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NOTE

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ABBREVIATIONS AND EXPLANATORY NOTES

Abbreviations

AEO	Authorized Economic Operator
ASEAN	Association of South-East Asian Nations
AU	African Union
BAF	bunkering adjustment factor
bcm	billion cubic metres
bpd	barrels per day
BRIC	Brazil, Russian Federation, India and China
C-TPAT	United States Customs Trade Partnership Against Terrorism
CAF	currency adjustment factor
c.i.f.	cost, insurance and freight
CSF	The Special Register of Ships and Shipping Companies of the Canary Islands
CIS	Commonwealth of Independent States
CSR	Special Register of Ships and Shipping Companies of the Canary Islands
DESA	Department of Economic and Social Affairs
DIS	Danish International Register of Shipping
dwt	deadweight tons
ECSA	East Coast of South America
EU	European Union
FDI	foreign direct investment
FEFC	Far East Freight Conference
FEU	40-foot equivalent unit
FIS	French International Ship Register
f.o.b.	free on board
FPSO	Floating Production Storage and Offloading
GDP	gross domestic product
GHG	greenhouse gas
GT	gross tons
ICT	information and communication technology
ICTSI	International Container Terminal Services Inc.
IDE	International Data Exchange
IEA	International Energy Agency
ILO	International Labour Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
ISO	International Organization for Standardization
ISPS Code	International Ship and Port Facility Security Code
ITO	international terminal operator
LNG	liquefied natural gas
LPG	liquefied petroleum gas
LRIT	Long-Range Identification and Tracking System
LSCI	Liner Shipping Connectivity Index
mbpd	million barrels per day
MCCC	Modernized Community Customs Code
MEPC	Marine Environment Protection Committee
MSC	Maritime Safety Committee (IMO)
mtoe	million tons oil equivalent
n.a.	not available

NAFTA	North American Free Trade Agreement
NCSA	North Coast South America
n.e.s.	not elsewhere specified
NIS	Norwegian International Ship Register
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
SITC	Standard International Trade Classification
SOLAS Convention	International Convention for the Safety of Life at Sea
TEU	20-foot equivalent unit
THC	Terminal Handling Charges
TNC	transnational corporation
ULCC	ultra-large crude carrier
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VLCC	very large crude carrier
VLOC	very large ore carrier
VLOO	very large ore oiler
WS	Worldscale
WCO	World Customs Organization
WCSA	West Coast of South America
WTO	World Trade Organization

Explanatory notes

- All references to dollars ($) are to United States dollars, unless otherwise stated.
- Unless otherwise stated, “ton” means metric ton (1,000 kg) and “mile” means nautical mile.
- Because of rounding, details and percentages presented in tables do not necessarily add up to the totals.
- Two dots (..) indicate that data are not available or are not separately reported.
- A hyphen (-) signifies that the amount is nil or less than half the unit used.
- In the tables and the text, the term *countries* and *economies* refers to countries, territories or areas.
- Since 2007, the pressentation of countries in the *Review of Maritime Transport* is different from that in previous editions. Since 2007, the new classification is that used by the Statistics Division, Department of Economic and Social Affairs (DESA), of the United Nations, as well as by UNCTAD in the *Handbook of Statistics*. For the purpose of statistical analysis, countries and territories are grouped by economic criteria into three categories which are further divided into geographical regions. The main categories are developed economies, developing economies and transition economies. See annex I for a detailed breakdown of the new groupings. Any comparison with data in pre-2007editions of the *Review* should therefore be handled with care.

Vessel groupings used in the *Review of Maritime Transport*

As in the previous year's *Review*, five vessel groupings have been used throughout most shipping tables in this year's edition. The cut-off point for all tables, based on data from Lloyd's Register – Fairplay, is 100 gross tons (GT), except those tables dealing with ownership, where the cut-off level is 1,000 GT. The groups aggregate 20 principal types of vessel category, as noted below.

Review group	Constituent ship types
Oil tankers	Oil tankers
Bulk carriers	Ore and bulk carriers, ore/bulk/oil carriers
General cargo	Refrigerated cargo, specialized cargo, roll on-roll off (ro-ro) cargo, general cargo (single- and multi-deck), general cargo/passenger
Container ships	Fully cellular
Other ships	Oil/chemical tankers, chemical tankers, other tankers, liquefied gas carriers, passenger ro-ro, passenger, tank barges, general cargo barges, fishing, offshore supply, and all other types
Total all ships	Includes all the above-mentioned vessel types

Approximate vessel size groups referred to in the *Review of Maritime Transport*, according to generally used shipping terminology

Crude oil tankers	
ULCC, double-hull	350,000 dwt plus
ULCC, single hull	320,000 dwt plus
VLCC, double-hull	200,000–349,999 dwt
VLCC, single hull	200,000–319,999 dwt
Suezmax crude tanker	125,000–199,999 dwt
Aframax crude tanker	80,000– 124,999 dwt; moulded breadth > 32.31m
Panamax crude tanker	50,000– 79,999 dwt; moulded breadth < 32.31m
Dry bulk and ore carriers	
Large capesize bulk carrier	150,000 dwt plus
Small capesize bulk carrier	80,000–149,999 dwt; moulded breadth >32.31m
Panamax bulk carrier	55,000–84,999 dwt; moulded breadth < 32.31m
Handymax bulk carrier	35,000–54,999 dwt
Handy-size bulk carrier	10,000–34,999 dwt
Ore/Oil carrier	
VLOO	200,000 dwt
Containerships	
Post-Panamax Containership	moulded breadth >32.31m
Panamax Containership	moulded breadth < 32.31m

Source: Lloyd's Register – Fairplay.

EXECUTIVE SUMMARY

Seaborne trade volumes remain strong, fuelled by growth in emerging dynamic developing countries ……

With over 80 per cent of world merchandise trade by volume being carried by sea, maritime transport remains the backbone supporting international trade and globalization. In 2007, the volume of international seaborne trade reached 8.02 billion tons – a 4.8 per cent increase year-on-year. Indeed, during the past three decades, the annual average growth rate of world seaborne trade is estimated at 3.1 per cent.

Strong demand for maritime transport services was fuelled by growth in the world economy and international merchandise trade. In 2007, the world gross domestic product (GDP) grew at 3.8 per cent while world merchandise exports expanded by 5.5 per cent over the previous year. Growth was driven by emerging developing countries and transition economies which continued to set the pace.

Benefiting from improved terms of trade, exporters of fuel and minerals increased their overall import volumes. Imports expanded at double-digit rates in Latin America (20 per cent), Commonwealth of Independent States (CIS) (18 per cent), as well as Africa and the Middle East (12.5 per cent).

Thus, *despite rising energy prices* and their potential implications for transport costs and trade and despite growing global risks and uncertainties from factors such as soaring non-oil commodity prices, the global credit crunch, a depreciation of the United States dollar, and an unfolding food crisis, the world economy and trade have, so far, shown resilience.

…… and the world fleet continues to expand ……

The world merchant fleet expanded by 7.2 per cent during 2007 to 1.12 billion deadweight tons (dwt) at the beginning of 2008. With historically high demand for shipping capacity, the shipping industry responded by ordering new tonnage, especially in the dry bulk sector. Vessel orders are at their highest level ever, reaching 10,053 ships with a total tonnage of 495 million dwt, including 222 million dwt of dry bulk carriers. The tonnage of dry bulk ships on order at the end of 2007 is 12 times higher than it was in June 2002; since mid-2007, dry bulk orders outstrip those for any other vessel type. This influx of new tonnage into the world fleet over recent years has contributed to the decrease in the average age of the world fleet to 11.8 years.

As of January 2008, nationals of the top 35 shipowning countries together controlled 95.35 per cent of the world fleet, a slight increase over the previous year figure. Greece continues to maintain its predominant position, followed by Japan, Germany, China, and Norway; together, these five countries hold a market share of 54.2 per cent.

By May 2008, the world containership fleet reached approximately 13.3 million TEUs, of which 11.3 million TEUs were on fully cellular containerships. This fleet includes 54 containerships of 9,000 TEU and above, which are operated by five companies: CMA CGM (France), COSCON and CSCL (both from China), Maersk (Denmark) and MSC (Switzerland). Twelve existing ships have a capacity of more than 10,000 TEU; these include eight 12,508 TEU ships, owned and operated by Maersk, and four vessels of 10,000 to 10,062 TEU, owned and operated by COSCON. The total TEU carrying capacity on the gearless cellular containerships, i.e. those vessels which require port facilities to discharge, built in 2007 amounts to 1.18 million TEU, which is 8.5 times larger than the combined geared capacity of 0.14 million TEU that entered the market during the same period.

The rising prices for new ship buildings reflect the continuing high demand, as well as the surge in the price of steel and the costs of local currency inputs if measured in US dollars. The highest increase was recorded for containerships: a 2,500 TEU vessel cost 43.5 per cent more in December 2007 than one year earlier. Dry bulk carriers also recorded high increases, reaching record prices. A 170,000 dwt dry bulk carrier fetched $97 million in December 2007; this is 39 per cent more than a year before, and 2.4 times the price paid in 2000.

…… Containership market remains resilient ……

The dry bulk market has been riding high for the last four years and in 2007 this trend continued, fuelled mainly by buoyant steel production in Asia and the corresponding demand for iron ore. The Baltic Dry Index (BDI) performed spectacularly moving up from 4,421 points in January to end the year at 9,143. The highest level was reached in mid November at 11,039 points. The average Baltic Dry Index for 2007 was 7,276, more than double the 3,239 average for the previous year. The containership market showed its resilience despite the downward pressure resulting from higher fuel costs, a weakening United States dollar, a strengthening Euro and an increased supply of newbuildings coming online.

The first month of 2008 however saw a decline in rates so that year-on-year growth was nominal or marginally negative. The major exception was in the VLCC sector where ships of 200,000 dwt plus climbed from 63 points in January 2007 to a high of 201 in December to fall back to 112 in January 2008. This spectacular rise in freight rates towards the end of the year occurred principally because OPEC raised oil production in November 2007 to take advantage of the high price. Other factors included low stock levels in Europe and the Far East, the start of winter, increased refinery throughput following a heavy autumn maintenance schedule. The time charter earnings for modern VLCCs (Very Large Crude Carriers) averaged $102,000 per day for the first quarter of 2008 compared to $58,900 for the same period in 2007.

…… and the efficiency of the world fleet remains high ……

Operational productivity of the world fleet remained high in 2007, as demonstrated by the key indicators, namely (i) the comparison of cargo generation and fleet ownership, (ii) tons of cargo carried and ton-miles performed per deadweight ton, and (iii) the supply of tonnage in the main shipping market sectors. The global average of tons of cargo carried per dwt of cargo carrying capacity was 7.7; in other words, the average ship was fully loaded 7.7 times during 2007. The ton-miles performed per deadweight reached 31.6. This means that the average dwt of cargo carrying capacity transported one ton of cargo over a distance of 31,600 nautical miles (60,375 km) in 2007 or, 165 km per day. The thousands of ton-miles per dwt of oil tankers decreased from 34.2 in 2006 to 32.5 in 2007, while the corresponding figure for dry bulk carriers increased slightly from 28.8 to 29.5. The productivity of the remaining fleet, including container and general cargo ships, decreased from 36 to 33.1. It was observed that in general containership operators in 2007 tended to reduce the service speeds of their vessels thereby reducing the fleet's productivity while saving money in fuel costs.

World container port capacities continue to grow ……

World container port throughput grew by an estimated 11.7 per cent to reach 485 million TEUs in 2007. Chinese ports accounted for approximately 28.4 per cent of the total world container port throughput. Rail freight traffic for the same period grew by 28 per cent in Saudi Arabia, 12.6 per cent in Viet Nam, 9.4 per cent in India, 7.6 per cent in China, 7.2 per cent in the Russian Federation, and by a mere 1 per cent in both Europe and in the United States.

International rail transport of goods was boosted in 2007, in particular in several of the BRIC countries, caused by demographical development and globalization of trade. In January 2008 the first demonstration block train between Beijing (China) and Hamburg (Germany) was launched carrying out the 10,000 kilometres journey in only 15 days. According to an African Union 2008 report, transport infrastructure developments in Africa were reported to be in need of urgent upgrading, in particular with a need for further market-driven private sector involvement. Global contract logistics is one of the fastest growing segments in the transport and logistics industry. From 2005 to 2006 global contract logistics grew around 10 per cent, with a record growth in Asia-Pacific of 13.1 per cent.

As regards liner shipping connectivity, there is a growing connectivity divide with a widening of the gap between the best and worst connected countries. In 2008, China continued to be the best connected country; approximately 40 per cent of containerships include one or more Chinese ports in their liner shipping itinerary. As regards market concentration, on average, due to mergers and acquisitions, in July 2008 there were 7.7 per cent fewer companies providing services per country than in July 2004. This trend may raise concerns for countries with a low connectivity, as a further decline in the number of service providers may give rise to oligopolistic market structures.

…… and norms and standards for maritime transport continue to be developed ……

In the field of security, efforts to develop, implement and refine relevant legal instruments and standards are ongoing. Key players in this respect include the World Customs Organization (WCO), the European Union (EU), the International Maritime Organization (IMO) and the International Organization for Standardization (ISO). Of particular note are developments regarding the certification and mutual recognition of Authorized Economic Operators (AEOs), both at the EU level and in relation to the implementation of the WCO Framework of Standards to Secure and Facilitate Global Trade (SAFE Framework), which had been adopted in 2005. Environment-related developments include the IMO's continued commitment to making progress in a number of areas. These include measures to reduce air pollution from ships, as well as, increasingly, measures focused on helping to reduce GHG emissions from international shipping. To this end, a dedicated Working Group has been established and it is hoped that an international agreement to control GHG emissions from international shipping may be ready for adoption in 2009. Another important area of IMO's work focuses on enhancing conditions involved in ship breaking by making further progress on the draft text of an International Convention for the Safe and Environmentally Sound Recycling of Ships.

…… the Latin American region enjoys growth in seaborne trade, but the shipping connectivity divide remains a key issue.

The economies in this region experienced a continued growth in GDP per capita of 4.4 per cent during the period from 2003 to 2006. This development to a significant level has been driven by the high demand for natural resources from the Asian economies (especially China and India) and the overall growth of the global economy. With exports increasing on average 8 per cent annually between 2003 to 2006 and imports growing over 10 per cent annually, regional port throughput reached 1.47 billion tons in 2006 putting a significant strain upon port infrastructure. The role of a hub port, has been a main topic of discussion in Latin America over the last decade. With the expansion of the Panama Canal and related port developments, a discussion of potential hub ports has gained new impetus. Ambitious port projects (e.g. Manta, Ecuador; La Union, El Salvador etc.) are driven by high expectations to become regional hubs and to attract logistics industries. A number of Latin American and Caribbean countries have created specific "clusters" of excellence in parts of the maritime industry e.g. the Panamanian flag is flown by 22.6 per cent of the world fleet. The outlook for the region on the whole looks positive with some financial analysts reporting that the region has escaped much of the knock-on effects of the US sub-prime housing market.

Chapter 1

DEVELOPMENTS IN INTERNATIONAL SEABORNE TRADE

This chapter provides an overview of the demand for global maritime transport services as well as a review and forecast of developments in world seaborne trade, against the background of the world economy and global trade. In 2007, the world economy and global merchandise exports grew at a firm rate, albeit more moderately than the previous year. Dynamic emerging developing and transition economies continued to set the pace. Driven by economic and trade growth, firm demand for maritime transport has lead to further growth in seaborne trade. However, rising oil prices due to supply-side constraints and increasing oil demand, the continuing repercussions of the global credit crunch, together with concerns about security and the environment impose a great challenge for maritime seaborne trade and transport in 2008.

A. WORLD ECONOMIC SITUATION AND PROSPECTS

1. World economic growth[1]

In 2007, the world's real GDP grew by 3.8 per cent. Although growth moderated compared to the previous year, the world economy appears, nevertheless, to have withstood some of the challenges facing the international economic environment (see table 1). These challenges include soaring oil and non-oil commodity prices, the sub-prime mortgage lending crisis in the United States and global credit crunch, a depreciation of the United States dollar vis-à-vis other currencies, and an unfolding food crisis as well as increasing environmental challenges such as climate change.

World economic growth was mainly driven by strong performances recorded by emerging developing economies including China.

Growth in developed economies was down from 2.8 per cent in 2006 to 2.5 per cent in 2007. The major drag on these economies was the slowdown in the United States and its effect on Europe and Japan. Developing economies growing at 7.3 per cent and transition economies at 8.4 per cent continued their robust growth in 2007. World economic growth was mainly driven by strong performances recorded by emerging developing economies including China (11.4 per cent) and India (9.7 per cent).

The resilience of developing and transition economies appears to be consistent with the "decoupling" argument whereby growth in developing regions is no longer entirely dependent on the economic performance of advanced economies. The argument proposes that decoupling is taking place due to robust and consistent growth in domestic economies of emerging economic giants such as China and India, and the growing South–South interdependence. It might be argued, however, that "divergence" rather than "decoupling" is taking place. Despite the resilience of

Table 1

World economic growth, 2005–2008[a]

Region/country [b]	2005	2006	2007	2008[c]
WORLD	3.4	3.9	3.8	2.9
Developed economies	2.4	2.8	2.5	1.6
of which:				
United States	3.1	2.9	2.2	1.4
Japan	1.9	2.4	2.1	1.4
European Union (27)	1.8	3.0	2.9	1.9
of which:				
Germany	0.9	2.9	2.5	2.0
France	1.9	2.2	2.1	1.6
Italy	0.0	1.7	1.5	0.5
United Kingdom	1.9	2.8	3.0	1.7
Developing economies	6.6	7.1	7.3	6.5
of which:				
China	10.4	11.1	11.4	10.0
India	8.8	9.2	9.7	7.6
Brazil	3.2	3.7	5.4	4.2
South Africa	5.1	5.4	5.1	4.1
Transition economies	6.6	7.5	8.4	7.4
of which:				
Russian Federation	6.4	6.7	8.1	7.5

Source: UNCTAD Trade and Development Report 2008 based on UNCTAD Handbook of Statistics database; and United Nations, Department of Economic and Social Affairs (UN/DESA), LINK Global Economic Outlook 2008 (May 2008).

[a] Calculations for country aggregates are based on GDP in dollars at base year 2000.

[b] Regions and country groups correspond to those defined in the *UNCTAD Handbook of Statistics 2004*. For 2008, the regions and country groups correspond to those defined in UNCTAD's *Trade Development Report, 2008*.

[c] Forecast.

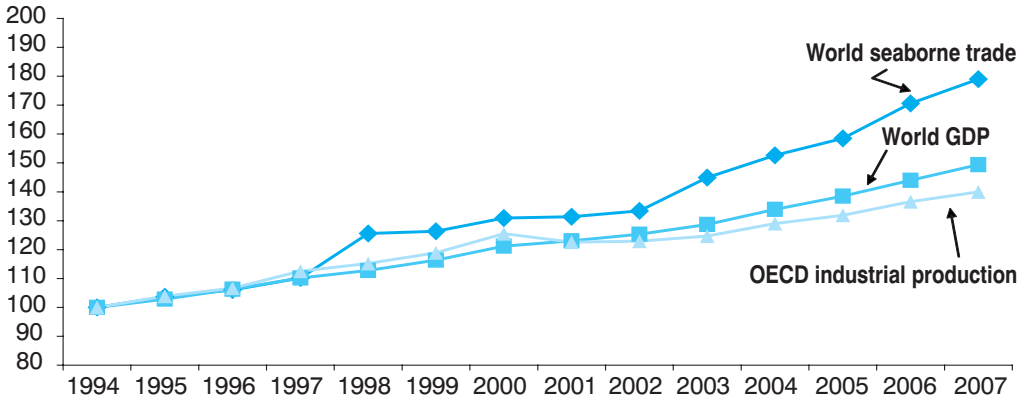
emerging developing economies, economic conditions in developed economies will likely continue to impact other parts of the world due to globalization and international integration. According to the International Monetary Fund (IMF), the turmoil in the credit markets could spread and involve spillover effects including for emerging developing economies. The IMF estimates the aggregate potential losses to nearly $1 trillion and maintains that "what began as a fairly contained deterioration in portions in the United States sub-prime market has metastasized into severe dislocations in broader credit and funding markets that now pose risks to the macroeconomic outlook in the United States and globally".[2]

Figure 1 illustrates the evolving relationship between the growth in world GDP, industrial production in advanced economies and seaborne trade. Since 2000, the world economy has been growing at a faster pace than both the industrial production index of the

Figure 1

Indices for world economic growth (GDP), OECD industrial production and world seaborne trade (volume), 1994–2007

(1994 = 100)



Source: UNCTAD secretariat on the basis of *OECD Main Economic Indicators*, April 2008; UNCTAD *Trade Development Report 2008* and UNCTAD *Review of Maritime Transport*, various issues.

Organisation for Economic Cooperation and Development (OECD) countries and world seaborne trade. This suggests that growth in OECD countries alone would not have been sufficient to sustain recorded growth in world GDP. Thus, growth in non-OECD countries, namely in developing and transition economies, has had a large impact. For comparison purposes, the industrial production index of selected developed and developing countries is presented in figure 2. As shown, between 2000 and 2007, industrial production in India, Brazil and the Russian Federation has been growing at a rapid pace compared with the United States, Japan and the European Union.[3] Industrial production indices in these countries remained practically flat and grew only marginally.

The outlook for 2008 appears to be unfavourable due to the carryover of uncertainties faced in 2007. As noted in table 1, the world economy is expected to slow down, with GDP growth of less than 3.0 per cent. Growth is expected to be moderate in all country groupings, including developing economies and China.

Reflecting the deceleration in world GDP growth and the weaker import demand in the United States, world merchandise exports grew at a slower pace in 2007.

2. Merchandise trade [4]

Recent developments in international trade

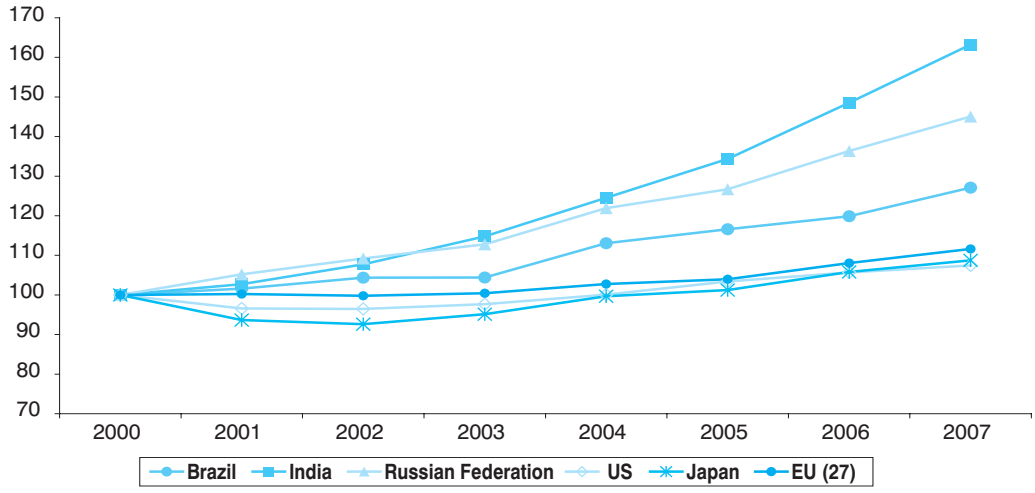
Reflecting the deceleration in world GDP growth and the weaker import demand in the United States, world merchandise exports grew at a slower pace in 2007. Down from 8.5 per cent recorded in 2006, the volume of world merchandise exports increased by 5.5 per cent in 2007 (see table 2). Large variations in trade performances prevailed both within and between regions. Developing and transition economies are driving the growth in world merchandise trade and are gaining a larger global market share. Their contribution to global merchandise exports by value increased from 34 per cent in 1997 to over 40 per cent in 2007. In 2007, 12 countries from both transition economies and developing regions were featured among the world's 30 leading importers and exporters.

Benefiting from improved terms of trade, exporters of fuel and minerals increased their overall import

Figure 2

Industrial Production Index, selected countries, 2000–2007

(2000 = 100)



Source: UNCTAD secretariat on the basis of *OECD Main Economic Indicators*, April 2008.

Table 2

Growth in the volume [a] of merchandise trade, by geographical region, 2005–2007

(Percentages)

Exports			Countries/Regions	Imports		
2005	2006	2007		2005	2006	2007
6.5	8.5	5.5	**WORLD**	6.5	8.0	5.5
6.0	8.5	5.5	**North America**	6.5	6.0	2.5
4.5	7.5	3.0	**European Union**	4.0	7.0	3.0
4.5	1.5	0.5	**Africa and Middle East**	14.5	6.5	12.5
8.0	4.0	5.0	**Latin America**	14.0	15.0	20.0
11.0	13.0	11.5	**Asia**	8.0	8.5	8.5
25.0	22.0	19.5	**China**	11.5	16.5	13.5
3.5	6.0	6.0	**Commonwealth of Independent States**	18.0	21.5	18.0

Source: World Trade Organization (WTO) Press Release, World Trade 2007, Prospects 2008, April 2008.

[a] Trade volumes data are derived from customs values deflated by standard unit values and adjusted price index for electronic goods.

volumes. Imports expanded at double-digit rates in Latin America (20 per cent), the CIS[5] (18 per cent), and Africa and the Middle East (12.5 per cent). Exports from these regions grew at a much slower pace than imports.

Asia, in particular China, continued to power world merchandise trade growth. China's exports and imports grew at 19.5 per cent and 13.5 per cent, respectively. Within Asia, Japan's performance was less impressive, with exports increasing at a slower pace than in 2006 and imports remaining practically unchanged.

North America's merchandise exports grew at the same rate as the world's average, and faster than imports. While United States exports benefited from the depreciation of the dollar, imports into Canada and Mexico were stimulated by the revenue gains generated from exports of fuels and mining products. Elsewhere, the European Union recorded a slowdown in its merchandise trade, with imports and exports, each expanding by 3.0 per cent.

Over recent years, the conjunction of several factors has contributed to the dynamism of the international merchandise trade and altered the landscape of international merchandise trade and maritime transport services. These include increased trade liberalization, advances in information and communication technologies (ICTs) and transport (e.g. larger ship sizes, tracking and tracing technologies), sophisticated logistics services (e.g. third-party and fourth-party logistics) and new global production processes. A new emerging pattern is the increased trade within and among developing regions. China, Brazil, India, Mexico, South Africa, the Republic of Korea and the Russian Federation are propelling South–South trade and cooperation. The share of these countries in world exports was 17 per cent in 1997, 18 per cent in 2000 and 23 per cent in 2007. Examples of concrete actions taken to promote South–South trade cooperation include the India–Brazil-South Africa developmental initiative launched by the Brasilia Declaration in June 2003 and the signature of over 40 trade agreements[6] between China and African countries in 2006.[7]

Although starting from a low base, South–South merchandise trade has assumed an increasingly important role in world trade. The contribution of South–South trade to the total value of world exports increased from 7.7 per cent in 1990 to 12.4 per cent in 2000, and 16.7 per cent in 2006. South–South merchandise trade expanded from $686 billion in 1997 to over $2 trillion in 2007, a three-fold increase in 10 years. The share of intra-developing countries' exports in terms of their total exports increased from 39.5 per cent in 2000 to 45.9 per cent in 2006. There is a great potential for South–South trade to develop further and avoid concentration by extending its geographical reach to areas outside Asia as well as to lower-income countries.

Developments affecting the wider international economic environment have implications for freight transport, in particular maritime transport services. Economic growth, production processes and consumption patterns largely determine demand for these services. As shown in figure 1, growth in world GDP is positively correlated with growth in seaborne merchandise trade.

B. WORLD SEABORNE TRADE

1. Overall seaborne trade

In 2007, international seaborne trade was estimated at 8.02 billion tons of goods loaded, a volume increase of 4.8 per cent over the previous year (see tables 3 and 4, and figure 3). Dry cargo, including bulk, break-bulk and containerized cargo, accounted for the largest share of goods loaded (66.6 per cent) while oil made up the balance. Growth in dry bulk trade is estimated at 5.6 per cent with the five major bulks, fuelled mainly by the needs of China's metal industries, growing even faster at 6.4 per cent. Partly reflecting the limited impact of rising oil prices on oil demand, world shipments of crude and petroleum products are estimated to have grown by 3.3 per cent over the previous year.

In 2007, international seaborne trade was estimated at 8.02 billion tons of goods loaded, a volume increase of 4.8 per cent over the previous year.

Major loading areas were located in developing regions (63.2 per cent) followed by developed economies (33.3 per cent) and transition economies (3.5 per cent). A geographical breakdown of total goods loaded by region underscores Asia's continued predominance, with a share of 40 per cent, followed in descending order by the Americas, Europe, Africa and Oceania (see figure 4). A detailed breakdown by country groupings, regions and types of cargo is presented in table 4 and annex II.

Table 3

Development of international seaborne trade, selected years

(Millions of tons loaded)

Year	Oil	Main bulks[a]	Other dry cargo	Total (all cargoes)
1970	1 442	448	676	2 566
1980	1 871	796	1 037	3 704
1990	1 755	968	1 285	4 008
2000	2 163	1 288	2 533	5 984
2006	2 595	1 876	3 181	7 652
2007[b]	2 681	1 997	3 344	8 022

Source: Estimated by the UNCTAD secretariat on the basis of annex II and data supplied by reporting countries, ports and specialized sources.

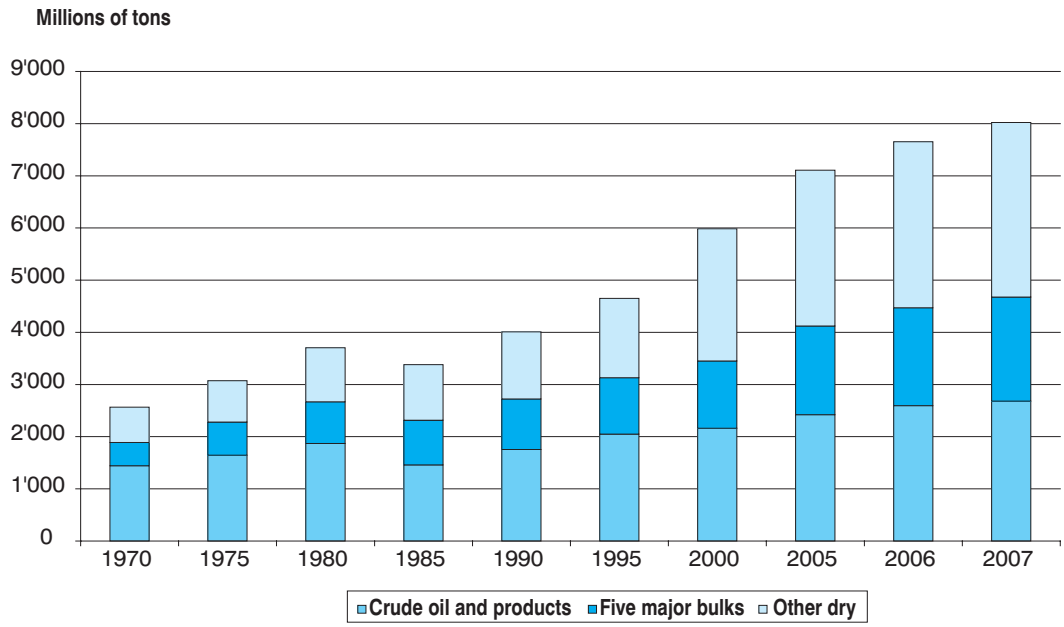
[a] Iron ore, grain, coal, bauxite/alumina and phosphate.

[b] Preliminary.

Figure 3

International seaborne trade for selected years

(Millions of tons loaded)



Source: UNCTAD *Review of Maritime Transport*, various issues.

Table 4

World seaborne trade in 2006 and 2007, by type of cargo and country group

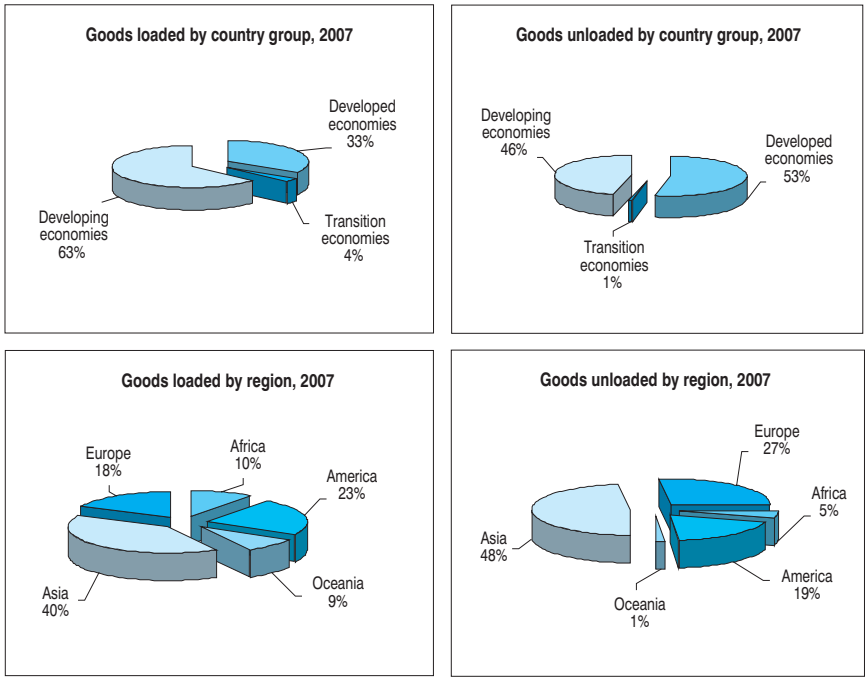
Country group	Year	Goods loaded				Goods unloaded			
		Total	Crude	Products	Dry cargo	Total	Crude	Products	Dry cargo
		Millions of tons							
World	2006	7 652	1 802	792	5 057	7 761	1 929	839	4 993
	2007	8 023	1 866	815	5 341	8 032	1 963	839	5 230
Developed economies	2006	2 621	135	365	2 121	4 174	1 294	509	2 370
	2007	2 672	136	371	2 165	4 263	1 302	507	2 454
Transition economies	2006	258	115	47	95	55	6	3	46
	2007	284	129	51	105	58	6	3	49
Developing economies	2006	4 773	1 552	380	2 841	3 532	629	327	2 576
	2007	5 069	1 602	393	3 074	3 712	655	329	2 728
Africa	2006	780	475	60	246	333	43	34	255
	2007	835	508	63	263	366	45	38	284
America	2006	1 090	272	70	748	341	49	51	241
	2007	1 176	271	73	833	351	52	55	244
Asia	2006	2 897	801	251	1 845	2 846	537	235	2 074
	2007	3 052	819	257	1 976	2 982	558	229	2 194
Oceania	2006	7	4	0	2	12	0	7	6
	2007	7	4	0	2	13	0	7	6
		Percentage share							
World	2006	100.0	23.6	10.3	66.1	100.0	24.9	10.8	64.3
	2007	100.0	23.3	10.1	66.6	100.0	24.4	10.4	65.4
Developed economies	2006	34.2	7.5	46.0	41.9	53.8	67.1	60.7	47.5
	2007	33.3	7.3	45.6	40.5	53.1	66.3	60.5	46.9
Transition economies	2006	3.4	6.4	6.0	1.9	0.7	0.3	0.3	0.9
	2007	3.5	6.9	6.2	2.0	0.7	0.3	0.3	0.9
Developing economies	2006	62.4	86.1	48.0	56.2	45.5	32.6	38.9	51.6
	2007	63.2	85.8	48.2	57.5	46.2	33.3	39.2	52.1
Africa	2006	10.2	26.4	7.5	4.9	4.3	2.2	4.1	5.1
	2007	10.5	27.2	7.7	4.9	4.6	2.3	4.6	5.1
America	2006	14.2	15.1	8.8	14.8	4.4	2.6	6.0	4.8
	2007	14.7	14.5	8.9	15.6	4.4	2.6	6.7	4.7
Asia	2006	37.9	44.4	31.7	36.5	36.7	27.8	28.0	41.5
	2007	38.0	43.9	31.6	37.0	37.1	28.4	27.3	41.9
Oceania	2006	0.1	0.2	0.0	0.0	0.2	0.0	0.8	0.1
	2007	0.1	0.2	0.0	0.0	0.2	0.0	0.8	0.1

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by reporting countries, ports and specialized sources.

Figure 4

World seaborne trade, by country groups and region

(Percentage share in tonnage)



Source: Compiled by the UNCTAD secretariat on the basis of data supplied by reporting countries, ports and specialized sources.

Maritime transport remains the backbone of international trade with over 80 per cent of world merchandise trade by volume being carried by sea. During the past three decades, the annual average growth rate of world seaborne trade is estimated at 3.1 per cent. At this rate, global seaborne trade would be expected to increase by 44 per cent in 2020 and double by 2031, potentially reaching 11.5 billion tons and 16.04 billion tons, respectively.

> … maritime transport will likely be included in any future discussions on global emerging concerns such as security, air pollution and climate change.

Although maritime transport has generally been associated with the carriage of high-volume low-value goods (e.g. iron ore and coal), over recent years the share of low-volume, high-value goods (e.g. manufactured goods) carried by sea has been growing. According to WTO, manufactured goods account for over 70 per cent of world merchandise trade by value. Traded manufactured goods include consumption goods as well as intermediate goods, parts and semi-finished products that have expanded in tandem with intra-company trade, international outsourcing and globalization. As much of this trade is carried in containers, world containerized trade has grown significantly and is expected to grow over the coming years at a pace that will require a doubling of the container handling capacity. In addition to economies of scale associated with larger cargo volumes, the container shipping sector is increasingly investing in larger containerships to further capitalize on these economies and reduce costs. Traditional agricultural bulk cargo (e.g. grain) are increasingly being transported in containers, avoiding the higher freight rates in the bulk market and reflecting the greater economies of scale available to larger containerships. These considerations highlight the economic importance of maritime transport and the potential for further growth in this sector and the expansion of the maritime cargo base to include lower-volume, higher-value goods.

Given its economic importance and in view of its projected growth, maritime transport will likely be

increasingly included in any future discussions on global emerging concerns such as security, air pollution and climate change. In relation to security, maritime transport is already at the centre of attention given the flurry of national as well as international supply chain security initiatives adopted or planned (see chapter 6). Environmental considerations are also gaining momentum in view of sustainable development objectives, the climate change challenge and concerns over growing air pollution. Heavy oil burned in ships' bunkers contains a high level of sulphur. As a result, and fuelled by growth in seaborne trade, shipping is responsible for high levels of sulphur oxide and nitrogen oxide emissions. Environmentalists point to ships' emissions as a major source of air pollution that if unchecked could by 2012 cause over 80,000 premature deaths each year.[8] Work is underway at IMO to address emissions of air pollutants from shipping, including through annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL 1973/78/97). As work is ongoing, maritime transport and its contribution to air pollution are, therefore, expected to remain on the international agenda for years to come (see chapter 6 for additional information on environmental-related initiatives currently under consideration at IMO).

In contrast, greenhouse gas emissions from maritime transport and related climate change implications have so far received limited attention. IMO has recently estimated the total fuel consumption by ships at 369 million tons in 2007 and has projected that, by 2020, consumption will grow by over 30 per cent to reach 486 million tons. These consumption levels result in carbon dioxide (CO_2) emissions from ships totalling 1,120 million tons in 2007 and 1,475 million tons in 2020. These amounts are equivalent to 4 per cent of CO_2 emissions from global fuel combustion.[9] No mandatory instrument has been adopted yet to regulate greenhouse gas emissions from maritime transport. While work on greenhouse gas emissions under IMO is at its preliminary stage, greenhouse gas emissions from international ship bunkers have so far been excluded from the international regulatory instrument dealing with climate change, namely the Kyoto Protocol. With current negotiations of a Post-Kyoto agreement expected to be concluded in December 2009, maritime transport and related energy consumption and greenhouse gas emissions are likely to attract further international attention.

2. World shipments by country groups

Strong consumer demand and rapid industrial expansion in emerging developing economies continue to drive growth in world seaborne trade. The majority of developing and transition economies are dependent on the commodity sector, including fuels, as their largest source of revenue, employment and foreign exchange. Over 100 developing economies, including least developed countries and transition economies, derive more than 40 per cent of their export earnings from the export of primary commodities. This reliance on the commodity sector is reflected in the composition of their seaborne trade.

The structure of developing economies' seaborne imports highlights the growing energy needs in these countries and the expansion of South–South trade. Rapid economic growth and industrial production (e.g. China and India) have spurred growth in oil imports by developing countries. Africa and Latin America are increasingly becoming suppliers of China's primary commodity needs, while China's consumer goods are increasingly exported to Africa and Latin America. In 2006, over 70 per cent of China's exports to Africa were manufactured goods, while around 60 per cent of Africa's exports to China consisted of fuels. During the same year, fuels and other minerals made up 40 per cent of Latin America's exports to China, while over 60 per cent of China's exports to Latin America were manufactured goods. It is expected that both developed and developing economies will continue to be heavily dependent on fossil fuel sources of energy. Coal is already emerging as a supplement and, potentially, an alternative to oil and gas. By far one of the most polluting fossil fuel sources, growth in coal use raises some environmental concerns. Addressing environmental implications of coal-fired power plants, while meeting energy demands of growing developing economies, remains a challenge.

Developed economies

In 2007, developed economies accounted for 33.3 per cent of global goods loaded. Within this grouping, Europe was the major player and dry cargo the main cargo flow, followed by petroleum products (exports) and crude oil (imports). Europe's share of world goods loaded amounted to 14.8 per cent, followed by Australia and New Zealand (8.5 per cent combined), North America (7.9 per cent) and Japan and Israel (2.2 per

cent combined). Europe is the destination of 26.9 per cent of world crude oil shipments, 32.8 per cent of petroleum products and 24.9 per cent of dry cargo. North America accounted for 14.8 per cent of world goods unloaded, followed by Japan and Israel (10.8 per cent), and Australia and New Zealand (1.2 per cent).

Developing economies

In contrast with developed nations, developing economies contribute a larger share of global exports than imports. In 2007, 63.2 per cent of goods loaded in the world originated in developing regions, while 46.2 per cent of world's shipments were unloaded at ports in developing countries. Reflecting their trade structure, ports in developing countries loaded 85.8 per cent of total world crude oil exports and 48.2 per cent of total world exports of petroleum products. In terms of goods unloaded, ports in developing economies accounted for 52.1 per cent of world dry cargo imports, 39.2 per cent of world petroleum products and 33.3 per cent of crude oil. Developing Asia's dominance both as a loading and unloading area is maintained with a share of 38 per cent with respect to goods loaded and 37.1 per cent of goods unloaded. Transition economies accounted for 3.5 per cent of world goods loaded and 0.7 per cent of world goods unloaded. Oil shipments loaded at their ports are estimated to have reached 6.9 per cent of total world oil loaded, reflecting in particular oil shipped from the Black and Baltic Seas.

3. Demand for shipping services

Table 5 provides data on total demand for shipping services measured in ton-miles. In 2007, world seaborne trade was estimated at 32,932 billion ton-miles. This represents an increase of 4.7 per cent over the previous year. With China and others seeking to diversify their energy suppliers by tapping into distant markets, ton-miles for crude oil and oil products increased by 2.5 per cent. The share of crude oil imports into China from sources other than the Middle East and the Russian Federation is growing. For example, China's oil imports from Angola rose from 14 per cent in 2004 to 17 per cent in 2007.

Table 5

World seaborne trade in ton-miles, selected years

(Billions of ton-miles)

Year	Oil			Iron ore	Coal	Grain[a]	Five main dry bulks[b]	Other dry cargoes	World total
	Crude	Products	Crude plus products						
1970	5 597	890	6 487	1 093	481	475	2 049	2 118	10 654
1980	8 385	1 020	9 405	1 613	952	1 087	3 652	3 720	16 777
1990	6 261	1 560	7 821	1 978	1 849	1 073	5 259	4 041	17 121
2000	8 180	2 085	10 265	2 545	2 509	1 244	6 638	6 790	23 693
2001	8 074	2 105	10 179	2 575	2 552	1 322	6 782	6 930	23 891
2002	7 848	2 050	9 898	2 731	2 549	1 241	6 879	7 395	24 172
2003	8 390	2 190	10 580	3 035	2 810	1 273	7 464	7 810	25 854
2004	8 795	2 305	11 100	3 444	2 960	1 350	8 139	8 335	27 574
2005	9 239	2 510	11 749	3 918	3 113	1 686	9 119	8 730	29 598
2006	9 495	2 635	12 130	4 192	3 540	1 822	9 976	9 341	31 447
2007	9 685	2 755	12 440	4 790	3 750	1 857	10 827	9 665	32 932

Source: Fearnleys *Review*, various issues.

[a] Includes wheat, maize, barley, oats, rye, sorghum and soya beans.

[b] Includes iron ore, coal, grain, bauxite/alumina and phosphate.

For all dry cargoes, ton-miles increased by 6.1 per cent with ton-miles for the five major dry bulks growing even faster (8.5 per cent). For the remaining dry cargoes (minor bulks and liner cargoes), ton-miles expanded by 3.5 per cent. Ton-miles for dry bulk cargoes may be expected to continue to grow with China's iron ore needs being increasingly met by new suppliers such as Latin America.

Energy and primary commodity needs of emerging developing economies are on the rise. Some emerging countries have even evolved from being net exporters to net importers of certain primary commodities. For many of these countries, it may be necessary to find new suppliers in distant locations, thus increasing the ton-miles. Additionally, policies aimed at enhancing energy security and combating climate change may contribute to reshaping global trade patterns, suppliers' distribution and distances travelled. Examples of measures that might have a bearing on shipping include:

Some emerging countries have even evolved from being net exporters to net importers of certain primary commodities.

the United States Energy Independence and Security Act of 2007, which aims at helping reduce America's dependence on oil by increasing the supply of alternative fuel sources and reducing the demand for oil; and

the European Commission proposal for Climate Action, which includes a directive that sets, by 2020, an overall binding target for the European Union of 20 per cent renewable energy and a 10 per cent minimum target for the market share of biofuels.

Such policies may lead to increased trade in non-conventional fossil fuels as well as biofuels and their production inputs (e.g. corn). Trade in biofuels and non-conventional fossil fuels could also have implications for the composition of the world fleet, in particular the tanker and handymax market segments. It could also impact on routes as new infrastructure is developed to handle the potential growth in non-traditional fuel sources.

C. SECTORS OF WORLD SEABORNE TRADE

In addition to the supply-side factors (e.g. fleet, transport infrastructure and cargo availability), the performance of seaborne trade is dictated by demand-side considerations such as the level of development (e.g. mature, emerging or growing economies), the structure of the economy (e.g. services economy, industrial or agricultural-based economies), the political and regulatory framework (e.g. trade liberalization and regional integration) as well as unforeseen events (e.g. weather, strikes and political unrest). The following section reviews some developments affecting seaborne trade in 2007.

1. Seaborne trade in crude oil and petroleum products[10]

General developments affecting oil seaborne trade

A number of developments affected the oil sector in 2007. These included the depreciation of the United States dollar, geopolitical risks in production and exporting areas, extreme weather events, refinery capacity limitations as well as rigid OPEC production quotas.[11] A major development, however, has been the relentless rise of oil prices, which continued into 2008. For example, the spot price of a barrel of Brent averaged $72.54 per barrel (pb) during the year but reached $96.68 pb in November. By the end of 2007, prices had increased by more than 60 per cent as compared with the start of the year. In 2008, prices hit the $100 pb mark, increased over $145 pb in July before falling to $95.47 in September.[12] Rising oil prices in 2007 and 2008 have been driven by a combination of factors, including fluctuating strategic oil stock levels, geopolitical tensions and adverse weather conditions. The "speculation effect" has also been referred to by some observers as a contributing factor to the record high oil prices. The weakness of the United States dollar and the volatility in international financial markets have generated interest in commodities, including oil, which is primarily priced in dollars and is perceived as an effective protection against dollar weakness.

A more fundamental reason explaining the steady rise in oil prices observed over the past few years relates to supply and demand pressures. Fuelled by population expansion and economic growth in emerging developing economies, growth in oil demand has been matched by slower growth in supply. Oil supply is constrained by the availability of the oil reserves, investment requirements, the affordability of oil production and the lag between the time an oil field is discovered and the time oil is actually produced. Another structural

constraint is the finite amount of non-renewable fossil fuels and the prospect of production growth reaching a peak and declining thereafter. The proposition that global oil production has already reached its peak or is about to do so within few years ("peak oil") is increasingly gaining ground, and similar propositions are emerging regarding other fossil fuel sources, such as "peak gas" and "peak coal", in recognition of the finite nature of all fossil fuels.[13] The most common measure of the adequacy of proved reserves relative to annual production is the reserve-to-production ratio, which describes the number of years of remaining production from current proved reserves at current production rates. For the past 25 years, the United States ratio has been between 9 and 12 years, while the major oil-producing countries of OPEC have maintained ratios of 20 to 100 years.[14] Based on data on world energy, proved reserves and production levels at the end of 2007,[15] and assuming that the world's oil production recorded in 2007 continues at the same level into the future, oil is expected to last 41.6 years, while natural gas and coal will respectively last 60.3 years and 133 years. Many geologists and oil experts are of the view that oil production has already reached its maximum and has therefore started to decline.[16]

In 2007, OECD and OPEC accounted for 66.1 per cent of world crude oil production.

The International Energy Agency (IEA) *World Energy Outlook 2007* (WEO), projects the world's primary energy needs in the reference scenario (i.e. assuming that no new policies are adopted), to grow by 55 per cent between 2005 and 2030. China and India are expected to account for 45 per cent of this growth, with much of the additional demand likely to be met by increased imports. To meet the projected global demand in 2030, about $22 trillion of infrastructure-related investments (e.g. offshore rigs, pipelines, refineries and pump units) are needed. While rising prices could lead to substituting oil by coal and non-convention fossil fuels, they also have the potential to provide an incentive to undertake the requisite investments in energy-related infrastructure, technology and alternative energy. Investing in alternative energy sources including biofuels can have ripple effects for other sectors such as agricultural products and their trade.

To sum up, rising oil prices, supply-side constraints and increasing demand pose a great challenge for global trade, as well as maritime seaborne trade and transport. Section D (see page 25) of the present chapter takes up the issue of the potential impact of rising fuel costs on maritime transport and assesses some of the possible ramifications for trade and its geography.

Oil production and consumption

In 2007, global oil production[17] measured in million barrels per day (mbpd) decreased by 0.2 per cent to reach 81.5 mbpd. Despite supply-side constraints and rising oil prices, oil consumption[18] did not contract but instead outstripped oil production. Firm oil demand partly reflects, with respect to OECD, the high price inelasticity of transportation fuels, especially in North America, as well as the heating needs and electricity requirements of other OECD members. In non-OECD regions, especially in emerging developing economies, oil demand is mainly driven by economic growth.

Oil supply is concentrated in Western Asia, transition economies, North America and Africa. In 2007, OECD and OPEC accounted for 66.1 per cent of world crude oil production. Production in OPEC countries fell by 1.2 per cent, leading to a slight drop in the group's market share (43 per cent in 2007 against 43.5 per cent in 2006). During the same year, production in OECD countries also declined by 1.4 per cent, while market share fell from 23.8 per cent in 2006 to 23 per cent in 2007 (see figure 5).

