, the introduction of coordinated shipping, rail and road transport schedules, or the development of intermodal hubs at inland ports as part of long-term plans for the development of national and international intermodal transport networks;
- promoting the role of inland waterways as an efficient and environmentally sustainable alternative to roads through the support and sponsorship of pilot projects that trial the use of barges for the transportation of freight between inland locations and coastal ports;
- providing private logistics specialists and major manufacturers with incentives to build intermodal facilities such as warehouses and distribution centres near inland ports; and
- liberalizing cabotage laws to allow foreign shipping companies, increased flexibility to operate in domestic waterways.

10.6  The development of privately owned intermodal facilities

10.6.1  The challenge

Intermodal facilities form an integral part of the broader transport network. For intermodal facilities to function effectively, they must be served by appropriate road and rail links. Additionally, in order to ensure the efficient utilization of existing road and rail infrastructure – and to ensure that local roads or already congested routes are not subject to undesirable increases in traffic – the upstream and downstream impacts of a facility should be taken into account when a terminal is planned. For both of these reasons, it is important the development of intermodal facilities be integrated into a broader national transport planning framework.

Moreover, in many ESCAP countries, traffic congestion and air pollution in urban centres is a major problem. Road safety and the damage caused by heavy vehicles to national road networks are also significant issues in many countries. Encouraging the transfer of freight traffic from road to rail can make an important contribution to ameliorating these problems. It may therefore be desirable to encourage the development of intermodal systems for other reasons as well as to increase the efficiency of the logistics chain and extend port hinterlands.

For all of these reasons, Governments may wish to take an active role in influencing the siting and sequencing of the development of privately owned intermodal terminal facilities.

10.6.2  Policy guidelines

Government can significantly influence the ability of a port to develop its hinterland through the development of intermodal facilities. However, when assessing a proposal for the development of a privately owned terminal, the response of government should to the proposal should reflect both the financial viability of the terminal and the contribution that the terminal would to general government policy objectives. The relationship between appropriate response, the financial viability of the development, and the impact of the development on government policy objectives is shown in Figure 10.1.
Possible responses can be classified into four broad categories.

- **Facilitation of the development by coordination through approval processes**
  Governments could undertake a number of measures that would enable the intermodal network to be established quickly and to operate with a minimum of intrusion or control. Facilitation may involve expedition of planning processes, the harmonization of industrial relations, the improvement of connectivity, and the reservation of land for future growth. Governments’ ability to facilitate is considerable and the actions that governments can take range from passive acquiescence to active participation and leadership.

- **Support of the development through financial or commercial mechanisms**
  This assistance might include direct financial support or subsidy of loss making operations, and direction to government agencies to use or assist its services. Support could also take the form of improved connectivity, such as enhanced transport links, which may be partially charged to the operators.

- **Mitigation or control measures to be applied to lessen undesirable aspects of the terminal development**
  In this circumstance the intermodal network proposal conflicts with government policies in such a way that in its original form, the intermodal network should not be allowed to occur. The only way for the proposal to be developed is if there are adjustments by way of agreed controls, such as regulation of market activities such as price and access rules or other mitigation strategies that are agreed between the government and the proponent.
Rejection of the development

The government does not support the intermodal network, as it believes the case for the proposal is not compelling and the conflicts with government policies cannot be resolved.

10.7 Public private partnerships

10.7.1 The challenge

For ports to be able to expand their markets into regions that are located many kilometres away, they need to be able to link their dock-based facilities with rail, road and, sometimes, inland waterway facilities. They also need to integrate with facilities provided by allied logistics services, such as warehouse and distribution hubs that rely on complex and sophisticated infrastructure and systems.

It is beyond the reach of most governments to finance all of the required investment by conventional public funding means. Estimates of port infrastructure investment requirements for East Asia alone are more than US$1,800 billion for the current decade. The aggregation of government spending, international aid and official lending is insufficient to meet this estimated demand.

Although developed economies have experienced a dramatic growth in private investment in transport infrastructure, only 16 Asian developing countries in the ESCAP region have some sort of private sector involvement in transport infrastructure projects, and seven Asian developing countries – People’s Republic of China, Malaysia, Republic of Korea Philippines, Indonesia, India and Thailand – accounted for 95 per cent of all private sector investments, and 97 per cent of transport sector investments in Asian developing countries. Among this group of six countries, People’s Republic of China, Malaysia and the Republic of Korea accounted for more than 78 per cent of investment commitments in the transport sector.

10.7.2 Pointers to the way forward

A small number of Asian country governments are leading the way by supporting effective public-private sector investment partnerships. These are the Republic of Korea, the Philippines, Bangladesh and India (at a provincial level) where private sector participation in infrastructure

---

development has concentrated. The governments of these countries have developed special units that have been successful in playing a ‘catalytic’ role in promoting and implementing private projects.

In an attempt to promote private sector investment in the country’s infrastructure development, the government of Bangladesh has undertaken the Private Sector Infrastructure Development Project, which consists of two components, project financing and transaction development. Through the Ministry of Finance, two facilitative bodies have been established to implement these two components. The first of these, the Infrastructure Development Company was established in 1997 with the assistance of the International Development Agency. A non-banking financial institution, in which its share capital is full subscribed by the government, one of the main functions of this company is to provide loans for private infrastructure projects or refinancing for small projects implemented by NGOs and other private entities, but so far it has not supported any transport sector projects.6

To attract private investors to fund infrastructure projects at both the national and the provincial government levels, the Republic of Korea introduced the Private Participation in Infrastructure (PPI) Act 1999. The intention of the Act is to promote, facilitate and guide private sector participation for both solicited and unsolicited projects. By September 2002, regulations had been developed to frame the establishment of two separate bodies that will implement the intentions of the Act: a policy making body called the Private Investment Project Committee which will be led by the Minister for Planning and Finance; and the Private Infrastructure Investment Centre of Korea (PICKO), the role of which is to provide a one-stop-shop service based on uniform criteria for evaluation and negotiation.

10.7.3 Policy guidelines

Government can expand the quantity of capital available for intermodal development by:

- developing policies that will encourage private sector participation in infrastructure development; and
- identifying and structuring projects for private sector participation, including, but not limited to, BOT projects.

---

In order to ensure that this capital is wisely spent and the economic return to the country from the developments is maximized, it is important to develop relevant skills in public sector officials in areas such as the identification and packaging of BOT projects, as well as contract negotiation and management. Some countries have found it helpful to concentrate expertise in a central agency responsible for all PPP projects. This is the approach favoured by the major international lending institutions.

This central agency may undertake a range of related functions, including:

- identifying and preparing projects;
- screening projects and debating issues related to project choice and implementation;
- overcoming obstacles to project development (including those related to policy);
- reducing risk and uncertainties for private sector participation by defining project cycle times;
- conducting pre-feasibility and feasibility studies, and recommending public-private partnership risk sharing options;
- establishing the terms of agreements covering the allocation of risk between the state and private investors;
- monitoring progress of projects;
- intervening on behalf of a government agency or acting as a facilitator to help solve a problem related to a particular project; and
- contributing to the development of new legislation related to PPPs.

### 10.8 Technology

#### 10.8.1 The challenge

Technical systems and their operation and management are now key issues for government as they form not only a source of competitive advantage, but in many cases they are a minimum condition of operating. Technical systems include information systems, track and trace technologies, and security systems such as access control and surveillance technologies.

There are two key issues that are potentially in conflict that will have to be managed for effective market operation and to prevent the locking out of smaller market players:

- ensuring that technical systems are compatible with international systems, including compulsory security and customs data; and
- ensuring that technical systems are open to all industry participants at a reasonable cost.
The rise of global information standards including Internet and dedicated e-commerce systems, in particular the development of proprietary business-to-business (B2B) platforms, poses significant challenges for both industry participants and governments.