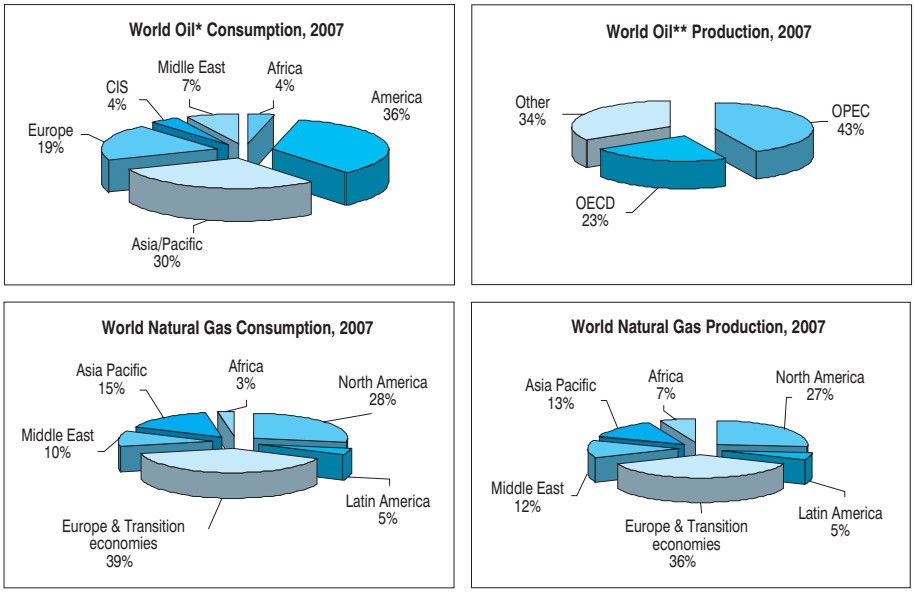
OPEC members

In 2007, Angola, Iraq, the Islamic Republic of Iran, Qatar and the Libyan Arab Jamahiriya increased production, while the remaining OPEC members recorded a drop. Production was constrained by, among other things, OPEC's implementation of the 500,000 bpd cut in February 2007. The world's largest oil producer, Saudi Arabia, accounted for 12.8 per cent of total world production in 2007 and remained the main producer within OPEC, with a share of 29.3 per cent. Other major producers within the group included the Islamic Republic of Iran (12.6 per cent) and the United Arab Emirates (8.1 per cent). The share of OPEC members outside Western Asia and Africa (Indonesia and the Bolivarian Republic of Venezuela) dropped from 11.4 per cent in 2006 to 10.8 per cent in 2007. African members increased their share from 17.1 per cent in 2007

Figure 5

Oil and natural gas: major producers and consumers, 2007

(Percentages)



Source: UNCTAD secretariat on the basis of data published in BP *Statistical Review of World Energy*, June 2008.

* Includes inland demand, international aviation, marine bunkers, refinery fuel and loss, as well as fuel ethanol and biodiesel.

** Includes crude oil, shale oil, oil sands and NGLs (the liquid content of natural gas where this is recovered separately). Excludes liquid fuels from other sources such as biomass and coal derivatives.

to 22 per cent in 2007, reflecting, in part, the contribution of Angola, who joined OPEC in December 2006, the first addition to OPEC's membership since the 1970s.

OECD members

In 2007, North America remained the main crude oil producer among OECD members, with a share of 71.3 per cent. The United States, which accounted for more than one third OECD's oil production, increased its output. In 2007, production in the 27 European Union countries decreased by 1.1 per cent, reflecting the unchanged production level in the United Kingdom and the 7.7 per cent drop in Norway's production. Such reduction could be attributed, among other factors, to the maintenance-related temporary production shutdown at the Kvitebjoern condensate field in the North Sea. Elsewhere, the 2007 cyclones off the coast of north-west Australia, which caused a production shutdown of about 175,000 bpd of offshore crude oil, seemed to have had limited impact on Australia's production, which increased by 1.8 per cent.

Other producers

In 2007, the total production of non-OPEC and non-OECD countries, including the Russian Federation, China and Brazil, increased by 1.9 per cent over the previous year. With a total of 27.1 mbpd, the market share of these countries increased from 32.6 per cent in 2006 to 33.3 per cent in 2007. The Russian Federation, the world's second-largest producer, increased production by 2.2 per cent to reach about 10 mbpd. Other producers are reported to have either decreased (e.g. China and Argentina) or only marginally increased (Brazil and India) their production levels.

Refinery developments

Total throughput of world refineries reached about 75.5 mbpd in 2007. Over half of the world's output is produced in OECD countries' refineries**.** This share marginally decreased over the past few years, reflecting the challenge facing refinery capacity expansion in these regions due to, inter alia, environmental restrictions and the general public's resistance to refinery expansion.

In 2007, Europe and transition economies were the largest producers, with a combined production of 20.8 mbpd. The next largest contributor to world refineries' output was North America, with a production of 18.4 mbpd. These amounted to world refinery market shares of 27.6 per cent for Europe and the transition economies, and 24.4 per cent for North America. Emerging developing economies are increasingly investing in new refinery capacity. In the Middle East, plans to upgrade existing refineries and build new units are being drawn. At the start of 2008, 180 projects for increasing refinery capacity and 50 projects for new refineries were being considered.[19] Elsewhere, refinery capacities are also expanding. Worth noting is the excess refinery capacity of India, which includes a number of terminals dedicated to handling exports.

Crude oil shipments

In 2007, the share of tanker trade in the total world seaborne trade amounted to 33.4 per cent. World shipments of tanker cargoes reached 2.68 billion tons, of which more than two thirds were crude oil. During the same year, crude oil seaborne shipments increased by an estimated 3.5 per cent, to reach 1.86 billion tons (see table 4). Major loading areas are mainly located in developing regions, with Western Asia topping the list (726.7 million tons). Other loading areas include Western Africa (238.6 million tons), Northern Africa (139.6 million tons), the Caribbean and Central America (119.8 million tons), South America's northern and eastern seaboards and Central Africa (117.4 million tons each). Major unloading areas are located in developed regions, including Europe (528.4 million tons loaded), North America (534.4 million tons) and Japan (211.5 million tons). Major unloading developing regions included Southern and Eastern Asia, with 424.8 million tons and South-Eastern Asia, with 95.8 million tons, reflecting growing energy requirements in developing Asia, and an evolving intraregional South–South trade.

World shipments of tanker cargoes reached 2.68 billion tons, of which more than two thirds were crude oil.

Shipments of petroleum products

In 2007, world shipments of petroleum products are estimated to have increased by 2.8 per cent to reach 814.7 million tons. In general, shipments of products are affected by the global refinery capacity, the driving season in the United States (i.e. an increase in motor vehicle use between May and September) as well as the weather conditions, which impact on seasonal fuel consumption. In 2007, developed regions accounted for 60.4 per cent of world product imports, while developing and transition economies made up the balance. In addition to seasonal factors (i.e. heating and driving season), as well as structural (i.e. a decision to specialize in producing particular products and importing others, maintenance requirements) and strategic factors (stock building), demand for petroleum products is dictated by the wider international environment, including the performance of the world economy. Nevertheless, demand for petroleum products remains subject to unforeseen events, including natural disasters and weather-related incidents. For example, the earthquake in Japan at the end of summer 2007 disrupted the activities of a large nuclear reactor, leading to an increased demand for oil and gas imports.

Natural gas production and consumption

In 2007, world production of natural gas expanded by 2.4 per cent over the previous year, taking the total to 2,940 billion cubic metres (bcm). Expressed in million tons oil equivalent (mtoe), total production amounted to 2,654. The Russian Federation remained the world's largest producer, with a market share of 20.6 per cent, followed by the United States, with a world share of 18.6 per cent. Other producers included Canada (6.2 per cent), the Islamic Republic of Iran (3.8 per cent), Norway (3 per cent), Algeria (2.8 per cent), China (2.3 per cent), Indonesia (2.2 per cent) and Malaysia (2 per cent) (see figure 5).

In 2007, world natural gas consumption increased by 3.1 per cent to reach 2,922 bcm or 2,638 mtoe. The

United States and the Russian Federation were the main natural gas consumers, with their shares in world total consumption amounting to 22.3 per cent and 15 per cent, respectively. Other major consumers included the Islamic Republic of Iran (3.8 per cent), Canada (3.2 per cent), Japan and the United Kingdom (3.1 per cent each).

Liquefied natural gas shipments

Liquefied natural gas (LNG) shipments are estimated to have increased by 7.3 per cent between 2006 and 2007 to reach 226.4 bcm, with growth being mainly driven by the additional capacity provided by liquefaction and purification facilities that started up in 2006 as well as those that were completed in 2007 (e.g. Nigeria and Equatorial Guinea). Major LNG importers included a mix of developed and developing countries, namely Japan, the Republic of Korea, the United States, Spain, France and India. Main LNG exporters are located in developing regions, with Qatar – the world largest exporter – accounting for 17 per cent of world natural gas exports. Other exporters included Malaysia (13.1 per cent), Indonesia (12.2 per cent), Algeria (10.9 per cent), Nigeria (9.3 per cent), Australia (9 per cent), and Trinidad and Tobago (8 per cent). Other smaller players were Egypt, Oman and Brunei Darussalam. Together, Japan and the Republic of Korea accounted for over half the world natural gas imports. Other major natural gas importers in 2007 included Spain, the United States, France, and Taiwan Province of China.

Liquefied natural gas (LNG) shipments are estimated to have increased by 7.3 per cent between 2006 and 2007.

LNG trade is set to grow. Capacity expansion plans are proliferating, with projects spanning Qatar, Nigeria, Australia, Trinidad, the Russian Federation, Yemen and Peru. In preparation for the additional supply resulting from these projects, many countries and regions – including the United States, Canada, Europe, South America and Asia – have taken steps to boost investments in the development of import terminals. A separate development worth noting is the recently concluded agreement between the Russian Federation natural gas monopoly Gazprom and the French group Total. The agreement gives Total a share of 25 per cent in the project involving the Russian Federation's Shtokman natural gas field in the Barents Sea. The Shtokman field is reported to be one of the world's largest undeveloped natural gas fields, and is estimated to hold 130 trillion cubic feet. Phase 1 of the Shtokman project is expected to become operational in 2013, supplying 835 billion cubic feet of natural gas per year. The intent is to export LNG to Europe via pipeline and to North America via tanker, suggesting a scope for further growth in the LNG trade and demand for specialized LNG carrying capacity. Over the past few years, LNG carriers have almost doubled in size, with the Marshall Islands-registered *Al Gattara* being the largest LNG carrier in the world.

Metal industries are key to the development of emerging and maturing economies.

2. Dry cargo shipments[20]

General developments

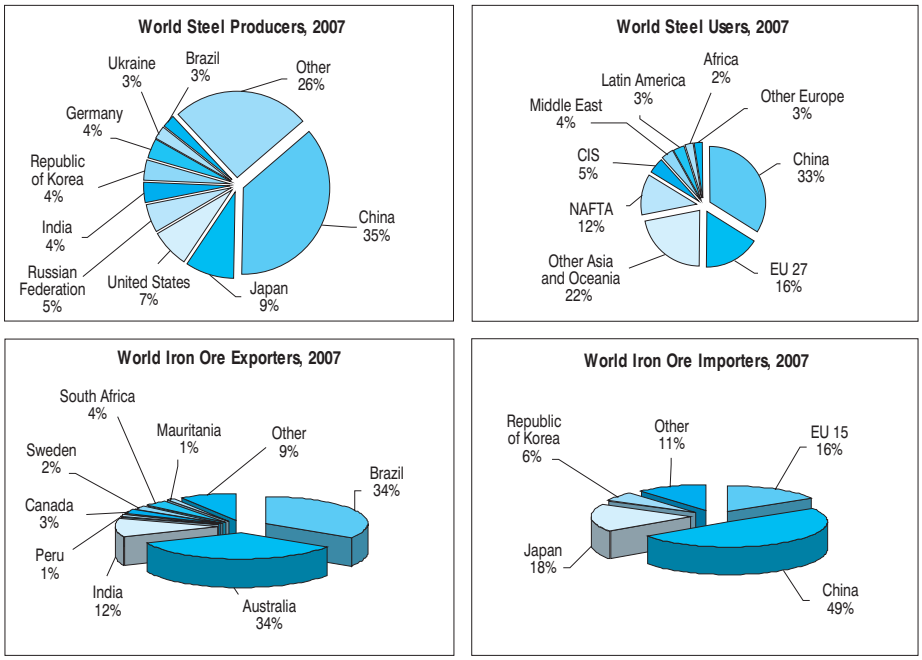
In 2007, dry cargo shipments continued to grow at a firm rate (5.6 per cent over the previous year) to reach 5.34 billion tons. These shipments accounted for 66.6 per cent of total world goods loaded. Trade in the major dry bulks (iron ore, coal, grains, bauxite/alumina and rock phosphate) was estimated at 2.0 billion tons. The difference was made up of minor bulks and liner cargoes, which together were estimated at 3.34 billion tons. Figures 6 (a) and (b) present an overview of major players involved in the production, consumption and trade of some major dry bulks.

Demand for dry bulk commodities is driven, inter alia, by industrial production and growth requirements. Metal industries are key to the development of emerging and maturing economies, whose economic growth rests heavily on the availability of steel, iron ore, coal and other minerals. Containerized traffic is also a major driver of growth in the dry bulk trade. Strong growth in container trade is fuelled by increased demand for consumer goods in developing regions, growth in intra-company trade and production inputs (parts and semi-finished goods) and increasing containerization of some traditional agricultural bulks. Against this background, the following section presents some of the main developments that affected the maritime dry cargo segment in 2007.

Figure 6 (a)

Major bulks (steel and iron ore): producers, consumers and traders in 2007

(World market share in percentages)



Source: UNCTAD secretariat on the basis of data supplied in Clarkson Research Services, *Shipping Review & Outlook*, spring 2008, *Dry Bulk Trade Outlook*, May 2008, International Iron and Steel Institute (IISI), IISI Short Range Outlook, April 2008.

World crude steel production

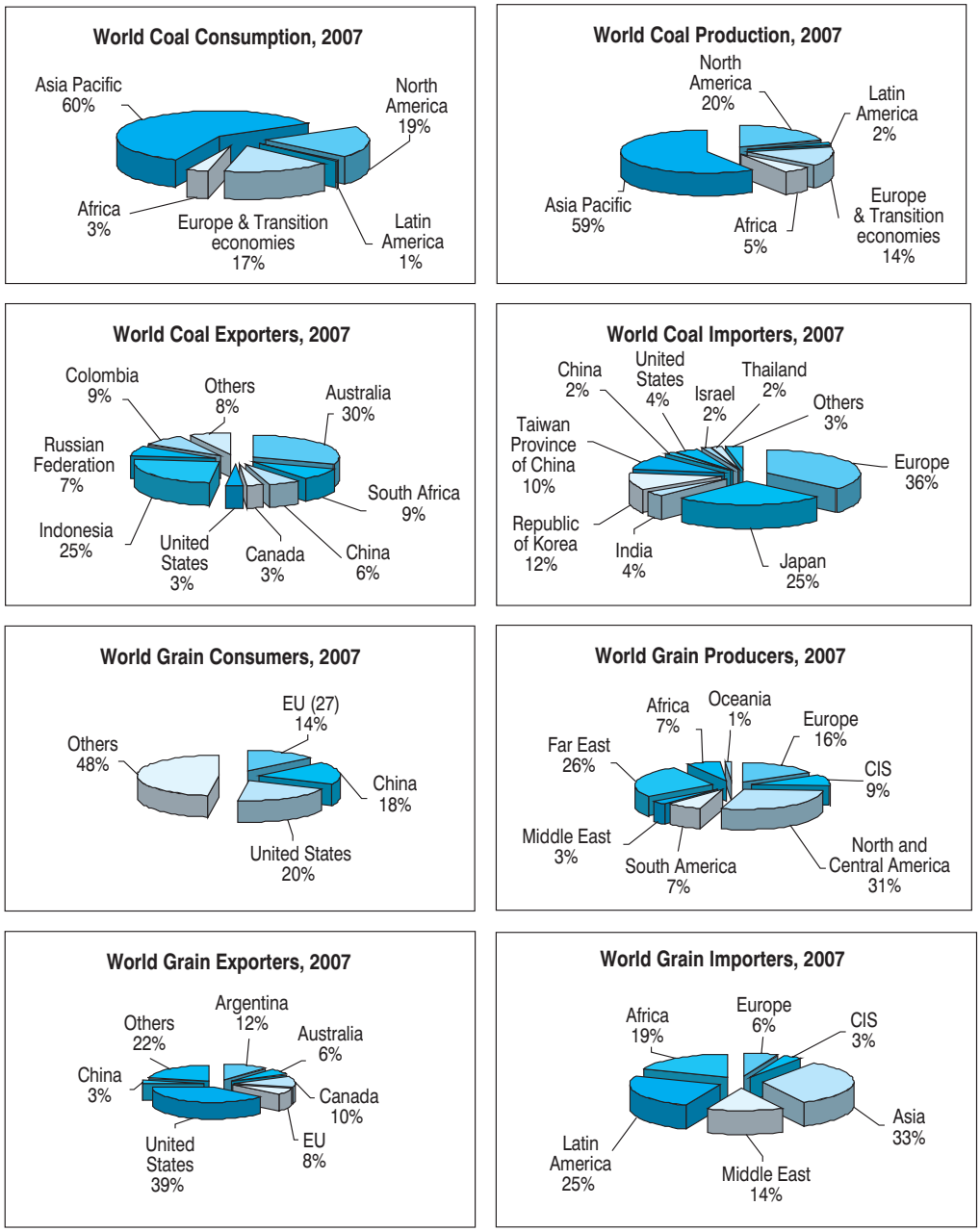
For the fourth consecutive year, world crude steel production passed the 1 billion tons mark in 2007. An annual increase of 7.5 per cent carried production to 1.3 billion tons. Asia accounted for more than half of the world's total production. Excluding China, the world crude steel production would have only grown by 3.3 per cent. However, with an output of 489 million tons in 2007, China remained the world's largest producer, with a world market share of 35 per cent in 2007 (33.8 per cent in 2006). Japan, the second-largest crude steel producer, increased its output by 3.4 per cent to reach 120.2 million tons. While crude steel production increased only marginally in Africa and North America, growth in the Middle East (6.7 per cent), South America (6.5 per cent) and Europe (2.8 per cent) benefited global crude steel production. Positive performances included those by Turkey (10.7 per cent), Brazil (9.4 per cent), India (7.3 per cent), the Republic of Korea (6 per cent), Ukraine (4.6 per cent), the Russian Federation (3.1 per cent) and, to a lesser extent, other producers such as Italy, Spain, the Islamic Republic of Iran, Germany, Canada, Mexico, the United Kingdom and Poland. In contrast with 2006, crude steel production in the United States declined by 1.4 per cent to 97.2 million tons.

Environmental sustainability and corporate social responsibility are increasingly gaining ground among companies, including those in the steel industry. During the United Nations Conference on Climate Change held in Bali in December 2007, the global steel industry, through the International Iron and Steel Institute (IISI), challenged Governments to cooperate with the industry to find new methods for combating climate change. More specifically, IISI members called on Governments to replace cap and trade emission regimes with innovative approaches that would reconcile climate change mitigation objectives with industry growth and efficiency.[21] This development is relevant to the extent that the concept of green and sustainable logistics could

Figure 6 (b)

Major bulks (coal and grain): producers, consumers and traders in 2007

(World market share in percentages)



Source: UNCTAD secretariat on the basis of data supplied in Clarkson Research Services, *Shipping Review & Outlook*, Spring 2008; *Dry Bulk Trade Outlook*, May 2008; The Economist Intelligent Unit, *World commodity forecasts: food, feedstuffs and beverages*, May 2008, International Grains Council and BP *Statistical Review of World Energy*, June 2008.

be further advanced. With end users increasingly examining the level of "greening" by companies along the supply chain, and shippers demanding environmentally sound transportation, joining efforts with maritime transport users like the steel industry could result in co-benefits accruing to both industries. Shipping companies are increasingly incorporating a "triple bottom line" approach in their reporting by quantifying and reporting environmental and human impacts alongside profits. For example, preferential contracting between environmentally sound shipping companies and environmentally conscious users is already emerging. Outside the steel industry, preferential contracting is being used, for example, by IKEA and Wal-Mart, who have developed initiatives to ensure that ocean carriers that handle their business have a satisfactory environmental record.[22]

Shipping companies are increasingly incorporating a "triple bottom line" approach in their reporting by quantifying and reporting environmental and human impacts alongside profits.

World steel consumption

World steel consumption grew by 6.6 per cent in 2007, bringing the total to 1.2 billion tons. While Asia, driven by China, remains the largest world consumer. Consumption growth was also strong in the Middle East and Latin America (12.7 per cent each), CIS countries (13.7 per cent) and non-EU European countries (9.4 per cent). Consumption grew by 10 per cent in Asia and Oceania, with China growing at 14.6 per cent. Steel consumption increased by 3.4 per cent in the 27 European Union countries, 9.4 per cent per cent in other European countries and 8.5 per cent in Africa. The North American Free Trade Agreement NAFTA is the only regional group that recorded a negative growth rate (-9.1 per cent), due to a slowdown in their economies, and in particular that of the United States. As a result, growth in world steel consumption and related trade and transport, have mainly been fuelled by the BRIC countries (Brazil, Russian Federation, India and China).

Iron ore shipments

An increase in steel production stimulates the growth of iron ore shipments, which were estimated at 792 million tons in 2007. All exporters increased their volumes in 2007, albeit at different rates. Together, Australia and Brazil accounted for over two thirds of world iron ore exports. Brazil overtook Australia as the world's largest iron ore exporter and increased its volumes by 11.1 per cent, to reach 269.4 million tons. Exports from Australia amounted to 266.8 million tons, an increase of 7.4 per cent over 2006. The balance of world iron ore exports originated in India (90.1 million tons), South Africa (30.3 million tons), Canada (22.9 million tons), Sweden (19 million tons) and, to a lesser extent, Mauritania and Peru.

With 383.6 million tons unloaded in Chinese ports in 2007, China remained the main destination for world iron ore shipments, reflecting its booming steel production sector. Its imports grew by 17.6 per cent over 2006, and its world market share increased to 48.9 per cent. Other major importers included Japan, with 135.3 million tons (2.3 per cent increase) and Western Europe, with 138.9 6 million tons (2.7 per cent). Lesser importers in Asia – such as the Republic of Korea and Malaysia – recorded increases of respectively, 2.2 and 0.6 million tons. Imports into Taiwan Province of China, Pakistan and Indonesia remained steady, while the Philippines recorded a drop in import volumes (2.2 million tons). Worth noting is the sharp decline in import volumes of the United States (-25 per cent) as well as Latin America (-17.6 per cent). Europe and the Middle East both recorded some growth in iron ore imports, while Africa showed a marginal increase.

To sum up, iron ore trade grew at a healthy rate in 2007, which provided further fuel to global dry cargo trade and demand for dry bulk fleet (see chapter 2). The physical distance between supply and demand (i.e. from Brazil to the Far East and from Australia to the European Union and regions other than Asia) contributed to the 8.5 per cent increase in the ton-miles of the five major dry bulks. While India is also a sizeable exporter, the drop in its exports in 2006 and a newly imposed export tax may limit its presence in the market. In view of the firm global demand for iron ore driven by Asian economies, iron ore shipments are likely to continue to be largely sourced from Brazil, which would increase the ton-miles of major dry bulks.

Coal production and consumption

Against a background of increasing global energy needs, heavy reliance on fossil fuel sources, rising oil prices and growing concerns over energy security, coal is

increasingly being used as a major source of power generation as well as a raw material for steel production. Large and widely dispersed world coal reserves, the reliability of supply routes in comparison with global oil supplies, and the increasing cost of oil and gas are increasingly making coal a safe, easy-to-transport, readily stored and, most importantly, affordable source of energy.

In 2007, world coal production increased by 3.3 per cent to reach 3,135.6 mtoe. China remained the world's largest producer, with a share of 41.1 per cent, followed by the United States (18.7 per cent), Australia (6.9 per cent), South Africa (4.8 per cent), the Russian Federation (4.7 per cent), India (5.8 per cent) and Indonesia (3.4 per cent). In 2007 – reflecting growing energy needs, including power generation requirements in developing economies – coal consumption was the fastest-growing fuel consumption. Growing by 4.5 per cent over 2006, the total world consumption reached 3,177.5 mtoe in 2007, representing 28.6 per cent of the world's primary energy consumption. Major coal consumers included China (41.3 per cent), the United States (18 per cent), India (6.5 per cent), Japan (3.9 per cent) and the Russian Federation (3 per cent).

Together, Indonesia and Australia accounted for over half the world's thermal coal shipments.

According to the IEA's *WEO 2007*, demand for coal is expected to grow by 73 per cent between 2005 and 2030. The main source of growth is the emerging developing economies, particularly China and India. In contrast, coal use in OECD countries grows marginally, with most of the increase coming from the United States. As previously noted, the concern with increased use of coal is the related significant carbon footprint. Coal is a big polluter and contributor to greenhouse gas emissions. Although emissions per capita remain lower, by 2010 China is expected to overtake the United States as the world's largest polluter. The question that remains is how climate change mitigation objectives could be reconciled with growing energy needs and use of coal as a supplement and alternative to oil and gas. In this context, the efficient and rapid deployment of relevant technologies (e.g. clean coal and carbon capture and storage) is necessary to ensure a sustainable use of coal that contributes to ensuring global energy security as well as improving the environmental performance of coal.

… how climate change mitigation objectives could be reconciled with growing energy needs …

World coal shipments

Reflecting a clear trend of increased reliance on coal, coal shipments are estimated to have reached 789.5 million tons in 2007, a volume increase of 6.2 per cent. Thermal coal is estimated at 574 million tons, representing 72.7 per cent of world coal shipments. Coking coal shipments increased for the sixth consecutive year, reaching 215.5 million tons. Thus, despite the infrastructure problems, including congestion and extreme weather conditions that affected Australia, Indonesia and South Africa, trade in coal continued to expand. With current plans for capacity expansion at mines and major ports, including in Australia, the coal trade is set to grow.

Together, Indonesia and Australia accounted for over half the world's thermal coal shipments. Since 2005, Australia has been overtaken by Indonesia as the largest thermal coal exporter. In 2007, Indonesia increased its thermal coal exports by 11.7 per cent to reach 196.1 million tons, while Australia recorded a 2.6 per cent fall. Other major thermal coal exporters in 2007 included South Africa (68.7 million tons), Colombia (66.5 million tons), China (45.3 million tons), the Russian Federation (52.8 million tons) and the Bolivarian Republic of Venezuela (8.3 million tons). With the exception of Australia (-2.6 per cent) and China (-15.6 per cent), all other countries increased their exports, with growth rates ranging from a low of 1.4 per cent in South Africa to a high of 11.4 per cent in Colombia.

In 2007, Australia remained the world's largest coking coal exporter, with a total of 132.4 million tons, an increase of 9.9 per cent over 2006. Other lesser exporters, such as Canada, have also expanded their export volumes. A marked growth was achieved by the United States, with an increase of 24.5 per cent. At the same time, China stood out, recording a drop in export volumes of more than 40 per cent. With increasing domestic demand, China is becoming a net importer of coal. With most of China's coal resources being located in inland provinces and the biggest increase in demand occurring in coastal regions, increased pressure on domestic transportation systems makes imports by sea more competitive and therefore benefit shipping and seaborne trade.

The main destinations of both types of coal shipments (thermal and coking) are Japan and the European Union, which together accounted for more than half the world's coal imports in 2007. In both cases, coal imports are dominated by thermal coal, with a share of 62.9 per cent for Japan and 76.7 per cent for the European Union. In 2007, thermal coal imports surged for the second consecutive year in China (65.6 per cent), Thailand (41.7 per cent), Chile (34.1 per cent) and India (24.3 per cent). Other thermal importers included the Republic of Korea, Taiwan Province of China, the United States and Israel.

The main destination of Australia's coal exports is Asia, where Australia has been competing with China and Indonesia and – more recently – with Viet Nam. With China gradually emerging as a net importer of coal, competition from the region will be limited to Indonesia and Viet Nam. Outside the region, Brazil, South Africa, Colombia, the United States and the Russian Federation compete mainly in the European market. However, demand for South African coal in India and the Asia-Pacific, including Japan and Korea, has been growing. Thus, coal from South Africa could compete with Australia's coal, especially when infrastructural constraints and logistical bottlenecks have been limiting Australia's supply. Ton-miles could also be expected to increase, as South Africa to Asia is a long haul.

Grain market

According to the International Grains Council, grain production, especially wheat, dropped from 1,604 million tons in 2006 to 1,575 million tons in 2007. The tight supply and the increased industrial demand contributed to higher world grain prices in 2007, which accelerated in 2008. Between May 2006 and May 2007, the price of United States wheat exports increased by 63 per cent. During the same period, the prices of maize, soybeans and rice grew by 48 per cent, 71 per cent and over 200 per cent, respectively.

World grain shipments are estimated to have grown at a modest rate of 2.4 per cent reaching 302 million tons in 2007.

The combined effect of weather conditions, increased biofuel production, increased demand for food items that depend on grains (e.g. meat) and rising oil prices (e.g. fertilizers) have contributed to current hikes in food prices. Weather conditions have caused poor harvests in some grain exporting regions, such as the European Union and Ukraine, while droughts have damaged crops in Australia. Biofuel production is competing with food consumption needs since, in addition to being the main food staple in many countries, grains are used as inputs in the production of biofuels. Similarly, increased demand for animal-based products such as meat and dairy leads to increased demand for grain-based animal feeds. Furthermore, rising oil prices increase agricultural production costs (e.g. energy and fertilizers), which ultimately lead to increased food prices. Finally, mirroring the trend in the oil market, the speculation factor has also been blamed for the surge in food staples, including rice and wheat. Increased cost of food is a social and political concern, especially for countries where governmental subsidy systems seemed insufficient to fully address the crisis. Protests in Morocco, Côte d'Ivoire, Mauritania, Senegal, Egypt and India are cases in point.[23]

World grain shipments are estimated to have grown at a modest rate of 2.4 per cent reaching 302 million tons in 2007. Wheat totalled about 103 million tons, while coarse grains such as corn, barley, soybeans, sorghum, oats, rye and millet totalled 199 million tons. In 2007, Canada and the United States accounted for 49 per cent of world grain exports (not including soybeans). Export growth in North America was driven by wheat in Canada and coarse grains in the United States. Argentina increased its share to 11.4 per cent, while Australia and the European Union recorded declines in their export volumes.

In 2007, Asia remained the main unloading area for grain (excluding soybean) with 72.8 million tons, followed by Latin America (54 million tons), Africa (42.4 million tons), the Middle East (31 million tons), Europe (13.6 million tons) and the CIS countries (7 million tons). Japan, by far the largest importer (10.8 per cent share in 2007), reduced its grain imports by 1.2 per cent. China recorded another year of negative growth, with grain imports falling by nearly half. Nevertheless, imports into Asia continued to grow (2.8 per cent), owing to moderate increases recorded by Indonesia, Malaysia and Viet Nam. Imports fell by 4.5 per cent in the Middle East and 10.3 per cent in Africa, while imports into Latin America and Europe recorded positive growth rates of 10.7 per cent and 15.6 per cent, respectively. Growth in import demand from Latin America partly reflects the increasing export revenues of net exporters of fuels and mining products.

Other bulk shipments

Bauxite and alumina are used in the production of aluminium. Bauxite ore is first refined to produce aluminium oxide or alumina, which is then turned into aluminium metal through a smelting process. Together, China, Guinea, Australia, Jamaica, Brazil and India account for more than 80 per cent of the world's bauxite production.

In 2007, world trade of bauxite and alumina is estimated to have reached 82 million tons, almost equally split between the two minerals. During the same year, major loading areas of bauxite included Africa, with a 37.9 per cent market share, followed by the Americas (25.9 per cent). Other exporting regions included Asia (11 per cent) and Australia (24.2 per cent). Main importing areas are Europe and North America, with their respective market shares amounting to 42.6 per cent and 33 per cent. Since 2001, the boom in bauxite trade has been driven by import demand from China, which used to meet nearly its entire bauxite requirements by importing from Indonesia. More recently, however, given the closure of some illegal mines by the Indonesian Government, China has shifted suppliers and imports larger bauxite volumes from India. A booming bauxite trade in China has led to large gains in the handysize market segment and increased bauxite trade ton-miles.

With respect to alumina, Australia is the major exporter, accounting for about half of world exports, while Jamaica contributes more than 12 per cent. Other loading areas span the Mediterranean, Africa and Asia. Europe remains the largest alumina importer, followed by other developed regions, namely North America and Japan.

As noted above, the trade of bauxite and alumina is essential to aluminium production. Demand for aluminium is driven by, inter alia, the home construction, container and packaging, healthcare, aerospace and defence and transport industries. In 2007, production of world consolidated primary aluminium increased by 12.6 per cent, to reach 37.4 million tons. Except for Africa, which recorded a slight fall in production, all regions have posted positive growth. China, however, outpaced other producers, with an impressive expansion rate of 34.8 per cent (14 times the rates of some other producers) to reach 12.6 million tons. Major smelters can be found in various countries, including Australia, Canada, China, India, Jamaica, the United States and Ukraine. Aluminium scrap is recyclable, with high value and low energy needs during the recycling process. Demand for scrap aluminium is likely to increase in the future, in view of growing global concerns about environment sustainability and corporate responsibility. This will potentially open new opportunities for maritime transport of aluminium including scrap aluminium.

Another bulk commodity shipped by sea is phosphate rock, which is mainly used to manufacture phosphate fertilizers and industrial products. The world's largest miners of phosphate rock are China, the United States and Morocco. Lesser producers include Brazil, the Russian Federation, Jordan and Tunisia. In 2007, world trade of rock phosphate totalled 31.5 million tons. Morocco remained the major exporter and the United States the major importer. In 2007, Morocco's exports accounted for almost half of world shipments, of which over two thirds were supplied to the European and American markets. Shipments by lesser exporters in other African countries and the Middle East accounted for 40 per cent of world exports.

The minor dry bulks (manufactures, agribulks, metals and minerals) are estimated to have reached 1.053 billion tons in 2007. The big increase came from some metals and minerals (e.g. scrap), agricultural products (soy meal and oilseed) as well as manufactures (steel products).

Shipments of manufactures, namely steel and forest products, are estimated to have increased by 4 per cent, reaching 446 million tons. Trade in steel products accounted for 60.5 per cent of this total and grew at a faster rate than forest products. Shipments of various metals and minerals (e.g. coke, pig iron, scrap, iron, manganese ore, salt and cement) have also grown, and were estimated at 334 million tons. Increasing global demand for steel and iron ore with resulting higher prices have fuelled the demand for some minor bulks such as ferrous scrap, which is recycled as steel. With new steel production capacity starting up in Turkey, scrap shipments from the United States on the transatlantic route increased. It is estimated that, since 2002, Turkey has imported an average of 12.9 million tons per year of scrap. Other minor dry bulk trades involved agricultural products such as sugar, rice, tapioca and meals (oilseeds, soy and oil-cakes) as well as fertilizers (phosphates, potash, sulphur and urea). Volumes traded in 2007 are estimated at 273 million tons, an increase of 5.4 per cent compared with the previous year.

3. Liner shipments of containerized cargoes[24]

The balance of 2.29 billion tons of dry cargoes is increasingly being carried in containers along three major liner trade routes. The majority of containerized cargo is made up of manufactured goods and high value bulk commodities (e.g. time- and temperature-sensitive cargo).

Since 1990, container trade (in TEUs) is estimated to have increased by a factor of five, which is equivalent to an average annual growth rate of 9.8 per cent.[25] In 2007, global container trade was estimated at 143 million TEUs, a 10.8 per cent increase over 2006. In tonnage terms, container trade is estimated at 1.24 billion tons, accounting for about one quarter of total dry cargo loaded (figure 7).

Since 1990, container trade (in TEUs) is estimated to have increased by a factor of five.

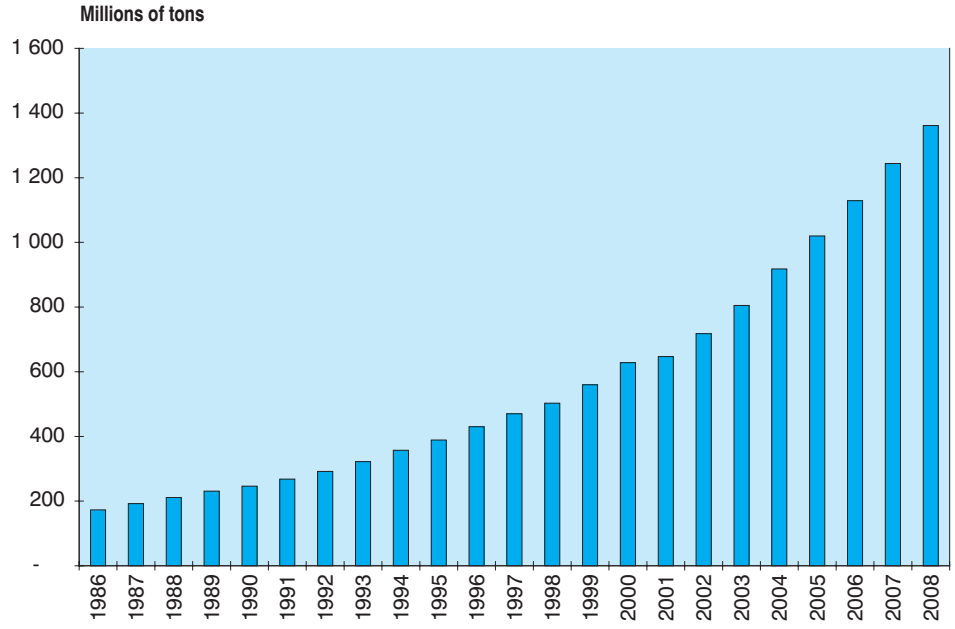
With globalization, increased trade in intermediate goods, growth in consumption and production levels and expanding "containerizable" cargo base (e.g. agricultural cargoes are increasingly transferring to containers given higher freight rates in the bulk sector and economies of scale in the container market), containerized trade is posed to grow significantly and account for an increasingly larger share of world dry cargo. According to Drewry Shipping Consultants, container trade is forecast to double by 2016 to reach 287 million TEUs, and more than double by 2020 to exceed 371 million TEUs. Increased trade volumes would have implications for world container fleet and global port handling capacity, as well as intermodal and hinterland connections.

Spurred by container trade growth, port container handling activity has also expanded (see chapter 5). As shown in figure 8, a given trade movement (import or export) involves more than two port moves. The share of trans-shipments in total port throughput has grown from 10 per cent in 1980 to 27 per cent in 2007. As a result, container port throughput is more than three-fold the volume of trade. An important consideration for liner carriers is to address the imbalances and their implications for empty containers. The larger the imbalance, the greater the empty container incidence and the more significant the

Figure 7

International containerized trade growth, 1986–2008

(Million tons)

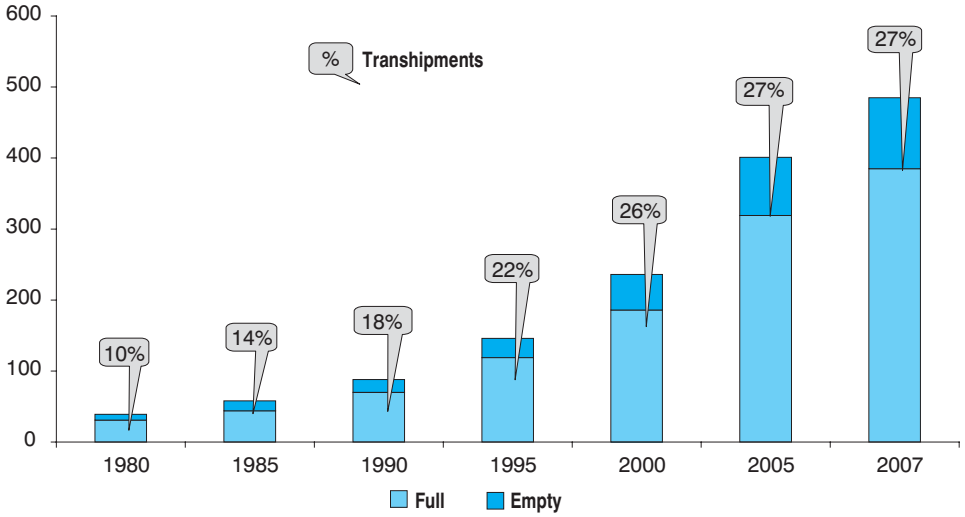


Source: Clarkson Research Services, Shipping Review Database, Spring 2008: 101.

Figure 8

International container port traffic, 1980–2008

(Million TEUs)



Source: UNCTAD based on data provided by Drewry Shipping Consultants in the *Drewry Annual Container Market Review and Forecast 2006/2007*, September 2006.

costs resulting from related operational challenges (e.g. repositioning empty containers, cabotage restrictions and empty mileage).[26]

Containerized trade is carried across three major sea lanes along the East–West axis (see figure 9). These lanes include the transpacific, which links Asia and North America; the transatlantic, between Europe and North America; and the Asia–Europe lane.

In 2007, the Asia–Europe route overtook the transpacific route as the largest containerized trading lane. The Asia–Europe lane totaled 27.7 million TEUs. Cargo flows on the dominant leg from Asia to Europe are estimated at 17.7 million TEUs, representing an increase of 15.5 per cent over 2006. Traffic moving eastward grew by 9.0 per cent, reaching about 10 million TEUs. The drop in United States imports from Asia has been offset by exports to Europe, driven partly by increased demand and a weaker United States dollar. European demand increased not only in the traditional industrial economies of Northern Europe, but also in fast-growing Eastern European countries and transition economies such as the Russian Federation. To cater to this emerging market, the New World Alliance, Hanjin and the United Arab Shipping Company have combined to provide a weekly service to connect Asia and the Black Sea.

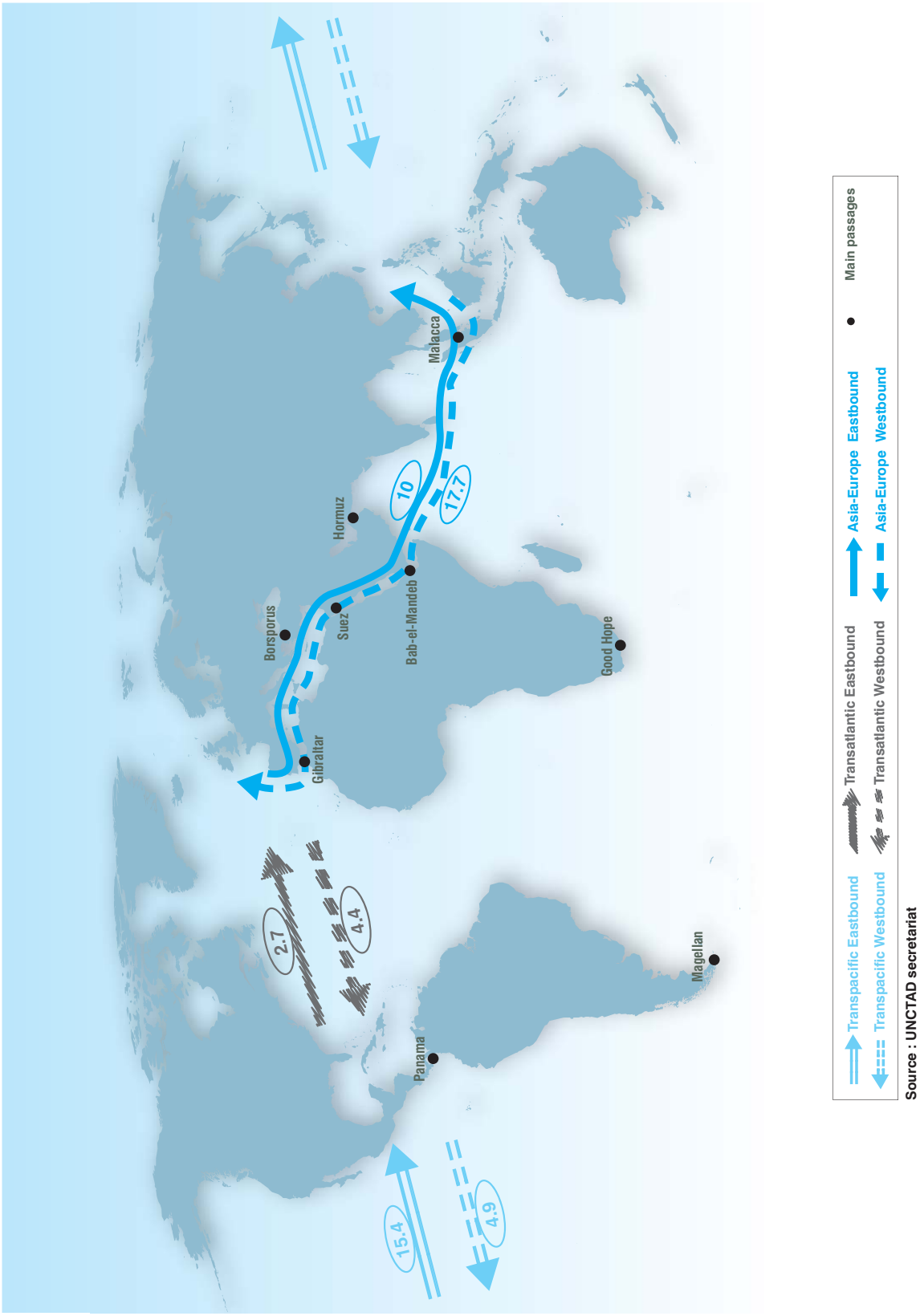
In 2007, the Asia–Europe route overtook the transpacific route as the largest containerized trading lane.

In 2007, container cargo flows in the transpacific route slowed, due to the deceleration of the United States economy and the effect of capacity constraints experienced over recent years on the United States West Coast ports. Congestion on the West Coast led shippers to increasingly seek alternative routes and shift volumes to East Coat ports. Total container traffic on the transpacific route is estimated to have reached 20.23 million TEUs, an increase of 2.7 per cent over the previous year. The dominant leg from Asia to the United States was estimated at 15.4 million TEUs, up 2.8 per cent. Although positive, this growth is dwarfed by the rate achieved in 2006 (up by 12.1 per cent over 2005). The main reason for the decline is the fall in United States import demand, in particular for housing market inputs such as furniture, sanitary, plumbing, heating equipment and mineral manufactures. Despite the economic slowdown in the United States, trade on the backhaul segment from the United States to Asia, grew, albeit at a slightly lower rate (3.05 per cent)

Figure 9

Major maritime trade routes: container traffic, 2007

(Millions of TEUs)



Source : UNCTAD secretariat

than the previous year, reaching 4.8 million TEUs. This growth involved in particular pulp and waste paper, electrical machinery, meat and beverages.

The transatlantic route linking Europe and North America is estimated to have increased by 7.3 per cent, to reach 7.1 million TEUs in 2007. Trade on the dominant westbound leg from Europe to North America increased by 1.6 per cent, taking the total to 4.4 million TEUs. Fueled by a falling United States dollar, exports from the United States increased, resulting in containerized volumes' growth on the eastbound leg. In 2007, a total of 2.7 million TEUs was shipped from North American ports to destinations in Europe, representing an increase of 7.3 per cent.

The transatlantic route linking Europe and North America is estimated to have increased by 7.3 per cent in 2007.

The effects of globalization and changes in global consumption and production patterns are giving rise to new shipping flows and trade patterns. Intra- and interregional connections spanning North–South and South–South trajectories are increasingly on the rise. In 2007, total containerized trade between Africa[27] and Europe, the United States and the Far East, is estimated to have increased by 10.7 per cent, to reach 5.1 million TEUs. Exports from the Far East to Africa were dominated by metal manufacturers, plastics, specialized machinery, paper and textile fibers. During the same year, the Middle East containerized trade flows with the United States, the Far East and Europe totaled 8.7 million TEUs, an increase of 7.1 per cent over 2006. Latin America's container trade with Europe, the Far East and the United States increased by 6.1 per cent, with shipments to the Far East including meat, dairy products and coffee. Containerized flows between Oceania and the Far East, Europe and the United States, increased by 6.9 per cent in 2007 to reach 2.9 million TEUs.

These examples of emerging trade routes highlight the rise in the North–South and South–South trade and underscore the potential for further expansion, both in terms of geographical scope and composition of trade. South–South trade, in particular, warrants further attention, especially with the potential for some conventional bulk commodities and raw materials, the mainstay of developing countries' trade, to become "containerizable".

The fuel cost burden for the shipping sector and therefore for trade, could be significant given the share of fuel costs in a ship's overall costs.

D. RISING OIL PRICES, MARITIME TRANSPORT COSTS AND GEOGRAPHY OF TRADE

The energy mix used in fuelling transportation is dominated by oil. As a result, the recent steep rise in oil prices is raising concerns about the potential implications for transport costs and trade. Some trade observers are calling into question the sustainability of current trade patterns, global production networks and related transportation strategies. It is argued that increased transport costs may reverse globalization and bring to an end the comparative advantage of low cost remote production locations such as China.[28] Others have observed that rising energy prices have yet to affect demand for logistics services.[29]

Diverging views about the potential transport and trade implications of rising energy prices highlight the importance of refraining from drawing premature conclusions and the need for a considered analysis of this important issue, which is global and multidimensional in nature, and is linked to factors with amplifying as well as offsetting effects. Such relevant factors include the availability and access to energy supplies, particularly in the long term, as well as the climate change debate and developments relating to mitigation and adaptation options (e.g. energy efficient technology, use of alternative energy and operational adjustments).

1. Maritime fuel costs and cost-cutting strategies

With over 80 per cent of world merchandise trade by volume[30] estimated to be carried by sea, the impact of ring fuel costs on maritime transport costs is of great relevance. Like other modes, maritime transport relies on oil for its propulsion. Rising oil prices have an immediate effect on ship bunker cost levels as well as carriers' operating costs and management strategies. Reflecting the rising oil prices, by the end of 2007, prices for bunker fuel oil (380 cst) had increased by 73 per cent in Rotterdam, 76 per cent in Singapore and 79 per cent in Los Angeles

compared to the same period during the previous year.[31] According to Germanischer Lloyd, by November 2007, fuel accounted for 63 per cent of the operating costs of an 8,000-TEU containership.[32] According to UNCTAD's estimates, during the same period the share of fuel costs in the total operating costs for a small 3,000 deadweight (dwt) general cargo ship amounted to 40 per cent.[33] The fuel cost burden for the shipping sector and therefore for trade, could be significant given the share of fuel costs in a ship's overall costs.

Governments have no fiscal mechanism in place to help reduce the effect of rising oil prices on shipping companies and on end-users as taxes on fuel used in international maritime transport are almost non-existent.[34] Nevertheless, the maritime industry itself seems to be already responding to rising fuel costs by adopting certain measures. These include in particular operational changes (e.g. redeploying ships, consolidating services, reducing sailing speed, discontinuing less profitable services and improving sailing conditions), an increased emphasis on technological improvements, as well as the introduction of bunker surcharges.

The maritime industry itself seems to be already responding to rising fuel costs by adopting certain measures.