The costs of developing and deploying new systems have seen them often limited to the larger operators and there are concerns in a number of areas that the technical systems might be used to entrench or enhance market dominance. The key issues include:

- the costs of gaining access to key information systems, for example freight information or vehicle booking systems;
- the use of technical systems to favour related parties or alliance partners over other groups when the system manages pick up or deliver schedules; and
- the use of market power to prevent or reduce the deployment of new technology as it could weaken the position of dominant players.

### 10.8.2 Policy guidelines

Governments can take a number of steps to reduce the anti-competitive use of technical systems including:

- the insistence on using open source technologies for information systems and software;
- ensuring that critical information is passed using common protocols such as XML languages, thus limiting the opportunity for the development of proprietary technical systems;
- when developing standards for reporting to government agencies such as customs, quarantine and security agencies, ensuring that information requirements are not limited to a proprietary system, rather that the information and technical integration can occur from a range of platforms;
- sponsoring pilot programmes for the introduction of common user platforms for information interchange; and
- supporting industry training in the use of open platform technologies.
11
Policies with respect to institutions and people

11.1 Restructure of government agencies to have an intermodal focus

11.1.1 The challenge

Most ESCAP governments have a number of different groups providing advice and services in transport. These groups are often, for reasons of history and early development, specialist in one particular transport mode.

Developing a multimodal focus and understanding in government is an important step in developing intermodal networks, as modal interest groups are often quite effective in gaining funding and support for their interests, which may hamper the development of other multimodal networks.

11.1.2 Policy guidelines

Governments can achieve an intermodal focus by amalgamating existing modal groups within the bureaucracy. The practice of forming new intermodal groups is not recommended as it appears to leave existing power structures in place and they compete with the new intermodal groups for attention and funding.

11.2 Redefining the role of ports

11.2.1 The challenge

The roles and activities that port authorities undertake are often a function of their historical role in the economic development of the country. The investment required to establish and develop port infrastructure is usually so large that in the past government has undertaken it. This means publicly owned port authorities have a history of providing facilities that are limited to waterside infrastructure such as shipping channels and navigation aids and landside infrastructure, including wharves and terminal facilities.

In some cases port authorities have been the providers of service, but this service has been circumscribed by the waterside and landside facilities that have been developed. In other cases, port authorities have had an
even more limited role. Acting as landlords, they have rented land to operators, but have had no involvement in service provision and very limited involvement in planning. A third alternative model of port authority management is a more strategic one in which the port authority is responsible for managing the landside and waterside assets and has a role in developing the long-term future of the port. In addition, the port has a wider role in ensuring that enhanced economic outcomes are achieved. With this model it is common for the terminals and other port facilities to be operated by the private sector.

It is this third strategic manager model that is most conducive to the extension of the port authority’s role beyond the provision of waterside and landside functions. The third model encourages growing the port’s business by reaching inland markets through the provision of an intricate range of intermodal services along the transport chain.

Over the past decade there has been a significant move towards private ownership and operation of ports throughout the world, in part as a mechanism for driving a more commercial and strategic approach to port management.

Among ESCAP countries, port privatization has occurred in a range of countries such as Malaysia, the People’s Republic of China, Thailand, Bangladesh and India. However, in most countries privatization tends to be limited to specific terminal facilities, with a considerable degree of public sector involvement being maintained in many of the ports. In a survey of 188 major and medium sized container ports throughout the world, carried out in 1998/99 by the International Association of Ports and Harbours, 92 per cent of respondents were public organizations, 71 per cent were either a public agency or corporation, and only 7 per cent were private companies. Of this last mentioned group, over two thirds had a government shareholding varying from 60-100 per cent. In the main, the ports that intend to increase private participation are not transferring property rights to private owners but just the provision of port assets and services.

11.2.2 Policy framework

As most ports continue to be overseen by bodies established by legislation and controlled by government, it is important that these bodies are appropriately constituted and have sufficient powers to meet the challenge of the changing role of the port in the logistics chain. The case study material contained in Section A of this report suggests that this will require, amongst other things:

- a commercial orientation and a considerable degree of autonomy, balanced by clear accountability for outcomes;
- the ability to become involved in initiatives that extend beyond the geographical boundaries of the port; and
- the ability to become involved in partnership arrangements with other public and private sector organizations.

A key task in establishing a new policy framework for the ports is to define their focus, their responsibilities and the boundaries that should be imposed on port operations and interests. The settings of boundaries are crucial, as they will legitimize what the port can consider to be within its interests and how it may act in meeting the requirements of its stakeholders.

Key boundaries that should be set include:
- responsibility to act in upstream and downstream activities;
- ability to manage financial affairs, including:
  - borrowing limits and practices;
  - cost recovery mechanisms and limitations to manage competition.

For many traditional port organizations, preparing for a future in which hinterlands are more fluid and are continually being redefined by the interplay of port competition will require a number transformational activities that will require government action. These include:
- legislative and regulatory amendments which will set the policy settings for the port;
- communications strategies that will address both internal and external audiences;
- capacity review, including identification of new tasks and functions and those no longer required; and
- internal restructuring, including the merging and removal of non-relevant tasks and functions.

### 11.3 Labour Issues

#### 11.3.1 The challenge

To move to a broader set of responsibilities, many traditional ports of the ESCAP region will need to address a number of significant structural, operational and cultural changes. Bureaucratic structures and restrictive work practices related to functions such as ship berthing, loading, unloading and storage of cargo, and customs processing do not well support a competitive strategy that is based on fast, efficient and flexible throughput of cargo.
The consequences of failing to adapt effectively can be severe. At the ports in Bangladesh, for example, attempts to encourage private sector participation depend on the implementation of a number of organizational reforms, but workforce resistance is delaying these. Frederick T. Temple, World Bank Country Director for Bangladesh has recently said that:

*All three major ports – Chittagong, Mongla, and the river port of Dhaka-Narayanganj – suffer from overstaffing, labour strikes, cumbersome customs procedures, out-dated and inefficient work rules, and out-dated and inflexible management practices. Private participation in the sector is likely to be very limited until the labour force is restructured in line with realistic operational requirements and until steps are taken to increase productivity.*

However, progress implementing the reforms has not been smooth over the last five years. Attempts to achieve greater port authority autonomy and private sector participation in port development and operations reached an impasse in 2002 because of industrial disputation among port workers and the ADB was not prepared to undertake the project until the government of Bangladesh had resolved the disputes. Similar problems led to Stevedoring Services of America (SSA) withdrawing from the planned development of a new Container Terminal at Chittagong Port in May 2003, when port workers’ unions and local politicians opposed the project ‘because of fears that it would lead to massive layoffs’, and because the approval process was believed to be ‘inadequately transparent’.

### 11.3.2 Policy guidelines

#### Redundancy practices

One of the important ways in which governments can promote labour reform in Asian ports is to establish policies that provide social safety net practices designed to give port employees some employment security and financial protection in the event of reforms making their jobs less secure or redundant. These safety net measures could include:

- defining minimum redundancy payment levels and conditions that ensure that port workers’ rights and interests are appropriately addressed according to international labour standards;

---

2 Ministry of Shipping and Infrastructure Investment Facilitation Center (IIFC): August 20, 2001, Workshop on Private Investment Opportunities in Shipping Sector of Bangladesh to Raise Investor Awareness, Speech by Frederick T. Temple, World Bank Country Director for Bangladesh.

introducing into the country’s industrial relations laws transmission of business clauses, which define minimum employment conditions that must be upheld by a private company taking over a port that was owned either by the government or another private operator and its employees;

Alternatively, the transmission of business provisions could hold the new owner to industrial agreements that were reached between the employees and their previous employer until they were no longer current or until each of the parties agrees to negotiate a new arrangement if this is before the existent agreement ceases to be current; and

participation of labour in workplace reform and customer service initiatives.