Ship operation: it has been estimated that slowing down a ship's speed by 10 per cent can lead to a 25 per cent reduction in fuel consumption.[35] According to Hapag-Lloyd, one of the top 10 global container companies, although lower speed implies "longer voyages, extra operating costs, charter costs, interest costs and other monetary losses, slowing down still paid off handsomely"[36] Maersk Line, the world largest container carrier, is reported to have suspended its service linking China and Taiwan Province of China with Eastern Mediterranean ports, citing soaring bunker costs.[37] Clearly, this type of response to rising fuel costs is of potential concern, especially for smaller developing economies, that are in any event experiencing relatively higher transport costs, lower liner shipping connectivity and some degree of marginalization in global transportation networks.[38]

Bunker Adjustment Factor charges: while the shipping industry may in some cases be able to absorb rising costs without passing them on to shippers, cost-recovery measures in the form of Bunker Adjustment Factor charges (BAFs) may be introduced, increasing the costs of transportation. In January 2008, Maersk Line announced the introduction of a floating BAF formula arguing that traditional methods of BAF surcharging helped recover only 55 per cent of the extra bunker costs.[39]

Technological solutions: a number of technological solutions which are already available are increasingly being considered to save on fuel costs. These include improved hull design, propulsion and ship engines technologies, alternative energy sources (e.g. wind, electricity) as well as computer-based technology (e.g. weather routing systems).[40] Wind energy is increasingly attracting attention with giant kites being tested on some freighters (e.g. *M.V Beluga SkySails*). It has been reported that by using the SkySails System, a ship's fuel costs may be reduced by 10 per cent to 35 per cent on annual average, depending on wind conditions; under optimal wind conditions, fuel consumption may temporarily be reduced by up to 50 per cent.[41] Some saving on fuel costs could also be achieved by cutting on fuel consumption while at berth. This involves using shore-side electrical power while the ship's main and auxiliary engines are turned off.[42]

Similarly, the logistics sector is responding to rising oil prices by adopting policies based on network optimization and intense re-evaluation of supply-chains. "*Companies are pooling equipment and loads, moving full container and truckloads, and going to alternative transportation modes - especially rail - while trying to optimize inventory by finding the right mix of warehouse and distribution locations. Shippers are trying to ensure that containers are fully loaded, and they're using more cross-docking and intermodal rail.*"[43]

2. Maritime freight rates

In addition to the impact on carriers' operating costs, rising oil prices have potential implications for shippers. Nevertheless, while rising oil prices have immediately translated into higher fuel costs, it is interesting to note that an equivalent rise in ocean freight rates has not yet materialized.[44] Based on data provided by Containerisation International,[45] average freight rates on the three major East-West container shipping routes and bunker prices appear not to always move in tandem or at the same rate. The rise in bunker

prices observed since the first quarter of 2007 is much more pronounced than the rise in average freight rates. Between the first quarter of 2007 and the first quarter of 2008, average bunker prices in Rotterdam rose by 79 per cent, whereas, during the same period, the average freight rates increased by 9 per cent on the Transpacific route, 6 per cent on the Transatlantic and 30 per cent on the Asia-Europe route.[46] For dry bulk trades, freight rate increases have been fuelled by tonnage capacity shortages, infrastructure constraints and logistical bottlenecks (e.g. coal in Australia). Surges in dry bulk freight rates have also been driven by a booming trade of growing dynamic emerging developing countries like China and India.

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The divergent trends observed in the movement of oil prices and transport costs are largely due to non-fuel related factors that determine maritime transport costs. These include geography, time, trade volumes and imbalances, as well as economies of scale, the type and value of the goods traded, insurance and crewing costs, quality of infrastructure, levels of competition, and private sector participation in port operations.[47]

3. Trade and global production networks

Transport costs contribute significantly to shaping the volume, structure and patterns of trade as well countries' comparative advantages and trade competitiveness.[48] However, the long term implications of sustained higher oil prices on transport and trade are not yet fully understood. Future developments in production and trade patterns will depend on whether oil prices continue to rise and the extent to which higher levels are short-lived or sustained (it is suggested that the latter is likely). Other relevant factors include, *inter alia*: (a) the potential for substitution of oil by more affordable alternative sources of energy; (b) the share of transport costs in the overall production costs; (c) whether shifting production closer to the market is cost efficient, i.e. whether transport cost savings outweigh the potential rise in production costs (wage differentials, cost of energy used in production, environmental regulation) and, importantly, (d) the type of goods traded/ transported (e.g. bulk or manufactured), their value, weight, handling requirements.[49]

The differentiated impact of rising transport costs

While bulk trade, including tanker and dry cargo dominates world seaborne trade, containerized trade, a fast growing market segment (growing by a factor of 5 since 1990, at an average annual rate of about 10 per cent), is at the heart of globalized production and trade. Containerized goods are mostly manufactured goods, which tend to have higher value per volume ratios than bulk cargoes - like oil and other commodities - and travel longer distances, as they are sourced more globally. In 2006, the share of manufactured goods exported globally amounted to over 70 per cent of the value of world exports ($8.2 trillion out of a total of $11.5 trillion).[50] Given their higher value, on average, transport costs on ad valorem basis matter less for high value goods than low value raw materials. Therefore, if higher transport cost were to lead to regionalization, lower value manufactured goods (clothing, textile) would likely be much more affected than higher value goods or goods, the production of which involves significant capital or start up costs.

Higher transport costs are of more relevance for bulk cargo.[51] To minimize the incidence of transport costs on low-value/high-volume goods, importers of bulk cargo are more likely to source from nearby providers. For example, oil requirements in the Americas are more likely to be sourced from locations such as South America or Mexico or, in Asia, from neighbouring Asian oil exporting countries.

Cost of shifting production location

While a direct causal link between rising oil prices and a decision to relocate is yet to be established, it is interesting to note that some changes in global production patterns may be taking place. For example, the Swedish manufacturer IKEA is reported to have opened its first factory in the United States in May 2008 to avoid transportation costs.[52] However, some of the reported recent decisions to relocate to neighbouring locations like in the textile sector appear not to be motivated entirely by transport cost considerations. It is often suggested that, in many cases, decision to move production plants to neighbouring locations was the result of more favourable duty treatment (e.g. Mexico

and Central America/United States and Eastern Europe/European Union) and retailers' need to cut inventories in view of uncertain economic times.[53]

Reiterating this argument, a recent study by Drewry using a modeling approach found that labour and production cost differentials, differences in tariff regimes and supply chain responsiveness and agility appear to play a more important role in outsourcing decisions than do transport costs.[54] Short production cycles requiring rapid delivery times and "agile" supply chains are particularly relevant in the context of the growing luxury (fashion) apparel segment; since 2003 this market segment is estimated to have grown globally at about 15 per cent per year.[55] Some reports about offshore production locations losing their competitive edge as a result of rising transport costs remain questionable in view of the emerging new low cost offshore locations like Viet Nam and Bangladesh in the apparel and textile manufacturing sector. In the first quarter of 2008, sales of Vietnamese apparel in the United States market are reported to have increased by 30 per cent compared with the corresponding period of the previous year.[56]

It has also been argued that an outright regionalization in response to sustained higher levels of oil prices may not necessarily be feasible or economically viable. "*It would be difficult to reverse the geographical concentration of production given the magnitude of the scale economies that firms achieve. When a manufacturing plant is relocated to another country or its output is replaced by imports, many of the upper links in the supply chain also transfer to the foreign country as new overseas vendors are found*".[57] Thus moving a production plant would involve moving the related business partnerships (sources of raw materials, producers, carriers, assembly, etc). The booming intra-Asia trade estimated at potentially over 40 million containers (measure in twenty-foot-equivalent units, TEUs) in 2007[58] illustrates the clustering within the region of the various production and supply chain links supporting the Asian manufacturing business. The cost implications of relocating production plants and related clusters could potentially erode any comparative advantages sought in the new locations. A decline in globalization may, however, not be excluded, if rising oil prices result in very large increases in transport costs especially for higher value goods.[59]

… outright regionalization in response to sustained higher level of oil prices may not necessarily be feasible or economically viable.

It is likely that as long as long rising transport costs do no significantly and permanently upset the balance of trade-offs between the various cost headings on the one hand (e.g. transportation, production, distribution, inventory, etc), and reliability, speed and service quality on the other, less radical and more cost effective transport cost mitigation strategies will be considered first. Such strategies would include for example, measures to reduce the handling factor.[60]

Other considerations

In a carbon constrained world, comparative advantages will probably be determined not only by lower production and transportation costs, but also energy intensity, efficiency and CO_2 emissions. Efforts aiming at de-carbonizing include a potential carbon tariff to be applied to imports as a counter-measure against energy subsidies and carbon emissions embedded in exports, including from China. For example, a hypothetical carbon price of $45 per tonne in the United States has been estimated to be equivalent to a 17 per cent tariff on Chinese exports.[61] In this context, the unfolding of current negotiations on a post-Kyoto agreement and the potential binding commitments for CO_2 emission reduction that may arise for both developed and developing countries will likely have a role to play.

Distance alone does not determine the extent to which transport is fuel or carbon efficient. Economies of scale derived from the deployment of larger and more fuel efficient ships on longer trade routes contribute to achieving greater fuel efficiency and related fuel cost savings as well as CO_2 emissions reduction. Reflecting, the economies of size and the fuel efficiency of larger ships trading on longer routes a cargo ship, over 8,000 dwt is estimated to emit 40 per cent less CO_2 than smaller ships (2,000-8,000 dwt).[62] In addition to differences in fuel efficiencies within the shipping sector, there are significant differences between shipping and other modes of transport. It is argued that "*sending a container load of shirts 10,000 miles around the world on a ship with 8,000 other containers uses a great deal less fuel than trucking the same container by road the 2,000 miles from Istanbul to London*".[63] On a per tonne-kilometre basis, shipping remains the most energy efficient and climate friendly mode of transport. For example, it is estimated that, on average, a container ship (3,700 TEU) consumes 77 times less energy than a freight aircraft

(Boeing 747-400), about 7 times less than a heavy truck and about 3 times less than rail. Equally, a ship (3,700 TEU ship) is reported to emit over 40 times less CO_2 than a freight aircraft (Boeing 747-400) and about 4 times and 31 per cent less CO_2 than a heavy truck and rail, respectively.[64] Shipping's fuel and carbon efficiency per unit of weight and distance means that any increase in fuel costs and any cost pressure resulting from climate-led initiatives will likely have less impact on the cost of moving trade by sea compared to other modes of transport. This is particularly relevant when considering the critical nature of shipping for international trade, in particular long haul.

Shipping's fuel and carbon efficiency per unit of weight and distance means that any increase in fuel costs and any cost pressure resulting from climate-led initiatives will likely have less impact on the cost of moving trade by sea compared to other modes of transport.

For some trades, the effect of rising oil prices and transport costs may be somewhat offset by savings that could be derived from a potential global warming induced full year operation of the Northern Sea Route (NSR) and the opening for navigation of the Northwest Passage (NWP). Although no thorough assessment of the feasibility and viability of the NWP as an alternative shipping route is yet available, the shortcuts offered by these new shipping lanes would cut transport costs and create competition with existing routes, such as the Panama Canal.[65]

… rising transport costs are likely to change relative prices between exporters, redefine comparative advantages and reshape the geography of trade.

With oil at $120 a barrel for a full year, the world's oil bill (based on current annual production) will be around 7 per cent of the world's GDP in 2007;[66] at $200 a barrel, this would be equivalent to 11 per cent of global GDP. To put things in perspective, these shares are larger than the potential global economic costs of inaction against the climate change challenge as predicted in 2006 in the Stern Review (estimated at 5 per cent of world GDP, each year).[67] In fact, oil prices at $120 a barrel for a full year would be seven times the costs of mitigating climate change as envisaged in the Stern Review (around 1 per cent of global GDP, each year).[68]

In this context, factoring the notion of depleting fossil fuel sources into relevant policy and regulatory processes is therefore key. Oil-based economies need to address their fossil fuel dependency by taking decisive action; in this context, capitalizing on synergies that may prevail between energy security and climate change mitigation objectives appears to be imperative. Climate-led policies including investment in alternative energy sources, efficiency standards and carbon pricing, are but a few measures which, in addition to climate change mitigation, could lead to a major co-benefit: energy security through reasonable, stable and predictable energy prices and markets.

To sum up, rising oil prices affect carriers' operating costs and have implications for transport services including shipping, freight rate levels and the geography of trade. A shift to local sourcing or neighbouring locations is probably neither automatic nor necessarily cost efficient, fuel saving or climate friendly. Nevertheless, higher transport costs are likely to change relative prices between exporters, redefine comparative advantages and reshape the geography of trade. That being said, further research and analysis is needed to thoroughly investigate the actual implications of higher oil prices on transport, comparative advantages, growth and development. In this context, future work by UNCTAD will focus on obtaining data to measure the impact of oil prices on maritime freight rates, to be able to better assess the impact of increased rates on transport strategies, trade and its geography as well as modal and inter-country trade competitiveness.

Chapter 2

STRUCTURE, OWNERSHIP AND REGISTRATION OF THE WORLD FLEET

This chapter reviews the supply-side dynamics of the world maritime industry. The information and data comprehensively cover the structure, ownership and registration of the world fleet. The chapter also reviews deliveries and demolition of ships, tonnage on order, newbuilding prices and markets for second-hand tonnage. The world merchant fleet expanded by 7.2 per cent during 2007, to 1.12 billion deadweight tons (dwt) at the beginning of 2008. With historically high demand for shipping capacity, the shipping industry responded by ordering new tonnage, especially in the dry bulk sector. Vessel orders are at their highest level ever, reaching 10,053 ships with a total tonnage of 495 million dwt, including 222 million dwt of dry bulk carriers. This represents 28 per cent of merchant fleet by number of vessels over 1,000 GT or, a 44 per cent in terms of volume. The average age of the world fleet decreased to 11.8 years. In container shipping, the share of gearless vessels continued to grow; the total TEU carrying capacity on the gearless cellular containerships built in 2007 amounted to 1.18 million TEUs, 8.5 times larger than the combined geared capacity of 0.14 million TEUs that entered the market during the same period.

As of January 2008, nationals of the top 35 shipowning economies together controlled 95.35 per cent of the world fleet, a further slight increase over the January 2007 figure. Greece continued to be the country with the largest controlled fleet, followed by Japan, Germany, China and Norway; together, these five countries held a market share of 54.2 per cent. Among developing countries, oil exporters tend to control a relatively high share of oil tankers, and large exporters of agricultural commodities and other dry bulks also tend to be host to dry bulk shipping companies; in the case of manufactured goods, there is no significant correlation between trade structure and fleet ownership.

A. STRUCTURE OF THE WORLD FLEET

1. World fleet growth and principal vessel types

Data on the world fleet for 2005–2008 are provided in figure 10 and table 6. At the beginning of 2008, the world merchant fleet reached 1.12 billion deadweight tons (dwt). Year-on-year growth on 1 January 2008 was 7.2 per cent, a gain of 82 million dwt. The tonnage of oil tankers increased by 6.5 per cent and that of bulk carriers by 6.4 per cent. These two types of ships together represent 71.5 per cent of total tonnage, a slight decrease from 72.0 per cent in January 2007. The fleet of general cargo ships increased by 4.5 per cent in 2007; as this growth rate was below the world total growth rate, this category's share of the total world fleet has further declined to 9.4 per cent. The fleet of containerships increased by 16.3 million dwt, or 12.7 per cent, and now represents 12.9 per cent of the total world fleet. This high growth rate reflects the increasing share of trade in manufactured goods, which is further enhanced by its continued containerization.

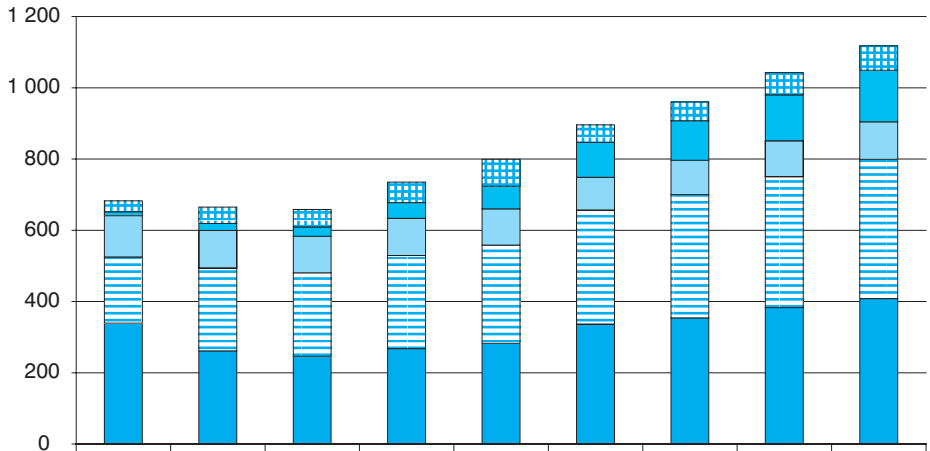
The containership fleet grew by 12.7 per cent – a response to the increasing share of trade in manufactured goods, which is further enhanced by its continued containerization.

In 2008, only 1.1 per cent of the dry bulk fleet (0.4 per cent of the total fleet) are combined ore/bulk/oil carriers, a further decrease from the 1.5 per cent share of one year earlier. In spite of the high fluctuations in vessel charter rates, both for oil

Figure 10

World fleet by principal vessel types, selected years[a]

(Beginning of year figures, millions of dwt)



	1980	1985	1990	1995	2000	2005	2006	2007	2008
Other	31	45	49	58	75	49	53	63	69
Container	11	20	26	44	64	98	111	128	145
General cargo	116	106	103	104	101	92	96	101	105
Dry bulk	186	232	235	262	276	321	346	368	391
Oil Tanker	339	261	246	268	282	336	354	383	408

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Cargo carrying vessels of 100 GT and above.

tankers and for dry bulk carriers, the building cost differential between pure dry bulk carriers and combined carriers still deters investment in the more versatile combined carriers. Among other types of ships, in 2007 there was a continued strong growth of liquefied natural gas carriers (plus 11.5 per cent), reflecting the growing use of LNG in the global energy supply, although the record number of new LNG carriers also raised concerns of short-term overcapacity following delays in the completion of liquefaction plants.

2. The world containership fleet

In terms of deadweight tonnage, 53.9 per cent of the containerized tonnage is registered in the 10 major open and international registries, a slight decrease over the previous year. 27.9 per cent of deadweight tonnage on containerships is registered in developed market economies (down from 28.4 per cent in 2007), and 18.0 per cent in developing economies (up from 17.15 per cent). Among the developing economies, by far the largest share is registered in Asia, which increased its deadweight tonnage by more than one fifth, reaching a 17.6 per cent share (see table 7).

The world fleet of fully cellular containerships continued to expand substantially in 2007; by the beginning of 2008, there were 4,276 ships, with a total capacity of 10.76 million TEUs. This represented an increase of 9.5 per cent in the number of ships and 14 per cent in TEU capacity over the previous year. Ship sizes also continued to increase, with average carrying capacity per ship growing from 2,417 TEUs in January 2007 to 2,516 TEUs in January 2008 (see table 8). The average vessel size of new cellular containerships that entered into service in 2007 was 3,291. Behind the increase in average vessel sizes was a growing spread between the largest ships deployed on the main East–West routes, and the smaller containerships used for intraregional and feeder services. In 2007, the largest new fully cellular containerships were five 12,508-TEU vessels built in Denmark for the Danish company Maersk, and the smallest new deliveries were one 136-TEU ship built in Viet Nam for the Danish company Erria, and two Indonesian-built and operated 241-TEU ships.

Table 6

World fleet size by principal types of vessel, 2005–2008[a]

(Beginning-of-year figures, in thousands of dwt)

Principal types	2005	2006	2007	2008	Percentage change 2008/2007
Oil tankers	336 156	354 219	382 975	407 881	6.5
	37.5	*36.9*	*36.7*	*36.5*	*-0.3*
Bulk carriers	320 584	345 924	367 542	391 127	6.4
	35.8	*36.0*	*35.3*	*35.0*	*-0.3*
Ore/bulk/oil	9 695	7 817	5 614	4 284	-23.7
	1.1	*0.8*	*0.5*	*0.4*	*-0.2*
Ore/bulk	310 889	338 107	361 928	386 842	6.9
	34.7	*35.2*	*34.7*	*34.6*	*-0.1*
General cargo ships	92 048	96 218	100 934	105 492	4.5
	10.3	*10.0*	*9.7*	*9.4*	*-0.2*
Containerships	98 064	111 095	128 321	144 655	12.7
	10.9	*11.6*	*12.3*	*12.9*	*0.6*
Other types of ships	48 991	52 508	62 554	68 624	9.7
	5.5	*5.5*	*6.0*	*6.1*	*0.1*
Liquefied gas carriers	22 546	24 226	26 915	30 013	11.5
	2.5	*2.5*	*2.6*	*2.7*	*0.1*
Chemical tankers	8 290	8 919	8 823	8 236	-6.7
	0.9	*0.9*	*0.8*	*0.7*	*-0.1*
Ferries and passenger ships	5 589	5 649	5 754	5 948	3.4
	0.6	*0.6*	*0.6*	*0.5*	*0.0*
Other	12 566	13 714	21 062	24 427	16.0
	1.3	*1.1*	*1.9*	*2.2*	*0.3*
World total	895 843	959 964	1 042 328	1 117 779	7.2
	100.0	*100.0*	*100.0*	*100.0*	

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 100 GT and above. Percentage shares are shown in italics.

Table 7

Distribution of dwt capacity of containerships, by country groups, 2007 and 2008[a]

(Beginning-of-year figures)

	2007		2008		Change 2007/2008		
	1 000 dwt	Per cent	1 000 dwt	Per cent	1 000 dwt	Growth, per cent	Percentage share
World total	128 321	100.00	144 655	100.00	16 333	12.73	-
Developed economies	36 475	28.42	40 356	27.90	3 881	10.64	-0.53
Transition economies	167	0.13	144	0.10	- 23	- 13.73	-0.03
Developing economies	22 006	17.15	26 084	18.03	4 079	18.54	0.88
of which:							
Africa	187	0.15	182	0.13	- 5	- 2.49	-0.02
America	663	0.52	401	0.28	- 262	- 39.46	-0.24
Asia	21 114	16.45	25 459	17.60	4 345	20.58	1.15
Oceania	41	0.03	41	0.03	0	0.00	0.00
Other, unallocated	51	0.04	67	0.05	16	31.01	0.01
10 major open and international registries[b]	69 622	54.26	78 002	53.92	8 381	12.04	-0.33

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 100 GT and above.

[b] There exists no clear definition of "open and international registries". UNCTAD has grouped the 10 major open and international registries to include the 10 largest fleets with more than 90 per cent foreign-controlled tonnage. See table 15 for the list of registries.

Table 8

Long-term trends in the cellular containership fleet[a]

World total	1987	1997	2006	2007	2008	Growth 2008/2007
Number of vessels	1 052	1 954	3 494	3 904	4 276	9.53
TEU capacity	1 215 215	3 089 682	8 120 465	9 436 377	10 760 173	14.03
Average vessel size	1 155	1 581	2 324	2 417	2 516	4.11

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 100 GT and above. Beginning of year figures, except 1987, which are mid-year figures.

By May 2008, the world containership fleet had reached approximately 13.3 million TEUs, of which 11.3 million TEUs were on fully cellular containerships. This fleet included 54 containerships of 9,000 TEUs and above, which were operated by five companies: CMA CGM (France), COSCON and CSCL (both from China), Maersk (Denmark) and MSC (Switzerland). Twelve existing ships had a capacity of more than 10,000 TEU; these included eight 12,508 TEU ships owned and operated by Maersk and four vessels of 10,000 to 10,062 TEUs owned and operated by COSCON. Maersk's largest containerships were registered in the Danish International Registry DIS, while COSCON's largest vessels were flying the flag of Panama.

Currently, the largest containerships are all gearless, i.e. the vessels depend on the ports' container cranes for the handling of the containers. Many smaller ports, especially in developing countries with infrastructure constraints in their ports, cannot accommodate large or gearless containerships. Operating costs for geared containerships are higher than on gearless ships, while loading and unloading speeds in the ports are lower.

55.9 per cent of general cargo tonnage is 20 years and older. Containerships have the lowest average age.

Of the fully cellular containerships that entered into service in 2007, 23.3 per cent were geared. The average vessel size of those geared ships was 1,473 TEUs, versus 3,843 TEUs for the gearless ships that entered into service during the same year. The total TEU carrying capacity on the gearless ships built in 2007 amounted to 1.18 million TEUs, 8.5 times larger than the combined geared capacity of 0.14 million TEUs that entered the market during the same period. The long-term trend towards larger and more gearless ships is also depicted in tables 9 (a),(b) and (c). Larger ships are far more likely to be gearless. On ships built after 2000, 87 per cent of the container carrying capacity is gearless, as is 94 per cent of the capacity on existing ships of 2,500 TEUs and above. Among containerships built since 2001, the number of gearless vessels is three times higher than that of geared ships.

Among containerships built since 2001, the number gearless vessels is three times higher than that of geared ships.

Shipping lines based in developing economies or companies that specialize in regional South–South or North–South shipping services have a higher share of geared vessels than companies serving mostly the East–West trade lanes. The six operators with the largest deliveries of geared containerships between January and May 2008 are all based in developing economies: TS Lines (Hong Kong, China); CSAV (Chile); Safmarine (based in South Africa, belonging to the Danish AP Moller Group); PIL (Singapore); UASC (Kuwait); and Maruba (Argentina). The six operators with the largest deliveries of gearless containerships during the same period are Maersk (Denmark); MSC (Switzerland); NYK (Japan); COSCON (China); APL (Singapore); and Hanjin (Republic of Korea).

3. Age distribution of the world merchant fleet

Table 10 provides data on the average age distribution of the world merchant fleet by both ship types and groups of countries and territories of registration. The estimated average age of the total world fleet continued to decrease during 2007 to 11.8 years. By vessel type, the youngest fleet continues to be that of containerships, with an average age of 9.0 years; 37.3 per cent of tonnage on containerships is younger than five years and only 12.4 per cent is 20 years and older. The average age of tankers increased marginally to 10.1 years, the average age of bulk carriers decreased slightly from 12.9 to 12.7 years, and general cargo vessels continue to be the oldest vessel type, with an average of 17.1 years and 55.9 per cent of tonnage 20 years and older. Only 12.0 per cent of general cargo tonnage is younger than 5 years, reflecting the trend that general cargo is increasingly containerized.

As regards country groupings, ships registered in developed countries are the youngest (average age of 9.7 years in January 2008), followed by developing countries (12.3 years) and transition economies (15.5 years). Replacement of general cargo vessels by containerships is particularly noticeable in the fleets registered in developing and transition economies. In these country groups, containerships were introduced later than in the developed market economies fleets. As a consequence, in developing economies, 39.2 per cent of containerships are younger than five years old, versus only 12.1 per cent of general cargo vessels in this age group. Of general cargo vessels registered in developing

Table 9 (a)

Geared and gearless cellular containerships in service in May 2008, by years of build and by vessel size

	Geared	Gearless	Total
Built during or before 2000	20.7	35.8	56.5
Built during or after 2001	10.6	33.0	43.5
Built during or after 2002	31.3	68.7	100.0

	Geared	Gearless	Total
Capacity of up to 2,499 TEU	27.9	33.0	60.9
Capacity of 2,500 TEU and above	3.4	35.8	39.1
Total	31.3	68.7	100.0

Source: Compiled by the UNCTAD secretariat on the basis of data from *Containerisation International Online*, May 2008.

Table 9 (b)

Container carrying capacity on geared and gearless cellular containerships in service in May 2008, by years of build and by vessel size

(Percentage of TEU)

	Geared	Gearless	Total
Built during or before 2000	10.2	31.2	41.3
Built during or after 2001	7.5	51.1	58.7
Total	17.7	82.3	100.0

	Geared	Gearless	Total
Capacity of up to 2,499 TEU	13.9	27.0	40.9
Capacity of 2,500 TEU and above	3.8	55.3	59.1
Total	17.7	82.3	100.0

Source: Compiled by the UNCTAD secretariat on the basis of data from *Containerisation International Online*, May 2008.

Table 9 (c)

Geared and gearless cellular containerships built in 2007

	Geared	Gearless	Total
Ships	93	306	399
Per cent of ships	23.3	76.7	100.0
TEU	136 956	1 176 011	1 312 967
Per cent of TEU	10.4	89.6	100.0
Average vessel size	1 473	3 843	3 291

Source: Compiled by the UNCTAD secretariat on the basis of data from *Containerisation International Online*, May 2008.

Table 10

Age distribution of the world merchant fleet, by types of vessel,[a] as of 1 January 2008

(Percentage of total dwt)

Country grouping	Types of vessel	0–4 years	5–9 years	10–14 years	15–19 years	20 years and over	Average age (years) 2008 [b]	Average age (years) 2007 [b]	Change 2008/2007
World total	All ships	25.8	21.3	15.8	11.7	25.2	11.8	12.0	-0.2
	Tankers	28.8	27.6	14.1	16.2	13.2	10.1	10.0	+0.1
	Bulk carriers	23.4	18.3	18.4	9.6	30.3	12.7	12.9	-0.2
	General cargo	12.0	10.8	12.2	9.2	55.9	17.1	17.4	-0.2
	Containerships	37.3	22.9	19.4	8.0	12.4	9.0	9.1	-0.2
	All others	20.5	15.8	9.8	10.0	44.0	14.7	15.1	-0.4
Major open-registries [c]	All ships	28.5	20.9	16.1	11.3	23.2	11.3	11.5	-0.1
	Tankers	29.6	26.1	15.1	17.5	11.7	10.0	9.8	+0.2
	Bulk carriers	26.7	18.6	18.2	8.1	28.4	12.1	12.3	-0.3
	General cargo	13.2	11.3	14.7	9.1	51.8	16.5	16.5	+0.0
	Containerships	41.0	21.6	15.7	8.3	13.5	8.8	8.9	-0.1
	All others	24.9	15.9	8.1	7.1	44.0	14.1	14.7	-0.6
Developed economies	All ships	28.4	31.6	16.3	8.7	15.0	9.7	9.9	-0.2
	Tankers	35.5	38.5	12.6	8.2	5.2	7.5	7.7	-0.2
	Bulk carriers	19.0	29.1	18.8	8.3	24.9	11.9	11.9	-0.0
	General cargo	16.9	21.6	18.1	12.6	30.8	13.4	13.7	-0.3
	Containerships	33.5	29.1	21.2	6.9	9.3	8.6	8.9	-0.3
	All others	20.0	22.2	14.4	12.3	31.1	13.1	13.0	+0.1
Transition economies	All ships	21.8	8.3	11.2	10.6	48.0	15.5	16.2	-0.7
	Tankers	38.9	12.6	11.8	7.6	29.1	11.2	12.6	-1.4
	Bulk carriers	10.4	4.2	15.2	14.9	55.2	17.8	18.2	-0.4
	General cargo	7.5	5.0	4.5	8.2	74.8	20.0	20.1	-0.1
	Containerships	37.8	14.5	14.9	9.7	23.1	10.6	10.5	+0.2
	All others	36.5	12.7	10.1	9.1	31.6	11.8	13.1	-1.3
Developing economies	All ships	25.8	18.4	15.7	12.8	27.3	12.3	12.4	-0.1
	Tankers	27.1	23.0	13.8	19.9	16.2	11.0	10.8	+0.2
	Bulk carriers	24.8	16.6	18.5	9.8	30.3	12.7	12.8	-0.1
	General cargo	12.1	8.7	11.5	8.1	59.7	17.6	17.9	-0.2
	Containerships	39.2	21.2	18.9	8.0	12.8	8.9	9.1	-0.2
	All others	19.0	14.1	8.9	8.8	49.1	15.5	15.9	-0.4

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 100 GT and above.

[b] To estimate the average age, it has been assumed that the ages of vessels are distributed evenly between the lower and upper limits of each age group. For the 20-years-and-over age group, the mid-point has been assumed to be 23.5 years.

[c] The open registries included in this group are the Bahamas, Bermuda, Cyprus, Liberia, Malta, Panama and Vanuatu.

economies, 59.7 per cent are older than 19 years, versus only 12.8 per cent of containerships in this age group. For transition economies, 74.8 per cent of general cargo vessels are older than 19 years, and 37.8 per cent of containerships younger than 5 years. After a period of ageing in the 1990s and modernizing in the present decade, at the beginning of 2008 the average age of the world fleet was approximately the same as it was in 1987, with tankers being on average younger, and bulk carriers and general cargo ships still somewhat older today than two decades ago (table 11).

54.2 per cent of the world's tonnage is controlled by owners from Greece, Japan, Germany, China and Norway.

B. OWNERSHIP OF THE WORLD FLEET

1. The 35 economies with the largest controlled fleets

The 35 economies with the largest fleets owned by nationals are ranked in table 12 according to deadweight tonnage.[69] Nationals of these countries control 95.35 per cent of the world fleet, a slight increase over the 95.33 per cent historical record of January 2007. Greece continues to be the country with the largest controlled fleet, totalling 174.6 million dwt and 3,115 ships, followed by Japan (161.7 million dwt and 3,515 ships); Germany (94.2 million dwt, 3,208 ships); China (84.9 million dwt, 3,303 ships); and Norway (46.9 million dwt, 1,827 ships). Together, those five countries hold a market share of 54.2 per cent.

Thirty-two per cent of the Greek-controlled fleet use the national flag, versus 68 per cent using foreign flags. As regards vessel types, the Greek-controlled fleet includes 82.7 million tons of dry bulk carriers, 76.3 million dwt of oil tankers, 8.3 million dwt of containerships, 4.3 million dwt of general cargo vessels and 3.0 million dwt of other vessels. The share of foreign flagged tonnage is highest among general cargo ships (93 per cent) and lowest among oil tankers (56 per cent).

The Japanese-controlled fleet is 93 per cent foreign flagged. Japanese-controlled ships include 86.5 million dwt of dry bulk carriers, 44.1 million dwt of oil tankers, 12.7 million dwt of containerships, 9.4 million dwt of general cargo vessels and 9.0 million dwt of other vessels. An impressive total of 880 Japanese-controlled dry bulk carriers with a combined tonnage of 70 million dwt fly the flag of Panama.

The German-controlled fleet uses a foreign flag for 85 per cent of it tonnage. More than half of the German-controlled fleet is comprised of containerships (50.7 million dwt), followed by 20.7 million dwt of oil

Table 11

Long-term trends in the average age, by vessel types

	Types of vessel	1987	1997	2007	2008
World total	All ships	11.7	14.9	12.0	11.8
	Tankers	12.1	14.9	10.0	10.1
	Bulk carriers	10.7	14.6	12.9	12.7
	General cargo	13.7	17.3	17.4	17.1
	Containerships	n/a	12.0	9.1	9.0
	All others	n/a	15.3	15.1	14.7

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

Notes: Vessels of 100 GT and above. Data are beginning of year figures, except for 1987, which are mid-year figures

Table 12

The 35 countries and territories with the largest controlled fleets, as of 1 January 2008[a]

Country or territory of ownership [b]	Number of vessels			Deadweight tonnage						
	National flag[c]	Foreign flag	Total	National flag[c]	Foreign flag	Total	Foreign flag as a percentage of total	Total as a percentage of world total, 1 Jan. 2008	Total as a percentage of world total, 1 Jan. 2007	Change in percentage share
Greece	736	2 379	3 115	55 766 365	118 804 106	174 570 471	68.06	16.81	17.39	-0.58
Japan	714	2 801	3 515	11 620 381	150 126 721	161 747 102	92.82	15.58	15.07	0.50
Germany	404	2 804	3 208	14 588 066	79 634 721	94 222 787	84.52	9.07	8.69	0.38
China	1 900	1 403	3 303	34 351 019	50 530 684	84 881 703	59.53	8.18	7.19	0.98
Norway	792	1 035	1 827	14 182 841	32 689 255	46 872 096	69.74	4.51	4.98	-0.46
United States	855	914	1 769	20 301 154	19 526 996	39 828 150	49.03	3.84	4.93	-1.10
Korea, Republic of	756	384	1 140	19 122 776	18 580 931	37 703 707	49.28	3.63	3.30	0.33
Hong Kong, China	311	346	657	18 228 651	15 195 788	33 424 439	45.46	3.22	4.60	-1.38
Singapore	536	333	869	16 440 270	12 192 284	28 632 554	42.58	2.76	2.63	0.13
Denmark	317	544	861	10 466 920	16 967 723	27 434 643	61.85	2.64	2.24	0.41
Taiwan Province of China	93	497	590	3 986 356	22 163 936	26 150 292	84.76	2.52	2.54	-0.02
United Kingdom	394	482	876	10 479 296	15 522 244	26 001 540	59.70	2.50	2.73	-0.23
Canada	206	213	419	2 352 552	16 395 893	18 748 445	87.45	1.81	0.61	1.20
Russian Federation	1 532	579	2 111	5 986 569	12 051 321	18 037 890	66.81	1.74	1.85	-0.11
Italy	559	214	773	11 419 633	6 320 035	17 739 668	35.63	1.71	1.63	0.08
India	474	60	534	13 956 575	2 096 910	16 053 485	13.06	1.55	1.51	0.03
Turkey	495	531	1 026	6 431 016	6 728 712	13 159 728	51.13	1.27	1.12	0.15
Saudi Arabia	61	103	164	801 539	12 144 926	12 946 465	93.81	1.25	1.21	0.03
Belgium	87	146	233	6 087 051	6 067 624	12 154 675	49.92	1.17	1.28	-0.11
Malaysia	314	78	392	7 399 196	3 769 710	11 168 906	33.75	1.08	0.68	0.40
Iran, Islamic Republic of	116	63	179	5 080 136	5 176 747	10 256 883	50.47	0.99	1.02	-0.03
United Arab Emirates	54	370	424	521 677	8 403 618	8 925 295	94.16	0.86	0.71	0.15
Netherlands	503	259	762	4 136 349	4 499 185	8 635 534	52.10	0.83	0.89	-0.06
Cyprus	111	144	255	2 828 540	4 484 942	7 313 482	61.32	0.70	0.63	0.08
Indonesia	728	122	850	4 807 801	2 450 354	7 258 155	33.76	0.70	0.68	0.02
Sweden	154	211	365	1 758 402	5 159 712	6 918 114	74.58	0.67	0.66	0.01
France	182	176	358	3 036 041	3 490 150	6 526 191	53.48	0.63	0.61	0.02
Kuwait	40	29	69	3 953 100	1 348 386	5 301 486	25.43	0.51	0.49	0.02
Viet Nam	358	50	408	3 192 261	1 394 075	4 586 336	30.40	0.44	0.31	0.13
Spain	190	192	382	1 422 309	3 075 812	4 498 121	68.38	0.43	0.45	-0.02
Brazil	130	14	144	2 472 017	1 949 344	4 421 361	44.09	0.43	0.50	-0.07
Thailand	302	39	341	3 520 841	500 984	4 021 825	12.46	0.39	0.30	0.09
Switzerland	29	129	158	847 265	2 731 566	3 578 831	76.33	0.34	1.28	-0.93
Bermuda	0	62	62	0	3 216 806	3 216 806	100.00	0.31	n/a	
Croatia	78	39	117	2 086 397	978 977	3 065 374	31.94	0.30	n/a	
Total (35 countries)	14 511	17 745	32 256	323 631 362	666 371 178	990 002 540		95.35	95.33	0.02
World total	16 798	19 515	36 313	342 662 755	695 633 834	1038 296 589		100.00	100.00	

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

a Vessels of 1,000 GT and above, excluding the United States Reserve Fleet and the United States and Canadian Great Lakes fleets, which have a combined tonnage of 6.4 million dwt.

b The country of ownership indicates where the true controlling interest (i.e. parent company) of the fleet is located. In several cases, determining this has required making certain judgements. Thus, for instance, Greece is shown as the country of ownership for vessels owned by a Greek national with representative offices in New York, London and Piraeus, although the owner may be domiciled in the United States.

c Includes vessels flying the national flag but registered in territorial dependencies or associated self-governing territories such as Isle of Man (United Kingdom), as well as second registries such as DIS (Denmark), NIS (Norway) or FIS (France). For the United Kingdom, British flagged vessels are included under the national flag, except for Bermuda.

tankers, 14.1 million dwt of dry bulk carriers, 7.4 million dwt of general cargo vessels and 1.3 million dwt of other vessels. The share of foreign flagged tonnage is highest among dry bulk carriers (98 per cent) and lowest among containerships (74 per cent).

The Norwegian-controlled fleet declined slightly during 2007, still maintaining its fifth-place ranking with 46.9 million dwt. Of this tonnage, 69.7 per cent is registered under a foreign flag, and the remaining 30.3 per cent mostly under the Norwegian International Ship Register (NIS). Half of the Norwegian-controlled tonnage consists of oil tankers (23.5 million dwt), followed by 10 million dwt of general cargo vessels, 7.4 million dwt of dry bulk carriers, 5.2 million dwt of other types, and 0.7 million dwt of containerships.

The largest nationally-controlled fleets from developing economies are mostly found in Asia, as well as in Bermuda and Brazil (see also figure 11).

The Chinese-controlled fleet is 40 per cent registered in China, versus 60 per cent that uses a foreign flag. More than half of the Chinese-controlled fleet are dry bulk carriers (43 million dwt), followed by 19.4 million dwt of oil tankers, 10.1 million dwt of general cargo vessels, 7.7 million dwt of containerships and 4.6 million dwt of other vessels. The share of foreign flagged tonnage is highest among other vessel types (78 per cent) and lowest among general cargo ships (74 per cent). 62 per cent of the Chinese-controlled dry bulk fleet uses foreign flags.

Nationals of the Republic of Korea control a fleet of 37.7 million dwt, 49 per cent of which is foreign flagged, compared to 55 per cent that were foreign flagged one year earlier. The fleet includes 20.2 million dwt of dry bulk carriers, 10.3 million dwt of oil tankers, 3.0 million dwt of containerships, 2.3 million dwt of other types and 1.9 million dwt of general cargo vessels. Of oil tanker tonnage, 66 per cent is foreign registered, compared to just 36 per cent of the general cargo fleet.

Hong Kong (China) controls a fleet of 33.4 million dwt, a significant decline from the previous year's 45 million dwt, as some owners have moved to China. Although Hong Kong (China) also has a large national vessel registry that is used by foreign vessel operators, 45 per cent of tonnage controlled by Hong Kong (China) itself is registered under a different flag. The Hong Kong (China)-controlled fleet consists of 17.2 million dwt of dry bulk carriers, 12.2 million dwt of oil tankers, 1.7 million dwt of general cargo vessels, and 0.4 million dwt of other ships. The only vessel type of the Hong Kong (China)-controlled fleet that has grown during 2007 is containerships, reaching 1.9 million dwt.

The fleet with owners from Singapore totals 28.6 million dwt, 62 per cent of which consists of oil tankers (17.6 million dwt), followed by 5.3 million dwt of dry bulk carriers, 4.0 million dwt of containerships, 1.1 million dwt of general cargo vessels and 0.7 million dwt of other types. Although the flag of Singapore is itself used by a large number of foreign vessel operators, Singaporean companies themselves register 43 per cent of their fleet under foreign flags, including 56 per cent of their dry bulk tonnage.

The Indian-controlled fleet of 16.1 million dwt is 87 per cent nationally flagged. This includes practically all Indian oil tankers, which make up 52 per cent (8.4 million dwt) of the country's total. The remainder of the fleet consists of 5.7 million dwt of dry bulk carriers and 1.3 million dwt of other types, as well as a small number of general cargo and containerships. Thirty per cent of the Indian-controlled dry bulk tonnage and 39 per cent of the general cargo fleet is foreign flagged.

The Turkish-controlled fleet is 49 per cent registered in Turkey, versus 51 per cent that uses a foreign flag. Almost half of the Turkish-controlled fleet are dry bulk carriers (6.1 million dwt), followed by 3.2 million dwt of oil tankers, 2.8 million dwt of general cargo vessels, 0.7 million dwt of containerships and 0.2 million dwt of other vessels. The share of foreign flagged tonnage is highest among oil tankers (67 per cent) and lowest among containerships (37 per cent).

The Saudi Arabia-controlled fleet of 12.9 million dwt consists almost entirely (95 per cent) of oil tankers, 97 per cent of which is foreign flagged.