Throughout the 1990s one of the key ways in which much needed labour reforms were introduced throughout European, British and Australian workplaces was by encouraging the widespread participation of the workforce and their labour unions in the design and implementation of organizational change. Participation was achieved through the establishment of consultative committees representing management, employees and unions and mandated to contribute to work unit restructuring and work process improvements as well as decisions about training and development plans. Governments can promote this type of participation by:

- providing financial incentives to the port authorities and other transport providers on the basis of their introduction of participative practices;
- sponsoring active research into organizational change and participative work practices;
- acting as facilitators between the port authority managers and their workers in consultative processes;
- encouraging the port authorities to act as facilitators of workplace change among the other transport service providers on whom they are dependent in their development of intermodal linkages;
- providing guidance to the port authorities on participative work practices; and
- reforming the employment and industrial relations laws so that they are oriented towards greater worker participation in organizational change.

It is also important to give port managers and employees the opportunity to work in collaboration with other port service providers and other intermodal partners, both within the port and in rail and road transport organizations, in projects in which all of the parties are focused on finding
ways of improving intermodal transport services and building their markets together.

**Performance management practices**

One of the ways in which organizational and individual accountability can be encouraged in port organizations is through the application of systematic performance management practices. These should be based on the port organization's strategic and operational goals, which should cascade down into work unit and individual performance targets.

At an organizational level the port’s goals and key performance indicators should embrace service delivery commitments that are explicitly negotiated between the port and its customers as service agreements. Then these commitments can be translated into negotiated agreements between the port managers and their employees, either in the form of a collective agreement or individual performance agreements.

The impact of performance management practices can be strengthened if they are used as a tool for promoting ongoing communication and cooperative problem-solving between managers and employees and between these parties and the port’s customers and collaborators.

### 11.4 Enhanced commercial awareness and skills

#### 11.4.1 The challenge

The practice of outsourcing the movement of cargo to third or fourth party logistics specialists is an emerging trend in China, and one that is occurring in response to the rapid development of the manufacturing sector in this country:

> A lot of manufacturing industries have been moved to the Pearl River Delta (PRD) area of southern China...So most of the freight transportation and logistics providers are moving north of Hong Kong to meet the new demand there. The market in the PRD is huge and has very high growth potential.

Keen to get their products to their markets as quickly and cheaply as possible, major manufacturers, including those moving into China from overseas, are demanding increasingly sophisticated intermodal services. According to Lau: ‘Not so many of those manufacturers or trading companies have regional connections or competency to provide this high-demand service’, and third-party logistics companies are stepping in to fill that need.

---

In other Asian countries there is also an emerging demand for logistics services provided by third party specialists, but it is not coming from local manufacturers but from their overseas customers. According to Lynnette McIntire, director of public relations for UPS Supply Chain Solutions in Atlanta, the 3PL concept is taking root but slowly:

There’s still some resistance, because most manufacturers are somewhat locally or regionally focused. They’re used to dealing with a very fragmented market. They use different people for different services and different geography, and they may be managing their distribution internally.\(^5\)

The demand for door-to-door service with a tight turnaround is already being addressed in highly industrialized countries such as Japan; Singapore; Republic of Korea; Hong Kong, China and Taiwan Province of China, where the technology infrastructure and financial systems are strong and the market for logistics is well established. The standard of service being delivered in these countries is already setting the benchmark for a demand for similar services in countries such as Indonesia, Viet Nam, Cambodia, and Thailand, where logistics management is still relatively immature, but where an explosion in intra-Asia distribution and domestic consumer demand will require highly effective and efficient intermodal transport services between ports and their hinterland markets.

Damon Newquist, manager of marketing and pricing for the Americas at Japanese freight forwarder and 3PL Kintetsu World Express notes that:

High-tech companies that manufacture in Asia have pushed especially hard for 3PLs to handle their logistics needs in developing nations. Today, these are typically low-level service requirements, but as global competition increases, demand for new, innovative solutions is becoming more routine....‘This is driven largely from the high-tech industry, where companies like Dell are strong-arming their way up the supply chain to drive out cost while meeting consistent quality and delivery schedules.\(^6\)

Challenges faced by port managers therefore include the difficulties of understanding the competitive drivers of intermodal transportation of cargo or the complex and intricate network of relationships between cargo producers and owners and the various other logistics and customs players in the transport chain.

One of the key organizational limitations on the development of intermodal logistics networks capable of facilitating growth of trade and extending the hinterland markets of ports is a lack of awareness of the competitive importance of logistics, and, as a consequence of this, the low

\(^5\) Ibid.

\(^6\) Ibid.
priority given to logistics in executive decision making. This problem can extend beyond predominantly government managed ports, railways or road authorities to private companies and their executives. Many of the third party logistics specialists that operate in Asia are from Europe or North America. They still tend to rely on their own staff for senior management roles or have their local staff educated in foreign universities. Hence there is a lack of a locally educated Asian talent pool.

11.4.2 Pointers to the way forward

The demand for regionally educated logistics professionals is starting to be addressed with Asian universities beginning to offer logistics programmes at places such as Hong Kong University, and an increasing number of Asian graduate students are:

- choosing to study industrial engineering with a concentration in logistics and supply chain management. The recent establishment of the Hong Kong Roundtable of the Council of Logistics Management is another encouraging sign that professional development is becoming a higher priority in Asia.\(^7\)

Some observers still point out that before local skills and expertise can flourish there is a need to overcome shippers’ tendency to keep internal control on logistics management.

11.4.3 Policy guidelines

Governments can promote ongoing improvement in the level of commercial acumen of port managers and the managers of other organizations that play a role in delivering intermodal services through:

- financial and other sponsorship of tertiary education programmes and curricula;
- supporting public-private sector initiatives that aim to raise the profile of intermodal excellence; and
- establishing standards, facilitating the development of industry codes of conduct and supporting quality improvement programmes.

11.5 Enhancing the professional standards of officials

11.5.1 The challenge

While the removal of formal impediments to the efficient international movements of cargoes is an important prerequisite for the extension of port hinterlands, it will not in itself achieve a great deal unless the officials responsible for administering border control procedures understand the importance of their role, and are committed to the goal of improving logistics efficiency.

\(^7\) Ibid.
11.5.2 Policy guidelines

Governments can contribute to the effectiveness and efficiency of border crossing administration by establishing regulation of professional standards and promoting skill development among staff working in cross border roles and by giving recognition to the qualifications and experience of foreign nationals who are engaged in the transportation of goods.\(^8\)

11.6 Policies with respect to environmental and social issues

11.6.1 The challenge

Increasingly, administrators, managers and governments are being forced to consider the impact of their operations on the social well being of nearby communities and environmental conditions. With ports being located in cities, and in very crowded cities such as Bangkok, Manila and Jakarta, the effect of poor transport infrastructure on the movement of cargo is further exacerbated by crippling levels of traffic congestion. While ports, railways and road transport organizations throughout developed economies have made significant strides in addressing their impact on the environment, this is not the case for ports and other transport operators in many Asian countries.

In developing strategies to improve port penetration of the hinterland, ports in these countries are using the enhancement of economic and social well being and the reduction of traffic congestion, noise and pollution to support the argument for developing intermodal strategies that transfer the transportation of containers from road to rail and move the container transport task away from cities to inland container depots.

The addition of these broader objectives to their plans for growth mean that ports, particularly in more developed economies, are increasingly taking into consideration the social and environmental needs and interests of a broad spectrum of community and government stakeholders as part of the normal processes of port development planning. Such was the case with the development of the Alameda Corridor in California and so too has been the case with the plans for the development of the huge Maasvlakte 2 terminal development project at the Port of Rotterdam over the last five years. The aims of this project are to find space for the port to grow and within the framework of the port development, to improve the quality of the living environment.

---

\(^8\) WTO Council for Trade in Goods, 21 April 1998, Checklist of issue raised during WTO Trade Facilitation Symposium, Note by the Secretariat.
11.6.2 Policy guidelines

In promoting the development of intermodal facilities that encourage economic development of hinterland markets, governments in Asian countries need to also promote the environmental and social benefits of these transport infrastructure developments. They can, through a combination of legislation, facilitation and incentives, integrate environmental and social considerations into their land use planning and master planning activities.