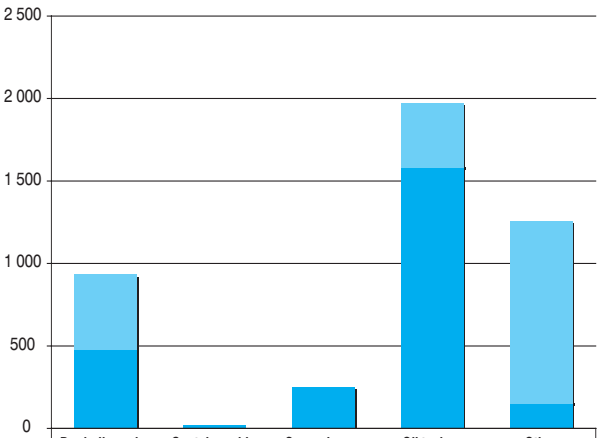
The market share of the Malaysia-controlled fleet grew from 0.68 per cent in 2007 to 1.08 per cent in 2008, mostly due to additional oil tankers. The total fleet of owners from Malaysia now amounts to 11.2 million dwt. The fleet is 34 per cent foreign flagged, which is a significant increase over the previous year, where only 6 per cent of the tonnage was foreign flagged. The Malaysia-controlled fleet consists mostly of oil tankers (7.3 million dwt), other ships (2.4 million dwt),

Figure 11

Largest fleets controlled by developing and transition economies, by principal vessel types, 2008[a]

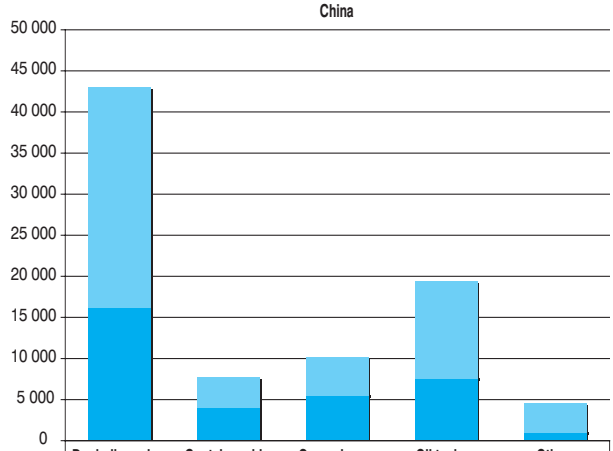
(Thousands of dwt)

Brazil



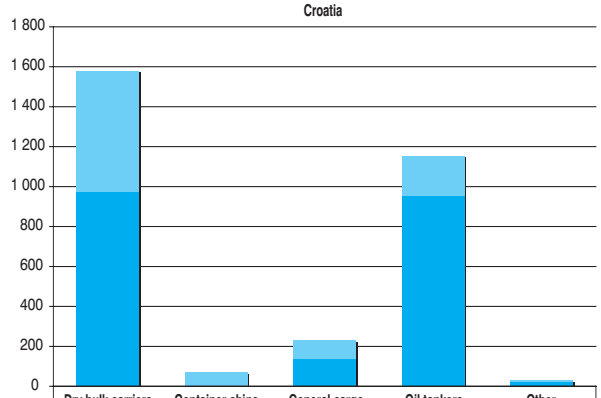
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	456	0	0	388	1 105
National flag	475	17	249	1 581	150

China



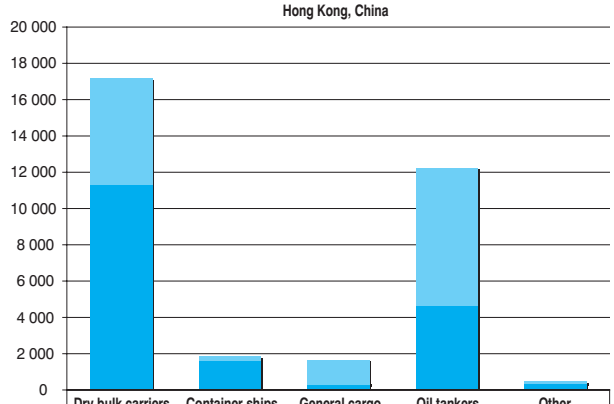
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	26 792	3 658	4 633	11 835	3 612
National flag	16 181	4 079	5 508	7 591	992

Croatia



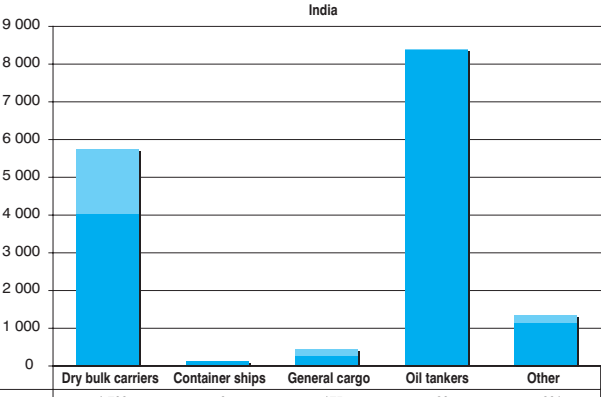
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	606	71	95	200	8
National flag	974	0	137	954	21

Hong Kong, China



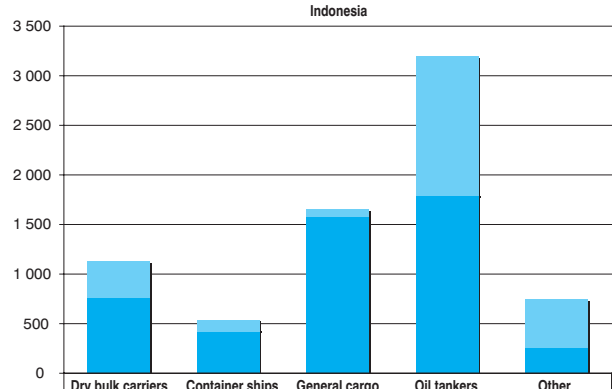
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	5 883	244	1 371	7 581	117
National flag	11 292	1 634	304	4 664	335

India



	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	1 702	0	175	20	201
National flag	4 037	107	278	8 384	1 152

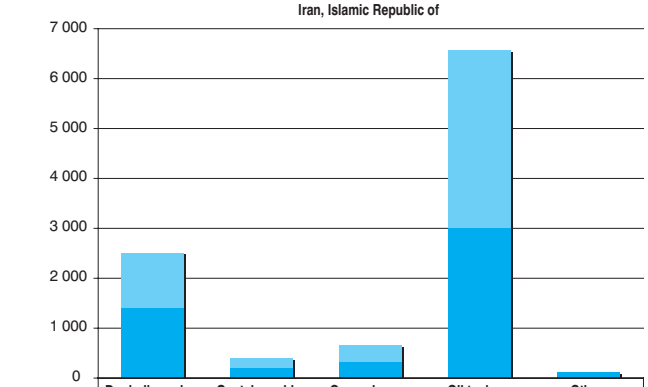
Indonesia



	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	366	119	75	1 405	485
National flag	763	421	1 578	1 792	255

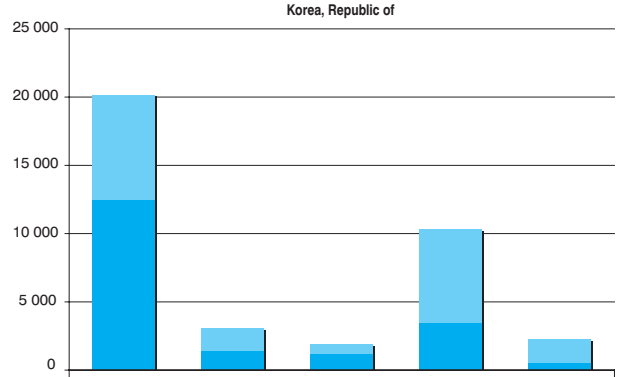
Figure 11 (continued)

Iran, Islamic Republic of



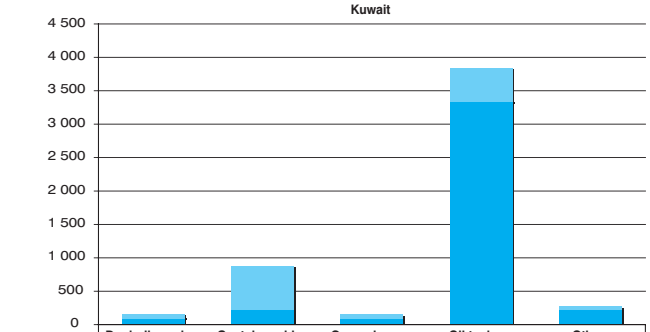
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	1 095	198	320	3 563	2
National flag	1 416	211	338	3 004	111

Korea, Republic of



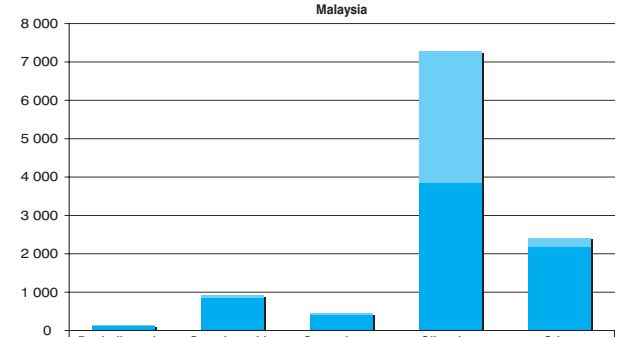
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	7 690	1 651	681	6 857	1 702
National flag	12 494	1 392	1 193	3 487	557

Kuwait



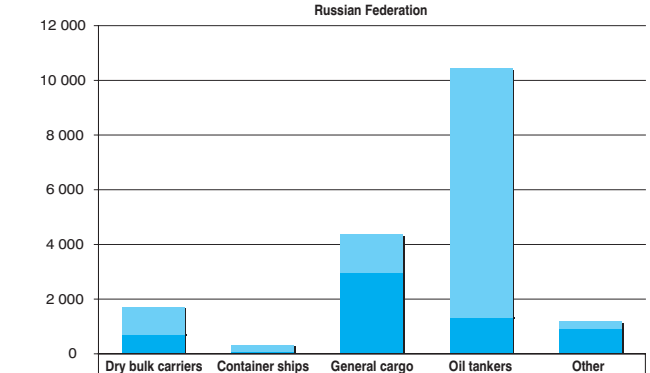
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	69	654	71	505	50
National flag	93	227	80	3 337	216

Malaysia



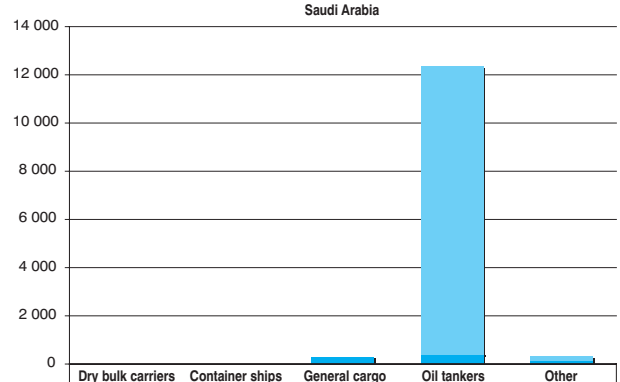
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	19	75	30	3 435	210
National flag	114	836	417	3 839	2 194

Russian Federation



	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	995	239	1 410	9 116	292
National flag	716	92	2 952	1 331	896

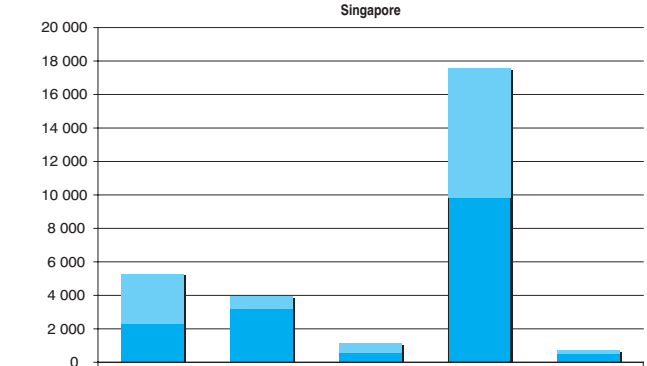
Saudi Arabia



	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	2	0	2	11 957	183
National flag	0	0	286	380	136

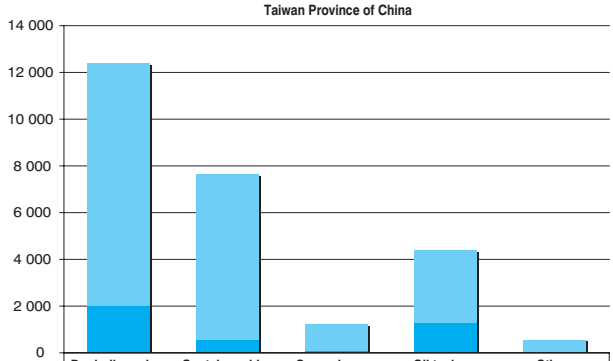
Figure 11 (continued)

Singapore



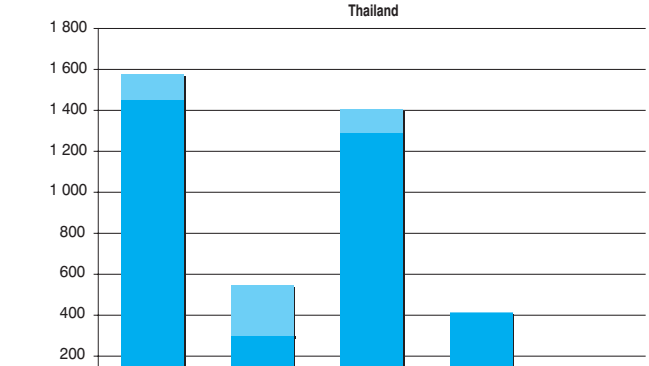
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	2 982	729	567	7 713	201
National flag	2 309	3 221	559	9 845	506

Taiwan Province of China



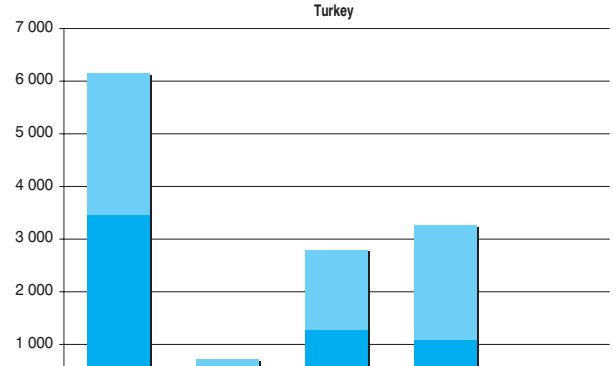
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	10 374	7 071	1 135	3 081	502
National flag	2 016	564	79	1 279	48

Thailand



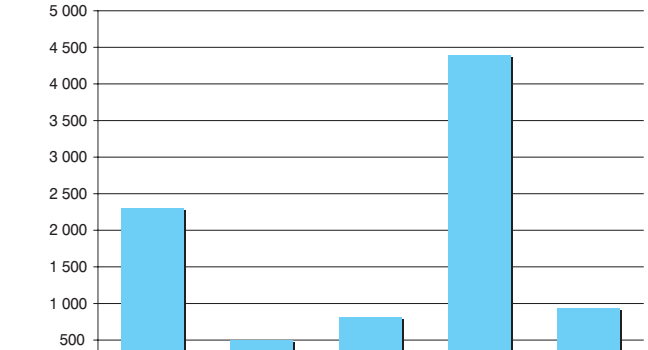
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	125	247	116	5	8
National flag	1 453	297	1 288	408	74

Turkey



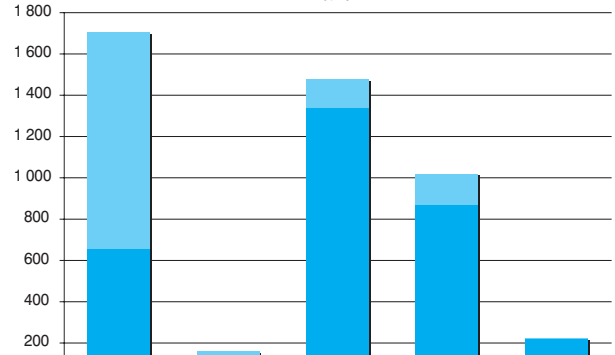
	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	2 685	268	1 518	2 168	89
National flag	3 456	454	1 278	1 092	151

United Arab Emirates



	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	2 164	499	785	4 103	853
National flag	141	0	24	282	75

Viet Nam



	Dry bulk carriers	Container ships	General cargo	Oil tankers	Other
Foreign flag	1 049	55	138	150	2
National flag	658	107	1 338	869	220

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 1,000 GT and above.

containerships (0.9 million dwt), general cargo ships (0.4 million dwt) and dry bulk carriers (0.1 million dwt). Forty-seven per cent of oil tankers are foreign flagged.

During 2007, an important proportion of the Islamic Republic of Iran's controlled tonnage of oil tankers was newly registered in Malta. This led to a decline of the nationally flagged tonnage, from 89 per cent at the beginning of 2007 to just 50 per cent at the beginning of 2008. The country's fleet consists of 6.6 million dwt oil tankers, 2.5 million dwt dry bulk carriers, 0.7 million tons general cargo ships, 0.4 million dwt containerships and 0.1 million dwt other ships. 54 per cent of the oil tanker tonnage is foreign flagged.

A total of 424 ships with 8.9 million dwt are reported to be controlled by companies or nationals of the United Arab Emirates. This fleet includes 4.3 million dwt of oil tankers, 2.3 million dwt of dry bulk carriers, 0.9 million dwt of other ships, 0.9 million dwt of general cargo ships and 0.5 million dwt of containerships. Of the United Arab Emirates-controlled fleet, 94 per cent is foreign flagged.

Owners from Indonesia control 7.3 million dwt, including 3.1 million dwt of oil tankers, 1.7 million dwt of general cargo vessels, 1.1 million dwt of dry bulk carriers, 0.7 million dwt other ships and 0.5 million dwt containerships. 34 per cent of the fleet is foreign flagged; the foreign flagged share is higher for oil tankers (44 per cent) than for general cargo ships (5 per cent), which are more often used for cabotage traffic.

The Kuwait-controlled fleet of 5.3 million dwt consists largely of oil tankers, totalling 3.8 million dwt, as well as 0.9 million dwt of containerships, under 0.3 million dwt of other vessels, under 0.2 million dwt of dry bulk carriers and under 0.2 million dwt of general cargo ships. Of the Kuwait-controlled fleet, 25 per cent is foreign flagged; the foreign flagged share is highest among containerships, with 74 per cent registered abroad.

Trade profiles often match the nationally controlled fleet. Oil exporters, for example, are also among the main providers of tanker capacity.

Viet Nam controls a fleet of 4.6 million dwt, of which 30 per cent is foreign flagged. The controlled fleet includes 1.7 million dwt dry bulk carriers, 1.5 million dwt general cargo vessels, 1.0 million dwt oil tankers, 0.2 million dwt other ships and under 0.2 million dwt containerships. The foreign flagged share is highest among dry bulk carriers (61 per cent) and lowest among general cargo and other ships.

Brazil controls a fleet of 4.4 million dwt, including 1.9 million dwt oil tankers, 1.3 million dwt other types of vessels, 0.9 million dwt dry bulk carriers and under 0.3 million dwt of general cargo and containerships. Forty-four per cent of its fleet is foreign flagged; the foreign flagged share among Brazil-controlled oil tankers is only 20 per cent.

The Thailand-controlled fleet of 4.0 million dwt is 12 per cent foreign flagged. The fleet includes 1.5 million dwt dry bulk carriers, 1.4 million dwt general cargo ships, 0.5 million dwt containerships and 0.4 million dwt oil tankers. Forty-five per cent of the container tonnage is foreign flagged.

Vessel owners from Bermuda control 62 ships with a total of 3.2 million dwt, including 1.5 million dwt of oil tankers, 1.2 million dwt dry bulk carriers and 0.4 million dwt general cargo ships. Although Bermuda itself is among the top 10 open and international ship registries, none of the 62 ships whose owners are from Bermuda also flies the country's flag. Instead, 100 per cent of the Bermuda-controlled fleet is foreign flagged, registered in the Bahamas, Croatia, Marshall Islands, Philippines and the Spanish international registry CSR.

2. Participation of countries in the controlled fleets of different vessel types

Many countries' trade profiles match in some way their maritime profiles. Among the economies represented in figure 11, those with the largest shares of oil exports are Kuwait (93 per cent of its exports are fuels and mining products), Saudi Arabia (90 per cent), Islamic Republic of Iran (88 per cent), Russian Federation (68 per cent), United Arab Emirates (53 per cent) and Indonesia (38 per cent), and all of them also have the highest share of their nationally-controlled fleets in oil tankers.

In Figure 11, the countries with the highest shares of agricultural exports are Brazil (29 per cent of its exports are agricultural products), Viet Nam (21 per cent), Indonesia (18 per cent), Thailand (16 per cent), India (12 per cent) and Turkey (10 per cent). Among those countries, Thailand, Turkey and Viet Nam also have the

highest shares of dry bulk carriers, and the other three countries also have important dry bulk fleets. In China, Hong Kong (China), Republic of Korea and Taiwan Province of China, the dry bulk fleet has the highest share, reflecting the large import demand of iron ore, grains and other dry bulk products.

A different picture emerges if we look at manufactured goods, which are mostly traded in containerized liner shipping services. These services call in numerous countries' ports, unlike oil tankers and bulk carriers, which are usually employed on direct port-to-port voyages. Containerships are often operated by companies different from the vessel owner (the latter charters the ship to the company that provides the actual liner shipping service). All these aspects may explain why there does not appear to be a correlation between a country's trade in manufactured goods and its nationally-controlled containership fleet. Among the countries represented in figure 11, none has a particular large share in container shipping. Even China, which accounts for about 25 per cent of world containerized exports, has only a very small share of containerships among its nationally-controlled fleet.

The largest nationally-controlled fleets that also fly the national flag include (a) oil tankers from Brazil, India, Kuwait and Thailand; (b) dry bulk carriers from Hong Kong (China), India, the Republic of Korea, and Thailand; and (c) general cargo ships from Indonesia, the Russian Federation, Thailand and Viet Nam. In several cases, these nationally flagged and nationally-controlled ships are employed in cabotage trades, often legally requiring the use of the national flag, or they are nationally flagged as a consequence of some public involvement in the vessel-owning companies.

C. REGISTRATION OF SHIPS

1. Flags of registration

The 35 economies with the largest fleets registered under their flag are ranked in table 13 according to deadweight tonnage.[70] Together, they account for 1,033 million dwt, corresponding to 92.42 per cent of the world fleet, an increase of 0.4 percentage points. The top 5 registries together account for 49.3 per cent, and the top 10 registries account for 69.5 per cent of the world's dwt. Both shares also represent increases over the previous year's figures.

One third of the world fleet is registered in Panama and Liberia.

The largest flag of registration continues to be Panama, with 252.6 million dwt (22.6 per cent of the world), followed by Liberia (117.5 million dwt, 10.5 per cent). These two leading registries are followed by five flags with between 55 and 61 million dwt (close to 5 per cent of the world fleet) each; they are Greece, the Bahamas, the Marshall Islands, Hong Kong (China) and Singapore. As regards the nationally flagged number of ships, the largest fleets belong to Japan (6,447 ships), the United States (6,419), Indonesia (4,477), China (3,816) and the Russian Federation (3,461). These include a large number of general cargo and other smaller vessels employed in coastal shipping.

The largest percentage growth in 2007 was recorded for the tonnage registered in the French International Registry (Registre International Français) (59.9 per cent), Republic of Korea (27.8 per cent), Germany (14.1 per cent), Malta (12.5 per cent), Liberia (11.7 per cent) and Greece (11.3 per cent). The growth of the French International Registry is partly due to the transfer of tonnage from the Kerguelen registry.

The 10 largest open and international registries that cater almost exclusively to foreign-controlled ships are Panama, Liberia, the Bahamas, the Marshall Islands, Malta, Cyprus, the Isle of Man, Antigua and Barbuda, Bermuda, and Saint Vincent and the Grenadines. Although they are in principle open to vessels from practically any country, most of them in fact specialize in some countries of ownership, or in certain vessel types. More than half the tonnage registered in Antigua and Barbuda is on containerships, mostly from German owners. The registries that cater mostly for dry bulk carriers are Bermuda, Cyprus, Malta, Panama and Saint Vincent and the Grenadines; Panama alone accounts for 33.3 per cent of the world dry bulk tonnage, mostly from Japanese owners. Oil tankers account for the largest tonnage in the registries of the Bahamas, the Isle of Man, Liberia and the Marshall Islands.

Among the top 35 registries, 15 cater almost exclusively to nationals of their own country, while others specialize above all in foreign controlled tonnage.

Among the top 35 registries, 15 cater almost exclusively for nationals of their own country. They are Greece,

Table 13

The 35 flags of registration with the largest registered deadweight tonnage, as of 1 January 2008[a]

Flag of registration	Number of vessels	Share of world total, vessels	Deadweight tonnage, 1000 dwt	Share of world total, dwt	Cumulated share, dwt	Average vessel size	Dwt growth 2008/2007, per cent
Panama	7 616	7.81	252 564	22.60	22.60	33 162	8.79
Liberia	2 173	2.23	117 519	10.51	33.11	54 081	11.68
Greece	1 477	1.52	61 384	5.49	38.60	41 560	11.31
Bahamas	1 422	1.46	59 744	5.34	43.95	42 014	8.16
Marshall Islands	1 097	1.13	59 600	5.33	49.28	54 330	9.07
Hong Kong, China	1 238	1.27	59 210	5.30	54.57	47 827	8.96
Singapore	2 243	2.30	55 550	4.97	59.54	24 766	8.83
Malta	1 442	1.48	45 218	4.05	63.59	31 358	12.48
China	3 816	3.91	37 124	3.32	66.91	9 728	6.30
Cyprus	982	1.01	29 431	2.63	69.54	29 971	-0.66
Korea, Republic of	2 962	3.04	21 141	1.89	71.44	7 137	27.82
Norway (NIS)	595	0.61	20 501	1.83	73.27	34 455	1.06
India	1 420	1.46	15 041	1.35	74.61	10 593	6.00
Germany	881	0.90	15 031	1.34	75.96	17 061	14.11
Japan	6 447	6.61	14 810	1.32	77.28	2 297	-1.81
Isle of Man	339	0.35	13 850	1.24	78.52	40 856	-2.63
United Kingdom	1 631	1.67	13 840	1.24	79.76	8 486	8.04
Italy	1 559	1.60	13 267	1.19	80.95	8 510	-0.09
United States	6 419	6.58	12 139	1.09	82.03	1 891	-1.74
Antigua and Barbuda	1 124	1.15	11 183	1.00	83.04	9 949	7.52
Denmark (DIS)	438	0.45	10 904	0.98	84.01	24 895	9.00
Bermuda	153	0.16	9 870	0.88	84.89	64 513	5.44
Malaysia	1 150	1.18	9 448	0.85	85.74	8 216	10.24
St. Vincent and the Grenadines	1 043	1.07	8 503	0.76	86.50	8 153	-0.57
France (RIF)	164	0.17	7 413	0.66	87.16	45 201	59.89
Turkey	1 251	1.28	7 300	0.65	87.82	5 836	1.07
Russian Federation	3 461	3.55	7 135	0.64	88.45	2 062	-6.26
Indonesia	4 477	4.59	6 859	0.61	89.07	1 532	7.30
Philippines	1 778	1.82	6 659	0.60	89.66	3 745	-0.67
Belgium	243	0.25	6 467	0.58	90.24	26 612	-7.54
Netherlands	1 248	1.28	6 217	0.56	90.80	4 982	6.68
Iran (Islamic Republic of)	495	0.51	5 222	0.47	91.27	10 549	-41.68
Cayman Islands	142	0.15	4 358	0.39	91.66	30 690	-6.03
Taiwan Province of China	632	0.65	4 308	0.39	92.04	6 816	-2.04
Thailand	860	0.88	4 224	0.38	92.42	4 911	-2.24
Total (Top 35 flags of registration)	64 418	66.08	1 033 035	92.42		16 036	7.71
World total	97 481	100.00	1 117 779	100.00	100.00	11 467	7.24

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Ships of 100 GT and above.

China, the Republic of Korea, India, Germany, Japan, Italy, the United States, Malaysia, Turkey, the Russian Federation, Indonesia, Belgium, the Islamic Republic of Iran, Taiwan Province of China, and Thailand. A low participation of foreign-controlled tonnage may be due to two reasons. First, the country's laws may not allow for the use of its national flag if there is no adequate "genuine link" between flag and ownership. Second, although the country's registry might in theory be open to foreigners, its tax or employment regime or other regulations may make the registry unattractive to foreign ship owners.

Some countries also provide their flag to both their own nationals and a significant share of foreigners. The largest such registries are Hong Kong (China) and Singapore; for both registries, about two thirds of the registered tonnage are foreign-controlled. In Cyprus, about nine tenths of registered tonnage is foreign-controlled. About half of the tonnage that is registered under the flag of the United Kingdom belongs to foreign owners, as does about two fifth of the tonnage registered in the Netherlands.

Finally, among the top 35 flags of registration, there are three "second" or "international" registries, i.e. registries that allow for the use of the national flag, albeit under conditions that are different from those applicable for the first national registry. They include notably the Norwegian International Ship Register (NIS), the Danish International Register of Shipping (DIS), and the French International Register (RIF). While the DIS is almost only used by Danish-controlled ships, both the NIS and the RIF also cater to some foreign-controlled tonnage.

Table 14 presents the percentage distribution of the world fleet by vessel type and country groupings. Excluding the 10 major open and international registries, 18.5 per cent of the world fleet is registered in developed economies, with a particularly high share (27.9 per cent) in the containership fleet. Transition economies account for 1.2 per cent of the total world fleet, with 4.9 per

Table 14

Percentage distribution of dwt capacity of different vessel types, by country groups, 2008 [a]

(Beginning-of-year figures)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
World total	100.00	100.00	100.00	100.00	100.00	100.00
Developed economies	18.54	20.31	11.66	17.03	27.90	29.84
Transition economies	1.15	0.80	0.63	4.92	0.10	2.62
Developing economies	25.51	24.18	27.40	35.07	18.03	23.68
of which:						
Africa	0.57	0.43	0.29	1.71	0.13	2.13
America	1.98	2.19	1.45	4.09	0.28	4.07
Asia	22.57	21.23	25.26	28.57	17.60	16.50
Oceania	0.39	0.33	0.40	0.69	0.03	0.99
Other, unallocated	0.45	0.33	0.23	1.80	0.05	1.23
10 major open and international registries [b]	54.35	54.38	60.09	41.17	53.92	42.62

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 100 GT and above.

[b] The 10 major open and international registries are the 10 largest fleets with more than 90 per cent foreign-controlled tonnage. See table 15 for the list of registries.

[c] Including passenger/cargo.

cent of the general cargo vessels. The table also shows that less than 1 per cent of the world's tonnage is registered in developing economies in Africa and Oceania. Two per cent of the world fleet is registered in developing economies in America, including in several minor open registries, such as Barbados, Belize, Bolivia, Dominica, Honduras, Jamaica, and Saint Kitts and Nevis. With 22.6 per cent of the world fleet, developing economies in Asia account for a higher market share in vessel registration than developed economies, holding a particularly high share in the general cargo fleet (28.6 per cent) and dry bulk carriers (25.3 per cent). The 10 major open and international registries have their highest shares among dry bulk carriers (60 per cent) and oil tankers (54.4 per cent).

The following section looks at the links between ownership and registration for the 10 largest registries with a high share of foreign owned tonnage and the 35 major countries of ownership in more detail.

2. Nationality of controlling interests

Table 15 presents the controlling nationality of the dwt registered in the largest 10 open and international registries for the 35 largest countries of ownership. It must be noted that the figures for the ownership, i.e. the nationality of the ships' controlling interests, is not always precise. Stockholding companies may be owned by a large number of nationals from different countries. A company may be holding less than 100 per cent of shares in companies in third countries. Especially in container shipping, there exists a common distinction between the vessel owners and the operators, who charter the vessel and sell liner shipping services under their own name. Nevertheless, for most ships it is possible to identify the country under which flag it is registered and the country from where the ship is controlled commercially.

Many registries specialize in some owners. More than half of the Panama-registered fleet is controlled by Japanese interests, while the registry of Liberia is mostly used by owners from Germany, Greece, the Russian Federation and Saudi Arabia.

As can be seen from table 15, most open and international registries specialize in certain countries of ownership. The flag of the world's largest registry, Panama, is predominantly used by vessel owners of Japan, who account for more than half of the registry's tonnage (123 million dwt of ships of 1,000 GT and above), followed by China (20.4 million dwt), Greece (19.9 million dwt) and the Republic of Korea (16.6 million dwt). More than half of the Panama-registered tonnage is on dry bulk carriers. The world's second-largest registry, Liberia, is predominantly used by owners from Germany (mostly for containerships) as well as from Greece, the Russian Federation and Saudi Arabia (mostly for oil tankers). Saudi Arabia relies on Liberia to provide the flag for more than half of its nationally-controlled fleet. Liberia supplies the flag for more than 10 per cent of the world's dwt, albeit only for 6 per cent of the number of ships, due to the large average vessel size of Liberia-registered ships.

Apart from Panama and Liberia, there are four registries – the Bahamas, Malta, Antigua and Barbuda, and Saint Vincent and the Grenadines – with less then 1 per cent of registered ships controlled by interests from the same country. They, too, specialize in certain countries of ownership. Three quarters of the dwt registered in Malta are owned by Greek nationals, more than 90 per cent of the fleet of Antigua and Barbuda is owned by German nationals, and around 60 per cent of the dwt of Saint Vincent and the Grenadines belongs to nationals of Greece and China.

D. SHIPBUILDING, DEMOLITIONS AND THE SECOND-HAND MARKET

1. Delivery of newbuildings

Newbuilding activities reached the highest level ever recorded in terms of deadweight tons, with deliveries totalling 81.9 million dwt in 2007 (see table 16), a further increase over previous year's historical record of 71.1 million dwt. During 2007, 2,782 cargo carrying commercial vessels of 100 GT and above were delivered, a historical record, too, and an increase of 16 per cent over 2006. As regards the tonnage and vessel types, the deliveries of oil tankers of 10,000 dwt and above account for 36 per cent of delivered dwt, dry bulk carriers of 10,000 dwt and above for 30 per cent and other vessels for 34 per cent; the latter category includes all kinds of commercial vessels of 100 GT and above. As regards the number of vessels, 75 per cent of vessels delivered in 2007 belong to the category of "other vessels", as compared to 13 per cent for large oil tankers and 11 per cent for large dry bulk carriers.

In 2007, the deliveries of oil tankers reached a historical record in terms of vessel numbers (369 units of 10,000 dwt) and also in terms of delivered deadweight tonnage (29.5 million dwt). The average vessel size of oil tankers increased in 2007, for the first time since 2000. The trend of dry bulk carrier vessel sizes follows an opposite trend for oil tankers; the dwt per unit had increased continuously over the last years, reaching 81,290 dwt in 2006, and then again somewhat decreased in 2007, to an average vessel size of 78,413 dwt. In total, there were 315 dry bulk carriers delivered in 2007, with a combined tonnage of 24.7 million dwt. 2007 also saw a record in the number and tonnage of other vessel types delivered, including car carriers, containerships, LNG tankers and general cargo ships, reaching a total of 2,098 units with a combined tonnage of 27.7 million dwt.

In 2007, deliveries of oil tankers reached a historical record of 29.5 million deadweight tons.

2. Demolition of ships

The trend in the demolition and recycling of ships is correlated with the trend in the delivery of ships; while 2007 saw record highs in newbuildings, it also saw record lows in demolitions. In total, demolitions were equivalent to only 0.4 per cent of the existing world fleet (see table 17). This is only one ninth of the percentage that was demolished in 2002. Tanker tonnage continues to assume the highest share among the vessel types demolished in 2007, with 2.0 million dwt, corresponding to half the year's total. The category of other vessel types increased its share to almost half, reaching 1.9 million dwt in 2006, while hardly any dry bulk carriers were demolished in 2007, a reflection of the high demand for older tonnage of this type of vessel, which is used to carry the main dry commodities, including grains.

Two sides of the same coin: While 2007 saw record highs in newbuildings, it also saw record lows in demolitions.

The average age of demolished ships in 2007 was highest for general cargo vessels (34.9 years), followed by tankers (31.4 years), containerships (29.6 years) and dry bulk carriers (29.1 years) (see table 18). For all vessel types, the average age at demolition has increased significantly since the beginning of the decade, albeit with some fluctuations. In general, scrapping activity is negatively correlated to developments in freight rates, as high freight rates reduce the economic interest of owners to sell their vessels to scrap yards. Hence, while the boom in shipping is creating new jobs in shipbuilding countries such as China, Japan and the Republic of Korea, employment is lost in countries with high ship scrapping activity, such as Bangladesh, India and Pakistan.

3. Tonnage on order

With historically high demand in 2007 for shipping capacity – especially for key commodities such as iron ore, grains and coal – the shipping industry responded by ordering new tonnage, especially in the dry bulk sector. Tonnage on order as per 31 December 2007 consisted of 222 million dwt of dry bulk carriers (44.8 per cent of the world total dwt on order), 125 million dwt oil tankers (25.2 per cent), 8 million dwt of general cargo vessels (2.7 per cent), 78 million dwt of containerships (15.8 per cent) and 57 million dwt of other vessel types (11.5 per cent). Total tonnage on order was at its highest level ever, reaching more than 10,000 vessels with a total tonnage of almost 500 million dwt (see table 19). This represents 28 per cent of merchant fleet by number of vessels over 1,000 GT or, a 44 per cent in terms of volume. Figure 12 illustrates the development of the main vessel types over the last seven years.

The tonnage of dry bulk ships on order at the end of 2007 was 12 times higher than it was in June 2002; since mid-2007, dry bulk orders have outstripped those for any other vessel type. The 222 million dry bulk tonnage on order represents 57 per cent of the existing dry bulk fleet; for the dry bulk vessels of 100,000 dwt and above, the tonnage on order even represents 87 per cent of the existing fleet. Oil tankers continue to be the largest vessels ordered, although the average vessel size decreased from 142,001 dwt in December 2000 to 110,470 dwt in December 2007. The average size of containerships on order attained the historical high of 54,598 dwt in December 2007. With 1,435 vessels, containerships on order reached a historical record, too. Containerized tonnage on order at the end of 2007 was six times higher than five years earlier.

The current financial crisis has started to have a bearing upon ship building and charter markets. The daily charter rates for large bulk carriers in September 2008 were only one third of the peak reached earlier in the year. Owners are finding it increasingly difficult and costly to raise

Table 15

True nationality of 10 major open and international registry fleets, as of 1 January 2008[a]

Country or territory of domicile	Panama			Liberia			Bahamas		
	No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%
Greece	511	19 876	8.8	360	21 916	20.2	209	12 229	23.0
Japan	2 236	123 046	54.4	114	6 729	6.2	67	4 156	7.8
Germany	39	5 088	2.2	770	35 330	32.5	48	2 711	5.1
China	501	20 411	9.0	15	378	0.3	12	900	1.7
Norway	68	1 505	0.7	41	2 340	2.2	254	6 262	11.8
United States	173	2 916	1.3	122	4 088	3.8	115	4 595	8.6
Republic of Korea	302	16 594	7.3	3	449	0.4	0	0	0.0
Hong Kong (China)	137	6 622	2.9	59	3 648	3.4	5	213	0.4
Singapore	106	3 596	1.6	39	4 301	4.0	15	363	0.7
Denmark	35	894	0.4	13	392	0.4	73	913	1.7
Taiwan Province of China	296	10 220	4.5	84	6 282	5.8	0	0	0.0
United Kingdom	58	1 824	0.8	27	766	0.7	76	1 991	3.7
Canada	21	2 739	1.2	5	684	0.6	80	7 670	14.4
Russian Federation	17	177	0.1	90	7 760	7.1	5	26	0.0
Italy	20	497	0.2	43	2 676	2.5	9	416	0.8
India	26	659	0.3	2	154	0.1	1	8	0.0
Turkey	76	647	0.3	6	158	0.1	7	349	0.7
Saudi Arabia	14	456	0.2	24	6 062	5.6	19	3 479	6.5
Belgium	3	77	0.0	3	52	0.0	14	191	0.4
Malaysia	15	72	0.0	0	0	0.0	13	88	0.2
Iran (Islamic Republic of)	5	41	0.0	0	0	0.0	0	0	0.0
United Arab Emirates	118	2 520	1.1	25	1 697	1.6	22	1 058	2.0
Netherlands	28	286	0.1	34	483	0.4	36	1 557	2.9
Cyprus	19	1 248	0.6	5	442	0.4	16	644	1.2
Indonesia	39	795	0.4	1	79	0.1	3	102	0.2
Sweden	10	135	0.1	10	422	0.4	7	60	0.1
France	18	358	0.2	5	249	0.2	28	693	1.3
Kuwait	2	93	0.0	0	0	0.0	0	0	0.0
Viet Nam	16	514	0.2	5	226	0.2	0	0	0.0
Spain	60	400	0.2	0	0	0.0	14	1 393	2.6
Brazil	6	1 099	0.5	3	456	0.4	2	109	0.2
Thailand	9	52	0.0	0	0	0.0	4	99	0.2
Switzerland	32	730	0.3	12	333	0.3	3	105	0.2
Bermuda	0	0	0.0	0	0	0.0	13	833	1.6
Croatia	4	78	0.0	3	74	0.1	1	54	0.1
Total 35 countries	5 020	226 265	100.0	1 923	108 625	100.0	1 171	53 265	100.0
Percentage share among 35 countries	15.6	22.9		6.0	11.0		3.6	5.4	

Table 15 (continued)

Marshall Islands			Malta			Cyprus			Country or territory of domicile
No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%	
244	14 227	26.7	449	22 835	57.5	272	13 953	50.0	Greece
10	522	1.0	4	136	0.3	19	535	1.9	Japan
221	10 451	19.6	76	2 679	6.7	196	4 847	17.4	Germany
2	7	0.0	12	207	0.5	9	215	0.8	China
69	6 051	11.4	93	744	1.9	23	785	2.8	Norway
158	10 791	20.3	13	176	0.4	9	51	0.2	United States
7	480	0.9	12	637	1.6	3	23	0.1	Republic of Korea
4	61	0.1	2	24	0.1	2	36	0.1	Hong Kong (China)
16	893	1.7	0	0	0.0	4	131	0.5	Singapore
15	717	1.3	22	335	0.8	3	52	0.2	Denmark
1	259	0.5	1	19	0.0	0	0	0.0	Taiwan Province of China
14	874	1.6	17	333	0.8	18	879	3.2	United Kingdom
6	308	0.6	2	11	0.0	2	60	0.2	Canada
6	147	0.3	57	560	1.4	47	1 689	6.1	Russian Federation
4	291	0.5	46	900	2.3	6	52	0.2	Italy
0	0	0.0	3	199	0.5	1	175	0.6	India
41	1 427	2.7	165	3 122	7.9	0	0	0.0	Turkey
5	1 561	2.9	0	0	0.0	0	0	0.0	Saudi Arabia
0	0	0.0	11	136	0.3	1	9	0.0	Belgium
4	38	0.1	0	0	0.0	0	0	0.0	Malaysia
0	0	0.0	51	4 688	11.8	3	438	1.6	Iran (Islamic Republic of)
17	566	1.1	8	273	0.7	11	461	1.7	United Arab Emirates
12	620	1.2	4	26	0.1	29	236	0.8	Netherlands
35	809	1.5	23	634	1.6	111	2 829	10.1	Cyprus
1	70	0.1	0	0	0.0	0	0	0.0	Indonesia
4	31	0.1	2	14	0.0	1	5	0.0	Sweden
0	0	0.0	4	45	0.1	3	110	0.4	France
0	0	0.0	0	0	0.0	0	0	0.0	Kuwait
0	0	0.0	0	0	0.0	0	0	0.0	Viet Nam
1	94	0.2	2	27	0.1	6	267	1.0	Spain
1	280	0.5	0	0	0.0	0	0	0.0	Brazil
0	0	0.0	0	0	0.0	0	0	0.0	Thailand
12	321	0.6	25	447	1.1	3	48	0.2	Switzerland
11	1 255	2.4	0	0	0.0	0	0	0.0	Bermuda
5	112	0.2	12	506	1.3	0	0	0.0	Croatia
926	53 264	100.0	1 116	39 712	100.0	782	27 887	100.0	Total 35 countries
2.9	5.4		3.5	4.0		2.4	2.8		Percentage share among 35 countries

Table 15 (continued)

Country or territory of domicile	Isle of Man			Antigua & Barbuda			Bermuda			Saint Vincent & the Grenadines		
	No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%	No. of vessels	1 000 dwt	%
Greece	47	4 244	31.5	2	4	0.0	2	152	2.7	82	2 014	30.8
Japan	4	13	0.1	0	0	0.0	2	164	2.9	0	0	0.0
Germany	57	821	6.1	913	9 870	93.8	21	768	13.4	3	16	0.2
China	0	0	0.0	0	0	0.0	12	1 606	28.1	99	2 271	34.7
Norway	51	1 983	14.7	7	49	0.5	5	58	1.0	21	91	1.4
United States	5	297	2.2	8	26	0.3	23	333	5.8	24	153	2.3
Republic of Korea	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Hong Kong (China)	0	0	0.0	0	0	0.0	4	593	10.4	7	83	1.3
Singapore	0	0	0.0	0	0	0.0	0	0	0.0	7	128	2.0
Denmark	53	430	3.2	18	120	1.1	0	0	0.0	16	42	0.6
Taiwan Province of China	0	0	0.0	0	0	0.0	0	0	0.0	4	5	0.1
United Kingdom	85	5 487	40.8	8	138	1.3	8	562	9.8	14	166	2.5
Canada	0	0	0.0	0	0	0.0	0	0	0.0	1	3	0.0
Russian Federation	0	0	0.0	5	21	0.2	0	0	0.0	22	301	4.6
Italy	0	0	0.0	0	0	0.0	0	0	0.0	18	296	4.5
India	0	0	0.0	0	0	0.0	0	0	0.0	6	53	0.8
Turkey	2	7	0.1	6	28	0.3	0	0	0.0	21	124	1.9
Saudi Arabia	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Belgium	0	0	0.0	0	0	0.0	2	9	0.2	14	63	1.0
Malaysia	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Iran (Islamic Republic of)	0	0	0.0	0	0	0.0	0	0	0.0	3	7	0.1
United Arab Emirates	1	2	0.0	0	0	0.0	0	0	0.0	20	347	5.3
Netherlands	2	4	0.0	19	81	0.8	0	0	0.0	7	12	0.2
Cyprus	2	75	0.6	2	31	0.3	0	0	0.0	1	6	0.1
Indonesia	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Sweden	3	97	0.7	1	5	0.0	19	1 464	25.6	2	8	0.1
France	1	4	0.0	1	4	0.0	1	7	0.1	19	60	0.9
Kuwait	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Viet Nam	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Spain	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Brazil	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Thailand	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Switzerland	0	0	0.0	4	145	1.4	0	0	0.0	14	178	2.7
Bermuda	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Croatia	0	0	0.0	0	0	0.0	0	0	0.0	9	115	1.8
Total 35 countries	313	13 462	100.0	994	10 521	100.0	99	5 716	100.0	434	6 542	100.0
Percentage share among 35 countries	1.0	1.4		3.1	1.1		0.3	0.6		1.3	0.7	

Table 15 (continued)

Total major 10 open and international registries					Total national controlled fleet, 1 000 dwt	Major 10 registries as % of total national controlled fleet	Country or territory of domicile
No. of vessels	% of vessels	1 000 dwt	% of dwt	Average vessel size			
2 096	17.0	109 437	20.3	52 212	174 570	62.7	**Greece**
2 456	19.9	135 302	25.1	55 090	161 747	83.7	**Japan**
2 341	19.0	72 565	13.5	30 998	94 223	77.0	**Germany**
563	4.6	23 724	4.4	42 138	84 882	27.9	**China**
611	4.9	19 776	3.7	32 367	46 872	42.2	**Norway**
626	5.1	23 273	4.3	37 177	39 828	58.4	**United States**
327	2.6	18 182	3.4	55 603	37 704	48.2	**Republic of Korea**
213	1.7	11 198	2.1	52 571	33 424	33.5	**Hong Kong (China)**
180	1.5	9 285	1.7	51 581	28 633	32.4	**Singapore**
232	1.9	3 853	0.7	16 606	27 435	14.0	**Denmark**
382	3.1	16 780	3.1	43 926	26 150	64.2	**Taiwan Province of China**
311	2.5	12 854	2.4	41 331	26 002	49.4	**United Kingdom**
116	0.9	11 472	2.1	98 895	18 748	61.2	**Canada**
227	1.8	10 379	1.9	45 723	18 038	57.5	**Russian Federation**
128	1.0	4 833	0.9	37 755	17 740	27.2	**Italy**
33	0.3	1 195	0.2	36 198	16 053	7.4	**India**
303	2.5	5 738	1.1	18 936	13 160	43.6	**Turkey**
62	0.5	11 558	2.1	186 421	12 946	89.3	**Saudi Arabia**
34	0.3	474	0.1	13 949	12 155	3.9	**Belgium**
32	0.3	199	0.0	6 211	11 169	1.8	**Malaysia**
59	0.5	5 167	1.0	87 579	10 257	50.4	**Iran (Islamic Republic of)**
202	1.6	6 575	1.2	32 551	8 925	73.7	**United Arab Emirates**
164	1.3	3 292	0.6	20 072	8 636	38.1	**Netherlands**
213	1.7	6 711	1.2	31 506	7 313	91.8	**Cyprus**
44	0.4	1 046	0.2	23 774	7 258	14.4	**Indonesia**
57	0.5	2 231	0.4	39 147	6 918	32.3	**Sweden**
61	0.5	1 469	0.3	24 083	6 526	22.5	**France**
2	0.0	93	0.0	46 560	5 301	1.8	**Kuwait**
21	0.2	740	0.1	35 237	4 586	16.1	**Viet Nam**
83	0.7	2 181	0.4	26 272	4 498	48.5	**Spain**
12	0.1	1 945	0.4	162 073	4 421	44.0	**Brazil**
13	0.1	151	0.0	11 630	4 022	3.8	**Thailand**
91	0.7	2 130	0.4	23 402	3 579	59.5	**Switzerland**
24	0.2	2 088	0.4	87 007	3 217	64.9	**Bermuda**
25	0.2	824	0.2	32 975	3 065	26.9	**Croatia**
12 344	100.0	538 718	100.0	43 642	990 003	54.4	**Total 35 countries**
38.3		54.4					**Percentage share among 35 countries**

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Ships of 1 000 GT and above.

Table 16

Deliveries of newbuildings, selected years [a]

Year	Oil tankers [b]			Dry bulk carriers [b]			Others [c]			Total		
	No. of vessels	Million dwt	Average vessel size	No. of vessels	Million dwt	Average vessel size	No. of vessels	Million dwt	Average vessel size	No. of vessels	Million dwt	Average vessel size
1980	99	7.0	70 707	135	4.7	34 815	552	4.4	7 971	786	18.0	22 901
	13	*39*		*17*	*26*		*70*	*24*		*100*	*100*	
1985	72	3.9	54 167	339	14.7	43 363	539	5.7	10 575	950	25.0	26 316
	8	*16*		*36*	*59*		*57*	*23*		*100*	*100*	
1990	81	8.7	107 407	119	9.6	80 672	523	4.0	7 648	723	23.0	31 812
	11	*38*		*16*	*42*		*72*	*17*		*100*	*100*	
1997	69	7.5	108 696	299	18.8	62 876	699	10.5	15 021	1 067	36.8	34 489
	6	*20*		*28*	*51*			*29*		*100*	*100*	
1998	120	12.6	105 000	217	11.6	53 456	704	11.1	15 767	1 041	35.3	33 910
	12	*36*		*21*	*33*		*68*	*31*		*100*	*100*	
1999	161	19.1	118 634	195	13.0	66 667	589	8.8	14 941	945	40.5	42 857
	17	*47*		*21*	*32*		*62*	*22*		*100*	*100*	
2000	154	20.8	135 065	188	13.1	69 681	1 202	10.5	8 735	1 544	44.4	28 756
	10	*47*		*12*	*30*		*78*	*24*		*100*	*100*	
2001	112	14.4	128 571	310	21.0	67 742	1 048	9.8	9 351	1 470	45.2	30 748
	8	*32*		*21*	*46*		*71*	*22*		*100*	*100*	
2002	182	23.4	128 571	226	14.1	62 389	1 131	11.5	10 168	1 539	49.0	31 839
	12	*48*		*15*	*29*		*73*	*23*		*100*	*100*	
2003	281	29.4	104 626	161	11.2	69 565	1 265	8.6	6 798	1 707	49.2	28 822
	16	*60*		*9*	*23*		*74*	*17*		*100*	*100*	
2004	294	27.0	91 837	266	19.8	74 436	1 262	7.9	6 260	1 822	49.4	27 113
	16	*55*		*15*	*40*		*69*	*16*		*100*	*100*	
2005	315	29.0	92 063	308	23.2	75 325	1 341	16.8	12 528	1 964	70.5	35 896
	16	*41*		*16*	*33*		*68*	*24*		*100*	*100*	
2006	329	24.7	74 948	307	25.1	81 759	1 762	21.3	12 110	2 398	71.1	29 648
	14	*35*		*13*	*35*		*73*	*30*		*100*	*100*	
2007 [d]	369	29.5	79 946	315	24.7	78 413	2 098	27.7	13 183	2 782	81.9	29 424
	13	*36*		*11*	*30*		*75*	*34*		*100*	*100*	

Source: Compiled by the UNCTAD secretariat on the basis of data from Fearnleys *Review*, various issues, and Lloyd's Register – Fairplay.

[a] Percentage shares per vessel type are shown in italics.

[b] Vessels over 10,000 dwt.

[c] Seagoing, cargo-carrying vessels of over 100 GT.

[d] Provisional.

Table 17

Tonnage reported sold for breaking, by types of vessel, 2000–2007

(Millions of dwt and percentage shares)

Years	Million dwt					Total as percent of world fleet	Percentage share				
	Tankers	Combined carriers	Bulk carriers	Others	Total		Tankers	Combined carriers	Bulk carriers	Others	Total
2000	13.5	1.0	4.6	3.1	22.2	2.7	60.9	4.3	20.8	14.0	100.0
2001	15.7	0.8	8.1	3.2	27.8	3.4	56.5	2.7	29.1	11.7	100.0
2002	18.1	1.6	5.9	4.9	30.5	3.6	59.3	5.2	19.3	16.1	100.0
2003	18.4	0.5	3.3	3.4	25.6	3.0	71.9	2.0	12.9	13.3	100.0
2004	7.8	0.5	0.5	1.8	10.6	1.2	73.6	4.7	4.7	17.0	100.0
2005	4.5	-	0.9	0.9	6.3	0.7	71.4	-	14.3	14.3	100.0
2006	2.7	0.2	1.3	1.8	6.0	0.6	45.0	3.3	21.7	30.0	100.0
2007	2.0	-	0.1	1.9	4.0	0.4	50.0	-	2.5	47.5	100.0

Sources: Compiled by the UNCTAD secretariat on the basis of data supplied by Fearnleys *Review*, various issues, and Lloyd's Register – Fairplay.

Table 18

Average age of broken-up ships, by type, from 2001 to 2007 [a]

Year	Tankers	Dry bulk carriers	Container ships	General cargo ships
2001	28.0	26.7	26.9	27.4
2002	28.3	26.6	26.0	28.2
2003	29.3	26.5	25.5	29.3
2004	29.5	27.3	30.5	32.9
2005	31.5	28.1	30.6	31.9
2006	30.0	28.9	28.1	32.3
2007	31.4	29.1	29.6	34.9

Source: Compiled by the UNCTAD secretariat on the basis of data from Institute of Shipping Economics and Logistics, *Shipping Statistics and Market Review*, Volume 52 No 1/2 - 2008, Table 2.2.