Legislation

Governments can have a significant influence on the behaviour of both public and private sector ports by introducing laws that include environmental and social impact standards in infrastructure development and capital investment approval processes.

More importantly, governments can encourage innovation among these transport players by defining outcomes-based standards rather than prescriptive process-driven procedures. Important areas of consideration could include the reduction in noise and pollution levels, road congestion and transit times for significant urban and freight transport corridors, and safe and efficient access to important public areas such as schools, hospitals and workplaces.

Facilitation and incentives

Governments can provide financial incentives to ports and other intermodal players for initiatives that reduce environmental impacts or enhance social wellbeing, for example, by creating employment opportunities or improving transport access for people. The incentives could be in the form of access to capital for infrastructure development projects or relief on taxation liabilities.

Governments can also show leadership on social and environmental standards by:

- making sustainable transport solutions a policy priority in their long-term planning;
- sponsoring research into environmental and social impact studies related to transport;
- providing guidance to port authorities and other intermodal players on stakeholder engagement and community consultation practices;
- forming partnerships with ports and other intermodal operators to bring them together with community groups to explore ways of developing intermodal facilities and systems that generate environmental and social improvements as well as economic development; and
- fostering the development of environmental and social impact reporting for ports and other transport operators by recognizing excellent practice in these areas.
Appendix
Appendix

WTO Symposium checklist of recommendations for improving cross border flows of trade

1 Physical movement of consignments (transport and transit)

- harmonization of information requirements for the movement of goods, which would subsequently allow for exploration on processes under which outbound and inbound clearances can be accomplished by a single filing;
- implementation of existing international agreements for each mode of transport and further work toward one multi-modal, multilateral code;
- adoption of the Montreal Protocol IV in order to facilitate air transport;
- development of common regulations and reporting requirements for the movement of vessels in and out of ports, based on the common criteria established by the IMO Convention on the Facilitation of International Traffic (FAL);
- harmonization of national legislations concerning the movement of crews and passengers in sea transport;
- harmonization of technical requirements for vehicles based on existing work in this area;
- harmonization of fiscal charges, restrictions and traffic bans, as well as visa requirements for drivers in the area of road transport;
- adoption of existing international rules and harmonization of the various national rules for the carriage of hazardous goods; and
- improvement of market access conditions for foreign transport enterprises.

2 Import and export procedures and requirements, including customs and border crossing problems

- reduction of documentation requirements for import and export. A serious internal review should survey what data are really necessary for customs authorities, and which of them could be obtained through other methods, i.e. by accepting commercial documents or information provided for export purposes;

---

1 This is a summary of a checklist of issues and recommendations developed by the Council for Trade in Goods, in 21 April 1998 and produced as a note by the symposium Secretariat: Checklist of issues raised during, WTO Trade Facilitation Symposium.
rationalization and alignment of format, content and numbers of documents required in line with the United Nations Layout Key for Trade Documents and other United Nations standards, including UN/EDIFACT;

increasing possibilities for electronic data submission;

separating the presentation of documentation from border-crossing and relying to a larger extent on post-clearance audits;

publication of all official requirements and establishment of information centres (at borders) where traders can receive authoritative information on official requirements and collect all necessary official documents;

review regulations that demand the dispatch of numerous samples for product registration, which can become effective trade restrictions when applied to high-value, low-volume consignments;

review of their labelling requirements which often demand inappropriate and unreasonable measures from importers;

use of a single administrative document for all import and export regimes;

seeking greater compatibility between import and export documentation by harmonizing information requirements. Common sets of documentation between importing and exporting countries would assist processes under which outbound and inbound clearances can be accomplished by a single filing, thus facilitating one-stop border controls. This would also increase customs control as it would help to avoid under-valuation by traders;

use of international standards for the exchange of information, (standard definitions of individual data elements, standard messages, or standard codes);

harmonization of import, transport, and transit requirements regarding dangerous goods, phytosanitary requirements, and veterinary prescriptions, where a variety of national requirements additional to international standards persist; and

greater standardization of the wording of compulsory labelling. Governments should consider whether attaching secondary labels in the language of the importing country would suffice to meet the concerns reflected in the labelling regulations.