Table 19

World tonnage on order, 2000–2007[a]

Beginning of month	Tankers			Bulk carriers			General cargo ships		
	1 000 dwt	Ships	Average vessel size, dwt	1 000 dwt	Ships	Average vessel size, dwt	1 000 dwt	Ships	Average vessel size, dwt
December 2000	40 328	284	142 001	31 208	486	64 214	3 966	446	8 892
March 2001	44 361	319	139 061	27 221	439	62 007	3 963	441	8 986
June 2001	45 123	339	133 105	26 103	400	65 258	4 154	419	9 914
September 2001	48 386	381	126 998	21 944	337	65 115	3 967	393	10 094
December 2001	51 894	399	130 060	22 184	353	62 845	3 826	372	10 286
March 2002	47 836	404	118 405	19 027	300	63 425	3 758	357	10 525
June 2002	49 564	425	116 622	18 132	283	64 069	3 932	353	11 139
September 2002	47 774	431	110 845	18 869	283	66 676	3 979	369	10 782
December 2002	47 591	488	97 523	28 641	391	73 251	2 832	257	11 018
March 2003	50 284	515	97 639	32 019	441	72 605	2 958	263	11 249
June 2003	55 771	540	103 279	33 408	455	73 425	2 592	250	10 368
September 2003	57 856	580	99 752	41 499	575	72 172	2 841	269	10 562
December 2003	61 123	631	96 867	46 732	640	73 019	3 068	295	10 400
March 2004	62 096	615	100 969	48 761	671	72 670	3 021	312	9 683
June 2004	66 652	649	102 699	50 545	696	72 623	2 838	317	8 954
September 2004	66 969	661	101 314	52 768	703	75 061	2 921	323	9 043
December 2004	71 563	701	102 087	62 051	796	77 953	3 306	370	8 935
March 2005	68 667	679	101 129	63 404	792	80 055	3 312	388	8 536
June 2005	70 520	686	102 799	65 326	801	81 556	4 079	456	8 945
September 2005	68 741	693	99 193	63 495	788	80 578	4 777	521	9 170
December 2005	70 847	724	97 855	66 614	805	82 750	5 088	584	8 712
March 2006	83 385	791	105 417	63 829	784	81 415	5 798	634	9 145
June 2006	93 277	887	105 160	69 055	859	80 390	7 370	683	10 791
September 2006	106 912	987	108 321	73 226	898	81 543	7 602	715	10 632
December 2006	118 008	1 078	109 470	79 364		80 328	8 004	737	10 860
March 2007	120 819	1 113	108 553	100 256	1 204	83 269	9 561	843	11 342
June 2007	122 429	1 107	110 595	143 795	1 657	86 781	10 782	885	12 184
September 2007	124 758	1 149	108 580	183 574	2 137	85 903	12 042	956	12 597
December 2007	124 845	1 134	110 093	221 808	2 573	86 206	13 360	1 035	12 908
Percent of total, December 2007	25.2	11.3		44.8	25.6		2.7	10.3	

Table 19 (continued)

Container vessels			Other ships			Total			Beginning of month
1 000 dwt	Ships	Average vessel size, dwt	1 000 dwt	Ships	Average vessel size, dwt	1 000 dwt	Ships	Average vessel size, dwt	
16 140	394	40 964	8 870	1 087	8 160	100 513	2 697	37 268	**December 2000**
17 350	435	39 884	10 154	1 132	8 970	103 048	2 766	37 255	**March 2001**
18 393	441	41 708	11 790	1 138	10 360	105 563	2 737	38 569	**June 2001**
16 943	413	41 025	12 181	1 153	10 564	103 421	2 677	38 633	**September 2001**
16 550	393	42 111	13 501	1 201	11 242	107 955	2 718	39 719	**December 2001**
14 476	355	40 776	12 839	1 200	10 700	97 936	2 616	37 437	**March 2002**
14 793	362	40 865	15 415	1 324	11 643	101 836	2 747	37 072	**June 2002**
14 509	338	42 927	15 342	1 292	11 875	100 473	2 713	37 034	**September 2002**
13 000	296	43 919	16 174	1 386	11 669	108 238	2 818	38 409	**December 2002**
16 281	326	49 943	16 199	1 365	11 868	117 742	2 910	40 461	**March 2003**
18 296	367	49 853	17 085	1 367	12 498	127 152	2 979	42 683	**June 2003**
27 216	503	54 107	18 062	1 484	12 171	147 475	3 411	43 235	**September 2003**
30 974	580	53 403	19 277	1 492	12 920	161 174	3 638	44 303	**December 2003**
35 840	658	54 468	20 068	1 520	13 203	169 786	3 776	44 965	**March 2004**
38 566	724	53 268	22 833	1 682	13 575	181 434	4 068	44 600	**June 2004**
41 172	808	50 956	24 368	1 714	14 217	188 198	4 209	44 713	**September 2004**
43 904	880	49 891	27 361	1 898	14 416	208 185	4 645	44 819	**December 2004**
49 624	1 006	49 328	27 328	1 940	14 087	212 335	4 805	44 190	**March 2005**
53 605	1 101	48 688	29 884	2 002	14 927	223 414	5 046	44 275	**June 2005**
52 378	1 132	46 271	31 209	2 158	14 462	220 600	5 292	41 686	**September 2005**
50 856	1 124	45 245	33 147	2 285	14 506	226 551	5 522	41 027	**December 2005**
49 749	1 130	44 026	36 750	2 373	15 487	239 512	5 712	41 931	**March 2006**
53 876	1 185	45 465	39 768	2 522	15 768	263 347	6 136	42 918	**June 2006**
54 676	1 199	45 601	42 322	2 714	15 594	284 738	6 513	43 718	**September 2006**
51 717	1 143	45 247	45 612	2 962	15 399	302 706	6 908	43 820	**December 2006**
55 144	1 229	44 869	49 245	3 327	14 802	335 025	7 716	43 420	**March 2007**
63 063	1 305	48 324	52 382	3 562	14 706	392 451	8 516	46 084	**June 2007**
76 804	1 412	54 394	56 767	3 864	14 691	453 945	9 518	47 693	**September 2007**
78 348	1 435	54 598	56 947	3 876	14 692	495 309	10 053	49 270	**December 2007**
15.8	14.3		11.5	38.6		100.0	100.0		**Percent of total, December 2007**

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Ships of 100 GT and above.

funds to finance new buildings, and ship yards have seen some orders cancelled. According to LLR-Fairplay, in January 2008 more than 600 new vessels were ordered, while by September this had slowed to just 127 contracted.

By end of May 2008, the global containership newbuildings order book reached its highest level ever, standing at 1,528 ships with a total container carrying capacity of 6.7 million TEUs. Among those, there were 54 ships on order, with a capacity of 13,000 TEUs and above. The largest containerships on order were eight 13,350 TEU units ordered by COSCON (China) and eight 13,000 TEU units ordered by China Shipping (China), all for delivery between December 2010 and 2012. The other known operators for which 13,000 plus containerships were on order were MSC (Switzerland), Maersk (Denmark), Hanjin (Republic of Korea), and CGM–CMA (France). The 54 ships with 13,000 plus TEUs are all built in shipyards in China and the Republic of Korea, and they are scheduled to be registered in China, Germany, Liberia, Marshall Islands and Panama.

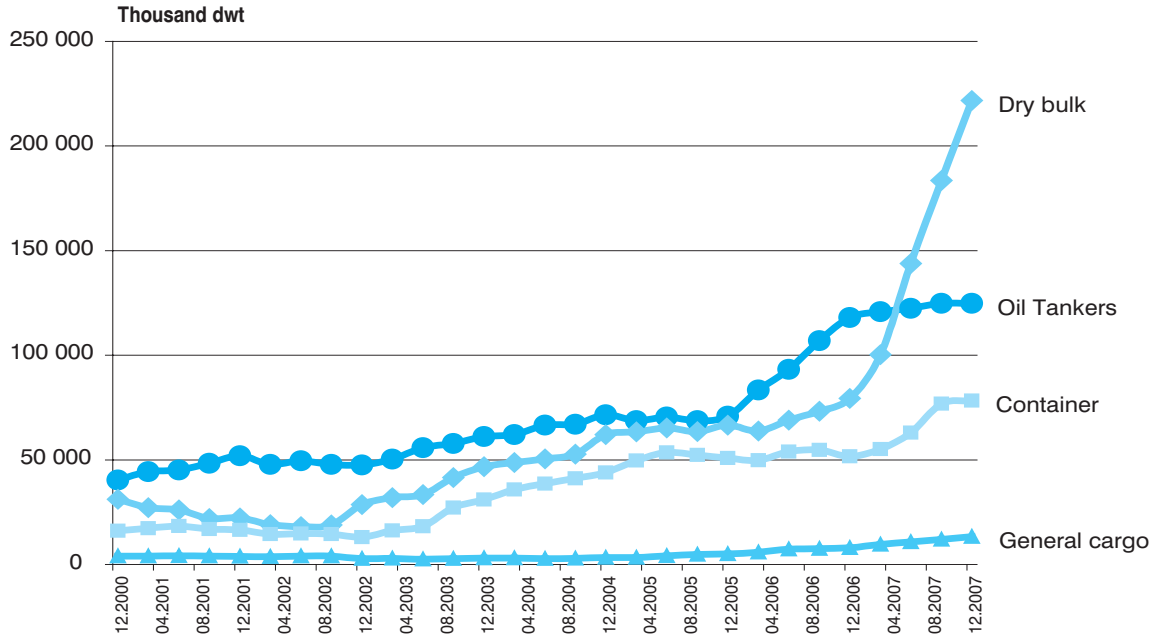
The present order book has raised concerns whether the supply of qualified seafarers will grow sufficiently quickly to sustain the fleet that will enter into service in coming years.

The present order book has raised concerns whether the supply of qualified seafarers will grow sufficiently quickly to sustain the fleet that will enter into service in coming years. It is estimated that manning the 10,000 ships presently on order requires 400,000 newly trained crew. Already in 2007, carriers reported an acute shortage of officers, and the shortage is expected to escalate. Some of the maritime accidents that happened in 2007 are thought to be the consequence of the employment of insufficiently experienced on-board personnel. Specialized ships, such as LNG tankers, require a specialized workforce, and officers are increasingly seeking employment ashore, where job opportunities in the area of port operations and maritime administrations are also growing in line with the booming trade.

In past decades, traditional "maritime nations" would have their own national shipping companies, vessel registrations and seafarers, and if there was a shortage of the last, there would have been a need for a national solution, possibly involving support to nautical schools and more attractive working conditions. Today, the global shortage of seafarers

Figure 12

World tonnage on order, 2000–2007[a]



Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Ships of 100 GT and above.

requires a global solution, where carriers and trading nations need to provide a framework that makes maritime training and education a worthwhile investment.

4. Prices of newbuildings and second-hand tonnage

Newbuilding prices for most vessel types continued to increase in 2007 compared to the previous year's figures, the exception being a slight decrease for 110,000 dwt tankers, albeit following a historical high in 2006, and a stable price (in nominal United States dollars) for 150,000 m^3 LNG tankers. The rising prices for newbuildings reflect the continuing high demand, as well as the surge in the price of steel and the costs of local currency inputs if measured in dollars.

Today, due to a shortage of capacity, second-hand vessels are more expensive than newbuilding contracts.

The highest increase was recorded for containerships: a 2,500 TEU vessel cost 43.5 per cent more in December 2007 than it did a year earlier. Dry bulk carriers also recorded high increases, reaching record prices. A 170,000 dwt dry bulk carrier fetched $97 million in December 2007, 39 per cent more than a year before, and 2.4 times the price paid in 2000 (see table 20).

The most expensive new ships continue to be LNG carriers, which in 2007 cost $220 million, equivalent to almost $1500 per m^3. Prices per dwt depend heavily on ship sizes, implying significant economies of scale. At $483, the price per dwt on a 300,000 dwt tanker was only 42 per cent of the price per dwt on a 45,000 dwt tanker, and was in fact the lowest price per dwt of all ship types in the table. In the case of dry bulk carriers, the price per dwt on a 170,000 dwt vessel was $571, two thirds of the price per dwt on a 45,000 dwt vessel. An 8,000 TEU containership in 2007 cost $20,000 per TEU, less than two thirds of the TEU price on a 4,000 TEU ship.

Prices for second-hand tonnage fluctuate more than prices for newbuildings. Prices for five-year-old dry bulk carriers grew more than six-fold between 2001 and 2007, reaching levels that were in fact significantly higher than the corresponding newbuilding prices (see tables 20 and 21). A five-year-old 170,000 dwt dry bulk carrier in 2007 cost $152 million, compared to just $97 million for a newbuilding contract for a vessel of the same type.

Table 20

Representative newbuilding prices in selected years

(Millions of dollars, end of year figures)

Type and size of vessel [a]	1985	1990	1995	2000	2005	2006	2007	Percentage change 2007/ 2006
45,000 dwt dry bulk carrier	11	24	25	20	28	31	39	25.8
72,000 dwt dry bulk carrier	14	32	29	23	35	40	54	35.0
170,000 dwt dry bulk carrier	27	45	40	40	59	70	97	38.6
45,000 dwt tanker	18	29	34	29	43	47	52	10.6
110,000 dwt tanker	22	42	43	41	58	81	72	-11.1
300,000 dwt tanker	47	90	85	76	120	130	145	11.5
150,000 m^3 LNG	200	225	245	165	205	220	220	0.0
78,000 m^3 LPG	44	78	68	60	89	92	93	1.1
20,000 dwt general cargo	12	24	21	19	18	24	25	4.2
2,500 TEU full containership	26	52	50	35	42	46	66	43.5
4,000 TEU full containership	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	130	n.a.
8,000 TEU full containership	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	160	n.a.

Source: Compiled by the UNCTAD secretariat on the basis of data from *Lloyd's Shipping Economist*, various issues.

[a] Vessel sizes for different years do not always coincide completely.

Table 21

Second-hand prices for five-year-old ships, 2000–2007

(Millions of dollars, end of year figures)

Type and size of vessel	2000	2001	2002	2003	2004	2005	2006	2007	Percentage change 2007/2006
40,000 dwt tankers	27.0	25.5	24.0	28.0	40.0	45.0	47.5	50.0	5.3
95,000 dwt tankers	39.0	33.0	30.0	38.0	57.0	59.5	66.0	68.0	3.0
150,000 dwt tankers	50.0	43.0	42.0	48.0	74.0	76.0	85.0	88.7	4.4
300,000 dwt tankers	71.0	60.0	53.0	75.0	107.0	108.0	121.0	130.0	7.4
45,000-52,000 dwt dry bulk carrier	15.0	12.0	15.0	20.5	30.0	26.5	40.5	75.5	86.4
70,000 dwt dry bulk carrier	16.0	13.5	17.0	28.0	41.0	30.0	46.0	91.5	98.9
170,000 dwt dry bulk carrier	25.0	25.0	29.0	46.0	65.0	58.0	81.0	152.0	87.7

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by Fearnleys *Review*, various issues.

Chapter 3

PRODUCTIVITY OF THE WORLD FLEET AND SUPPLY AND DEMAND IN WORLD SHIPPING

This chapter provides information on the operational productivity of the world fleet and an analysis of the balance between supply and demand for tonnage and container carrying capacity. Key indicators are the comparison of cargo generation and fleet ownership, tons of cargo carried and ton-miles performed per deadweight ton, and the analysis of tonnage oversupply in the main shipping market sectors. The thousands of ton-miles per dwt of oil tankers decreased from 34.2 in 2006 to 32.5 in 2007, while the corresponding figure for dry bulk carriers increased slightly from 28.8 to 29.5. The productivity of the residual fleet, including container and general cargo ships, decreased from 36 to 33.1. In 2007, containership operators have tended to reduce the service speeds of their vessels, thus saving fuel in response to high oil prices, albeit reducing the fleet's productivity.

A. OPERATIONAL PRODUCTIVITY

The main indicators of operational productivity for the world fleet in tons and ton-miles per deadweight ton (dwt) are shown in tables 22, 23 and 24 and illustrated in figures 13, 14 and 15.[71] As the growth in the supply of the fleet (8.6 per cent) outstripped the growth in total seaborne trade (estimated at 4.8 per cent), in 2007 the tons of cargo carried per deadweight ton (dwt) decreased slightly compared to the 2006 figures. The global average of tons of cargo carried per dwt of cargo carrying capacity was 7.7; in other words, the average ship was fully loaded 7.7 times during the year. During the same year, the ton-miles performed per deadweight reached 31.6; thus, the average dwt of cargo carrying capacity transported one ton of cargo over a distance of 31,600 nautical miles (60,375 km) in 2007, i.e. 87 miles per day.

Table 23 provides data on the operational productivity in terms of cargo carried per dwt by type of vessel. Productivity in terms of tons carried per dwt for oil tankers decreased slightly, from 7.3 in 2006 to 7.0 in 2007, while that for dry bulk remained practically constant at 5.4 tons per dwt. The cargo volumes carried per dwt of the residual fleet also decreased, from 12.2 to 11.5 tons per dwt. Apart from short-term fluctuations, the productivity of the residual fleet, which increasingly includes containerships, has seen a long-term positive trend since 1970, while oil tankers and dry bulk carriers had a higher productivity in 1970 than today; compared to 1980, however, oil tankers and dry bulk carriers have also seen their productivity increase.

Indicative data on ton-miles performed by oil tankers, dry bulk carriers and the residual fleet are provided in table 24. The thousands of ton-miles per dwt of oil tankers decreased slightly, from 34.2 in 2006 to 32.5 in 2007, while the corresponding figure for dry bulk carriers increased, from 28.8 to 29.5. The productivity of the residual fleet measured in ton-miles per dwt also decreased slightly, from 36 to 33.1.

In 2007, ship operators, especially in liner shipping, tended to reduce the service speeds of their vessels, thus saving fuel in response to high oil prices. With lower

Table 22

Cargo carried and ton-miles performed per deadweight ton (dwt) of the total world fleet, selected years

Year	World fleet (million dwt, beginning of year)	Total cargo (million tons)	Total ton-miles performed (billions of ton-miles)	Tons carried per dwt	Thousands of ton-miles performed per dwt
1970	326	2 566	10 654	7.9	32.7
1980	683	3 704	16 777	5.4	24.6
1990	658	4 008	17 121	6.1	26.0
2000	799	5 983	23 693	7.5	29.7
2006	960	7 652	31 447	8.0	32.8
2007	1 042	8 022	32 932	7.7	31.6

Sources: Calculated by the UNCTAD secretariat on the basis of UNCTAD data on seaborne trade (tons); Lloyd's Register – Fairplay (world fleet in dwt) and Fearnleys *Review*, various issues (ton-miles).

Table 23

Estimated productivity of tankers, bulk carriers and the residual fleet,[a] selected years

(Tons carried per dwt)

Year	Oil cargo (million tons)	Tanker fleet (million dwt, beginning of year)	Tons carried per dwt of tankers	Main dry bulks (million tons)	Dry bulk fleet (million dwt, beginning of year)	Tons carried per dwt of bulk carriers	All other dry cargoes (million tons)	Residual fleet[a] (million dwt, beginning of year)	Tons carried per dwt of the residual fleet [a]
1970	1 442	148	9.74	448	72	6.21	676	106	6.38
1980	1 871	339	5.51	796	186	4.29	1 037	158	6.57
1990	1 755	246	7.14	968	235	4.13	1 285	178	7.23
2000	2 163	282	7.66	1 288	276	4.67	2 532	240	10.53
2006	2 595	354	7.33	1 876	346	5.42	3 181	260	12.24
2007	2 681	383	7.00	1 997	368	5.43	3 344	292	11.46

Sources: Calculated by the UNCTAD secretariat on the basis of UNCTAD data on seaborne trade (tons); and Lloyd's Register – Fairplay (world fleet).

[a] The residual fleet refers to general cargo, container and other vessels included in annex III(b).

Table 24

Estimated productivity of tankers, bulk carriers, and the residual fleet,[a] selected years

(Thousands of ton-miles performed per dwt)

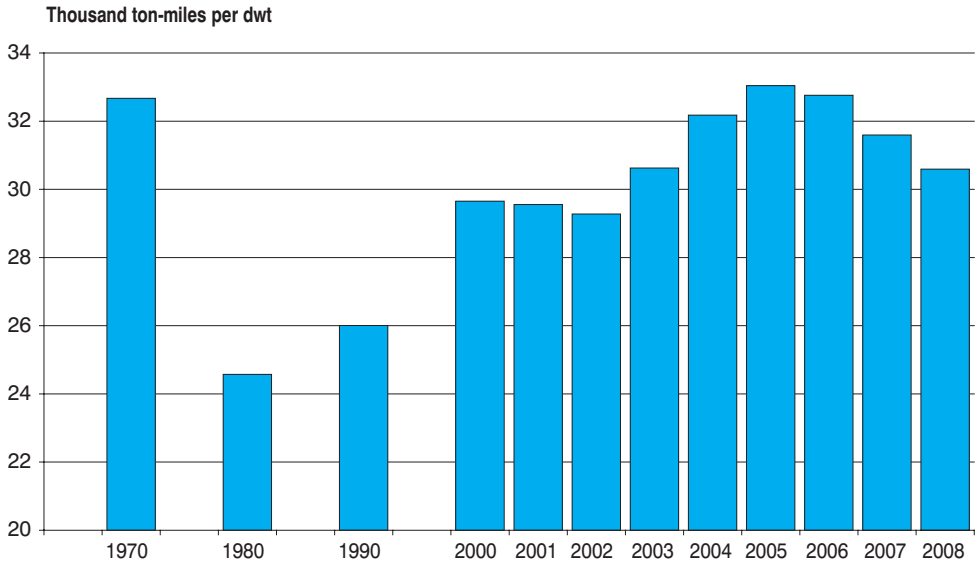
Year	Ton-miles of oil (billions)	Tanker fleet (beginning of year)	Ton-miles per dwt of tankers	Ton-miles of dry bulk cargo (billions)	Dry bulk fleet (beginning of year)	Ton-miles per dwt of bulk carriers	Ton-miles of other dry cargo (billions)	Residual fleet (beginning of year)	Ton-miles per dwt of the residual fleet
1970	6 487	148	43.83	2 049	72	28.42	2 118	106	19.98
1980	9 405	339	27.72	3 652	186	19.67	3 720	158	23.58
1990	7 821	246	31.80	5 259	235	22.41	4 041	178	22.73
2000	10 265	282	36.34	6 638	276	24.04	6 790	240	28.24
2006	12 130	354	34.24	9 976	346	28.84	9 341	260	35.95
2007	12 440	383	32.48	10 827	368	29.46	9 665	292	33.12

Sources: Calculated by the UNCTAD secretariat on the basis of data from Fearnleys *Review*, various issues; *World Bulk Trades* and *World Bulk Fleet*, various issues (ton-miles); and Lloyd's Register – Fairplay (world fleet).

[a] The residual fleet refers to general cargo, container and other vessels included in annex III(b).

Figure 13

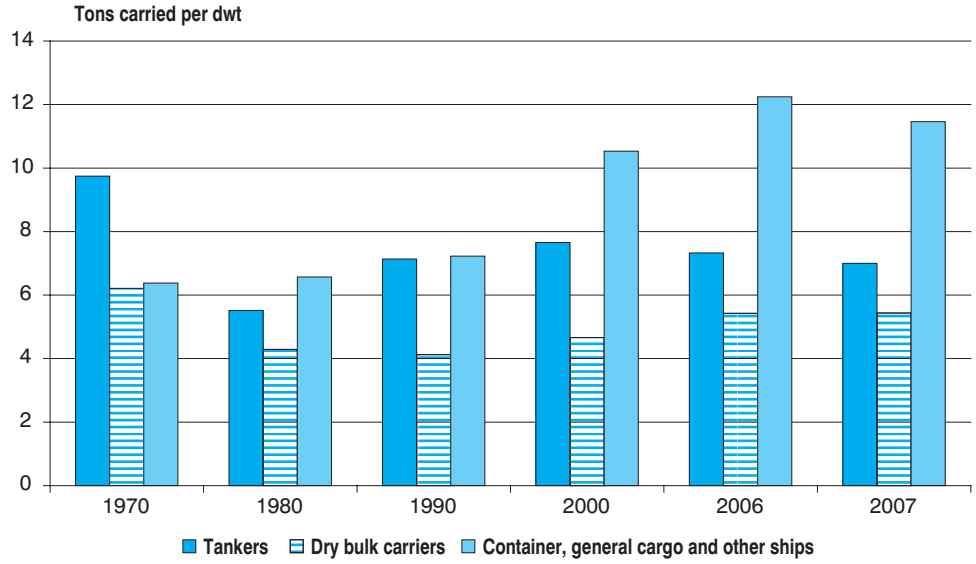
Ton-miles per deadweight ton (dwt) of the world fleet, selected years



Source: UNCTAD calculations.

Figure 14

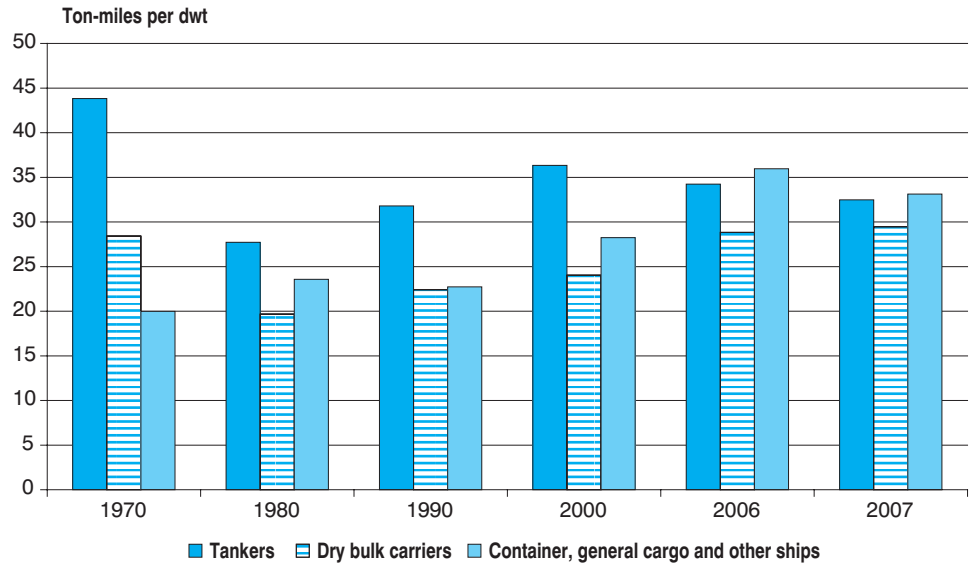
Tons carried per deadweight ton (dwt) of the world fleet, selected years



Sources: Calculated by the UNCTAD secretariat on the basis of UNCTAD data on seaborne trade (tons); and Lloyd's Register – Fairplay (world fleet).

Figure 15

Ton-miles per deadweight ton (dwt) of the world fleet, by vessel types, selected years



Sources: Calculated by the UNCTAD secretariat on the basis of data from Fearnleys *Review*, various issues; *World Bulk Trades* and *World Bulk Fleet*, various issues (ton-miles); and Lloyd's Register – Fairplay (world fleet).

Table 25

Tonnage oversupply in the world merchant fleet, selected years

(End of year figures)

	1990	2000	2004	2005	2006	2007
			Million dwt			
World merchant fleet	658.4	808.4	895.8	960.0	1 042.3	1 117.8
Surplus tonnage [a]	63.7	18.4	6.2	7.2	10.1	12.1
Active fleet [b]	594.7	790.0	889.6	952.8	1 032.2	1 105.7
			Percentages			
Surplus tonnage as percentage of world merchant fleet	9.7	2.3	0.7	0.7	1.0	1.1

Sources: Compiled by the UNCTAD secretariat on the basis of data supplied by Lloyd's Register – Fairplay and *Lloyd's Shipping Economist*, various issues.

[a] Tankers and dry bulk carriers of 10,000 dwt and above, and conventional general cargo vessels of 5,000 dwt and above. Surplus tonnage is defined as tonnage that is not fully utilized because of slow steaming or lay-up status, or because it is lying idle for other reasons.

[b] World fleet minus surplus tonnage.

Table 26

Analysis of tonnage surplus by main type of vessel, selected years [a]

(Millions of dwt)

	1990	2000	2004	2005	2006	2007
World tanker fleet	266.2	279.4	298.3	312.9	367.37	393.53
Total tanker fleet surplus	40.9	13.5	3.4	4.5	6.08	7.80
Share of surplus fleet in world tanker fleet (%)	15.4	4.8	1.1	1.4	1.66	1.98
World dry bulk fleet	228.7	247.7	325.1	340.0	361.81	393.45
Dry bulk fleet surplus	19.4	3.8	2.1	2.0	3.40	3.61
Share of surplus fleet in world dry bulk fleet (%)	8.2	1.5	0.6	0.6	0.94	0.92
World conventional general cargo fleet	63.6	59.3	43.6	45.0	44.68	43.75
Conventional general cargo fleet surplus	2.1	1.1	0.7	0.7	0.65	0.70
Share of surplus fleet in world conventional general cargo fleet (%)	3.3	1.8	1.6	1.6	1.44	1.60

Source: Compiled by the UNCTAD secretariat on the basis of data from *Lloyd's Shipping Economist*, various issues.

[a] End of year figures, except for 1990 and 2000, which are annual averages. This table excludes tankers and dry bulk carriers of less than 10,000 dwt and conventional general cargo/unitized vessels of less than 5,000 dwt.

service speeds, more vessels are required on a given route, which helps to reduce overcapacity, while at the same time leading to a reduced productivity. Capacity constraints and congestion at ports also have a negative impact on the fleet's productivity, as ship capacity is tied up while queuing.

Ship operators, especially in liner shipping, reduced the service speeds of their vessels, thus saving fuel in response to high oil prices.

B. SUPPLY AND DEMAND IN WORLD SHIPPING

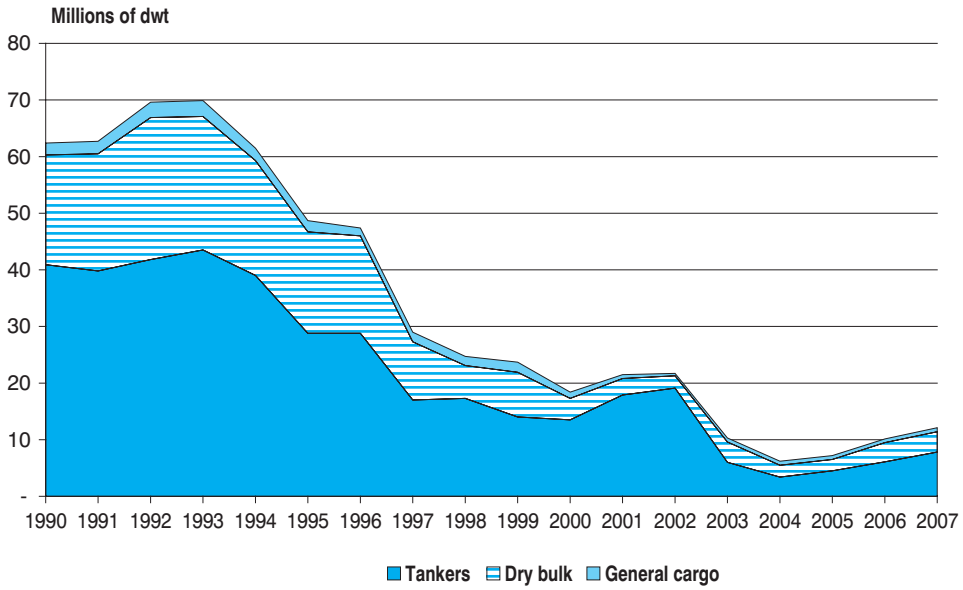
A summary of the balance of tonnage supply and demand for selected years appears in table 25. The surplus tonnage of oil tankers, dry bulk carriers and general cargo ships in 2007 stood at 12.1 million dwt, slightly above that of the previous year. The share of surplus tonnage as a percentage of the total world merchant fleet stood at 1.1 per cent.

Tonnage supply of large oil tankers (10,000 dwt and above) increased in 2007 by 26 million dwt to 394 million dwt as newbuildings delivered outweighed tonnage scrapped, laid up or lost (see table 26 and figure 16). Overcapacity in this sector increased somewhat, to 7.8 million dwt or 2 per cent of the total world tanker fleet. In 2007, the supply in the large dry bulk fleet increased by 32 million dwt to 393 million dwt. Surplus tonnage for this type of vessel was 3.6 million dwt, equivalent to 0.9 per cent of the dry bulk fleet. For the conventional general cargo fleet of vessels of 5,000 dwt and above, overcapacity stood at about the same level as the previous year, with supply exceeding demand by only 0.7 million dwt, or 1.6 per cent of the world fleet of this sector.

As regards the growth of supply and demand in container shipping, table 27 provides a comparison of the annual change of containerized trade (TEU) and the year-on-year growth of the container carrying capacity of the world fleet (TEU). In 2007, growth of the fleet outstripped growth of containerized trade. The increase of the fleet by 11.8 per cent was 1.8 percentage points higher than the 10 per cent growth in demand, leading to a downward pressure on container shipping freight rates.

Figure 16

Trends in surplus capacity by main vessel types, selected years



Source: Compiled by the UNCTAD secretariat on the basis of data from *Lloyd's Shipping Economist*, various issues.

C. COMPARISON OF NATIONAL TRADE AND FLEETS

Information on the trade, fleet ownership and nationally flagged fleets of the major trading nations appears in table 28. In 2007 the United States generated 11.4 per cent of world trade (United States dollars, imports plus exports) while owning 3.8 per cent of world tonnage; 1.1 per cent of the world's cargo carrying tonnage used the flag of the United States. Germany, China and Japan are among the top four trading nations, accounting for 8.5, 7.8 and 4.8 per cent of world trade, respectively; all three countries also have important shares in the controlled fleet, while only a minor proportion of its controlled fleet flies the national flag. France and the United Kingdom account for 4.2 and 3.8 per cent of world trade, respectively, and the United Kingdom has a 2.5 per cent share in the nationally controlled fleet, while France, with a similar share in world trade, has a much smaller share in the controlled fleet (0.6 per cent).

... the majority of the world fleet is registered in open and international registries, most of which do not belong to any of the top 25 trading nations ...

Together with China, the Republic of Korea, Hong Kong (China) and Singapore are among the Asian developing economies with the highest share in world trade, accounting for 2.6, 2.6 and 2.0 per cent, respectively. The Republic of Korea controls 3.6 per cent of the fleet as regards ownership, Hong Kong (China) 3.2 per cent and Singapore 2.8 per cent. The only Latin American country among the major trading nations is Mexico, with a 2.0 per cent share of world trade, albeit with only a very minor interest in vessel owning or registration.

Among the countries covered in table 28, there exists a positive correlation between the controlled fleet and its foreign trade, especially as regards oil and dry bulk trade and the ownership of oil tankers and dry bulk carriers, respectively (see also chapter 2). However, some of the largest ship owners, notably Greece, which controls the world's largest tonnage, are not among the top 25 trading countries. Overall, the statistical correlation coefficient between the shares of world trade and the shares in fleet ownership of the countries covered in table 28 is +0.57.

As regards the relationship between national trade and a nationally flagged fleet, the correlation is much weaker (+0.23), since the majority of the world fleet is registered in open and international registries, most of which do not belong to any of the top 25 trading nations covered in table 28.

Only France, Hong Kong (China) and Singapore have a higher share of the nationally flagged fleet than of the controlled tonnage, reflecting a high proportion of foreign controlled tonnage among the nationally flagged fleet. In addition to Hong Kong (China) and Singapore, India also has a slightly higher share of the nationally flagged fleet than of the world merchandise trade, as a part of the national fleet is employed in cabotage traffic.

Table 27

Growth of demand and supply in container shipping, 2000–2008 [a]

(Annual growth rates)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Growth in containerized trade (TEU)	11.0	2.0	11.0	11.0	13.0	11.0	11.0	10.0	9.0
Growth in container carrying fleet (TEU)	7.8	7.8	8.5	8.0	8.0	8.0	13.6	11.8	13.1
Balance	3.2	-5.8	2.5	3.0	5.0	3.0	-2.6	-1.8	-4.1

Source: Compiled by the UNCTAD secretariat on the basis of data from *Clarkson Container Intelligence Monthly*, various issues.

[a] Total container carrying fleet, including multi-purpose and other vessels with some container carrying capacity. 2008 data: forecast.

Table 28

Maritime engagement of 25 major trading nations

2007 data (trade) and beginning of 2008 data (fleet)

Country/territory	Percentage share of world trade generated, in terms of value	Percentage share of world fleet (flag) in terms of dwt	Percentage share of world fleet (ownership) in terms of dwt
United States	11.38	1.09	3.84
Germany	8.51	1.34	9.07
China	7.81	3.32	8.18
Japan	4.77	1.32	15.58
France	4.16	0.71	0.63
United Kingdom	3.76	1.42	2.50
Netherlands	3.72	0.56	0.83
Italy	3.55	1.19	1.71
Belgium	3.01	0.58	1.17
Canada	2.88	0.28	1.81
Republic of Korea	2.62	1.89	3.63
Hong Kong (China)	2.56	5.30	3.22
Spain	2.18	0.25	0.43
Russian Federation	2.16	0.64	1.74
Mexico	2.04	0.14	n.a.
Singapore	2.02	4.97	2.76
Taiwan Province of China	1.67	0.39	2.52
India	1.29	1.35	1.55
Switzerland	1.19	0.08	0.34
Austria	1.16	0.00	n.a.
Malaysia	1.16	0.85	1.08
Saudi Arabia	1.15	0.10	1.25
Sweden	1.14	0.22	0.67
Australia	1.10	0.19	n.a.
Poland	1.08	0.01	n.a.
Total	78.02	28.16	64.93

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by UNCTAD *Handbook of Statistics* (trade) and Lloyds Register-Fairplay (fleet registration and ownership).

Chapter 4

TRADE AND FREIGHT MARKETS

This chapter describes conditions and trends in trade and freight markets, covering the major tanker, bulk cargo and liner sectors. Overall, 2007 was a good year for all tanker market segments compared to the previous year and in some cases even surpassing the highs achieved in 2005. As with the previous year, 2007 experienced a strong dry-bulk cargo freight market fuelled mainly by buoyant steel production in Asia and the corresponding demand for iron ore. The containership market showed its resilience despite the downward pressure resulting from higher fuel costs, a weakening United States dollar, a strengthening euro and an increased supply of newbuildings coming online.

A. CRUDE OIL AND PETROLEUM PRODUCTS SEABORNE FREIGHT MARKET[72]

Introduction

In addition to being the main source of fuel which propels the ships, crude oil and petroleum products are also transport commodities. The world's tanker fleet carried approximately one third of the total world seaborne trade for the year 2007. Thus, understanding the oil industry gives the reader not only a good indication of one of the main cost elements in transport, but also of shipping as a whole.

1. Seaborne trade in crude oil and petroleum products

The price of oil continued upwards in 2007 from around $54 per barrel at the start of the year to $96 per barrel by the year end. In early 2008, a barrel of oil crossed the long-anticipated threshold of $100 as a result of a combination of weak supply growth coupled with a tight spare capacity. This marked a significant growth from a decade earlier, when in 1998 the price was at a mere $11 per barrel. The previous recorded high was in April 1980 when the inflationary adjusted figure put the price of oil at the equivalent of $102.81 per barrel.[73] Even the discovery of new supplies of oil did little to either dampen the price of oil, which slipped below $90 per barrel in January and February, nor prevent it from surpassing $145 in July 2008. Some analysts attributed the continued demand for oil to speculative investors using the commodity as an alternative to holding the weakening United States dollar and by speculators who treat commodities like assets, i.e. banks and hedge funds. This occurred because the credit crunch wiped out the mortgage backed paper market and collateralized debt market. Commodities were seen as a more tangible safer heaven. However, other reasons – such as low Organization of the Petroleum Exporting Countries (OPEC) production, refining capacity shortages and geopolitical turmoil – all have a part to play in fuelling the uncertainty which drives the price up. Falling production in the Russian Federation, the world's second largest producer, combined with resilience from the world's number one producer, OPEC, to increase production also contributed to the record high prices.

However, the Government of Saudi Arabia – a member of OPEC – did announce its intention to increase production by 300,000 barrels a day, or 3.3 per cent, to 9.45 million barrels a day in June 2008. This helped to slightly ease the price of oil. Oil production in the Russian Federation had peaked at 9.9 million barrels per day, about 11 per cent of the consumption, in October 2007, but has been declining since. The main reason behind the Russian Federation's declining production, analysts claim, is the punitive tax situation which discourages production of oil from new wells over older fields.[74]

The rising price of oil is also having an effect upon supply capacity as holders of stock seek to cash in on the rising value of their inventory. Spare capacity in oil supply has been dwindling since the highs of around 8.4 mbpd in 2002 to around 2.8 million mbpd in 2008. Approximately 2 million of this is held by Saudi Arabia and the United Arab Emirates. Delays in completing projects such as Saudi Arabia's 500,000 barrels per day (bpd) Khursaniyah, pipeline outages, weather-related disruptions in the North Sea and Australia, and attacks to oil installations in Nigeria and Iraq, illustrate market vulnerability and the need for a bigger supply cushion. Heightened tensions in the global markets became evident when in April 2008 a Japanese tanker was attacked with a rocket in the Middle East and militants blew up a Royal Dutch Shell pipeline in Nigeria.[75] Also in Nigeria, a strike at Exxon Mobil halted production of approximately 200,000 bpd while in April 2008 workers at British Petroleum's Grangemouth, United Kingdom plant walked out in protest over pensions. In the United States, an explosion in February 2008 at the Alon USA Energy Inc. refinery in Texas also contributed to uncertainty. Should an increase in production be required, some analysts believe countries which will struggle to increase short-term production include Indonesia, Iraq, Nigeria and the Bolivarian Republic of Venezuela.

In 2007 Petrobras, Brazil's partly State-owned oil firm, announced the world's biggest oil discovery since 2000, the Tupi field, believed to hold between 5 billion and 8 billion barrels. There are possibilities of other big discoveries as analysts assess finds at two nearby fields named Carioca–Sugar Loaf and Jupiter. All three fields are in an area far below the seabed and beneath a thick layer of salt, making extraction costly. The cost of operating an oil rig has risen from around $200,000 per day in 2003 to $600,000 in 2008.[76] While most analysts agree that the cost of extracting oil is rising, the estimates vary. Some put the cost of extraction in many developing countries at below $10 per barrel, others in the range $10–$30, with offshore production at $64.[77] Estimates put the demand for oil in 2008 at around 87.2 mbpd, up 1.5 per cent from 2007, but lower than previously forecasted.

The time charter earnings for modern VLCCs (very large crude carrier) averaged $102,000 per day for the first quarter of 2008, compared to $58,900 for the same period in 2007. OPEC raised oil production in November 2007 to take advantage of the high price. This – combined with low stock levels in Europe and the Far East – gave rise to a spectacular rise in freight rates towards the end of the year. This price increase reflected the strong demand for oil. Also reflecting the strong demand for oil was the order book for new tankers for the next four years, which equates to about 37 per cent of the existing fleet. Due to more stringent environmental regulations by many nations, single-hulled tankers are expected to be converted or scrapped. Presently these account for around 22 per cent of the existing fleet.

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OPEC production cuts in 2007, combined with sluggish growth in non-OPEC supply, tightened oil markets in the upstream sector. The downstream market was characterized by under-capacity. A number of United States refineries suffered unplanned shutdowns resulting in utilization rates below 90 per cent, compared to 92.6 the previous year. Product stocks averaged 701 million barrels in 2007, compared to 744 million in 2006.

2. Tanker freight rates

In 2007, the average year freight indices for tanker ships continued their downward path from which they embarked at the beginning of 2005 (see table 29). However, within this general trend, there was considerable movement. The five freight indices remained relatively static in the first half of 2007 before dipping slightly as a prelude to an impressive gain from

September to December. However, the first month of 2008 saw a decline in rates so that year-on-year growth was nominal or marginally negative.

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The major exception was in the VLCC sector, where ships of 200,000 dwt-plus climbed from 63 points in January 2007 to a high of 201 in December, falling back to 112 in January 2008. The rise in demand for VLCC was largely attributable to the discounting of crude prices by some Middle Eastern countries, thereby creating a higher demand for tankers. The Baltic Tanker Clean Index ended the year virtually unchanged from the beginning, at 1,184 points.

Tables 29 and 30 show a return to normal from the reverse trend noticed in 2006. The average freight rates decreased during the first two quarters and climbed during the last quarter of the year. Table 30 presents the average freight rates measured in Worldscale (WS),[78] a unified measure for establishing spot rates in the tanker market. (When reporting a Worldscale freight rate, the prefix WS is always cited). The table focuses on traditional benchmark routes and is not intended to be exhaustive. The main loading areas indicated in the table are the Persian Gulf, West Africa, the Mediterranean, the Caribbean and Singapore, while the main unloading areas are in the Far East, South Africa, North-West Europe, the Mediterranean, the Caribbean and the East Coast of North America. The growing West Africa to China route, relying on large ships, has not been included in the table.

The largest increases for 2007 came towards the end of the year. For VLCC vessels from the Persian Gulf to Japan, rates in December climbed to 195 points from 71 the previous month. This route is also the most frequently traded Asian tanker derivative. From the Persian Gulf to the Republic of Korea, rates climbed to 189 points from 86 the previous month. From the Persian Gulf to Europe, December saw the rate double to 163 points, up from 82 the previous month. On the route from the Persian Gulf to the Caribbean/East Cost of North America, the rate climbed from 55 points in November to 159 in December.

The VLCC market in 2007 started weak and, despite a couple of gains in March and May, the year was characterized by uncertainty.

Freight markets during 2008

The start of 2008 saw a downward correction in all sectors of the tanker freight market. This was largely attributable to increased supply of tonnage following the New Year holiday season, better weather conditions in the Bosphorus and lower crude runs in the Atlantic basin.[79] In the first quarter of 2008, daily time charter rates for a 1990/91-built VLCC averaged $80,000 per day. Although this was higher than 2007, it was on par with previous highs seen in 2004.

Although average spot rates for most tanker sectors at the beginning of 2008 were higher than in 2007, there was still persistent volatility. The major exceptions were on the Aframax[80] North-West Europe–North-West Europe, Mediterranean–North-West Europe routes, on the handysize Caribbean–East Coast of North America/ Gulf of Mexico, and for both types of vessels on the Mediterranean–Mediterranean routes. The overall picture that emerges from table 30 is one where average spot earnings continued to fluctuate. September, however, marked the turning point for most routes with strong growth for the remainder of the year.

The biggest month-on-month decrease was for Aframax vessels on the Mediterranean–Mediterranean route in February, where rates dropped from 231 in January to 121. Elsewhere with Aframax vessels, the Mediterranean–North-West Europe rate dropped from 188 to 110 in the same period. Again on the Mediterranean–Mediterranean route, rates dropped from 173 in May to 107 in June for both the Aframax and handysize.

More detailed information about developments in 2007 in relation to the various categories of tanker segments is provided in the following sections.

Very large and ultra large crude carriers

Representing some of the world's largest ships, VLCCs and ULCCs offer the best economies of scale for oil transportation where pipelines are non-existing. The VLCC market in 2007 started weak and, despite a couple

Table 29

Tanker freight indices, 2006–2008
(monthly figures)

	Lloyd's Shipping Economist				Baltic Tanker		
	>200	120–200	70–120	25–70	Clean	Dirty Index	Clean Index
2006							
October	87	147	190	213	217	1 281	1 095
November	74	118	133	199	194	1 223	853
December	66	136	189	210	251	996	931
Average	**93**	**141**	**164**	**228**	**247**	**1 295**	**1 112**
2007							
January	63	124	187	209	219	1 316	1 185
February	65	116	159	237	226	1 190	907
March	81	112	145	220	282	1 094	1 065
April	63	122	145	229	264	1 398	1 096
May	79	108	161	235	244	1 236	1 045
June	63	110	113	211	242	1 006	1 151
July	59	91	128	216	208	1 026	941
August	52	85	97	185	174	977	900
September	51	77	102	170	158	801	770
October	57	104	134	180	170	902	767
November	72	126	148	205	198	1 089	812
December	201	232	214	279	239	1 535	1 184
Average	**76**	**117**	**144**	**215**	**219**	**1 131**	**985**
2008							
January	112	124	178	205	215	1 914	1 083
February	97	119	141	182	195	1 174	938
March	108	156	175	202	197	1 164	946
April	110	187	217	239	234	1 482	873
May	182	239	247	271	279	1 701	1 192
June	182	210	237	324	326	1 921	1 388

Source: UNCTAD secretariat based upon Executive Summary in *Lloyd's Shipping Economist*, several issues; Baltic Tanker indices reported for the first working day of the month. Ship sizes are expressed in deadweight capacity.

of gains in March and May, the year was characterized by uncertainty. The most notable event in the 2007 VLCC tanker freight rates came at the end of the year, when rates reached their highest levels since the highs of 2004. The key drivers behind this increase were low global oil stocks at the start of winter, increased refinery throughput following a heavy autumn maintenance schedule, a 0.5 mbpd increase in OPEC oil supply from 1 November 2007, and completion of field maintenance at a major oilfield in the Middle East. External factors such as fog-related delays in the United States Gulf of Mexico and rising transit delays in the Bosphorus Strait helped increase demand further and push up the average earnings to a new record of $230,000 per day in December 2007.[81] Rates afterwards dropped to an average of around $80,000 per day for the first quarter of 2008. The global VLCC fleet at the end of 2007 stood at 489 vessels with an expected 40 new deliveries in 2008.

Table 30

Tanker market summary: clean and dirty spot rates, 2007–2008

(Worldscale (WS))

Vessel type	Routes	2007												% change 2007/2006	2008					
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Jan	Feb	Mar	Apr	May	Jun
VLCC/ULCC (200,000 dwt+)																				
	Persian Gulf–Japan	58	59	82	50	81	63	63	56	54	57	71	195	236.2%	122	96	97	109	212	204
	Persian Gulf–Republic of Korea	58	55	81	53	72	60	55	53	52	53	86	189	220.3%	127	99	88	102	167	190
	Persian Gulf–Europe	54	52	66	45	69	60	50	45	42	42	82	163	181.0%	135	88	84	69	160	145
	Persian Gulf–Caribbean/East Coast of North America	53	48	73	49	63	60	45	45	43	43	55	159	189.1%	85	86	84	95	132	142
	Persian Gulf–South Africa	57	..	..	55	97	..	..	54	..	..	..	220	243.8%	..	..	..	160	..	..
Suezmax (100,000–160,000 dwt)																				
	West Africa–North-West Europe	130	107	126	128	105	108	96	78	79	93	117	237	94.3%	149	124	173	200	237	199
	West Africa–Caribbean/East Coast of North America	129	116	116	113	108	112	99	79	79	93	114	251	93.1%	135	125	157	175	249	190
	Mediterranean–Mediterranean	154	113	136	124	110	113	87	78	75	125	138	223	38.5%	165	113	224	226	273	214
Aframax (70,000–100,000 dwt)																				
	North-West Europe–North-West Europe	169	168	138	139	129	105	128	87	104	125	140	190	25.8%	163	128	159	196	240	206
	North-West Europe–Caribbean/ East Coast of North America	167	185	130	170	178	124	126	97	..	114	125	190	-5.0%	170	138	173	194	258	246
	Caribbean–Caribbean/East Coast of North America	174	211	187	156	170	140	170	105	115	153	166	299	29.4%	204	168	240	226	288	309
	Mediterranean–Mediterranean	231	121	157	146	173	107	117	94	106	145	150	205	15.2%	183	146	192	251	263	222
	Mediterranean–North-West Europe	188	110	161	140	142	103	115	91	117	135	133	193	-6.8%	187	137	174	240	265	218
	Indonesia–Far East	149	124	125	156	142	143	129	112	120	114	141	237	55.9%	180	143	140	164	210	226
Handy-size (less than 50,000 dwt)																				
	Mediterranean–Mediterranean	281	273	247	216	233	150	230	..	156	205	199	260	36.8%	198	180	191	211	235	300
	Mediterranean–Caribbean/East Coast of North America	200	213	195	203	..	..	200	167	148	153	177	262	50.6%	200	174	187	212	279	290
	Caribbean–East Coast of North America/Gulf of Mexico	212	205	214	207	198	161	176	161	158	154	168	334	37.4%	194	159	221	236	275	344
All Clean Tankers																				
70,000–80,000 dwt	Persian Gulf–Japan	156	133	146	135	133	132	137	153	140	115	142	195	13.4%	198	150	135	141	172	260
50,000–60,000 dwt	Persian Gulf–Japan	185	161	182	172	185	168	184	188	175	163	172	236	21.6%	224	171	182	166	207	288
35,000–50,000 dwt	Caribbean–East Coast of North America/Gulf of Mexico	209	222	288	233	223	242	201	155	133	145	177	203	-28.0%	216	190	189	227	298	302
25,000–35,000 dwt	Singapore–East Asia	303	257	276	223	313	246	292	294	302	243	218	322	6.6%	287	224	260	221	220	306

Source: UNCTAD secretariat based upon *Drewry Shipping Insight*, various issues.

Note: Two dots (..) means that no rate was reported. The classification of ship size in this table reflects the source used and may vary when compared to other parts of this publication

However, the phasing out of single-hulled tankers under regulation 13G of MARPOL annex 1 by 2010 is having an effect upon the fleet, and a similar number off ships will be taken out of the fleet and converted mainly to very large ore carrier (VLOC) and some to floating storage and offloading FSO/floating production, storage and offloading (FPSO) during 2008.