3 Official procedures

conducting all official controls in a single location and concentrating them in the hands of customs as the responsible agency;

streamlining procedures to avoid unnecessary checks and double-checks by other regulatory government agencies;
the increased use of communication systems to undertake more effective risk assessment and profiling, allowing the large number of low risk consignments to cross borders with minimal intervention, while focusing customs resources on high-risk consignments;

moving from transaction-based control procedures to audit-based controls, thus eliminating intervention during the movement of goods;

introducing measures that facilitate pre-arrival processing and expedited clearance upon arrival;

carrying out official procedures at traders’ premises instead of at ports;

issuing ‘authorizations’ to compliant traders to make them eligible for minimized ‘green channel’ fast track processing;

flexible means of paying duties, including advance settlement and refund measures;

acceptance of payment guarantees, such as bonds instead of deposits;

introduction of systems that allow the efficient post-release collection of taxes and duties;

self-assessment of trusted traders;

abolition of prior registration procedures for labels, or, at least, establishment of a single centre that processes the applications for such registrations;

standardization of procedures and streamlined operations which increase transparency in formalities and help traders build realistic expectations regarding time and costs involved in border-crossing; and

establishing effective liaison between customs administrations at border-crossing points.

4 Automation and use of information technology

allowing for, or enhancing the use of electronic data submission, thus speeding up filing and processing, and delinking the place of filing from the borders or ports of arrival. This way, errors can be sorted out before goods arrive at borders and delays can be minimized;

use of communication systems to undertake more effective risk assessment, which would help a larger number of goods to move across borders with minimal intervention;

adapt electronic systems that facilitate post-release payment of taxes and duties; and

develop electronic data transmission between exporting and importing administrations.

5 Transparency, predictability and consistency

publication of all laws, regulations, and administrative rulings;

making legislation, procedures and documentation requirements as transparent as possible and defining the scope of information to be
provided to authorities as clearly as possible. This would help avoid misunderstandings, delays, additional costs, longer working time for officers, and limit their discretionary powers;

- greater uniformity in the application of customs laws, regulations, administrative guidelines and procedures;
- specification and publication of all fees and charges levied in order to allow traders to assess more accurately the costs involved in the trading process. Lack of transparency in this area makes procedures particularly susceptible to irregularities;
- application of laws, regulations and requirements only after their publication;
- implementation of the principles of the Arusha Declaration on Customs Integrity;
- re-evaluating penalization for inadvertent mistakes which result from misunderstandings due to inadequate transparency;
- harmonization of national tariffs beyond the 6-digit level of the Harmonized System; and
- establishment of a database which contains the specific customs requirements of all WTO Members.

6 Modernization of border-crossing administration

- improving the educational standards of officials, especially regarding the rules the officials are administering;
- increasing the ratio of professionals relative to other staff;
- extending opening hours of border-crossing authorities and adjusting them to commercial needs; and
- locating agencies which need to cooperate functionally together under one roof. These agencies should conduct official controls in one place;
- increasing cooperation mechanisms between traders (represented for instance by chambers of commerce) and customs. A trust based relationship will improve compliance and allow customs to focus their resources on high-risk consignments;
- seeking financing from international financial institutions and the private sector to overcome infrastructure problems;
- regulation of professional standards of customs brokers and customs warehouses; and
- greater cooperation between customs administrations. Information exchange, common border controls, and the introduction of ‘one-stop’ border controls for immigration and customs should be pursued.2

---

2 WTO Council for Trade in Goods, 21 April 1998, Checklist of issues raised during WTO Trade Facilitation Symposium, Note by the Secretariat.
Improvement of transport and logistics facilities to expand port hinterlands: Policy guidelines