Rates for VLCCs trading on the Middle East–eastbound long-haul route remained weak due to lower tonnage demand because of quick turnarounds times in Asian refineries and a steady increase in the tonnage supply. Similarly, rates for VLCCs moving volumes on the Middle East–westbound route came under pressure by OPEC's cut in production and the easing of geopolitical concerns in the region. Rates for VLCCs picked up at the end of April on increasing imports by the United States, in preparation for the summer driving season and the continued decline in gasoline stocks.

One year time charter rates for modern VLCCs climbed by 13 per cent in March 2008 as other classes weakened.

During 2007, average rates for the route from the Persian Gulf to Japan closed at a yearly high of WS195, having recovered from a low of WS54 just two months earlier, in September. In terms of returns, the annual average time charter equivalent earnings for owners of VLCCs on this route were $41,200, compared with $51,550 for 2006, $59,070 in 2005 and $95,250 in 2004.

As reported in the *Review of Maritime Transport 2007*, freight rates on VLCCs for the routes mentioned in table 30 are uncertain because of a number of factors, including IMO rules on the phasing out of single-hull tankers. The situation is not clear as regards importers in the East while exporting countries in the Middle East are expected to strictly enforce the new regulations after the 2010 deadline, The United States and the European Union[82] have already taken measures to ban the trading of single-hull tankers. The high prices of oil in 2007 were reflected in a drop in demand for OECD crude oil imports by 16 million tons – from 1.616 billion tones to 1.632 billion in 2006, 1.629 billion in 2005, and 1.626 billion in 2004.[83] One operator of a VLCC tanker fleet reported that net revenues earned, after broker commission, averaged $45,700 per day in 2007, down from $56,800 in 2006.

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Suezmax tanker tonnage

Suezmax ships offer economies of scale combined with flexibility. Suezmax ships require less lightering than VLCCs and are able to attract more cargo when ship size may be a constraining factor. A fully loaded Suezmax must be capable of transiting the Suez Canal, which is presently 16m deep, although they do not necessarily only operate on this route. Suezmax vessels play an important role in trading from West Africa to North-West Europe and to the Caribbean/East Coast of North America, as well as across the Mediterranean. Rates on the West Africa–North-West Europe route dropped in February 2007, and regained before falling in August and September, to reach a high of 237 in December. The same was largely true for the West Africa to the Caribbean/East Coast of North America route. For the first quarter of 2008, rates for these routes dropped from their December high in January and February before climbing again in March. No doubt due to high oil prices, rates in the Suezmax market did not follow the usual seasonal variations, i.e. a drop in March and April, when the winter peak demand ends, followed by a rise in May, as the summer season begins (air conditioning units, United States summer driving season, etc). The Suezmax market is less likely than the VLCC/ULCC markets to be affected by IMO regulations with regard to the phasing out of single-hull tankers, since this sector has fewer single-hull ships; also, the sector is less influenced by markets in the West (the United States and European Union), where single-hull tankers are already being banned from trading. Demand for Suezmax tonnage is expected to increase – especially in the Black Sea to Mediterranean, Bosphorus and West Africa – owing to increased oil production. Average rates for trade from West Africa to Europe started the year at WS130, reached their lowest point in August (WS78) and ended the year significantly higher at WS237.

On the West Africa–Caribbean/East Coast of North America route, the annual average time charter equivalent earnings were $37,000 per day in 2007, compared with $46,000 per day in 2006, $47,550 per day in 2005, and $64,800 per day in 2004. During 2007, the highest average rates were at the end of the year and the lowest point was in August and September.

Aframax tanker tonnage

Regarded as very versatile vessels, Aframax tankers are usually deployed for trading within and between the following regions: North-West Europe, the Caribbean, the East Coast of North America, the Mediterranean, Indonesia and the Far East.

Average rates on all routes dipped in August and then climbed to end the year higher, except within the Mediterranean. A year-on-year comparison with the month of December shows that all routes, except for the Mediterranean–North-West Europe, climbed in 2007.

The average rates on all routes except for trade in North-West Europe and in the Mediterranean started the year at lower levels compared with the end of 2006.

As shown in table 30, freight rates in the Mediterranean and North-West Europe declined sharply in February, because of a reported lowering of refinery activity brought about because of the Chinese New Year, which served to increase supply of tankers and depress rates. Again in July 2007, rates took a tumble on all routes due to limited cargo availability, except on the Indonesia–Far East route. Improved United States refinery utilization rates – which rose steadily from 90 per cent to 93.6 per cent in June and July – boosted trade activity in the United States Gulf of Mexico. The average rates on all routes except for trade in North-West Europe and in the Mediterranean started the year at lower levels compared with the end of 2006. In terms of earnings, the average annual time charter equivalent earnings continued their downward trend; for example, on the cross-Mediterranean route, it dropped from $43,915 in 2004 to $39,000 in 2005, $31,750 in 2006, and $27,100 in 2007.

On the Mediterranean route, rates varied from a high of WS232 in January to a low of WS94 in August 2007. For a ship of 80,000 dwt, these were equivalent to time charter earnings of $63,500 per day in January against a mere $8,100 in August.

On the Caribbean to other destinations in the Caribbean and to the East Coast of North America, rates peaked at WS299 at the end of the year, from a low of WS105 in August. These translated into time charter equivalent earnings of $67,700 per day in December from $12,000 per day in August. The highest average rate for traffic across the Mediterranean was WS231 in January, while the lowest point (WS121) was reached immediately during the following month. This corresponded to a drop in time charter equivalent earnings from $63,500 per day to $22,600 per day for a ship of 80,000 dwt. This drop occurred principally because of a reduction in delays transiting the Turkish straits removed the premium previously factored in by the market.

Handysize tanker tonnage

The handysize tankers are the most versatile of the tanker fleet, capable of calling at destinations with limited draft and length restrictions. Table 30 shows the freight rates for these types of ships deployed for trades across the Mediterranean, for trades originating in the Mediterranean with destinations in the Caribbean and the East Coast of North America, and trades from the Caribbean to the Gulf of Mexico and the East Coast of North America.

Freight rates on two of the three routes shown in table 32 climbed from the end of 2006 to the beginning of 2007 and maintained this level until May 2007, when in the Mediterranean there was a sharp drop. The second half of the year remained volatile and, as with all the other tanker sectors and previous years, December saw a large increase in rates over the preceding month. Nowhere was this more evident than on the Gulf of Mexico and the East Coast of North America route, where the onset of the winter season saw rates almost double, from WS168 in November to WS334 in December. For example, the time charter equivalent earnings for the Caribbean to the East Coast of North America were, for a ship of 60,000 dwt, $41,900 per day in January 2007 (WS212), $24,200 per day in November 2007 (WS168) and $66,600 per day in December (WS334).

As with the other tanker freight rates, January 2008 brought about a downward correction. When comparing freight rates for all handysize tankers for the first quarter of 2007 over 2008, it can be seen that the average rate for all routes decreased around 17 per cent.

All clean tankers

The average time charter equivalent earnings for product tankers continued its downward slide. For example, average annual time charter equivalent earnings on the Caribbean–East Coast of North America/Gulf of Mexico route were $17,700 per day in 2007 compared with $21,400 per day in 2006 and $25,240 per day in 2005.

Rates fluctuated in line with seasonal trends as well as because of variations in demand. Rates on all routes peaked in December due to the usual seasonal trends, except on the Caribbean–East Coast of North America/ Gulf of Mexico route, which reached its peak in March as a result of an increase in product demands across the main consuming regions. In the United States, oil deliveries in March stood at 100,000 bpd higher than the previous month due to the demand for transport fuels. October saw the lowest average freight rates on the Persian Gulf–Japan route for vessels of between 70,000 and 80,000 dwt (WS115). Likewise, the smaller clean tankers (50,000 to 60,000 dwt) trading on the same route saw the rate drop to WS163, similar to 2006, where November also marked the yearly low point of WS155.

Tanker-period charter market

In 2007, total chartering activity reached 28.04 million dwt which although equated to an average of 2.3 million dwt per month, the actual monthly figures show large fluctuations. For six months of the year (May, July and September until December) chartering activity was less than 2 million dwt. Vessels chartered varied from a high in March with 4,261 million dwt against a low in September of 514 million dwt. This contrasts with 2006 when the peak month was November with 3.94 million dwt, against a corresponding figure of 1.36 million dwt for 2007.

About 46 per cent of total chartering activity in 2007 was made up of long-term charters of 24 months or more, down from 58 per cent in 2006. As with 2006, the next most active sector of time chartering was for the period of less than 6 months (26 per cent) and those with duration of one to two years (24 per cent). Very large tankers (ULCC/VLCC) accounted for about 32 per cent of total chartering activity, down from 54 per cent for 2006. Tankers at the lower end of the range (10,000–50,000 dwt) accounted for over 12 per cent. Chartering activity in the first quarter of 2008 declined significantly to 6.4 million dwt from 12.3 million dwt for the same period in 2006. Rates varied little throughout most of the year, except for an increase in December of around 17 per cent over the previous month. For example, estimated tanker one-year time charter rates for a five-year-old ship of 280,000 dwt went from $52,000 per day in January 2007 to $62,000 per day in January 2008. The first quarter of 2008 saw a continuation of this trend, so that by March the rate stood at $71,000 per day.

B. DRY BULK SHIPPING MARKET[84]

Introduction

The dry bulk shipping market represents around 40 per cent of the total volume of cargo transported by sea. Understanding this segment of the shipping sector enables the reader to grasp what is happening to the raw materials, which affects our modern lives so much, but which often goes unnoticed by the general public. From the iron ore that is smelted and refined into consumer goods to the phosphates that are used to fertilize the crops we eat, this sector covers the five main bulks (iron ore, grain, coal, bauxite/alumina and phosphate).

1. Dry bulk trade

The dry bulk market has been riding high for the last four years and in 2007 this trend continued.

The dry bulk market has been riding high for the last four years and in 2007 this trend continued. In 2007, China imported 380 million tons of iron ore, up from 148 million tons in 2003. The demand for coal in Asia has been increasing around 30 to 40 million tons annually during the same period. The Drewry dry bulk earnings index recorded a rate of less than 4,500 points at the beginning of the year, to a close of over 11,000 points. The year started with increased levels of period chartering largely on the back of iron ore price settlements. This confidence spread into the dry bulk newbuilding market, with some 5 million dwt ordered. The demand for dry bulk carriers can be seen in the rise in price of a five-year-old Capesize vessel, which averaged a mere $30.3 million in 2003 to reach $105.7 million in 2007. The Capesize vessel *Anangel Happiness* was reported to have secured a hire rate which would repay her purchase cost in a mere five years, while the working life of such a vessel could be 25 years. In April 2007, the average earnings for a modern Capesize stood at $93,260/day; by May they had broken through the $100,000/day barrier, reaching $102,916/day.[85] In some cases, it was

The Capesize vessel *Anangel Happiness* was reported to have secured a hire rate which would repay her purchase cost in a mere five years, while the working life of such a vessel could be 25 years.

reported that the freight rate per ton exceeded the value of the cargo. The driving force behind Capesize demand was the growth in world steel production, up 10.2 per cent in the first quarter of 2007 over the pervious year to reach 318.3 million tons. A decline in steel production in North America in March 2007 compared with the same period the previous year was offset by increases mainly in Asia, so that the first quarter of this year saw a 16.3 per cent rise over the same period in 2006. In the first quarter of 2007, China imported a total of 100.19 million tons of iron ore. Delays at Australian ports for loading coal reached up to 50 days. The demand for new Capesize vessels saw order books in 2007 equal to 87 per cent of the existing fleet. VLOC (very large ore carriers) boomed, with 65 new ships ordered, twice that of the existing fleet. The demand for new bulkers saw order books grow from 90 million dwt at the start of the year to 240 million dwt at year's end.

First in May 2007 and then again in December, the Chinese Government raised export taxes on steel as a response to balance of trade issues with Europe and the United States. Also in December, the Chinese Government introduced a new import tax on iron ore. In May 2008, the *Capesize* market was on parallel with that of November 2007, signifying another good year for shipowners. The roaring dry bulk market reached an unprecedented record of just over $300,000 per day to charter a large *Capesize* vessel. The 203,512 dwt, 2006-built carrier China Steel Team was booked at a rate of $303,000 per day for a voyage to carry iron ore from Brazil to China. That was three times more than its last fixture a month prior, when Swiss Marine paid $95,000 per day.

Driving this demand was the failure of Chinese importers to agree on freight rates for Australian commodities. Commodities extractors BHP Billiton and Rio Tinto Group were locked in negotiations with Chinese steelmakers over the 2008 contract price for iron ore. BHP Billiton and Rio Tinto Group were holding out for a freight premium because of their geographical advantage over their main competitor, Brazil. Brazil's Vale had previously won an increase of 65 per cent, but as Australia is closer to China than Brazil. Australian commodity miners wanted a larger increase to reflect the freight savings; this they eventually achieved in June 2008 with an increase of 96 per cent. To illustrate the argument, shipping iron ore from Australia to China costs around $45 per ton, compared with $107 from Brazil. With longer voyage times from China–Brazil than China–Australia, more *Capesize* tonnage is tied up going this route, thus further driving up the transport costs. A roundtrip voyage between Brazil and China takes on average about 74 days compared with a roundtrip voyage from Australia to China, which takes about 30 days. A 170,000 dwt *Capesize* requires 0.59 vessels to carry 1 million metric tons/year from Australia to China, compared to 1.27 vessels for Brazil.[86] Theoretically, this means one *Capesize* vessel can make either five return trips from Brazil to China in one year against 12 return trips from Australia to China. Despite the standoff between Chinese steels mills and Australian commodity exporters, Australia exported 26.5 million tons of iron ore in March 2008, up 30.4 per cent from the previous month and 57.7 per cent on the same period in 2007. Australia's cumulative iron ore exports in the first quarter of 2008 were 74.1 million, up 26.4 per cent on the first quarter of 2007. In the first quarter of 2008, exports to China increased 35.3 per cent to 41.7 million tons, some 56 per cent of the total exports.[87] However, this did not prevent a major drop in the dry freight rates, mostly for the *Capesize* tonnage at the beginning of 2008. This was due largely to the Chinese New Year, which normally sees rates soften, and the closure of the iron ore terminal in Brazil for repairs. The largest effects, however, were caused by the price negotiations between Brazilian iron ore miner Vale and Asian steel mills, which postponed a number of iron ore stems. The long drawn-out dispute resulted in a number of vessels that sailed in ballast from China to Vale's terminal with no cargoes to load.

Reflecting the increased demand for bulk trade, at the end of 2007, shipping capacity increased, with the world dry bulk fleet growing by 6.4 per cent (23 million dwt) to reach 391.1 million dwt. In total, there were 315 dry bulk carriers delivered in 2007, with a combined tonnage of 24.7 million dwt. As reported in chapter 2, the tonnage of dry bulk ships on order at the end of 2007 outstripped those for any other vessel type. The dry bulk tonnage order book represents 57 per cent of the existing dry bulk fleet and 87 per cent of the existing *Capesize* fleet.

2. Dry bulk freight rates

2007 was yet another good year for dry bulk, the Baltic Dry Index (BDI) performed spectacularly moving up from 4,421 points in January to end the year at 9,143. The highest level was reached in mid November at 11,039 points. The upward trend reached a peak in May 2008 when the BDI achieved an all time high of 11,793 before falling significantly. The average Baltic Dry Index for 2007 was 7,276, more than double the

3,239 average for the previous year. The Baltic Panamax Index (BPI) averaged 7,133 points in 2007 over 3,070 in 2006. The Baltic Capesize Index (BCI) also increased significantly from 4,385 to 10,299.

As with 2006, the monthly indices for dry cargo tramp time- and trip-charters in 2007 showed a substantial rise over the course of the year (see table 31). Most months on both indices recorded a growth from the previous month. In December 2007, the dry cargo tramp time-charter had reached 926 – an increase of 88 per cent from its January 2007 level. The dry cargo tramp trip-charter almost doubled over the same period to reach 1,251 points.

Dry bulk time-charter (trips)

Unlike 2006, freight rates continued to rise for *Capesize* tonnage chartered for transatlantic round trips throughout 2007. Rates started the year at $73,628 and reached a high of $187,045 in November, before settling back to end the year at a monthly average of $165,680. Rates at the end of the year were more than double the January 2007 level and the outlook for 2008 is that rates will stay above the $100,000 mark for most of the year. Rates on the Singapore–Japan to Australia route showed a trend similar to that observed on the transatlantic route. For *Capesize* tonnage deployed on the Singapore–Japan to Australia route, freight rates rose significantly in 2007, with owners of relevant ships receiving $66,630 at the star of the year, compared with $25,840 per day for the same period in 2006, and $177,889 by the end of 2007. The route showing the most gain was on Europe to the Far East, which saw rates increase from 185 per cent from December 2006 over 2007. From a low of $85,040 in January 2007, rates peaked at $235,990 per day in November 2007, before settling back to $216,940 at year's end. Rates for handymax tonnage deployed on routes from Northern Europe to the Far East grew significantly in 2007. In January, freight on this route

Table 31

Dry cargo freight indices, 2005–2008

Period	Dry cargo tramp time-charter (1972 = 100)				Dry cargo tramp trip-charter (1985 = 100)			
	2005	2006	2007	2008	2005	2006	2007	2008
January	505	302	491	812	677	294	632	1 018
February	481	298	480	657	715	292	577	908
March	530	327	550	810	565	321	644	1 221
April	507	326	576	795	624	325	707	1 080
May	440	323	671	1 055	552	304	712	1 544
June	373	331	626	1 009	412	359	759	1 250
July	313	360	673		342	421	875	
August	290	417	718		285	475	920	
September	328	447	828		352	518	1 078	
October	379	450	985		391	522	1 044	
November	346	447	1 013		376	463	1 280	
December	320	484	926		332	594	1 251	
Annual average	401	376	711	856	469	407	873	1 170

Source: UNCTAD secretariat based upon various issues of *Shipping Statistics and Market Review*, Institute of Shipping Economics and Logistics in various issues.

Note: All indices have been rounded to the nearest whole number.

equated to $34,560 per day to end the year at $67,920 per day.

Dry bulk time-charter (periods)

Estimates of rates for 12-month period charters (prompt delivery) indicate that rates for the first half of 2007 remained fairly constant. Rates picked up in the second half of the year, peaking in November before dipping slightly at year's end. *Capesize* ships of 170,000 dwt aged one to five years fetched $63,000 per day in January 2007, against $34,000 for the same period in 2006, and peaked at $165,000 in November. January 2007 over January 2006 saw a 98.4 per cent growth in rates for a one to five year-old *Capesize* of 170,000 dwt. This compares with only a 50 per cent increase in a 10–15 year-old vessel of 150,000 dwt reflecting a higher demand for modern larger ships. Freight rates for *Panamax* ships in the range 70,000 to 75,000 dwt aged one to five years started at $31,000 per day in January, up from $17,800 in January 2006, and ended the year at $73,000 per day. Freight rates for handymax tonnage aged 5 to 10 years saw rates of $24,500 per day in January 2007 compared to $14,000 for the same period in 2006. The average daily freight rates for this type of vessel ended the year up at $50,375. Handysize tonnage aged 10 years followed a similar trend, with earnings at the beginning of the year of $15,500 per day, ending the year almost double at $29,500. During the first half of 2008, earnings for all ship sizes, irrespective of age, continued to grow.

January 2007 over January 2006 saw a 98.4 per cent growth in rates for a one- to five-year-old Capesize of 170,000 dwt.

Dry bulk trip-charter

The *Capesize* tonnage witnessed an upward trend in 2007, peaking in November. Iron ore freight rates from Brazil to China started the year at $35.50 per ton, up from $22 per ton in January 2006, and ended the year at $86.35. The year-on-year increase for January 2007/2008 equalled a rise of just over 80 per cent. The best performing route was with grain cargo on the USG–ARA (Amsterdam/Rotterdam/Antwerp) route, with 50,000–65,000-dwt vessels, which experienced a January 2007–2008 year-on-year increase of 183 per cent. At the other end of the scale, bulk carriers of 60,000–70,000 dwt on the Richards Bay to Mediterranean route saw a year-on-year increase of just over 20 per cent. In summary, all bulk carriers on the major routes saw an increase in freight rates, as was also the case for 2006 over 2005.

C. THE LINER SHIPPING MARKET[88]

Introduction

The liner shipping market represents around a quarter of the total volume of international cargo transported by sea. It carries mainly refined goods, i.e. the consumer goods which have become so prevalent in modern society such as televisions, clothes and refined foods. Understanding this sector helps the reader gauge how well merchantable trade is doing.

1. Developments in liner markets

General developments

The liner shipping sector in 2007 proved a much stronger year than was anticipated at the end of 2006. Despite the global credit crisis continuing to dampen demand in the United States for Asian goods, the effect on the global consumption was muted. A slower volume increase on the United States West Coast was mitigated by strong growth of cargo demand from Asia to Europe. More efficient operation of vessels by carriers in reaction to the high fuel costs also helped absorbed capacity through the need to apply more ships in order to maintain schedule. The strong euro is expected to sustain the current pace of outsourcing to Asia. Combined with the fiscal and monetary stimulus measures in the United States and United Kingdom, 2008 is expected to be broadly similar to 2007 in terms of trade pattern and growth. 2008 saw further changes afoot in the liner shipping industry with the liner shipper Hapag-Lloyd, put up for sale by its parent company TUI.[89]

As reported in chapter 2, the total seaborne container carrying fleet capacity, including fully cellular capacity, stood at 13.3 million TEUs in the middle of 2008. With a high percentage of newbuildings ordered in 2006 expected to be delivered in 2008, the fleet is set to continue its growth. Very little tonnage was reported broken up in 2007, around 21,000 TEUs. January 2008 saw the entry into service of the last in a series of eight behemoth containerships from Maersk Line's, the *Eugen Maersk*, for trading between China

and Europe. This ship is officially recorded as having a capacity of 12,508 TEUs, with stowage for 22 rows across, four more than the next-largest existing containerships, and some industry analysts predict it could carry 15,212 TEUs at full capacity.[90] On the seas are four other larger ships in excess of 10,000 TEUs and owned by COSCON of China. As mentioned in chapter 2, in May 2008 there were 54 ships on order, with a capacity of 13,000 TEUs and above. The largest containerships on order are eight 13,350-TEU units ordered by COSCON (China) for delivery between December 2010 and 2012.

Concentration in liner shipping

Over the course of 2007, the carrying capacity of the top 10 global containership operators increased by 15.7 per cent, to 6.6 million TEUs. This is somewhat lower than the exceptionally high gains of 26.5 per cent achieved in 2006 (see table 32). Overall, the share of the top 20 liner operators increased by 15.5 per cent and reached 8.8 million TEUs. Together, the 20 leading operators accounted for about 70 per cent of the total container capacity deployed. Whilst the list of the top 20 liner shippers stayed the same, there was significant

Table 32

Twenty leading service operators of containerships at the beginning of 2008
(Number of ships and total shipboard capacity deployed (TEUs))

Ranking	Operator	Country/territory	No. of ships in 2008	TEU capacity in 2008
1	Maersk Line	Denmark	446	1 638 898
2	MSC	Switzerland	359	1 201 121
3	CMA-CGM Group	France	238	701 223
4	Evergreen	Taiwan Province of China	177	620 610
5	Hapag Lloyd	Germany	142	491 954
6	COSCON	China	141	426 814
7	CSCL	China	122	418 818
8	APL	Singapore	117	394 804
9	OOCL	Hong Kong (China)	84	351 542
10	NYK	Japan	87	331 083
Subtotal			**1 913**	**6 576 867**
11	MOL	Japan	104	325 030
12	Hanjin	Republic of Korea	74	321 917
13	K Line	Japan	91	293 321
14	Yang Ming	Taiwan Province of China	83	276 016
15	Zim	Israel	84	243 069
16	Hamburg Sud	Germany	76	196 632
17	HMM	Republic of Korea	45	194 350
18	PIL	Singapore	72	140 135
19	Wan Hai	Taiwan Province of China	75	125 393
20	CSAV	Chile	48	108 927
Total 1-20			**2 665**	**8 801 657**
World container cellular fleet at 1 January 2008			**8 762**	**12 657 725**

Source: UNCTAD secretariat, *Containerisation International Online*, Fleet Statistics, www.ci-online.co.uk.

jostling between positions. Evergreen made the most advances – from ninth to fourth place – by increasing its fleet size by some 65 per cent to a total capacity of over 620,000 TEUs. Whilst the CMA-CGM Group made the second-highest gain of 35 per cent, it stayed in third place at just over 700,000 TEUs. OOCL performed well, with a 27 per cent increase in its fleet helping to push it rankings up from 12th to 9th position, with a total capacity of just over 350,000 TEUs. While Maersk Line, MSC and the CMA-CGM Group maintained their positions at the top of the list, their collective share of the world's total container capacity rose to 28 per cent, up from 26.5 per cent in 2006. Maersk Line maintained its lead position with a rather weak growth of just 4.2 per cent over the previous year to hold a still-sizable individual market share of 12.9 per cent. The gap between first and second position was narrowed, with MSC growing by 17.8 per cent over 2006. While most liner shipping companies in the top 20 grew in 2006, two witnessed a decline in fleet size – Hanjin, which saw a fleet reduction of 4.6 per cent; and CSAV, which saw a 7.6 per cent reduction.

Financial performance of the major liner shipping companies varied widely. Maersk Line's container and terminals business had a loss of $198 million in 2007 after a loss of $568 million the previous year. The outlook for the first quarter of 2008 did not bode too well for the liner companies, with a reported loss of $47 million. In an effort to turn around the company's recent poor performance, Maersk unveiled a new strategy to cut between 2,000 and 3,000 jobs worldwide. This represents a reduction of nearly 10 per cent of its current workforce. Globally, the A.P. Moller Group, of which Maersk is a part, employees some 110,000 people. CMA-CGM achieved a return of $966 million, up from $611 million the previous year. CMA-CGM made three acquisitions in the last year – Cheng Lie Navigation (Taiwan Province of China), Comanav (Morocco) and US Lines (United States). OOIL announced net profits of $461 million, up from $386 million in 2006, for is liner shipping division. The selling of its terminal division to Ontario Teacher Pension Fund also boosted profits for the group by an additional $1.99 billion, giving the company a significant reserve to concentrate upon other areas of its business. NOL reported a 183 per cent increase in first-quarter 2008 profits, defying sceptics about the contraction in container volumes into the United States West Coast and soaring fuel costs. MOL also posted significant results for fiscal 2007, with its container shipping business profit growing by 118.5 per cent year-on-year. K-Line saw revenues increase by 22.6 per cent for the 2007 fiscal year. The Russian Federation's FESCO announced that profits rose by 58 per cent to reach $103 million for fiscal 2007. Hapag-Lloyd reported an operating profit (EBITA) of €24 million in the first quarter of 2008. Hyundai Merchant Marine also announced that its container shipping business posted an operating profit of won 37.7 billion in Q1 2008, up from a loss of won 11.7 billion in Q1 2007.

2. Freight level of containerized services

Chartering of containerships

German shipowners dominate the global liner shipping market, with Hamburg brokers controlling about 75 per cent of containership charter tonnage available. Since 1998, the Hamburg Shipbrokers' Association (VHSS) has published the "Hamburg Index", which provides a market analysis of containership time charter rates of a minimum duration of three months. Table 33 presents the average yearly and monthly charter rates for containerships published by VHSS.

Unlike 2006, when charter rates for all types of containerships fell by between approximately 16 and 37 per cent, 2007 represented a change in fortune, with 7 of the 10 types of vessels listed in table 33 climbing. The rates for geared/gearless containerships in the range 1,000–1,299 TEUs, which recorded the largest fall in 2006, continued their decline in 2007 to reach $13.69, from their peak of $22.58 in 2005, per 14-ton slot per day. Also continuing their decline were ships in the 300–500 and 600–799 TEU range. The containership sector showed its resilience by recording the smallest drop in 2006 and its saw the largest gain in 2007, viz: the smaller gearless type in the range 200–299 TEUs. While all rates were short of the peaks reached in 2005, nowhere was this more pronounced than in the 1,000–1,299 range, where rates in 2007 stood at around 60 per cent of their high. During the first quarter of 2008, monthly average rates mostly continued to climb. By April 2008, rates for geared and gearless ships in the 200–299 TEU range had almost regained their 2005 highs.

Freight rates on main routes

NOL reported that its overall average container freight rate, across all trades, had increased 16 per cent to $2,934 per 40-foot equivalent unit (FEU) in the first quarter, compared to the same period a year earlier. Average rates in the Americas were $3,486 per FEU,

Table 33

Containership time-charter rates

($ per 14-ton slot/day)

Ship type	Yearly averages							
	2000	2001	2002	2003	2004	2005	2006	2007
Gearless								
200–299	15.71	15.74	16.88	19.57	25.02	31.71	26.67	27.22
300–500	14.52	14.72	15.14	17.48	21.73	28.26	21.67	22.27
Geared/Gearless								
2,000–2,299	10.65	7.97	4.90	9.75	13.82	16.35	10.51	11.68
2,300–3,400[a]			5.96	9.29	13.16	13.04	10.18	10.74
Geared/Gearless								
200–299	17.77	17.81	17.01	18.93	27.00	35.35	28.04	29.78
300–500	14.60	14.90	13.35	15.55	22.24	28.82	22.04	21.34
600–799[b]			9.26	12.25	19.61	23.70	16.62	16.05
700–999[c]			9.11	12.07	18.37	21.96	16.73	16.90
1,000–1,299	11.87	8.78	6.93	11.62	19.14	22.58	14.28	13.69
1,600–1,999	10.35	7.97	5.67	10.04	16.08	15.81	11.77	12.79

Ship type	Monthly averages for 2007											
	1	2	3	4	5	6	7	8	9	10	11	12
Gearless												
200–299	26.52	28.35	28.01	27.76	27.08	26.90	27.58	25.92	28.25	26.20	28.10	27.00
300–500	19.29	21.91	22.59	24.23	20.83	21.80	23.20	23.17	24.84	23.00	24.60	22.90
Geared/Gearless												
2,000–2,299	8.96	9.60	10.06	10.84	11.21	11.15	12.92	12.92	12.44	12.81	13.61	21.10
2 300–3,400[a]	9.15	9.51	10.50	10.95	9.98	10.18	11.04	11.04	10.82	10.62	12.53	12.53
Geared/Gearless												
200–299	26.43	28.96	29.34	30.08	28.27	28.71	31.05	29.75	32.66	30.50	30.30	29.00
300–500	21.42	19.88	20.38	19.07	21.32	19.91	21.23	24.63	23.49	24.50	19.10	21.30
600–799[b]	13.97	15.66	16.54	15.43	16.94	17.56	16.60	16.65	16.44	13.59	16.62	16.00
700–999[c]	14.20	15.70	15.86	16.18	16.55	17.17	16.79	18.08	17.33	18.24	17.33	16.60
1,000–1,299	11.52	12.72	13.24	12.70	13.03	14.08	14.21	15.11	14.98	14.48	13.94	13.60
1,600–1,999	10.43	10.99	11.56	11.87	11.97	12.82	14.06	14.05	14.05	13.64	14.38	12.70

Table 33 (continued)

Ship type	Monthly averages for 2008						
	1	2	3	4	5	6	7
Gearless							
200–299	29.23	28.49	30.16	27.96	28.77	29.10	29.87
300–500	22.37	23.77	24,49	23.34	21.88	23.04	23.82
Geared/Gearless							
2,000–2,299	13.18	13.10	12.59	12.78	11.98	10.15	10.15
2 300–3,400[a]	12.53	12.53	10.97	11.31	10.82	10.82	10.48
Geared/Gearless							
200–299	32.39	33.61	33.35	35.78	35.78	35.85	35.85
300–500	23.66	27.60	24.03	22.51	23.37	18.75	21.52
600–799[b]	16.47	17.59	17.94	18.27	17.43	17.43	15.77
700–999[c]	18.42	18.74	17.39	18.18	17.63	17.21	17.63
1,000–1,299	14.58	15.04	15.49	15.80	15.29	15.04	13.48
1,600–1,999	13.68	13.84	13.75	13.09	12.48	11.36	10.51

Source: Compiled by UNCTAD secretariat from Hamburg Shipbrokers' Association, http://www.vhss.de/hax2006_001.pdf, Institute of Shipping Economics and Logistics in *Shipping Statistics and Market Review*, Volume 52 No. 1/2 2008 pp 54–55 and *Dynaliners Trades Review* 2008, Fig. 18 pp. 33.

[a] This category was created in 2002. Data for the first half of the year correspond to cellular ships in the range 2,300–3,900 TEUs sailing at 22 knots minimum.

[b] Sailings at 17–17.9 knots.

[c] Sailings at 18 knots minimum.

up 7 per cent over 2007. For Europe, average rates were $3,216 per FEU, up 25 per cent over 2007. For Asia and the Middle East, they were $2,014, an increase of 24 per cent over 2007.

By the end of 2007, the level of all-in freight rates of the three main containerized routes (Pacific, Asia–Europe and transatlantic) were all above the end of 2006 levels (see table 34). Thus, 2007 marked a recovery from 2006, when all routes experienced a drop. For most routes, however, rates were still below their peak in 2005, except on the Asia–Europe and United States–Europe routes, which surpassed their 2005 highs. The routes experiencing the most significant gains were the Europe–Asia routes, which saw a 14.3 per cent increase in the fourth quarter 2007 over the same period the year before, despite the appreciation of the euro against most major currencies. However, the largest gain was on trade moving in the opposite direction. Rates for Asia-to-Europe increase by 32.9 per cent in the fourth quarter, emphasizing the purchasing power of the euro. The picture which is beginning to emerge for 2008 is that, whilst growth is continuing on the Europe–Asia route traffic, moving in the opposite direction is decreasing despite the high purchasing power of the euro.

The transpacific and the Europe–Asia routes are the primary container trade routes that link East to West. On the transpacific route, despite a poor start in 2007, rates increased overall to end the year up 2.2 per cent for both the dominant eastbound leg (linking Asia to North America) and the westbound leg. For 2008, rates picked up on both routes but more pronounced on the United States–Asia route as the dollar slipped to its all-time lows, making its goods attractively priced to buyers from Asia.

Table 34

Freight rates (market averages) per TEU on the three major liner trade routes
($ per TEU and percentage change)

	Transpacific		Europe–Asia		Transatlantic	
	Asia–USA	USA–Asia	Europe–Asia	Asia–Europe	USA–Europe	Europe–USA
2006						
First quarter	1 836	815	793	1 454	995	1 829
Change (%)	- 2	- 1	- 4	- 15	- 1	1
Second quarter	1 753	828	804	1 408	1 010	1 829
Change (%)	- 5	2	1	- 3	2	0
Third quarter	1 715	839	806	1 494	1 041	1 854
Change (%)	- 2	1	0	6	3	1
Fourth quarter	1 671	777	792	1 545	1 066	1 762
Change (%)	- 3	- 7	- 2	3	2	- 5
2007						
First quarter	1 643	737	755	1 549	1 032	1 692
Change (%)	- 2	- 5	- 5	0	- 3	- 4
Second quarter	1 675	765	744	1 658	1 067	1 653
Change (%)	2	4	- 1	7	3	- 2
Third quarter	1 707	780	777	1 952	1 115	1 725
Change (%)	2	2	4	18	4	4
Fourth quarter	1 707	794	905	2 054	1 147	1 766
Change (%)	0	2	16	5	3	2
2008						
First quarter	1 725	861	968	2 021	1 193	1 700
Change (%)	1	8	7	- 2	4	- 4
Second quarter	1 837	999	1 061	1 899	1 326	1 652
Change (%)	6	16	10	- 6	11	- 3

Source: UNCTAD secretariat based upon *Containerisation International Online*, www.ci-online.co.uk.

Notes: The freight rates shown are all-in, that is they include currency adjustment factors and bunker adjustment factors, plus terminal handling charges where gate/gate rates have been agreed, and inland haulage where container yard/container yard rates have been agreed. All rates are average rates of all commodities carried by major carriers. Rates to and from the United States refer to the average for all three coasts.

On the transatlantic route, United States–Europe freight rates climbed on the back of a weak dollar to end the fourth quarter 7.2 per cent higher than the previous year. However, the opposite route, Europe–United States, increased a mere 0.2 per cent in the fourth quarter of 2007. The Europe–United States route was the worst-performing of the three major containerized routes. This continued into 2008, with a further 3.7 per cent reduction in rates while trade in the opposite direction grew 4 per cent.

3. Supply and demand in respect of main liner services

Over the last two decades, global container trade (in tons) is estimated to have increased by 10.8 per cent, to reach 143 million TEUs in 2007 (see chapter 1). The share of containerized cargo in the world's total dry cargo is estimated to have increased from 7.4 per cent in 1985 to 24 per cent in 2006.

Developments along the major container trade routes illustrate this trend (table 35). In 2007, the Pacific trade is estimated to have reached 20.3 million TEUs. The dominant leg, Asia–United States trade, was estimated at 15.4 million TEUs, up by 2.8 per cent over the previous year. Trade in the opposite direction, United States–Asia, grew by 3.0 per cent and is estimated to have reached 4.9 million TEUs. The imbalance between the eastward and westward traffics seems to have levelled off in 2007, with the Asia–United States cargo flows exceeding those in the reverse direction by 10.5 million TEUs, compared to 10.3 million in 2006 and 8 million TEUs in 2005.

The Asia–Europe trade route expanded at a faster rate, with trade estimated to have reached 27.7 million TEUs in 2007. Cargo flows on the dominant leg from Asia to Europe are estimated at 17.7 million TEUs in 2007, compared to 15.3 million TEUs in 2006. In comparison, traffic moving in the opposite direction grew at a slower rate of 9.0 per cent, to an estimated total of 10.0 million TEUs. The Far East Freight Conference (FEFC) is a major player in the Europe–Asia container trade, accounting for around 72 per cent of total capacity. The total trade from Asia to Europe carried by FEFC members reached about 9.5 million TEUs in 2007, up by around 39.4 per cent. This can be largely attributable to MSC joining the conference in late 2006. Discount MSC's involvement in the FEFC growth in capacity on this route is estimated at around 15 per cent over 2006. Table 36 shows the share of major lines and their market share as a percentage of the world liner capacity. The market share for these alliances declined slight in 2007, from 48.6 per cent to 47.8 per cent. This happened as a prelude to the forthcoming lifting of liner conference block exemption from competition regulations by the European Union.

Trade on the transatlantic route linking Europe with North America is estimated to have reached 7.1 million TEUs in 2007. Trade on the dominant leg of the trade lane – Europe to North America – increased to a total of 4.4 million TEUs. Flows in the opposite direction also expanded, reaching 2.7 million TEUs. In 2007, 20 new container services came into operation on the East–West trades, employing a total of 149 ships, with a total carrying capacity of 4 million TEUs.

The North–South containerized trade saw 26 new container services launched in 2007, deploying some 121 ships with a combined total capacity of 2 million TEUs. Cargo flows from Europe to West Africa were estimated at 0.7 million TEUs, while trade in the opposite direction amounted to 0.4 million TEUs. The latter expanded at a faster rate than the former, with estimated growth rates of 3.2 and 2.1 per cent respectively. Traffic on the Europe–East and Southern Africa route were estimated at 0.7 million TEUs, while trade in the opposite direction amounted to 0.5 million TEUs. The former expanded at a faster rate than the latter, with estimated growth rates of 7.3 and 3.2 per cent respectively.

Traffic on the East and Southern Africa–Far East route was estimated at 0.3 million TEUs, while trade in the opposite direction amounted to 1.1 million TEUs. The former contracted by approximately 7 per cent on the previous year, while trade in the opposite direction grew at around 22.7 per cent, reflecting a higher demand of Asian products.

Table 35

Estimated cargo flows on major trade routes
(Million TEUs and percentage change)

Year	Transpacific		Europe–Asia		Transatlantic	
	Asia–USA	USA–Asia	Asia–Europe	Europe–Asia	USA–Europe	Europe–USA
2006	15.0	4.7	15.3	9.1	2.5	4.4
2007	15.4	4.9	17.7	10.0	2.7	4.5
% percentage change	2.8	3.0	15.5	9.0	7.3	1.6

Source: Compiled by UNCTAD secretariat from *Containerisation International*.

Table 36

Percentage of world slot capacity share by line/grouping [a]
(Percentage share)

Operator	2006	2007
Maersk Sealand	18.2	16.6
CHKY	11.7	11.9
Grand Alliance	10.8	11.8
New World Alliance	7.9	7.5
Total	48.6	47.8

Source: C. Sys (2007) Measuring the degree of concentration in the container liner shipping industry, University College Ghent – Faculty of Applied Business, Ghent, Belgium, available online at http://www.feb.ugent.be/soceco/sherppa/members/christa/documents/paper1.pdf accessed 30/5/2008.

[a] The Grand Alliance comprises trades in the transatlantic, transpacific and Europe–Far East routes. MISC participates only in the Europe–Far East trade. Since February 2006, the Grand Alliance has comprised Hapag-Lloyd, NYK Line, OOCL and MISC Bhd. The last participates solely in the Europe–Far East trades. The New World Alliance (APL, MOL and HMM) covers the transpacific, Asia–Europe and Asia–Mediterranean trades, cooperating with Yangming in the last. APL and MOL were members of the Global Alliance until the replacement New World Alliance was formed in 1997. The NWA additionally has a slot charter agreement with Evergreen, covering the United States–Asia market.

Traffic on the West Africa–Far East route was estimated at 0.1 million TEUs, while trade in the opposite direction amounted to 0.7 million TEUs. Reflecting a similar pattern with East and Southern African, exports to the Far East declined by around 18 per cent while imports increased by 26.4 per cent. The general picture which emerges for West, East and Southern Africa is that while the imports of containerized goods from Europe and the Far East amount to approximately 3.2 million TEUs, exports are only at 1.3 million TEUs. This highlights the general pattern of shipping to and from the continent, with the import of consumer goods in containers against exports of raw materials, which tends to be undertaken by bulk carriers.

The picture that emerges for the analysis of the major trade routes is that they rank in the following order: (a) Far East to Europe; (b) Far East to North America; (c) Europe to Far East; and (d) Europe to North America. The market share of imports and exports of the three main regions show that Far East trade represents about 42.4 per cent of containerized trade, Europe 32.6 and North America 25 per cent.

Container trade between Europe and Oceania is estimated to have increased by 6.3 per cent, to reach 0.8 million TEUs in 2007. The larger trade routes linking North America and Europe with developing America are estimated at 2.7 million TEUs and 5.8 million TEUs, respectively. Imbalances affecting these cargo flows are more pronounced, with northbound trade amounting to double southward trade.

Interregional services saw an increase of 84 new container services in 2007. The region of largest growth was the Far East, which took a 52 per cent share of the new services and some 1.9 million TEU capacity. Intra-African trade saw just four new services, while there were just two new intraregional services in both the Indian subcontinent and the Middle East.

4. Liner freight index

Table 37 indicates the development of liner freight rates on cargoes loaded or discharged by liners at ports of the German coastal range for the period 2005–2007. The average overall index for 2007 decreased by 7 points from the 2006 level, to reach 93 points (1995 equals the base year of 100). The average homebound index increased by 4 points to 97 over the year to reach the same level as 2005. The monthly figures indicate a gradual strengthening of rates, with some fluctuations. In the outbound trade, the average level in 2007 declined significantly to 88 points, a reduction of 18 points.

Table 37

Liner freight indices, 2005–2007
(Monthly figures: 1995 = 100)

Month	Overall index			Homebound index			Outbound index		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
January	96	104	88	89	95	89	101	113	88
February	95	105	88	88	95	89	102	113	87
March	95	106	86	88	97	88	102	114	85
April	98	105	87	91	96	91	105	113	84
May	103	101	88	97	92	92	108	110	85
June	108	104	92	101	94	96	114	113	88
July	108	105	94	102	96	101	115	113	87
August	106	98	95	100	92	103	111	103	88
September	106	96	98	100	92	106	112	100	90
October	109	95	97	102	93	105	116	97	89
November	111	91	97	104	89	101	118	93	93
December	110	87	100	103	86	104	117	88	96
Annual average	104	100	93	97	93	97	110	106	88

Source: Compiled by UNCTAD secretariat on the basis of information published by the Institute of Shipping Economics and Logistics, *Shipping Statistics and Market Review,* vol. 52, no. 3, March 2008: 60–61.

5. Liner freight rates as percentage of prices for selected commodities

Table 38 provides data on liner services freight rates as a percentage of market prices for selected commodities and trade routes in certain years between 1970 and 2007. For rubber sheet, the increases in freight rates were lower than the average f.o.b.[91] price increases and resulted in a lower freight ratio of 6.3 per cent for 2006. The f.o.b. price for jute remained steady, while freight rates moved up by 22 per cent. This explains the increase in freight ratio to 37.2 per cent for 2006. The price of cocoa beans shipped from Ghana increased by 3.5 per cent, while the increase in the freight rate was 1.6 per cent. Therefore, the freight ratio dropped slightly to 3.9 per cent in 2006. The c.i.f. price of coconut oil recorded a drop of 1.6 per cent in 2006, while corresponding freight rates increased by 12.4 per cent. As a result, there was an increase in the corresponding freight ratio, from 12.7 per cent in 2005 to 14.5 per cent in 2006. The ratio of liner freight to f.o.b. price for tea increased marginally, from 9.2 to 9.3 per cent, owing to an increase of 12.8 per cent in freight rates, combined with an increase of 11.7 per cent in prices during 2006. The price for coffee shipped from Brazil to Europe increased by 1.5 per cent, significantly lower than the impressive 49 per cent recorded in 2005. As freight rates decreased by 8.4 per cent, the freight ratio also declined from 5.7 per cent in 2005 to 5.1 per cent in 2006. The price of Colombian coffee exported to Europe from Atlantic and Pacific ports increased marginally by 1.1 per cent, a much lower rate than the 39 per cent growth rate recorded in 2005. Freight rates for Brazilian coffee loaded at Atlantic ports decreased by 2.4 per cent, while that loaded at Pacific ports decreased by 9.1 per cent. As a result, the freight ratios decreased to 3 and 3.7 per cent, respectively.

D. CONTAINER PRODUCTION[92]

Introduction

As mentioned earlier, the liner shipping market represents around a quarter of the total volume of cargo transported by sea. However, for goods moved by other modes of transport – such as barges, trains and trucks – the container is also widely used. Thus, understanding the world fleet of containers enables the reader to gauge how merchantable trade is performing.

Table 38

Ratio of liner freight rates to prices of selected commodities
(Percentages)

Commodity	Route	Freight rate as percentage of price [a]						
		1970	1980	1990	2004	2005	2006	2007
Rubber	Singapore/Malaysia–Europe	10.50	8.90	15.50	7.50	8.00	6.30	6.50
Jute	Bangladesh–Europe	12.10	19.80	21.20	27.60	30.50	37.20	44.20
Cocoa beans	Ghana–Europe	2.40	2.70	6.70	3.70	4.00	3.90	3.50
Coconut oil	Sri Lanka–Europe	8.90	12.60	n.a.	10.10	12.70	14.50	12.02
Tea	Sri Lanka–Europe	9.50	9.90	10.00	8.60	9.20	9.30	13.36
Coffee	Brazil–Europe	5.20	6.00	10.00	6.50	5.70	5.10	..
Coffee	Colombia (Atlantic)–Europe	4.20	3.30	6.80	2.30	3.10	3.00	2.50
Coffee	Colombia (Pacific)–Europe	4.50	4.40	7.40	2.60	4.10	3.70	3.60

Sources: UNCTAD secretariat on the basis of data supplied by the Royal Netherlands Shipowners' Association (data for 1970–1989) and conferences engaged in the respective trades (data for 1990–2006).

Note: Two dots (..) means that no rate was reported.

[a] Coffee (Brazil–Europe and Colombia–Europe) and coconut oil prices are based on c.i.f. (cost, insurance and freight). For cocoa beans (Ghana–Europe), the average daily prices in London are used. For tea, the Kenya auction prices are used. For the remaining commodities, prices are based on f.o.b. terms. The freight rates include, where applicable, bunker surcharges and currency adjustment factors, and a tank cleaning surcharge (for coconut oil only). Conversion of rates to other currencies is based on parities given in the Commodity Price Bulletin, published by UNCTAD. Annual freight rates were calculated by taking a weighted average of various freight quotes during the year, weighted by their period of duration. For the period 1990–2006, the prices of the commodities were taken from UNCTAD's Commodity Price Bulletin (see UNCTAD website).

In recent years, the global container fleet grew on average by 9 per cent per annum (see table 39) to reach a total of more than 25 million TEUs by the end of 2007. This is more than a 50 per cent increase since the end of 2002. While the main growth was largely led by the ocean carriers, lessors have now taken the lead. For instance, ocean carriers' share of the world container fleet (see table 39), which stood at 58.8 per cent in 2007, was 0.9 per cent higher than in 2006, down from a 1.6 per cent growth the previous year and 1.9 per cent in 2005. Conversely, in 2007 the lessors purchased 1.5 million TEUs, 36.4 per cent more than the previous year, making it the largest purchase made by lessors over the previous four years. While the new investment was partly influenced by the new upward trend in new box prices and rental rates, a good portion of the purchase was allocated to replace old and damaged boxes. A breakdown of the world container production can be seen in table 40. The share of container fleet owned by lessor was 41.2 per cent in 2007 and 41.10 per cent in 2006.

As global trade in 2007 continued to place a significant demand on the production of new containers, the industry responded with higher output and capacity. The global production of new containers reached 3.9 million TEUs by the end of 2007, an increase of more than 25 per cent from the level produced a year earlier (see table 40). This increase is higher than the 20 per cent increase experienced during 2006, when the total produced was 2.6 million TEUs. Container production capacity expanded in 2007 to an estimated 5.7 million TEUs. This means current production is operating at less than 70 per cent capacity. The increased capacity

As more than 90 per cent of the container production industry is located in China, market changes there may have a major impact upon future pricing.

Table 39

World container fleet
(thousands of TEUs)

Year	Global	Lessor	Sea carrier fleet
2003	17 960	8 370	9 590
2004	20 005	9 125	10 880
2005	21 455	9 370	12 085
2006	23 345	9 830	13 515
2007	25 365	10 440	14 925

Source: UNCTAD secretariat based upon *Containerisation International*, August 2007: 36-39.

Table 40

World container production
(thousands of TEUs)

	2006	2007
Dry freight standard	2 710	3 480
Dry freight special	85	90
Integral reefer	176	195
Tank	14	16
Regional	115	119
Total	3 100	3 900

Source: UNCTAD secretariat based upon *Containerisation International*, February 2008, online.

resulted from the opening of new manufacturers and the replacing of old factories with new ones. However, this excess capacity may not be enough to drive down prices in light of the global pressure on raw material and higher wage demands. As more than 90 per cent of the container production industry is located in China, market changes there may have a major impact upon future pricing.

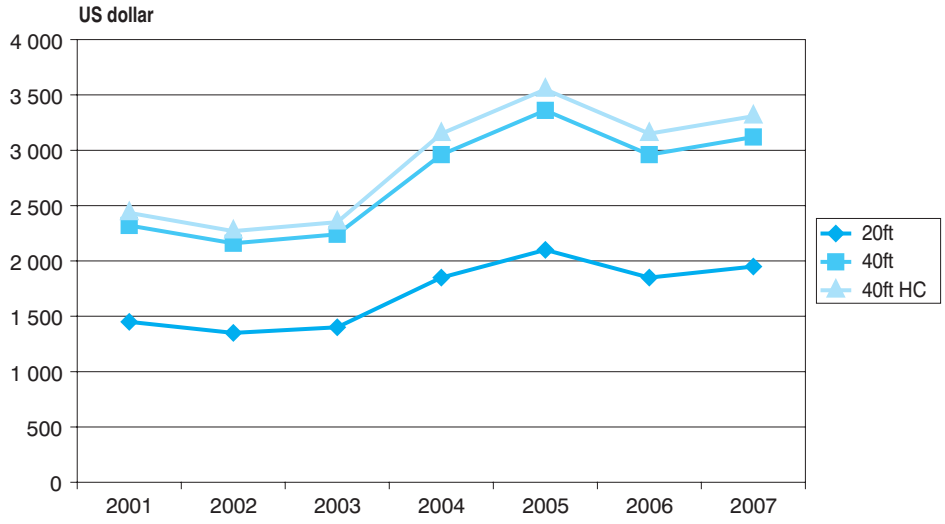
During 2007, the price of new boxes was largely stable. The price of a 20-foott dry box, for example, started the year at a peak at $2,050 on average in the first quarter of 2007, and then fell gradually toward $1,850 in the third quarter, before recovering to $1,950 by the end of the year (see figure 17). This modest fluctuation could be explained by the stable cost of material and resources in 2007. For instance, the price of Corten steel was practically set at about $600 per ton that year.

In the first half of 2007, lessors continued to exercise restraint in their investment strategies. Both prices of new boxes and daily rental must be taken into account in formulating optimal investment strategy. Since the peak in the third quarter of 2006, the rental rates fluctuated modestly, with a slight downward trend that ended with an upward turn in the third quarter of 2007 (see figure 18). The rental rate of 20-foot leased containers, for example, was $0.6 per day, an 18 per cent drop from its level a year earlier. The rate reached a modest $0.62 per day in the fourth quarter of 2007 and accelerated up to a rate of $0.7 per day in the opening quarter of 2008. This new upward trend was consistent with the hike of the new box prices over the same period.

In the first quarter of 2008 a sharp increase in cost of materials drove up prices of new boxes. The cost of Corten steel reached $850 per ton by the end of the first quarter, making the price of a 20-foot container rise to $2,200. Supplies of Corten steel became scarce as a result of increased demand from other economic sectors within China and the surrounding region. Although unclear, there was also some indication for higher labour costs originating from the scarcity of general skilled labour and the possible introduction of new labour rules and regulations on stricter working hours and wage.

Figure 17

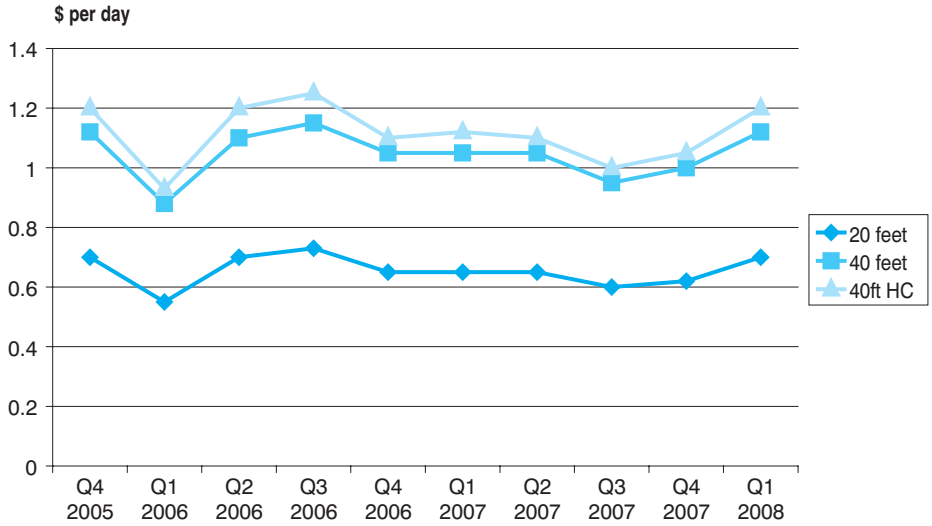
Evolution of prices of new containers
($ per box)



Source: UNCTAD secretariat based upon *Containerisation International*, August 2006, February 2007, and May 2008.

Figure 18

Evolution of leasing rates
($ per day)



Source: *Containerisation International*. August 2006, February 2007, and May 2008.

Chapter 5

PORT AND MULTIMODAL TRANSPORT DEVELOPMENTS

This chapter covers container port throughput for developing economies, improvements in port performance, institutional change, port development and inland transportation. World container port throughput grew by an estimated 11.7 per cent to reach 485 million TEUs in 2007. Chinese ports accounted for approximately 28.4 per cent of the total world container port throughput. Rail freight traffic for the same period grew by 28 per cent in Saudi Arabia, 12.6 per cent in Viet Nam, 9.4 per cent in India, 7.6 per cent in China, 7.2 per cent in the Russian Federation, and by a mere 1 per in both Europe and in the United States.

A. CONTAINER PORT TRAFFIC

With the world container fleet increasing by double-digits for a second consecutive year, the prospects for ports is bright, as more ships literally mean more customers. Some analysts had argued that in recent years there was an excess of ordering driven by cheap lending and an over optimistic view of world trade. Regardless of the reasons, with the advent of high oil prices, ship owners are fortunate to have this spare capacity to hand. These new ships, instead of servicing new routes, are now finding employment on existing routes. The high oil price reported in chapter 4 has resulted in the need for ships to reduce speed with the inevitable consequence that more ships are needed on existing routes if schedules are to be maintained. While more ships do not necessary translate into more cargo volumes being carried, as ships are in some cases simply moving slower, world container port throughput volumes are nevertheless increasing. Port revenues, at least by the large international terminal operators, are also increasing. Port revenue does not just consist of charges made from cargo handling but also for services such as towage, mooring, waste removal, etc., which will increase with the number of vessel calls, even if world trade stalls. This factor has not escaped the notice of investors in infrastructure, and thus has helped increase the price of ports as assets over the last few years.

With the world container fleet increasing by double-digits for a second consecutive year, the prospects for ports is bright, as more ships literally mean more customers.

World growth in container port throughput (measured in 20-foot equivalent units (TEUs)) increased by 11.1 per cent in 2006. This is up from 9.6 per cent for the previous year. Preliminary figures for 2007 indicate a similar increase of 11.7 per cent over 2006. In most cases, the port throughput statistics for 2007 are unconfirmed or not reported until the end of the fiscal year; hence, 2006 figures give a more reliable picture.

Table 41 shows the latest figures available on world container port traffic in 62 developing economies with an annual national throughput of over 100,000 TEUs for the period 2005–2007. The figures for 2006 show 434.3 million TEU moves, an annual increase of 43.4 million TEUs over 2005. In 2007, the container throughput growth rate for developing economies was 16.5 per cent, with a throughput of 317 million TEUs; this corresponds to 65 per cent of total world throughput.

There were 34 countries with double-digit growth in 2006 over 2005, of a total of the 62 developing economies listed. The top 10 countries by growth were Panama (43.8 per cent), Pakistan (40.2 per cent), Cuba (36.7 per cent), Lebanon (28.9 per cent), Jamaica (28.6 per cent), Dominican Republic (27.2 per cent), Sri Lanka (25.4 per cent), Mexico (25 per cent) and China (24.5 per cent). Both Jamaica and Panama also appeared in the top 10 countries by growth the previous year. The growth rate for container port throughput in China increased from approximately 21.7 per cent in 2005 to 24.5 per cent in 2006, giving the country an impressive 84-million TEU throughput. Preliminary figures for 2007 show that Chinese port throughput is around the 101-million TEU mark (excluding Hong Kong, China and Taiwan Province of China). If Taiwan Province of China and Hong Kong, China, are included, then Chinese ports accounted for 139.1 million TEUs in 2007, representing some 28.4 per cent of world container port throughput. Chinese ports grew on average by 17.3 per cent in 2007 over the previous year.

Chinese ports accounted for 139.1 million TEUs in 2007, representing some 28.4 per cent of world container port throughput.

In 2006, container growth rate in developing economies was estimated at 13.8 per cent with a throughput of 276 million TEUs. Preliminary data obtained by UNCTAD show that world container moves grew by around 11.7 per cent and that container throughput reached 485 million TEUs (estimated) in 2006.

Table 42 shows the world's leading 20 container ports for the most recent year, 2007. Container throughput in these ports reached 235.8 million TEUs in 2007, a rise of 13.1 per cent over 2006. The ports listed remain the same as the previous year, with a slight shifting of fortunes for some ports. The list includes 13 ports from developing economies, all from Asia, with the remaining from developed countries located in Europe (4) and the United States (3). Of the 13 ports in developing economies, 8 are located in China (including Taiwan Province of China and Hong Kong, China). The remaining ports are located in Malaysia (2), the Republic of Korea, the United Arab Emirates and Singapore.

Singapore retained its lead as the world's busiest port in terms of the total number of TEU moves by achieving an impressive 12.7 per cent growth over 2006. However, its long-time rival, Hong Kong, China, lost second position to the rapidly growing port of Shanghai. Shanghai matched its impressive growth of just over 20 per cent achieved in 2006 again in 2007, to bring its total to just over 26 million TEUs and narrowing the gap with Singapore to just 1.7 million TEUs. Early signs for 2008 indicate that Shanghai will grow by 15 per cent, boosted by Yangshan port's third-phase expansion, which is expected to come on-stream and help the port pass the 30 million TEU mark.

Hong Kong (China) slipped down the league table due to a mere 1.5 per growth rate over the previous year. Contributing to this decline was the fact that Hong Kong, China and Shenzhen share an overlapping hinterland. The port of Shenzhen, despite increasing throughput by 14 per cent, remained at fourth place. Busan recorded stronger growth in 2007 than the previous year, with an increase of just over 10 per cent, to hold onto fifth place. Rotterdam climbed one place to reach sixth position, with an impressive 11.8 per cent growth. Dubai also climbed one place with an impressive 19.4 per cent growth helping to sustain its annual average growth rate since 2000 at around 20 per cent per annum. Kaohsiung, which experienced timid growth in 2006 from negative growth in 2005, slipped two positions to eighth place. Hamburg maintained its position in ninth place with an impressive 11.7 per cent increase. Qingdao and Ningbo swapped places, the former taking 10th position with a 22.9 per cent increase and the latter 11th place with a 32.4 per cent increase. Guangzhou again moved up three places with a phenomenal growth rate of almost 40 per cent. In tandem, Los Angeles slipped three positions as a result of being the only port in the top 20 to have recorded negative growth. Neighbouring Long Beach also suffered a similar fate after registering a 0.3 per cent growth. Of the five remaining ports, Port Klang, Tianjin and Bremen/Bremerhaven maintained their

Table 41

Container port traffic for 62 developing economies, 2005, 2006 and 2007

(TEUs)

	2005	2006	Preliminary figures for 2007	Percentage change 2005 - 2006	Percentage change 2006-2007
China	67 499 063	84 017 014	101 963 351	24.47	21.36
Singapore	24 104 200	25 608 400	28 764 000	6.24	12.32
Hong Kong, China	22 601 630	23 538 580	23 881 000	4.15	1.45
Korea, Republic of	14 885 942	15 513 935	17 015 738	4.22	9.68
Malaysia	12 197 750	13 419 053	15 120 974	10.01	12.68
Taiwan Province of China	12 791 429	13 102 015	13 722 312	2.43	4.73
United Arab Emirates	9 851 709	10 967 048	12 826 854	11.32	16.96
Brazil	5 605 440	6 282 766	6 798 200	12.08	8.20
India	4 982 092	6 189 794	7 433 566	24.24	20.09
Thailand	5 115 213	5 574 490	6 200 425	8.98	11.23
Egypt	3 687 933	4 532 202	4 755 879	22.89	4.94
Indonesia	3 803 176	4 042 256	6 112 956	6.29	51.23
Saudi Arabia	3 732 706	3 919 027	4 208 854	4.99	7.40
Turkey	3 174 077	3 647 667	6 350 665	14.92	74.10
Philippines	3 633 559	3 595 279	3 732 872	-1.05	3.83
South Africa	3 111 121	3 552 198	3 781 403	14.18	6.45
Sri Lanka	2 455 297	3 079 132	3 381 693	25.41	9.83
Mexico	2 144 345	2 680 081	3 070 770	24.98	14.58
Oman	2 748 584	2 620 363	2 846 488	-4.66	8.63
Argentina	2 124 619	2 431 886	2 575 252	14.46	5.90
Pakistan	1 686 355	2 363 500	1 826 845	40.15	-22.71
Jamaica	1 671 820	2 150 408	2 193 915	28.63	2.02
Panama	1 483 183	2 133 021	5 291 180	43.81	148.06
Chile	1 799 427	2 122 529	2 417 336	17.96	13.89
Dominican Republic	1 462 889	1 860 872	2 054 433	27.21	10.40
Puerto Rico	1 727 513	1 749 565	1 695 153	1.28	-3.11
Cuba	1 191 081	1 628 138	1 731 003	36.69	6.32
Iran, Islamic Republic of	1 325 643	1 528 518	1 851 396	15.30	21.12
Colombia	1 236 121	1 510 744	1 898 773	22.22	25.68
Bahamas	1 211 500	1 463 000	1 636 000	20.76	11.83
Venezuela, Bolivarian Rep. Of	1 120 492	1 218 066	1 287 517	8.71	5.70
Peru	991 474	1 084 773	1 175 112	9.41	8.33
Bangladesh	808 924	897 937	980 396	11.00	9.18
Guatemala	776 395	800 245	830 936	3.07	3.84
Costa Rica	672 020	765 672	842 903	13.94	10.09
Kuwait	673 472	750 000	804 507	11.36	7.27
Ecuador	632 722	671 087	669 734	6.06	-0.20
Lebanon	461 122	594 603	873 605	28.95	46.92

Table 41(continued)

Port Name	2005	2006	Preliminary figures for 2007	Percentage change 2005 - 2006	Percentage change 2006-2007
Honduras	553 013	593 800	688 314	7.38	15.92
Yemen	542 001	575 394	773 016	6.16	34.35
Viet Nam	474 753	522 347	3 939 759	10.03	654.24
Uruguay	454 531	519 218	596 487	14.23	14.88
Côte d'Ivoire	571 674	507 119	542 617	-11.29	7.00
Kenya	436 671	479 355	585 367	9.77	22.12
Ghana	442 082	476 451	513 204	7.77	7.71
Syrian Arab Republic	422 231	471 970	505 007	11.78	7.00
Trinidad and Tobago	467 712	471 675	521 257	0.85	10.51
Jordan	392 177	406 000	414 000	3.52	1.97
Angola	316 396	377 206	403 610	19.22	7.00
Tanzania, United Republic of	319 548	361 173	13 850	13.03	-96.17
Mauritius	334 931	359 265	413 828	7.27	15.19
Sudan	273 518	326 701	359 537	19.44	10.05
Cambodia	211 141	221 490	236 994	4.90	7.00
Djibouti	193 600	221 330	294 902	14.32	33.24
Bahrain	195 571	215 487	121 351	10.18	-43.69
Cameroon	190 859	200 251	192 715	4.92	-3.76
Guam	150 960	147 972	165 427	-1.98	11.80
El Salvador	103 483	123 329	67 088	19.18	-45.60
Barbados	88 759	98 511	99 623	10.99	1.13
Madagascar	102 000	92 496	112 427	-9.32	21.55
Netherlands Antilles	89 229	90 759	97 271	1.71	7.18
Namibia	77 610	83 263	144 993	7.28	74.14
Subtotal	238 586 488	271 548 426	316 406 638	13.82	16.52
Other reported [a]	4 440 655	4 441 266	953 764	0.01	-78.52
Total reported [b]	243 027 143	275 989 692	317 360 401	13.56	14.99
World total [c]	390 875 566	434 302 152	485 000 000	11.11	11.67

Source: UNCTAD secretariat derived from information contained in *Containerisation International Online* as of May 2008, from various Dynamar B.V. publications and from information obtained by the UNCTAD secretariat directly from terminal and port authorities.

[a] Comprises developing economies where fewer than 100,000 TEUs per year were reported or where a substantial lack of data was noted.

[b] Certain ports did not respond to the background survey. While they were not among the largest ports, total omissions can be estimated at 5 to 10 per cent.

[c] Whilst every effort is made to obtain up-to-date data, figures for 2007 are in some cases estimated. Port throughput figures tend not to be disclosed by ports until a considerable time after the end of the calendar year. In some cases, this is due to the publication of annual accounts at the close of the financial year. Country totals may conceal the fact that minor ports may not be included; therefore, in some cases the actual figures may be higher than those given. The figures for 2006 are generally regarded as more reliable and hence are more often quoted in the accompanying narrative.

positions. Tanjung Pelepas, established in 2001, surpassed New York for the first time and again just outside the top 20 is the port of Laem Chabang. Together, these top 20 ports accounted for around 48 per cent of the world container port traffic in 2007. Figure 19 shows the breakdown of containerized trade by region. The picture remains unchanged from the previous year.

.. top 20 ports accounted for around 48 per cent of the world container port traffic in 2007.

B. IMPROVEMENTS IN PORT PERFORMANCE

Improving port facilities is one way developing economies can benefit from greater connectivity to world markets, improve trade and lower their transport costs. In most cases, to improve port performance, hardware needs to be upgraded and refinements made to existing soft solutions. Care should always be taken to ensure ports do not become bottlenecks; in some cases, this may require replacing existing paper-based procedures, originally designed to protect revenue collection, with electronic means. The challenge for developing economies remains how to achieve or maintain revenue collection and provide security procedures whilst financing change and reducing bottlenecks.

Ports are facing increasing demands for a quick turnaround of vessels from customers with ever-increasing sizes of ships. Improving turnaround time by increasing port performance is, however, no easy task, for the main bottleneck is in crane handling. Ports

Table 42

Top 20 container terminals and their throughput for 2005, 2006 and 2007

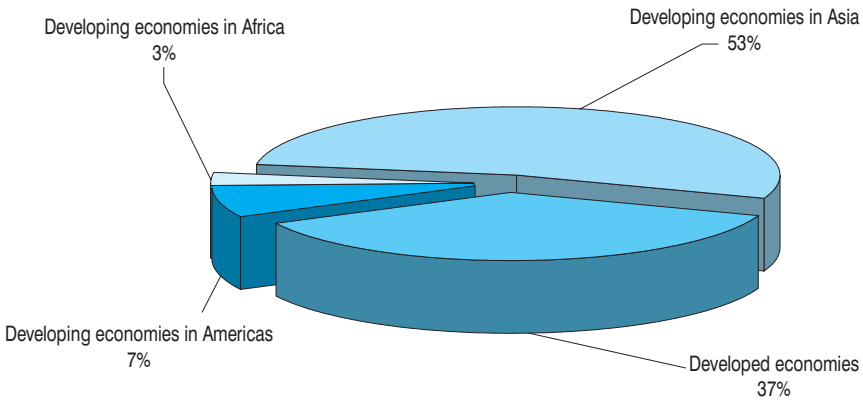
(TEUs and percentage change)

Port name	2005	2006	2007	Percentage change 2006-2005	Percentage change 2007-2006
Singapore	23 192 200	24 792 400	27 932 000	6.90	12.66
Shanghai	18 084 000	21 710 000	26 150 000	20.05	20.45
Hong Kong (China)	22 601 630	23 538 580	23 881 000	4.15	1.45
Shenzhen	16 197 173	18 468 900	21 099 000	14.03	14.24
Busan	11 843 151	12 030 000	13 270 000	1.58	10.31
Rotterdam	9 250 985	9 654 508	10 790 604	4.36	11.77
Dubai	7 619 219	8 923 465	10 653 026	17.12	19.38
Kaohsiung	9 471 056	9 774 670	10 256 829	3.21	4.93
Hamburg	8 087 545	8 861 545	9 900 000	9.57	11.72
Qingdao	6 307 000	7 702 000	9 462 000	22.12	22.85
Ningbo	5 208 000	7 068 000	9 360 000	35.71	32.43
Guangzhou	4 685 000	6 600 000	9 200 000	40.88	39.39
Los Angeles	7 484 624	8 469 853	8 355 039	13.16	-1.36
Antwerp	6 482 061	7 018 899	8 176 614	8.28	16.49
Long Beach	6 709 818	7 290 365	7 312 465	8.65	0.30
Port Klang	5 715 855	6 326 294	7 120 000	10.68	12.55
Tianjin	4 801 000	5 950 000	7 103 000	23.93	19.38
Tanjung Pelepas	4 177 121	4 770 000	5 500 000	14.19	15.30
New York/New Jersey	4 792 922	5 092 806	5 400 000	6.26	6.03
Bremen/Bremerhaven	3 735 574	4 428 203	4 892 239	18.54	10.48
Total top 20	186 445 934	208 470 488	235 813 816	11.81	13.12

Source: UNCTAD secretariat *Containerisation International*, May 2008.

Figure 19

Regional breakdown of container throughput for 2007



Source: UNCTAD secretariat.

have not made any significant breakthroughs in container handling, even with the arrival of tandem lift and triple lift cranes. These cranes do not bring double or triple levels of productivity, merely marginal increases, for they cannot complete every move with the optimum carrying capacity, as this would require optimum stowage as well as optimum supply and demand. Neither does there appear to be any new radical solutions on the horizons, which would have to be in a new approach to either container handling or box design.

In the *Review of Maritime Transport 2007*, it was reported that, at the Chiwan Container Terminal in Shenzhen, China, a crane capable of lifting six TEUs or three FEUs (forty-foot equivalent units) came into operation. The terminal has since introduced two additional similar cranes, bringing the total triple-lifts to three. The terminal earlier this year reported an average container handling rate of 64.17 boxes per hour when assisting the vessel *MSC Candice*. Five quay cranes (including four twin-lift 40-footers) were used in discharging (without loading) 2,542 units. One crane operator had apparently moved 132 boxes in one hour. A concept to further improve container handling efficiency has led one crane manufacturer to design, on paper, a crane capable of discharging four FEUs simultaneously. In 2007, Jebel Ali Port (United Arab Emirates) introduced tandem lift gantry cranes capable of handling two FEUs (or four TEUs) simultaneously. In October 2008 the port increased its tandem lift cranes to 16. Also in 2008, Jebel Ali Port introduced the world's first special simulator to train crane operators on the use of these tandem lift cranes.

C. RECENT PORT DEVELOPMENTS

Port developments around the world continue at an uneven pace. The following section gives a brief overview of some of these developments by region. This narrative is meant to be informative rather than exhaustive.

In Europe, A.P. Moller Terminals (APMT) won a concession to build Vado Ligure terminal in Savona, Italy. In Turkey, the outcome of the port privatization process saw the entry of the Port of Singapore Authority (PSA) in the port of Mersin and Hutchison in the port of Izmir. In Ukraine, Odessa Commercial Sea Port announced plans to convert a disused shipyard into a 300,000-TEU terminal, while the neighbouring port of Ilyichevsk plans to increase its facilities to handle 460,000 TEUs. In the Russian Federation, construction started on the long-awaited 1 million-TEU, €300 million container terminal at the port of Lomonosov in the Baltic Sea. The project is financed by the European Bank of Reconstruction and Development and the Swiss-based Mediterranean Shipping Company. Elsewhere in the Russian Federation, the Government announced plans to upgrade Novorossiysk to accommodate 4,000-TEU vessels. The port recently underwent a 20 per cent initial public offering (IPO) raising $1 billion. International Container Terminal Services Inc. (ICTSI) won a concession to operate a multi-purpose port to include 300,000 TEUs at Batumi, Georgia. Also in Georgia, DP World became involved in a new container terminal project and free trade zone at the port of Poti.

In the Middle East, APMT was granted a 25-year concession at the Bahrain Gateway terminal in the Port of Khalifa Bin Salman. The port has a depth of 15 metres, enabling it to cater for the newest generation of container vessels. In Oman, the International Container Terminal at Sohar opened for business. In the United Arab Emirates, DP World was awarded the concession to operate the new Khalifa port at Abu Dhabi.

In Pakistan, plans were announced to dredge the Port Qasim to 10.5 metres while HPH was to build a new container terminal in Karachi. In India, the State of Bhubaneswar is reportedly looking into a study suggesting the need to develop 15 to 20 more ports along its coast.[93] On the west coast of India, the State of Karnatakata is also looking at developing three new ports.[94] The Thai Government and DP World are considering the 2.6 billion Baht ($80 million) deep sea port project at Pak Bara. In the Republic of Korea, Donghae Port, which has a capacity of 100,000 TEUs per annum, received its first container ship, the 9,991-TEU *Golden Gat.* In Busan, both old and new ports will be dredged from 15 to 16 metres to accommodate the growing number of vessels over 10,000 TEUs.

In the Americas (see chapter 7 for a more detailed account), HPH launched a new $244 million facility at the Port of Lazaro Cardenas, Mexico.

In Africa, Morocco is to build a $1.2 billion port near Tangier in addition to the recently completed Tangiers–Med Port. DP World is reportedly looking at a $250 million port project in Djen-Djen in Algeria, after having won a 25-year concession to operate existing facilities and build new berths in Dakar, Senegal. In Equatorial Guinea, Lonrho Africa is to expand its $30 million (R209 million) investment into Luba Freeport to capture more of the region's growing oil and gas sector. In Gabon, the Singapore-based international terminal operator Portek won two 25-year concessions at the ports of Owendo and Port Gentil. In South Africa, the Port of Ngqura, the county's third-deepest harbour, is to see the development of a 3 million-TEU facility which will be capable of accommodating vessels of up to 80,000 dwt and a draught of up to 23 metres. Ngqura is midway between the ports of Durban and Cape Town and the first two berths should be completed in 2009. The total project is expected to amount to R8 billion ($1 billion) to bring the terminal into operation. This includes R4.7 billion for building four berths, about R1.4 billion for equipping two berths and the balance for upgrades to rail connections between the port and Gauteng. International terminal operator Cosco is reported to be interested in the project. In 2007, APMT began operations of facilities in the ports of Luanda (Angola), Xiamen, Tianjin, Guangzhou (China), Tema (Ghana) and Tangier (Morocco).

Morocco is to build a $1.2 billion port near Tangier in addition to the recently completed Tangiers–Med Port.

D. INSTITUTIONAL CHANGE

Governments trying to bring their ports into the twenty-first century may find that the costs can be prohibitively expensive and the port difficult to manage without sophisticated software management programmes. However, the globalization of ports and the creation of port transnational corporations (TNCs) have brought with them many opportunities for developing economies, such as the sharing of knowledge and expertise in the areas of management and operational techniques, infrastructure planning, methods of international finance, the adoption of tried and tested computer software systems, the replication of success factors and fine tuning of new equipment tested in other locations.[95]

In 1993, 42 per cent of world container throughput passed through State-owned terminals, but by 2006 this figure was down to 19 per cent. The share of State throughput varies by region: in Northern Europe it is 6 per cent, in South-East Asia, 42 per cent, Eastern Europe 24 per cent and Africa 68 per cent.[96] Today, the majority of the top 100 container ports, which represent over 80 per cent of total world container port throughput, have some form of private participation. For example, the Port of Tanjung Pelepas in Malaysia is 30 per cent owned by the shipping line Maersk Sealand, whereas the adjacent Port of Singapore remains one of the few ports still owned by its national Government, albeit in a form of corporatization.

The plethora of port concessions worldwide has created many individual terminal operating companies. Some companies have expanded through winning new concessions in other countries or, more recently, through a spate of mergers and acquisitions which have transformed some terminal operators into TNCs, so that some control more than 50 terminals and others are present in more than 30 countries. At the other end of

the scale are small individual port operators who, having matured in their own market, have sought out new opportunities abroad.

In late 2007, the Hamburger Hafen und Logistik AG (HHLA) terminal operator underwent an IPO on the Frankfurt and Hamburg stock exchanges. Shares were offered at €53 ($76.80) and soon climbed to above €60 per share. HHLA workers were offered shares at a 50 per cent discount. The IPO was oversubscribed 10-fold and raised around €1.17 billion. HHLA is still 70 per cent owned by the State of Hamburg.

In China, Qingdao and Ningbo, the country's third- and fourth-busiest container ports, are planning an IPO to raise funds. Previously, in 2006 Dalian Port raised HK$2.37 billion ($303.8 million) in an IPO in Hong Kong, China. The proceeds were to finance the construction of four container berths at Dayao Bay and 12 crude oil storage tanks at Xingang, as well as the supply of equipment including tugs. The port is now considering building 12 more crude oil storage tanks with a total capacity of 1 million–1.2 million tons. The project is expected to cost about Yuan 1 billion over 2008 and 2009, financed through a second IPO.

Previous Chinese port companies have received an overwhelming response from investors in the Hong Kong, China stock market. Dalian Port saw its share price surge 68 per cent on the first trading day and Tianjin Port Development Holdings shares were nearly 1,700 times over-subscribed, resulting in an increase of 26 per cent upon its launch.

The global port industry remains highly fragmented. From table 43, it can be seen that the Herfindahl Hirschmann Index, an indicator of market concentration, is at 548,[97] where 1,000 indicates concentrated and 1,800 highly concentrated. The recent purchases of ports by financial institutions in some cases will most likely translate into re-sales after some asset stripping and reorganization. Ports are capital-intensive industries by nature and revenue streams may take decades to repay current investments. The question remains whether these financial institution will still hold onto these assets when the next round of major investment is required. Port expansion, especially in old established ports, has become constrained by the encroachment of cities. Busan and Shanghai are classic examples. The expansion of the city has resulted in the need to build new port facilities at distant locations.

Drewry's 2008 edition of the "Annual Review of Global Container Terminal Operators" placed PSA in the lead over Hutchison by virtue of its 20 per cent stake in the latter. Drewry puts the top five port operators and their

Table 43

Global terminal operators' percentage share of world container throughput

(Percentages)

Global terminal operators	2005	2006	2007	HHI
HPH	13	13	14	187.69
PSA International	11	12	11	127.69
APM Terminals	10	10	12	153.76
DP World [a]	9	10	9	79.21
Cosco Pacific	7	7	8	
Eurogate	3	3	3	
SSA Marine	3	3	3	
Total share of world throughput	56	58	60	
World throughput (in millions of TEUs)	387.7	434.3	485.0	548.35

Source: UNCTAD secretariat from information obtained by Dynamar B.V.

[a] DP World includes CSX World Terminals and P&O Ports for all three years.

2007 TEU throughput as follows: PSA (47.5 million TEUs), Hutchison (33.6 million), APM Terminals (31.6 million), DP World (28.9 million) and Cosco (9.8 million). The top 20 global terminal operators handled some 349 million TEU, an increase of 13 per cent over the previous year.

In terms of fiscal results, DP World reported a 52 per cent growth in profits in the year ending 2007, but total throughput volumes increased by a marginal 3 per cent. China Merchants Holding International (CMHI), a significant port player in China, increased its profits to $515 million in 2007, up by around 40 per cent. ICTSI achieved a net profit of Php2.79 billion ($67.9 million) up 27 per cent in 2007. APMT posted a 22 per cent growth in revenue in 2007 to reach $2.52 billion. HPH saw profits rise by 13 percent to HK$12.8 billion ($1.65 billion) in 2007.

CMHI handled some 47 million TEUs in 2007, more than DP World, which ranks fourth in terms of the global terminal operators. However, apart from a small stake in a terminal in Zeebrugge, and pending the operation of a project in Viet Nam, CMHI's portfolio of ports are located in China.

The world's major ports are located on the main shipping routes on an East–West axis. This axis has historically been where ports have sought to expand internationally. Interesting along this route are numerous countries where port TNCs are not located (e.g. from east to west – Cambodia, Myanmar, Bangladesh, Yemen, Somalia, Eritrea, Sudan, Libyan Arab Jamahiriya and Tunisia). Of these countries, Yemen, Somali, Eritrea, Sudan, Libyan Arab Jamahiriya and Tunisia are the least distant from international shipping lanes, making them in principle candidates that port TNCs may wish to investigate further. Obviously, factors other than location to shipping routes need to be considered, e.g. water depth, and existing facilities, social, political, legal and economic constraints.

In Yemen, the Aden Container Terminal was handed back to the Government in 2002. The issue included security concerns in the wake of the 2000 terrorist attack on the USS Cole. Since then, no port TNC has been involved in the country.

In Somalia, there are deepwater ports at Berbera, Mogadishu and Kismaayo, plus a minor port at Maydh. A port modernization programme in the 1980s improved cargo handling capabilities at Kismaayo and increased the number of berths and deepened the harbour at Berbera. Situated at the mouth of the Red Sea in the Gulf of Aden, Berbera is 100 miles, or four hours, south of the main international shipping route.

In Eritrea, the main ports are Assab in the south-east and Massawa in the central eastern part of the country. Assab is located on the main international shipping route and has a draft of between 5 and 10 metres, sufficient for all but the most modern container ships. However, quay length and facilities are limited. In Massawa, slightly further away from the main shipping route, the depth ranges from 5 to 9 metres.

Port Sudan is the main port for Sudan, with a depth of around 8 to 12 metres, and is located around 100 miles west of the main international shipping route.

In the Libyan Arab Jamahiriya, the main ports are, from east to west, Bennghazi, Az Zuwaytinah, Marsa al Burayqah, Ra's Lanuf, As Sidrah, Misurata El-Khoms and Tripoli. The Libyan port industry has been targeting by the Government for reform.

In Tunisia, the Government is looking at developing a deep water port at Enfidha, 60 miles to the south of the capital Tunis. Closer to the capital, the port of Rades has a depth of between 7 and 9 metrrs, and is the site of a new logistics zone facility. It is not yet clear whether any port TNCs have been invited to tender.

Ports are increasingly attracting the interest of investors, and so for developing economies the main issue is no longer how to finance new infrastructure projects but which partner to choose. At an UNCTAD meeting on globalization of port logistics in 2007, APMT said that port opportunities in developing economies could contribute to further expanding their portfolio, but the process was by no means cheap. Poor existing facilities and inadequate inland connections make developing countries' ports capital-intensive. Developing economies, especially those in Africa, have some of the world's worst internationally-connected countries.

At the above mentioned-meeting, terminal operators present listed, besides macro risks such as economic and political, the following factors which Governments need to address in attracting port TNCs (see box 1).

Historically, the hardest change for many Governments to implement is that of the labour reforms, such as the abolition of controls originally established to protect the

Box 1

Prerequisites for attracting port TNCs

- A clean and transparent bidding process
- Quality and Capacity landside connections multimodal) and port infrastructure;
- No government cap on profits
- Good safety and security requirements
- A training and retrenchment of labour plan
- A clear role for the port authority (e.g. landlord model)
- Smooth customs procedures
- Absence of corruption

Source: UNCTAD meeting on Globalization of Port Logistics: Opportunities and Challenges for Developing Countries, December 2007, Geneva.

employment rights of port workers. Baird and Valentine (2006) state that, in the United Kingdom, it was not until the abolition of the National Dock Labour Scheme in 1989 that port privatization really received momentum despite the first port privatizations six year previously. Juhel and Pollock (1999) quote from an unnamed study which states that 79 per cent of the former registered dockworkers became redundant, of which 19 per cent wished to remain active but could not find work. While 55 per cent found employment elsewhere, 25 per cent re-entered the port industry. Labour reforms can be a thorny issue for Governments, as traditionally ports tend to over-employ. For example, in the port of Buenos Aires, Argentina, the suspension of the labour agreements led to a 50 per cent reduction of the number of workers. Port reforms in Australia, France, and the United Kingdom cut employment levels by 40 to 60 per cent (International Labour Organization, 1996). Finding other jobs for these people will initially be a challenge; however, in the long run, as the economies develop, more jobs will be created. The time lag in returning workers to the labour market and retraining costs will remain an issue. Often new port concessions are awarded with gradual reduction in workforce limits set over a defined period. These allow people to be retrained and adjust to the fact that their old job is redundant. For example, in 1993, the Mexican Government passed a law that reformed Mexico's ports which included transforming employment rights from a national collective bargaining position into a firm-level bargaining position by the new private operators. As a result, the number of port workers employed by the public sector was reduced, but total port employment by private firms is rising because of an increase in the activity of ports. For example, the port of Manzanillo had 2,100 workers before the reform, and at the end of 1997 the number had doubled. In Veracruz, the initial number of 6,647 employees increased to 8,260 (Estache and Trujillo, 2001). As a means of managing port TNC involvement in port concessions, the International Transport Workers' Federation (ITF) announced in 2007 that it was establishing a database to monitor the situation (ITF, 2007).

.. the hardest change for many Governments to implement is that of the labour reforms ..

The outlook for the port industry depends significantly on whether the global terminal operator is derived from

an ocean carrier or an international terminal operator (ITO) as the drivers and motives will be different. Ocean carriers are largely driven by the need to control supply chains. Supply chains involve managing the raw material that go into the manufacture of a particular product as well as the processes involved. This includes all the process – from the initial stages of a product's formation, its transportation to the market for sale, until its final point of consumption by the consumer. This chain is complicated but, once created, is difficult for new entrants to compete against. The motivation here is guaranteed income through managing the logistics processes. On the other hand, an ITO will be motivated by guaranteeing income through market share of the terminal operating business. The ITO TNC company will be looking to replicate the efficiencies achieved in one port in other locations. Its business will be highly focused but diversified globally to offset any regional imbalances in trade. An ITO port company will thus look for a globally diversified portfolio (e.g. Dubai Ports World). An ocean carrier TNC will conversely look for terminal management where its shipping line has the best advantage (i.e. fewer competitors and larger market share). However, due to the trend of ocean carriers TNC to distance themselves from the parent shipping line, ocean carrier TNC are less common. A TNC whose concentration is upon market share is more prominent, especially in the ports with higher throughput volumes.

E. INLAND TRANSPORT DEVELOPMENTS

(1) Inland waterway transport

In the absence of rivers, transport would be impossible to many remote areas in the world. Inland waterways play a vital role in connecting goods and passengers in remote areas to other more developed regions. Another important factor which is contributing to the growth of inland waterway transport is that many developed regions also see inland waterway transport as a means to relieving road congestion while protecting the environment through lower vehicle emissions.

In 2007, in Europe, inland waterway transport accounted for around 500 million tons of goods, an estimated 4 per cent increase compared to 2006. In the United States the figure for 2007 was around 800m tons. In China, strong transport volumes along the Yangtze River helped push the country's total inland waterway traffic up to between 1.2 – 1.3bn tons in 2007.

(2) Railway transport

(a) Market development

In 2007, the International Union of Railways reported a boost in rail traffic worldwide, in particular in several of the BRIC countries, caused by demographical development and globalization of trade.

In European rail freight, growth was recorded at 1 per cent in 2007, after a 4 per cent increase in 2006: The growth in cross-border rail freight traffic was particularly strong, growing by 3.5 per cent. The total rail freight production in Europe 2007 was 412 billion tons-kilometres.

The railways in the Russian Federation experienced a continued strong growth in rail freight in 2007, up 7.2 per cent from 2006, bringing the total rail freight production above 2 trillion ton-kilometres.

Likewise, in Asia the Chinese and Indian Railways in 2007 experienced healthy growth figures of 7.6 and 9.4 per cent respectively, compared to 2006. The total rail freight production in 2007 was recorded in China 2.2 trillion tons-kilometres and in India at 481 billion tons-kilometres.

In the United States in 2007, rail freight traffic decreased by 1 per cent on the previous year's levels of 3 per cent. The total rail freight production by United States railroads in 2007 was 2,800 tons-kilometres.

Of other reported rail freight market developments in 2007 compared to 2006, Chile saw a growth of 8 per cent, the Islamic Republic of Iran 9.4 per cent, Saudi Arabia 28 per cent and Viet Nam 12.6 per cent. Congo and Cameroon have experienced a decrease in the rail freight in 2007 compared to 2006 of around 5 per cent.

A particularly interesting development in intercontinental rail freight was the maiden journey in January 2008 of the so-called "Beijing–Hamburg Container Express", which left the Chinese capital and covered the distance of 10,000 kilometers (6,200 miles) in 15 days before arriving in the German Port of Hamburg. The comparable journey by sea takes around 30 days. The "Container Express" made its way from China to Germany through Mongolia, the Russian Federation, Belarus and Poland.

(b) Infrastructure development

Rail infrastructure developments took place in many of the world's regions in 2007. It is in particular worth noting that the African Union (AU) has over the recent years taken a role on linking infrastructures of its member countries into a comprehensive Pan-African transport infrastructure. In 2008, the AU published a report on "State of Transport Sector Development in Africa" for the consideration of the African Transport Ministers. Table 44 clearly shows that the African rail infrastructure is less dense compared to rail infrastructure density in other parts of the world, which is only natural given that the population density in Africa is generally lower.

Table 44

Comparative railway densities

Region	Total network (route km)[2]	Density (km/1,000 km^2)
North Africa	16 012	2.3
Eastern Africa	9 341	2.2
Southern Africa	33 291	5.6
Central Africa	6 414	1.2
Western Africa	9 715	1.9
Africa	74 775	2.5
World Average	-	23.1

Source: UNCTAD secretariat based on African Union, State of Transport Sector Development in Africa.

The African Union also has identified a number of missing links in African railway system based on the overall Railways Master Plan. The missing links are rail network interconnections, where their construction has not yet been started or completed (see table 45).

In conclusion, the African Union Ministers of Transport have defined that the following challenges need to be overcome:

Systematic programmes for replacement of old locomotives, wagons and communication systems need to be developed;

Inadequate railway lines and structures need to be rehabilitated and upgraded;

Market-driven and customer-responsive services to attract customers need to be initiated;

The role of the private sector needs to be increased;

Intra-modal or inter-modal transport competition to gain efficiency in cargo handling at terminals needs to be enhanced; and

Carrying out railway interconnections where feasible should be considered.

(3) Road transport

(a) Market development

Freight transport by road is a very un-consolidated and immature market, largely dominated by small and medium-sized companies. This is perhaps a reflection of the low barrier of entry into this market in many countries, and as such there are no pure road transport companies with a global reach. Only a few logistics companies with affiliated trucking and road transport activities can be considered to have global activities.

A comparative analysis of various national markets in the road transport industry,[98] concludes that the United States market is the largest when measured by total sales, and that the Chinese market is the largest when measured by number of establishments and the number of employees (see table 46).

(b) Infrastructure development

A 2008 study of the AU shows that Africa has about 2.09 million km of roads, of which 21 per cent is paved. The quality of the roads and their density are still low. The continent's roads accounts for about 90 per cent of inter-urban traffic. The density of the road network is 7.59 km per 100 sq. km. These ratios indicate a great inadequacy and are still too low to provide an acceptable degree of access by disadvantaged populations to the benefits of road transport.

The Trans-African Highway concept (see table 47) was originally formulated in the early 1970s. The 2008 AU study shows the missing links in the highway:

The AU has concluded that the existing gaps in the roads and road transport subsector reveal low network connectivity leading to high transport costs, as well as poor quality of services compared to the best practices in other regions of the world. The AU is proposing the following actions to close the gaps:

Table 45

Railway missing links by subregions in kilometres and percentages

Regions	Existing links (km)	Planned lines in the master plan -1979 missing link (km)	Total length of lines (existing and planned) (km)	Per cent of railway missing links
North Africa	16 012	6 484	22 496	29
Eastern Africa	9 341	2 299	11 640	20
Southern Africa	33 291	4 034	37 325	11
Central Africa	6 414	4 574	10 988	42
Western Africa	9 715	8 971	18 686	48
Total Africa	74 775	26 362	101 137	26

Source: UNCTAD secretariat based upon African Union, State of Transport Sector Development in Africa.

Table 46

Road transport markets: country comparisons

	Total establishments	%	Total employment	%	Total sales (million $)	%
Brazil	27 140	66.8	527 383	61.2	12 093	8.5
China	214 759	528.5	4 173 177	484.6	35 355	24.8
France	9 027	22.2	175 408	20.4	23 813	16.7
Germany	12 620	31.1	245 239	28.5	33 384	23.4
India	149 414	367.7	2 903 391	337.2	9 903	6.9
Japan	20 492	50.4	398 195	46.2	49 556	34.7
Russian Federation	23 897	58.8	464 354	53.9	12 793	9.0
South Africa	5 320	13.1	103 372	12.0	2 687	1.9
United Kingdom	9 246	22.8	179 675	20.9	25 854	18.1
United States	40 634	100.0	861 124	100.0	142 677	100.0

Source: UNCTAD secretariat based upon Barnes Reports, Worldwide Freight Trucking Long Distance Industry, 2008.

Table 47

Trans-African Highway missing links by subregions in kilometres and percentages

Region	Total TAH network (kms)	Paved sections (kms)	Per cent of missing links
Northern Africa	13 292	13 195	1%
Eastern Africa	9 932	8 201	17%
Southern Africa	7 988	6 817	15%
Central Africa	11 246	3 891	65%
Western Africa	11 662	10 581	9%
Total Africa	54 120	42 665	21%

Source: UNCTAD secretariat based upon African Union, State of Transport Sector Development in Africa.

Implementation of common border post systems;

Mobilization of public and private resources for maintenance and construction;

Undertaking all the necessary legal reforms;

Improvement of road transport facilitation and transit time improvements; and

Paying special attention to construct and/or pave the critical inter-state links that connect main cities and business centres.

(c) Global contract logistics[99]

Consolidation in the global logistics industry continues to influence the market structure. Over the past 10 years, most industry sectors have experienced major mergers and acquisitions, and even the biggest companies are not immune from potential takeover. This trend also holds true for the logistics industry, where the major logistics providers increasingly have seen it as necessary to provide more capacity and larger global networks in order to match the increased cargo volumes and globalized supply chains of their clients. Another major factor that drives the consolidation of the logistics market is the increasing outsourcing of various transportation, warehousing, logistics and supply chain management activities by global industrial companies that wish to focus on their core manufacturing and sales competencies.

One of the areas of the logistics industry that has experienced the largest growth rates over recent years – and where the biggest growth potential is estimated – is in the area of contract logistics. Contract logistics can be defined as follows: planning, implementation, and control of a logistics system provided through a third party under a contract.[100]

The global contract logistics market accounts for just a small part of what is spent overall by manufacturers, retailers and other logistics service users (see figure 20). However the proportion for which it accounts is growing, as an increasing number of clients outsource their logistics functions, and contract logistics players continue to win business from less value adding providers.

The global contract logistics market grew by 10 per cent in 2006 to reach €129 billion (see table 48). The market was driven by growth in the Asia Pacific region (13.1 per cent) and supported by higher levels of growth in other developing markets such as the Middle East and Africa. The European market held back overall development with a below-average 7.2 per cent. North America, however, held up well, with growth of 10.2 per cent.

Table 48

Global contract logistics market size

(€ million)

	2004	2005	2006
Global	105 961	116 913	128 590

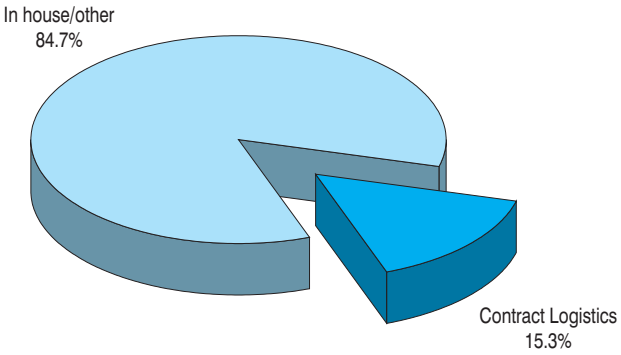
Source: Transport Intelligence, *Global Freight Forwarding 2007.*

Forecasts show that growth will continue over the next five years (see table 49). The projected downturn in the United States market as a result of the 2008 "credit crisis" and development in China, one of the key engines of growth in this market segment, are some of the key determining factors for the development of the market segment. Confidence in the industry remains high.

Europe is the largest market for contract logistics in the world, with a share just under 40 per cent. It is followed by North America (30 per cent) and Asia Pacific (27 per

Figure 20

Global contract logistics market penetration (2006)



Source: UNCTAD secretariat based upon Transport Intelligence, *Global Freight Forwarding 2007*.

Table 49

Global contract logistics market forecast

(€ million)

	2006	2010
Global	128 590	187 310
Growth rate		9.9

Source: Transport Intelligence, *Global Freight Forwarding 2007*.

cent). The markets in the Middle East, South America and Africa are tiny in comparison, each accounting for around 1–1.5 per cent.

(4) UNCTAD *Liner Shipping Connectivity Index 2008*

Access to world markets strongly depends on the availability of regular and efficient transport connectivity, especially as regards regular shipping services. UNCTAD's Liner Shipping Connectivity Index (LSCI) aims at capturing a country's level of integration into the existing liner shipping network through measuring the liner shipping connectivity. The LSCI was first introduced and explained in the *UNCTAD Transport Newsletter* No. 27 (1st quarter 2005), as an indicator of liner shipping connectivity for 162 countries. The ships which are deployed to provide liner shipping services to a country's port(s) form the basis of the five components which constitute the index: (a) number of ships; (b) the container carrying capacity in TEU of those ships; (c) maximum ship size; (d) number of services; and (e) number of companies. The underlying data is derived by UNCTAD from *Containerisation International Online*.

As of July 2008, China continued to lead the overall LSCI ranking (see annex 4), followed by Hong Kong (China), Singapore, Germany and the Netherlands. The best-connected countries in Africa are Egypt (ranked 17) and South Africa (35), while the best-connected countries in Latin America are Mexico, Brazil and Panama (26, 27 and 28, respectively).

The best-connected countries in Africa are Egypt (ranked 17) and South Africa (35), while the best-connected countries in Latin America are Mexico, Brazil and Panama (26, 27 and 28, respectively).

The data for 2008 confirms a growing connectivity divide, i.e. the gap between the best and worst connected countries is widening. As a trend, it can be observed that those countries that were best connected in July 2004 were also more likely to further improve their connectivity over the subsequent four years. Thus, the 20 highest -ranked countries in 2004 were, with the exception of Canada, still the highest-ranked countries in 2008, and China has led the ranking since 2004.

Countries at the bottom of the index include small island States which rely on small feeder service connections to a regional hub, such as Tuvalu and Dominica, and landlocked countries which have only inland waterways connections serviced by small ships, such as Paraguay and Switzerland. Also countries facing difficult political situations, such as Iraq, Haiti and Somalia are amongst the worst connected countries.

The composition of the worst connected countries changes more frequently than the top connected countries, as the overall numbers of companies and services are very low. A withdrawal of one service provider or one service can therefore strongly impact the overall ranking, as was the case in Paraguay which in 2006 and 2007 had two liner companies providing services including one with max ship size of 2,233 TEU, but in 2008 fell back to 2004 level of one company servicing Paraguay with three ships of max ship size of 162 TEU. Grenada and Virgin Islands (U.S.) are two small islands which steadily improved their ranking since 2005. Cambodia and Haiti, however, have seen the strongest decline in their index since 2005 and in 2008 are amongst the 20 worst-connected countries.

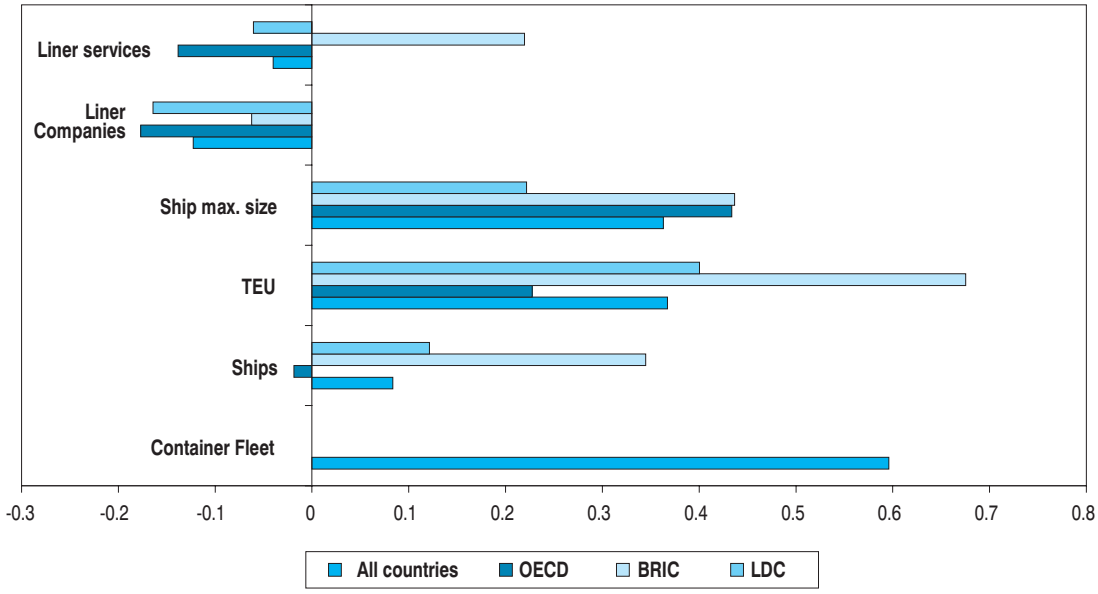
It is worth noting that some countries have experienced exceptional improvements in the past four years; Morocco and Lebanon, medium-ranked countries in 2004, have seen significant growth (217.2 per cent and 173.6 per cent, respectively) in the index and significantly improved their position in the ranking (Morocco from 78 to 33, and Lebanon from 67 to 34). Conversely, Yemen experienced one of the strongest declines in the index (- 24.8 per cent) and its position in the ranking decreased from 38 to 66; this may be attributable to the political situation, surcharges on war-risk premiums and the withdrawal of PSA from Aden port in 2003.

As regards the five components of the LSCI, it can be observed that the total number of ships, TEU capacity deployed and maximum ship size have all increased since 2004 (see figure 21). In comparison, liner services and companies have decreased. The liner services contracted in all countries except for BRIC countries. The number of liner shipping companies per country has contracted by 7.7 per cent. The highest concentration of liner companies is found in Europe, China and Singapore. This trend may raise concerns, especially for countries with low connectivity, where a further decline in the number of service providers may give rise to oligopolistic market structures.

The major change in maximum ship size has been observed in the OECD and BRIC countries. Indeed, in July 2008, there were eight countries that received ships with a TEU carrying capacity of more than 10,000 TEUs, notably Belgium, China, Germany, Hong Kong (China), the Netherlands, Singapore, Spain and the United Kingdom. The number of ships deployed has increased, particularly in the BRIC countries, with China once again leading the group. As of July 2008, 1,705 vessels from the world container fleet, approximately 4,300 vessels,[101] include at least one Chinese port in their liner services. The parallel increase of the maximum ship size and number of ships further explains the strong growth of TEU capacity deployed to BRIC countries. In comparison, OECD countries have experienced a decline in number of ships, but a growth in ship size. While LDCs have seen an improvement in the TEU capacity, the difference in TEU capacity between LDC and OCED or BRIC countries remains very high. LDCs with the biggest TEU capacity are Senegal and Angola, with 128,496 and 100,000 TEU respectively, while the comparative figure for countries such as China, Germany, the United Kingdom and Singapore is of more than 1,000,000 TEUs.

Figure 21

Changes in the LSCI between 2004 and 2008



Source: UNCTAD secretariat.

Chapter 6

LEGAL ISSUES AND REGULATORY DEVELOPMENTS

This chapter provides information on some recent legal developments in the fields of transport and trade facilitation, together with information on the status of the main maritime conventions.

A. NEGOTIATIONS ON TRADE FACILITATION AT WTO

Trade facilitation negotiations are one of the less contentious areas in the WTO Doha Round, where there is strong support from both developing and developed member States. Essentially, many countries believe that trade facilitation is a win–win scenario that can provide real benefits to both Government and business, and can be a major factor in enhancing trade competitiveness and transparency.

The negotiations are aimed at clarifying and improving the relevant aspects of General Agreement on Tariffs and Trade (GATT) articles V, VIII and X (respectively, freedom of transit, fees and formalities, and publication and administration of trade regulations), with a view to further expediting the movement, release and clearance of goods, including goods in transit.[102] Over the past year, the WTO Negotiating Group on Trade Facilitation considered a range of new and revised technical proposals from member States and focused on consolidating the over 130 proposals received to date into legal text-based proposals[103] that could be used in a possible future WTO agreement on trade facilitation.

Discussions also focused on the special and differential treatment for trade facilitation. This is a key element for developing and least developed countries, calling for an enhanced approach to special and differential treatment that goes beyond the traditional granting of transitional periods for implementing commitments, and includes the provision of adequate technical assistance and capacity-building to implement the measure(s) prior to obligation. Current proposals on the topic[104] suggest that developing and least developed countries notify WTO members regarding proposals for which they require additional time and/or technical assistance and capacity-building before implementation.

In order to assist such countries assess their current situations regarding the proposals, WTO, with the support of the so-called annex D organizations,[105] has embarked on an extensive programme of national self-assessment workshops. These workshops bring together key stakeholders in individual countries to review the proposals, determine their current level of compliance

(i.e. already comply, could comply in time, or will require technical assistance and capacity-building), and outline their implementation and technical assistance priorities.[106] The outcome of the workshops also provides feedback and direction to their national delegates at WTO.

The results of the self-assessment could be used by countries to develop their capacity-building plans to implement the measures. As laid out in proposal TN/TF/W/142, such plans could include details on areas such as the obligations for which technical assistance and capacity-building are required, the implementation period for each specific provision, the capacity-building and technical assistance required, and the potential donor. This would obviously require individual country discussions with perspective donors to determine the extent and areas of technical assistance and capacity-building to be provided.[107] The exercise would, logically, also have to integrate with other existing or planned national trade facilitation initiatives to provide an overall strategic implementation framework.

Feedback from countries that have undertaken the self-assessments is very positive. Countries have indicated that the trade facilitation self-assessment workshop is the first time they have undertaken such a wide consultation in-country on WTO related matters — the result being greater awareness and buy-in by stakeholders in the negotiating process. Such workshops also strengthen the political will for implementation — a key ingredient in trade facilitation.

Together with the other annex D organizations, UNCTAD provides facilitators to assist in undertaking these workshops. UNCTAD also provides a programme of support to developing and LDCs in preparing for the self assessment.

B. LEGAL ISSUES AFFECTING TRANSPORTATION

(1) Overview of recent developments relating to maritime and supply chain security

(a) World Customs Organization

In 2005, the Council of the World Customs Organization (WCO) adopted the *Framework of Standards to Secure and to Facilitate Global Trade (SAFE Framework)*, which has fast gained widespread international acceptance as the main global supply-chain security framework. As of June 2008, 154 WCO member administrations had expressed their intention to implement the WCO SAFE Framework.

Core features of the SAFE Framework were presented in previous editions of the *Review of Maritime Transport*. One of the integral aspects of the customs-to-business network arrangements envisaged by the SAFE Framework is the concept of the Authorized Economic Operator (AEO), defined as "party involved in the international movement of goods … that has been approved by or on behalf of national customs administrations as complying with the WCO or equivalent supply chain security standards. Authorized Economic Operators include, inter alia, manufacturers, importers, exporters, brokers, carriers, consolidators, intermediaries, ports, airports, terminal operators, integrated operators, warehouses, distributors"[108] Detailed AEO guidelines have been issued and, in June 2007, were integrated in a revised version of the SAFE Framework. The requirements for AEO recognition, applicable to AEOs and/or to customs administrations, were briefly presented in the *Review of Maritime Transport 2007*, but are repeated here for ease of reference. A number of elements that need to be satisfied are listed, each of them accompanied by specific detailed requirements applicable to AEOs, customs, or to both.[109] These elements include:

(a) Demonstrated compliance with customs requirements;

(b) Satisfactory system for management of commercial records;

(c) Financial viability;

(d) Consultation, cooperation and communication;

(e) Education, training and awareness;

(f) Information exchange, access and confidentiality;

(g) Cargo security;

(h) Conveyance security;

(i) Premises security;

(j) Personnel security;

(k) Trading partner security;

(l) Crisis management and incident recovery; and

(m) Measurement, analyses and improvement.

Although the SAFE Framework and the AEO guidelines have been in place for some time, it is not yet clear how much progress has been achieved in successfully implementing the requirements at national levels. One of the main challenges in respect of successful global implementation of the SAFE Framework, in particular from the perspective of developing economies, remains the mutual recognition of AEOs that are certified by different customs administrations. In the longer term, mutual recognition of AEO status will be critical to ensure that operators who comply with the criteria set out in the SAFE Framework and have obtained AEO status in their own country are in fact able to enjoy the benefits outlined in the SAFE Framework and may participate in international trade on equal terms. In the absence of a system for global mutual recognition of AEO status, traders from some countries, in particular developing economies, may find themselves at a serious competitive disadvantage; this could become even more of a concern if protectionist pressures, already growing in many countries as a result of a slowing world economy, increase. Progress on the issue of mutual recognition remains slow, however. Although some guidelines on the development of mutual recognition agreements are provided in the SAFE Framework, emphasis is also placed on the fact that "a global system of mutual recognition of AEO status will require some time to accomplish". In this respect, it is noted that "just as it has been suggested by WCO members and the secretariat that the SAFE Framework be implemented in a progressively "phased approach", so too should be the expectations for the future application of mutual recognition of customs systems of control for partnership programmes. Bilateral, subregional or regional initiatives are being developed as useful stepping stones toward such a global system".[110]

One of the main challenges in respect of successful global implementation of the SAFE Framework, in particular from the perspective of developing economies, remains the mutual recognition of AEOs that are certified by different customs administrations.

According to information by WCO, as of December 2007, some five countries had operational AEO programmes. This suggests that much remains to be done and that both benefits and challenges associated with the operation of AEO programmes at a global level will take some time yet to become apparent. Following the establishment of AEO programmes, customs administrations should endeavour to develop mutual recognition agreements with other administrations that have similar AEO programmes. The United States–New Zealand Mutual Recognition Agreement, announced in June 2007, appears to have been the first bilateral mutual recognition agreement relating to AEOs, providing for improved cooperation and coordination between the United States Customs Trade Partnership Against Terrorism programme (C-TPAT) and the New Zealand Customs Service Secure Export Scheme.[111] According to WCO, as of December 2007, three further pilot programmes on mutual recognition agreements were underway[112] involving Australia–New Zealand, EU–China, and the customs administrations of the East African Community,[113] respectively.

In 2006, WCO launched a number of capacity-building programmes, notably the Columbus Programme, Aid for SAFE Trade,[114] to help the modernization of member customs administrations and to assist in the implementation of the new security framework, as well as prepare countries for the possible outcome of WTO negotiations on trade facilitation. The programme consists of three phases:

(a) Phase 1: Needs Assessment – this phase concluded in June 2007, with over 100 diagnostic missions conducted;

(b) Phase 2: Implementation – this phase focuses on strategic planning, programme and project initiation, development of management infrastructures and monitoring and supporting the implementation process undertaken by WCO members. The WCO secretariat has published a "Capacity-building development compendium",[115] a guide to key management techniques to enable member administrations to control their own organizational development. The compendium will be updated at regular intervals to reflect the reforms and the modernization process of different customs administrations;

(c) Phase 3: Monitoring and evaluation – this phase is dedicated to evaluation and follow-up of implementation progress of the Columbus Programme beneficiaries.

Two reports, both entitled "WCO trends and pattern report – a capacity-building estimate", were published in 2007 with a further relevant report being published in June 2008.[116] The first report, focusing on the results of the needs assessment phase, finds that member customs administrations are aware of the new challenges but need support to develop the business skills required to implement the SAFE Framework. While most Columbus members appear to have adequate customs law in place to ensure authority for the key responsibility of customs — i.e. the basic control of goods and people crossing borders — primary and secondary legislation on, inter alia, the AEO concept appears often to be missing and closer cooperation between customs and with business partners is needed in order to facilitate the development of AEO programmes.

Member customs administrations are aware of the new challenges but need support to develop the business skills required to implement the SAFE Framework.

In relation to container scanning equipment, also referred to as non-intrusive inspection equipment or non-intrusive inspections, the acquisition of which is reportedly growing rapidly, attention is drawn in both 2007 reports to the need for caution. The first report highlights some of the problems diagnosticians have identified as part of the first phase of the Columbus Programme.[117] These include instances where scanning equipment is put in place before the necessary risk assessment infrastructure to ensure the effective targeting of high-risk containers for scanning and inspection. The report notes, "A worrisome trend, however, is that some countries are using scanners without risk assessment, proper sequencing, clear strategies, or sufficient infrastructures". The report also states that "some administrations are purchasing non-intrusive inspections without first analysing what equipment is really needed, how it will be used under the new risk management system, what training will be needed, and maintenance requirements. In addition, selling scanners is profitable; WCO diagnosticians noted examples of sellers profiting from the overemphasis on scanners for countries that are not yet prepared for their usage". As is also emphasized in the report, scanning equipment is very expensive and, due to continuous technological improvements, the costs of acquiring such equipment may be prohibitive, especially for many developing economies, which lack the financial resources and remain heavily dependent on donors and payment schemes. In relation to container scanning equipment, the second WCO trends and patterns report reiterates the concerns identified as part of the Columbus Programme needs assessment phase and notes: "A large or growing number of functioning scanners could be a positive metric, but only if it is accompanied with a strategic plan describing purpose and usage; an operational risk assessment system; a process for maintenance and contingency plans for disrepair; contributes to rather harm trade facilitation; and does not involve 100 per cent scanning and physical inspection".[118] The 2008 issue of the trends and patterns report presents information on the activities of the Columbus Programme as well as concrete results achieved in the six WCO regions.

"A worrisome trend, however, is that some countries are using scanners without risk assessment, proper sequencing, clear strategies, or sufficient infrastructures".

(b) European Union

At EU level, Regulation (EC) No. 1875/2006[119] had been adopted in December 2006 to introduce a number of measures to increase the security of shipments into and out of the EU and to implement Regulation (EC) No. 648/2005, which had first introduced the AEO concept into the Community Customs Code. Regulation (EC) No. 1875/2006 includes detailed rules regarding implementation of the AEO programme and envisages that reliable economic operators that meet the conditions and criteria required for recognition of AEO status may be issued with AEO certificates as of 1 January 2008.[120] It should be noted that an "economic operator" is defined as "a person who, in the course of his business, is involved in activities covered by customs legislation".[121] This would cover, for instance, manufacturers producing goods for export, but not a suppler of raw materials already in free circulation, or a transport operator that moves only free circulation goods within the customs territory of the European Community.[122] According to the European Commission, in February 2008, 266 AEO applications from all actors in the supply chain were uploaded on the Community

ICT system developed for this purpose.[123] Companies seeking AEO status must comply with such criteria as:

(a) Presence of an automated system that manages trade and transport data;

(b) Proven financial solvency (over the last three years);

(c) Adequate safety/security standards (physical security, access control, screening of personnel, etc.).

There are three types of certificate that may be applied for:

(a) Customs Simplifications – AEOs benefit from certain simplifications provided for under the customs rules;

(b) Security and Safety – AEOs benefit from facilitation of customs controls relating to security and safety at the entry or exit of the goods to the customs territory of the Community;

(c) Customs Simplifications/Security and Safety jointly – AEOs will be entitled to benefit from both.

A number of guidance documents and tools have been prepared by the European Commission, including detailed AEO guidelines, published in June 2007, a common framework for risk assessment of economic operators, called COMPACT, published in June 2006,[124] an AEO self-assessment tool and an AEO e-learning tool.[125] The EU is also in the process of negotiating mutual recognition of the business partners programmes (AEO and similar) with its major trading partners, such as the United States, Canada, Japan and China, and also with neighbouring countries (e.g. Switzerland and Norway).

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In 2007, the EU and the United States started negotiations towards the mutual recognition of the United States' C-TPAT and the EU's AEO supply chain programmes. While there are significant differences between the two customs-business partnership schemes, a "Joint roadmap towards mutual recognition of trade partnership programmes" was adopted by the United States Customs and Border Protection and the European Commission in March 2008.[126] The roadmap focuses on six areas that will be addressed by the United States and the EU to achieve mutual recognition: political, administrative, legal, policy, technical/operational and evaluation. It is envisaged that the following tasks will be accomplished by the United States and the EU, in an effort to achieve mutual recognition by 2009:

(a) Establish guidelines regarding the exchange of information, including validation/audit results and legalities associated with the disclosure of membership details;

(b) Perform joint verifications to determine remaining gaps between AEO/C-TPAT;

(c) Explore and test an export component for C-TPAT;

(d) Exchange best practices through joint visits and conferences;

(e) Continue dialogue on legal and policy developments under the respective administrations ;

(f) Endorse and sign a mutual recognition arrangement; and

(g) Evaluate mutual recognition benefits for AEO/C-TPAT members.[127]

On 30 January 2008 the EU and Japan signed an Agreement on Cooperation and Mutual Administrative Assistance in Customs Matters (CCMAA).[128] The agreement entered into force on 1 February 2008. A first meeting of the EC–Japan Joint Customs Cooperation Committee was held in Brussels on 11 February 2008 to discuss the implementation of the CCMAA. The discussions focused mainly on the following topics:

(a) Supply chain security – recognizing the importance of mutual recognition of their AEO

programmes and security measures and deciding on the creation of a working group that will make recommendations on these matters;

(b) The protection of intellectual property rights; and

(c) Mutual administrative assistance to fight against frauds and irregularities.[129]

As reported in the *Review of Maritime Transport 2007*, in December 2006, the EU and China launched a pilot project on secure and smart trade lanes.[130] As part of the project, the customs administrations of the United Kingdom, the Netherlands and China were, as of November 2007, exchanging for the first time electronic information on sea containers leaving their territory through the ports of Felixstowe, Rotterdam and Shenzhen. According to the European Commission, following close technical cooperation between the EU and China, China is furthermore in the process of adopting and implementing legislation on security and trade facilitation based on and compatible with the EU legislation on AEO.[131]

The European Commission, together with the member States, has also undertaken a major review of the role of customs to adapt customs to global trade, and to the new threats of terrorism and climate change. In this context, the adoption of a Modernized Community Customs Code (MCCC) represents a major development, simplifying the legislation and administration procedures for both administrations and traders.

The European Commission, together with the member States, has also undertaken a major review of the role of customs to adapt customs to global trade, and to the new threats of terrorism and climate change. In this context, the adoption of a Modernized Community Customs Code (MCCC) represents a major development, simplifying the legislation and administration procedures for both administrations and traders. A common position on the MCCC[132] was adopted on 15 October 2007 by the EU Council of Ministers and, after approval by the European Parliament, Regulation (EC) No. 450/2008 laying down the Modernized Community Customs Code was adopted on 23 April 2008.[133] The regulation entered into force on 24 June 2008 but, in respect of a large number of implementing provisions which have yet to be drafted, it will apply at the earliest as from 24 June 2009, and no later than 24 June 2013.[134] The MCCC:

(a) Introduces the electronic lodging of customs declarations and accompanying documents as the rule;

(b) Provides for the exchange of electronic information between the national customs and other competent authorities;

(c) Promotes the concept of "centralized clearance", under which authorized traders will be able to declare goods electronically and pay their customs duties at the place where they are established, irrespective of the member State through which the goods will be brought into or out of the EU customs territory or in which they will be consumed;

(d) Offers bases for the development of the "single window" and "one-stop-shop" concepts, under which economic operators provide information on goods to only one contact point ("single window" concept), even if the data should reach different administrations/agencies, so that controls on them for various purposes are performed at the same time and in the same place ("one-stop-shop" concept).[135]

The MCCC also assimilates the security amendments resulting from Regulation No. 648/2005[136] such as the AEO status, pre-arrival and pre-departure declarations and the risk management framework.

(c) International Maritime Organization

Since 2005, IMO has participated in the implementation of the United Nations Global Counter-Terrorism Strategy (contained in General Assembly Resolution A/Res/60/288) and has been fully committed to the work of the United Nations Counter Terrorism Implementation Task Force. As part of this international involvement, IMO attended the fifth special meeting of the Counter-Terrorism Committee with International, Regional and Subregional Organizations, held in Nairobi, Kenya, 29–31 October 2007,[137] on "Prevention of Terrorist Movement and Effective Border Security".[138] On the occasion of the meeting, IMO presented its global counter-terrorism regulations, including the 1974 International Convention for the Safety of Life at Sea (SOLAS Convention) and the International Ship and Port

Facility Security Code (ISPS Code, chapter XI-2 of the SOLAS Convention), and the 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and its 2005 Protocol.[139] Some of the obstacles identified in the implementation of the maritime security regime included lack of appropriate administrative and verification arrangements, absence of proper and effective national legislative frameworks, a shortage of qualified human resources and lack of funding.[140] To ensure the efficacy of maritime security measures, the following steps were proposed:

(a) Continued review of the implementation of the IMO special measures on maritime security;

(b) Continued collaboration at regional and subregional level by putting action plans into practice, with a focus on vital shipping lanes;

(c) Training of more maritime security personnel using revised and new model courses;

(d) Organizing seminars and workshops in order to enhance the capacity of SOLAS contracting parties to exercise control and compliance;

(e) Continued cooperation with the United Nations Counter-Terrorism Implementation Task Force.

The report of the special meeting, together with a joint statement and associated plan of action adopted by the meeting was presented to the 84th session of the Maritime Safety Committee, in May 2008.[141] The joint statement confirmed the intention, inter alia, to:

(a) Strengthen further working relationships through increased interaction and communication;

(b) Increase the effectiveness of efforts against terrorism;

(c) Continue to work with member States to facilitate the implementation of the provisions of Security Council resolution 1373 (2001) and United Nations Global Counter-Terrorism Strategy that are relevant to the control and security of borders and adoption of pertinent legislative and administrative measures;

(d) Continue efforts to encourage member States to become parties to the existing international and relevant regional counter-terrorism conventions and protocols, and to put into place the required border control and security measures, and assist them in implementing the relevant provisions in domestic laws and practices;

(e) Continue to work with member States to identify shortfalls and challenges in their implementation of border security and counter-terrorism measures and the technical assistance required by member States;

(f) Continue to facilitate the provision of technical and other assistance to member States with their consent, recognizing that capacity building is a core element in the fight against terrorism;

(g) Continue to build on the body of best practices and international codes and standards to ensure the control and security of borders in the broader counter-terrorism effort and promote broader application of these best practices, codes and standards;

(h) Ensure that any measure that is undertaken to enhance the control and security of borders must comply with international law, including the Charter of the United Nations, and relevant international conventions and protocols;

(i) Continue to assist member States in ensuring the preservation and integrity of the institution of asylum and the diligent implementation of its core principles when implementing the provisions of United Nations Security Council resolution 1373 (2001) and the United Nations Global Counter-Terrorism Strategy that are relevant to the control and security of borders;

(j) Continue to review efforts to strengthen cooperation and coordination among international, regional and subregional organizations in combating terrorism at a future special meeting of the Counter-Terrorism Committee by, inter alia, conducting periodic stocktaking of progress and share results with all participants.

It should be noted that SOLAS regulation V/19-1 on a Long-Range Identification and Tracking System (LRIT), which had been adopted in 2006, entered into force on 1 January 2008. The regulation applies to ships over 500 GT constructed on or after 31 December 2008, with a phased-in implementation schedule for ships constructed before 31 December 2008. The purpose of the regulation is to allow for continuous monitoring of all vessels over 500 GT in order to help combat any threats to global security. The LRIT system is intended to be operational from 31 December 2008 and consists of the following:

(a) Ship-borne LRIT information transmitting equipment;

(b) Communication service providers(s);

(c) Application service provider(s); and

(d) LRIT data centre(s) including vessel monitoring system(s), the LRIT Data Distribution Plan and the International Data Exchange (IDE). LRIT Data Centers exchange their information and data through the IDE.

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During its 83rd session, IMO's Maritime Safety Committee (MSC) accepted the offer of the United States to host, build and operate the International LRIT Data Exchange (IDE);[142] at its 84th session, the MSC adopted a relevant resolution on the "Establishment of the International LRIT Data Exchange on an interim basis". In order to ensure the timely implementation of the LRIT system, a number of other relevant decisions were made by the MSC at its 84th session.[143] Inter alia, the committee agreed on a number of circulars to provide guidance on implementation, operation and technical specifications of the LRIT system and authorized the ad hoc LRIT group "to consider and adopt amendments to technical specifications for the LRIT system on behalf of the committee during the period between MSC 84 and MSC 85". The ad hoc LRIT group was also instructed to "develop, agree and adopt the documentation for the testing and integration of the LRIT system" and to "consider and report to MSC 85 on all matters relating to the development of a plan for the continuity of the LRIT system and, if possible, develop such a plan".[144]

Other relevant security-related decisions of the MSC, adopted at its 83rd session, included:

(a) Based on recommendations by the re-established Ad-Hoc Working Group on Maritime Security, the committee decided on the creation of a correspondence group on security arrangements for vessels that are not covered by the SOLAS chapter XI-2 and the ISPS Code (non-SOLAS vessels). The correspondence group was invited to develop relevant recommendatory guidelines to enhance maritime security to complement measures required by SOLAS chapter XI-2 and the ISPS Code;

(b) Regarding container security, the MSC endorsed the joint MSC/FAL circular on security and facilitating international trade, which had been developed by the MSC/FAL working group "Security and facilitation of the movement of closed transport units and of freight containers transported by sea".[145]

(c) The MSC also endorsed draft amendments to the International Convention on Standards of Training, Watchkeeping and Certification for Seafarers (STCW Convention). The proposed amendments concern regulation VI/1 and sections A-VI/1 and B-VI/1 addressing the basic security-related training, and security-related familiarization training for seafarers without designated security-related duties and for all shipboard personnel. A new regulation VI/6 and new sections A-VI/6 and B-VI/6 were proposed, addressing standards of competency and security-related familiarization training, for seafarers with security designated duties. These draft amendments will be reviewed by the Subcommittee on Standards of Training and Watchkeeping (STW) in conjunction with a comprehensive review of the STCW Convention and the STCW Code. Furthermore, the MSC decided that seafarers serving on non-SOLAS vessels should be required to undertake basic security-related training or instruction.

(d) International Organization for Standardization

As reported in the previous edition of this review, the International Organization for Standardization (ISO) has developed a range of voluntary international industry standards on supply chain management systems. In 2005, the ISO/PAS 28000 series *Specification for security management systems for the supply chain* was adopted. This series of international standards is intended for application by organizations involved in manufacturing, service, storage or transportation by all modes of transport at any stage of the production or supply process. The aim is to facilitate and improve controls of flows of transport, to fight smuggling, to deal with the threats of piracy and terrorism, and to enable secure management of supply chains. In 2007, the ISO 28000 series of standards were upgraded from their status of Publicly Available Specifications to that of full-fledged International Standards.

Maritime and supply chain regular standards published by ISO in 2007 and replacing previous Publicly Available Specifications (PAS) include the following:[146]

(a) ISO 20858:2007: *Ships and marine technology – maritime port facility security assessments and security plan development.* The standard is designed to assist in the uniform industry implementation of the ISPS Code. It replaces the PAS previously published on 1 July 2004;

(b) ISO 28000:2007: *Specification for security management systems for the supply chain*. It outlines the requirements to enable an organization to establish, implement, maintain and improve a security management system, including those aspects critical to security assurance of the supply chain. This standard can be implemented on its own, but it is designed to be fully compatible with ISO 9001:2000 and ISO 14001:2004, which companies using these management systems may use as a baseline;

(c) ISO 28001:2007: *Security management systems for the supply chain – best practices for implementing supply chain security – assessments and plans – requirements and guidance*. The standard is designed to assist industry to meet best practices as outlined in the WCO SAFE Framework, the EU Customs Security Programme AEO, and the United States' CTPAT. It "provides requirements and guidance for organizations in international supply chains to develop and implement supply chain security processes; establish and document a minimum level of security within a supply chain(s) or segment of a supply chain; assist in meeting the applicable authorized economic operator (AEO) criteria set forth in the WCO SAFE Framework and conforming national supply chain security programmes".[147] It also establishes documentation requirements to allow for verification;

(d) ISO 28003:2007: *Security management systems for the supply chain – requirements for bodies providing audit and certification of supply chain security management systems;* references ISO 19011:2002: *Guidelines for quality and/or environmental management systems auditing* and ISO/IEC 17021: *Conformity assessment – Requirements for bodies providing audit and certification of management systems with any necessary security-related modifications or change.* It provides harmonized guidance for the accreditation of certification bodies applying for ISO 28000 (or other specified supply chain security management system requirements) certification/registration;

In 2007, the ISO 28000 series of standards were upgraded from their status of Publicly Available Specifications to that of full-fledged International Standards.

(e) ISO 28004:2007: *Security management systems for the supply chain – guidelines for the implementation of ISO 28000*. This standard provides advice on the application of ISO 28000:2007, explaining the underlying principles and the intent as well as typical inputs, processes and typical outputs for each requirement of ISO 28000;

(f) ISO 28005: *Ships and marine technology – computer applications – electronic port clearance (EPC)*. This standard is currently being developed. It provides for computer to computer data transmission.

(2) Legal instruments and other developments relating to the environment

IMO's Marine Environment Protection Committee (MEPC), at its 56th and 57th sessions, adopted some important decisions related to amendments to MARPOL[148] annex VI regulations, to reduce air pollution from ships and made important progress in its work on greenhouse gas (GHG) emissions. The committee also reviewed the current draft of a proposed ship recycling convention and pursued its work related to the Ballast Water Management Convention.

(a) Air pollution from ships

Ocean shipping is the dominant mode of transport for international cargo. Ocean-going vessels transport about 80 per cent of the world's goods and represent the most fuel-efficient way to carry cargo. International shipping largely uses energy obtained from fossil fuels. The combustion of these fossil fuels creates significant emissions such as Nitrogen Oxides (NO_x) and Sulphuric Oxides (SO_x) which have been linked to a variety of adverse public health[149] outcomes and also Carbon Dioxide (CO_2) which causes global warming. However, it should be noted that bunker fuel emissions from international shipping are not covered by the international regulatory framework as set out in the Kyoto Protocol.[150]

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MARPOL 1973/1978, the main international convention dealing with pollution from ships and covering different types of pollution (oil, chemicals, pollutants in packaged form, sewage and garbage) did not cover air pollution until 1997, when a new annex VI on "Regulations for the Prevention of Air pollution from Ships" was adopted at a special conference. MARPOL annex VI entered into force in May 2005 and, as of 30 June 2008, had been ratified by 51 countries, representing approximately 80.36 per cent of the gross tonnage of the world's merchant fleet.[151] Annex VI deals with SO_x, NO_x emissions and particulate matter, but does not cover CO_2 emissions, which are subject to separate discussions within IMO. In this context, it is important to note that IMO work on GHG emissions, while still at an early stage, is intended to culminate in the adoption, in 2009, of a coherent and comprehensive IMO regime to control GHG emissions from ships engaged in international trade.[152]

At its 56th session, the MEPC confirmed the need to update an IMO GHG study which had been completed in 2000[153] and agreed on the relevant scope and terms of reference, as well as a time-frame for this updated study. According to the terms of reference, the new GHG study should analyse:

(a) Current global inventories of GHG's and relevant substances emitted from ships engaged in international transport;

(b) Methodological aspects and future emission scenarios;

(c) Progress made so far to reduce GHG emissions and other substances;

(d) Possible future measures to reduce GHG emissions and undertake a cost benefit analysis, including environmental and public health impacts, of options for current and future reductions in GHG emissions and other relevant substances resulting from international shipping; and

(e) The impact of the shipping emissions on climate change.[154]

The updated study is being conducted by an international consortium of research institutions and is being carried out in two phases:

(a) Phase one is to cover a CO_2 emission inventory from international shipping and future emission scenarios, with a relevant report to be submitted to IMO by August 2008 for consideration by MEPC 58 in October 2008;

(b) Phase two is to cover GHG emissions other than CO_2 and relevant substances emitted from ships engaged in international transport, in accordance with the methodology adopted by the United Nations Framework Convention on Climate Change, as well as consideration of future reduction potentials by technical, operational and

market-based measures. The final report covering both phases is expected to be ready by 1 March 2009 for consideration by MEPC 59.[155]

During its 56th session, MEPC also commissioned a comprehensive study to evaluate the effects on the environment, on human health and on the shipping and petroleum industries of different fuel options, proposed as part of the revision of MARPOL annex VI[156]. The study was conducted by an "informal cross-government/industry scientific group of experts", and was funded by donations from member States and non-governmental organizations. The cross-government/industry scientific group of experts finalized its work in the form of a report,[157] which was submitted to the MEPC ahead of its 57th session. The report estimates total CO_2 emissions from shipping at 1.12 billion tons in 2007, representing about 4 per cent of global CO_2 emissions from fuel combustion. By 2020, emissions from shipping are projected to increase by over 30 per cent to reach 1.47 billion tons. As these figures are considerably larger than existing estimates for emissions in the shipping as well as the aviation sector, the shipping sector may face increasing demands to address the issue of GHG emission control.[158]

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At its 57th session, from 31 March to 4 April 2008, the MEPC endorsed a number of amendments to MARPOL annex VI regulations, relating to SO_x and particulate matter emissions:

(a) As from 1 March 2010, the sulphur limit applicable in emission control areas would be 1.00 per cent (10,000 ppm) instead of 1.50 per cent (15,000 ppm);

(b) As from 1 January 2012, the global sulphur cap would be reduced from 4.50 per cent (45,000 ppm) to 3.50 per cent (35,000 ppm);

(c) As from 1 January 2015, the sulphur limit applicable in emission control areas would be 0.10 per cent (1,000 ppm);

(d) The global sulphur cap would be reduced to 0.50 per cent (5,000 ppm) from 2020 (subject to a feasibility review in 2018; in case of a negative conclusion of the review the new global cap should be applied from 1 January 2025);

(e) Introduction of a fuel availability provision under regulation 18 on fuel availability and quality that describes the appropriate actions that should be taken in case of non-compliance with the requirements of regulation 14.

The committee also endorsed a circular on "Unified Interpretations related to the verification of sulphur content in fuel oil".[159] These interpretations will have to be applied until the 2008 amendments to MARPOL annex VI enter into force.

Other amendments endorsed by the MEPC relate to NO_x emissions from ships. Nitrogen emission standards on tier III engines[160] operating in emissions control areas will be reduced to 3.4 g/kWh. Outside such areas, the NO_x emissions limit will be the one applied for tier II engines,[161] i.e. 14.5 g/kWh. The limit for tier I engines[162] is 17g/kWh. The MEPC also approved some amendments to the NO_x technical code[163] that includes a new chapter 7 related to the certification of an existing engine. The amended text also includes provisions related to direct measurement and monitoring measures, a certification procedure for existing engines and test cycles applicable to tier II and tier III engines.

Concerning CO_2 emissions, the MEPC, at its 57th session,[164] made some important progress. The committee welcomed a proposal by the IMO's Secretary-General[165] to expedite IMO's work on GHG emissions, underlining the universally recognized importance and urgency to limit and control GHG emissions and the need to act in concert with broader international efforts to develop and adopt a global agreement by 2009, with a view to its entering into force by 2012. In this context, the Committee agreed on some principal characteristics of a future IMO Regulatory Framework on Greenhouse Gas Emissions from Ships, which should be:

"1. Effective in contributing to the reduction of total global greenhouse gas emissions;

2. Binding and equally applicable to all flag States in order to avoid evasion;

3. Cost-effective;

4. Able to limit or at least effectively minimize competitive distortion;

5. Based on sustainable environmental development without penalizing global trade and growth;

6. Based on a goal-based approach and not prescribe specific methods;

7. Supportive of promoting and facilitating technical innovation and R&D in the entire shipping sector;

8. Accommodating to leading technologies in the field of energy efficiency; and

9. Practical, transparent, fraud-free and easy to administer."

Further consideration of these principles is, however, envisaged at the next session of the MEPC, in particular in view of the reservations expressed by some delegations regarding the principle stated in point 2 above.

The committee also approved the report and proposed set of actions of a newly established working group on GHG emissions from ships.[166] The working group had reviewed in detail a number of short-term and long-term measures to reduce CO_2 emissions from ships that had been outlined in a report by the Intersessional Correspondence Group on GHG Related Issues,[167] which had been set up by MEPC 56 and was re-established by the committee at its 57th session. Relevant short-term measures under consideration include, inter alia, the creation of a global levy scheme on marine bunker fuel to address GHG emission reductions, as well as measures related to the improvement of fuel consumption, the use of wind power, vessel speed reductions and onshore power supply. Relevant long-term measures under consideration include:

(a) Technical measures for ship design;

(b) Use of alternative fuels;

(c) A CO_2 design index for new ships;

(d) External verification scheme for CO_2 operational index;

(e) Unitary CO_2 operational index limit, combined with penalty in case of non-compliance;

(f) Emission trading scheme[168] and/or clean development mechanism; and

(g) Inclusion of mandatory CO_2 element in port infrastructure charging.

Relevant short-term measures under consideration include, inter alia, the creation of a global levy scheme on marine bunker fuel to address GHG emission reductions, as well as measures related to the improvement of fuel consumption, the use of wind power, vessel speed reductions and onshore power supply.

The committee further approved broad terms of reference for an intersessional meeting of the GHG Working Group to be held in Oslo from 23 to 27 June 2008. A written report on the outcome of the intersessional meeting will be submitted to MEPC 58, however, according to an IMO press release issued after the meeting, the GHG Working Group made progress on "developing a mandatory CO2 Design Index for ships and an interim operational index". It also held extensive discussions "on best practices for voluntary implementation and economic instruments with GHG reduction potential".[169] The Committee also re-established the *Intersessional Correspondence Group on Greenhouse Gas Emissions from Ships*, which is to "prepare detailed proposals on the measures identified in the Correspondence Group report (MEPC 57/4/5; MEPC 57/4/5/Add.1), which have not been identified for further consideration by the GHG Working Group at its intersessional meeting in Oslo (23–27 June 2008)".[170] An interim report by the Intersessional Correspondence Group is to be presented to MEPC 58 with a final report to be presented to MEPC 59.

(b) Ship recycling

At its 56th session, the MEPC made further progress on the draft text of an International Convention for the Safe and Environmentally Sound Recycling of Ships. The draft convention aims to provide globally applicable ship recycling regulations for international shipping and for recycling activities. The MEPC agreed that the new draft recycling convention would provide regulations for:

(a) The design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational efficiency of ships;

(b) The operation of ship recycling facilities in a safe and environmentally sound manner;

(c) The establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.[171]

It has been estimated that international shipping moves around 3 to 4 billion tons of ballast water each year, with a similar quantity of ballast water transferred in domestic and regional shipping. The associated introduction of large numbers of non-native invasive species of bacteria, plants and animals into marine environments poses a major threat to marine biodiversity and may also have broader economic impacts, such as in relation to fisheries, tourism and marine genetic resources.

In this regard, the committee also decided on a new intersessional meeting of the Working Group on Ship Recycling. The meeting will be held in October 2008 in order to prepare the final version of the draft convention which will be reviewed by the MEPC at its 58th session in October 2008. In June 2008, the IMO Council endorsed the holding of an ad hoc diplomatic conference in Hong Kong, China, in May 2009 in order to consider the Ship Recycling Convention for adoption.

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(c) Ballast Water Management Convention and Wreck Removal Convention

At its 56th and 57th session, the MEPC also urged States to ratify the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention). The convention, which dealt with harmful aquatic organisms in ballast water, had been adopted in February 2004, but has so far not attracted a sufficient number of ratifications to enter into force. It has been estimated that international shipping moves around 3 to 4 billion tons of ballast water each year, with a similar quantity of ballast water transferred in domestic and regional shipping.[172] The associated introduction of large numbers of non-native invasive species of bacteria, plants and animals into marine environments poses a major threat to marine biodiversity and may also have broader economic impacts, such as in relation to fisheries, tourism and marine genetic resources. The BWM Convention will enter into force 12 months after ratification by 30 States representing 35 per cent of the world merchant tonnage. As of June 2008, only 14 States, representing approximately a tenth of the required global tonnage, had ratified the convention.[173] At its 56th session, the MEPC adopted guidelines for additional measures concerning water ballast management, aiming to assist in the implementation of the BWM Convention.[174] Furthermore, the committee adopted a set of guidelines for ballast water exchange in the Antarctic Treaty area. At its 57th session, the MEPC adopted a revised procedure for approval of ballast water management systems that make use of active substances (G9). At the same session, the committee granted "basic approval" to four ballast water management systems and a "final approval" to one ballast water management system that makes use of Active substances.

Finally, attention should be drawn to the fact that the Republic of Estonia was the first State to sign the International Convention on the Removal of Wrecks that had been adopted in Nairobi in May 2007.[175] The Wreck Removal Convention will be open for signature until 18 November 2008 and will enter into force 12 months after 10 States have either signed without reservation or have deposited instruments of ratification, acceptance, approval or accession with the Secretary-General of IMO.

(3) Seafarers

In February 2008, the IMO Secretary-General, Mr. Efthimios E. Mitropoulos, endorsed a joint campaign by the International Shipping Federation, the International Chamber of Shipping and the International Transport Workers Federation to promote the implementation and monitoring of the IMO/ International Labour Organization (ILO) Guidelines on Fair Treatment of Seafarers in the event of Marine Accidents.[176] The guidelines were adopted by IMO's Legal Committee in April 2006 at its 91st session. The joint campaign serves to promote the guidelines widely. The guidelines stress the need for better cooperation and communication between all the actors involved[177] and on ensuring a fair treatment of seafarers in the case of maritime accidents.

C. STATUS OF CONVENTIONS

There are a number of international conventions affecting the commercial and technical activities of maritime transport. Box 2 provides information on the status of international maritime conventions prepared or adopted under the auspices of UNCTAD, as of 14 October 2008. Comprehensive and updated information about these and other relevant conventions is available on the United Nations website at www.un.org/law. This site also provides links to, inter alia, a number of organizations' sites, which contain information on the conventions adopted under the auspices of each organization. Those organizations are the following: IMO (www.imo.org/home.html), ILO (www.ilo.org) and the United Nations Commission on International Trade Law (www.uncitral.org).

Box 2

Contracting States parties to selected conventions on maritime transport, as of 14 October 2008

Title of convention	Date of entry into force or conditions for entry into force	Contracting States
United Nations Convention on a Code of Conduct for Liner Conferences, 1974	Entered into force 6 October 1983	Algeria, Bangladesh, Barbados, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chile, China, Congo, Costa Rica, Côte d'Ivoire, Cuba, Czech Republic, Democratic Republic of the Congo, Denmark, Egypt, Ethiopia, Finland, France, Gabon, Gambia, Germany, Ghana, Guatemala, Guinea, Guyana, Honduras, India, Indonesia, Iraq, Italy, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Liberia, Madagascar, Malaysia, Mali, Mauritania, Mauritius, Mexico, Montenegro, Morocco, Mozambique, Netherlands, Niger, Nigeria, Norway, Pakistan, Peru, Philippines, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Senegal, Serbia, Sierra Leone, Slovakia, Somalia, Spain, Sri Lanka, Sudan, Sweden, Togo, Trinidad and Tobago, Tunisia, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, Uruguay, Venezuela, Zambia **(81)**
United Nations Convention on the Carriage of Goods by Sea, 1978 (Hamburg Rules)	Entered into force 1 November 1992	Albania, Austria, Barbados, Botswana, Burkina Faso, Burundi, Cameroon, Chile, Czech Republic, Dominican Republic, Egypt, Gambia, Georgia, Guinea, Hungary, Jordan, Kazakhstan, Kenya, Lebanon, Lesotho, Liberia, Malawi, Morocco, Nigeria, Paraguay, Romania, Saint Vincent and the Grenadines, Senegal, Sierra Leone, Syrian Arab Republic, Tunisia, Uganda, United Republic of Tanzania, Zambia **(34)**
International Convention on Maritime Liens and Mortgages, 1993	Entered into force 5 September 2004	Ecuador, Estonia, Lithuania, Monaco, Nigeria, Peru, Russian Federation, Spain, Saint Vincent and the Grenadines, Syrian Arab Republic, Tunisia, Ukraine, Vanuatu **(13)**
United Nations Convention on International Multimodal Transport of Goods, 1980	Not yet in force — requires 30 contracting parties	Burundi, Chile, Georgia, Lebanon, Liberia, Malawi, Mexico, Morocco, Rwanda, Senegal, Zambia **(11)**
United Nations Convention on Conditions for Registration of Ships, 1986	Not yet in force — requires 40 contracting parties with at least 25 per cent of the world's tonnage as per annex III to the Convention	Albania, Bulgaria, Côte d'Ivoire, Egypt, Georgia, Ghana, Haiti, Hungary, Iraq, Liberia, Libyan Arab Jamahiriya, Mexico, Oman, Syrian Arab Republic **(14)**
International Convention on Arrest of Ships, 1999	Not yet in force — requires 10 contracting parties	Algeria, Bulgaria, Estonia, Latvia, Liberia, Spain, Syrian Arab Republic **(7)**

Source: For official status information, see www.un.org/law/.

Chapter 7

REVIEW OF REGIONAL DEVELOPMENTS: LATIN AMERICA AND THE CARIBBEAN

Every year, the Review of Maritime Transport focuses upon developments in a particular region. Last year, the focus was on developments in Asia, while the previous year concentrated upon Africa. This year, the focus of the regional review is on developments in Latin America and the Caribbean. This chapter in particular looks at the developments which have occurred since 2003. Liner shipping and intermodal connectivity are identified as key factors for the region's trade competitiveness. Latin America and the Caribbean experienced a continued GDP per capita growth of 4.9 per cent during the period 2003–2007, driven largely by Asian demand for the region's natural resources. During the period, exports and imports grew at an annual rate of 8 and 10 per cent, respectively. Port throughput reached 1.47 billion tons in 2006, putting a significant strain upon port infrastructure. With the expansion of the Panama Canal and related port developments, discussions of potential hub ports have gained new impetus, and ambitious new port projects are driven by expectations to become regional logistics hubs. This chapter reviews those port developments, as well as some other regional maritime clusters.

A. ECONOMIC BACKGROUND

According to ECLAC (United Nations Economic Commission for Latin America and the Caribbean), the region's GDP grew by around 5.6 per cent in 2007, with a rise in per capita GDP of 3.8 per cent (see table 50). This makes 2007 the fifth year running in which the region has marked a positive growth rate, reaching an average annual rate of increase of 4.9 per cent for 2003–2007, which is more than double the 2.2 per cent recorded for 1980–2002. Table 51 illustrates how this growth relates to the purchasing-power-partly per capita for each country in the region.[178]

In general, the growing demand for the region's commodities and for inputs into intermediate and final products, has benefitted the region's ports, maritime transport and internal logistics. In 2006, total foreign trade in goods amounted to $1.2 billion (representing 45 per cent of the region's GDP, up 20 per cent over 2005 figures). Consequently, Latin America showed a positive merchandise trade balance of $103 billion, an increase of 27 per cent over 2005 and more than 80 per cent over 2004.

During much of 2007, the Latin American and Caribbean region witnessed volatility in financial markets, owing to uncertainty about the impact of the financial crisis in the United States. This crisis has to date not had significant repercussions in the level of economic activity or international trade, and records show that most of the economies in the region have grown rapidly. Such growth has been driven primarily by domestic demand, with particularly sharp increases being noted in private consumption and capital formation.

The strength exhibited by domestic demand pushed up imports sharply, while, for the first time since 2000, the volume of goods exported rose more slowly than the region's GDP. Even so, most natural-resource exporters benefited from higher prices, and the region recorded a 2.6 per cent improvement in trade. Higher export prices

Table 50

Latin America and the Caribbean: GDP growth rates, 1998–2007

(Percentages)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Latin America and the Caribbean	2.5	0.2	3.9	0.3	-0.4	2.2	6.2	4.7	5.6	5.6
Latin America	2.4	0.1	3.9	0.3	-0.5	2.1	6.2	4.7	5.5	5.6
South America										
Argentina	3.9	-3.4	-0.8	-4.4	-10.9	8.8	9.0	9.2	8.5	8.6
Bolivia	5.0	0.4	2.5	1.7	2.5	2.7	4.2	4.0	4.6	3.8
Brazil	0.0	0.3	4.3		2.7	1.1	5.7	2.9	3.7	5.3
Chile	3.2	-0.8	4.5	3.4	2.2	3.9	6.0	5.7	4.0	5.3
Colombia	0.6	-4.2	2.9	2.2	2.5	4.6	4.7	5.7	6.8	7.0
Ecuador	2.1	-6.3	2.8	5.3	4.2	3.6	8.0	6.0	3.9	2.7
Guyana	-1.7	3.8	-1.4	2.3	1.1	-0.7	1.6	-2.0	4.7	4.5
Peru	-0.7	0.9	3.0	0.2	5.0	4.0	5.1	6.7	7.6	8.2
Paraguay	0.6	-1.5	-3.3	2.1	0.0	3.8	4.1	2.9	4.2	5.5
Suriname	3.1	-2.4	4.0	5.9	1.9	6.1	7.7	5.6	5.8	5.0
Uruguay	4.5	-2.8	-1.4	-3.4	-11.0	2.2	11.8	6.6	7.0	7.5
Venezuela, Bolivarian Rep. of	0.3	-6.0	3.7	3.4	-8.9	-7.8	18.3	10.3	10.3	8.5
Central America										
Belize	3.7	8.7	12.9	4.9	5.1	9.3	4.6	3.5	5.6	3.0
Costa Rica	8.4	8.2	1.8	1.1	2.9	6.4	4.3	5.9	8.2	7.0
Guatemala	5.0	3.8	3.6	2.3	3.9	2.5	3.2	3.5	4.9	5.5
Honduras	2.9	-1.9	5.7	2.7	3.8	4.5	6.2	6.1	6.4	6.0
Mexico	5.0	3.8	6.6	0.0	0.8	1.4	4.2	2.8	4.8	3.3
Nicaragua	3.7	7.0	4.1	3.0	0.8	2.5	5.3	4.3	3.7	3.0
Panama	7.3	3.9	2.7	0.6	2.2	4.2	7.5	7.2	8.7	9.5
El Salvador	3.7	3.4	2.2	1.7	2.3	2.3	1.9	3.1	4.2	4.5
Antigua and Barbuda	4.4	4.1	1.5	2.2	2.5	5.2	7.2	4.7	12.5	6.0
Bahamas	6.8	4.0	1.9	0.8	2.3	1.4	1.8	2.7	3.4	3.3
Barbados	6.2	0.5	2.3	-4.6	0.7	2.0	4.8	4.1	3.8	4.0
Caribbean	4.1	3.9	3.4	1.7	3.6	6.5	4.7	4.7	6.9	3.9
Cuba	0.2	6.3	6.1	3.0	1.5	2.9	4.5	n.a.	n.a.	7.0
Dominica	3.2	0.6	0.6	-3.6	-4.2	2.2	6.3	3.4	5.3	1.0
Dominican Republic	7.0	6.7	5.7	1.8	5.8	-0.3	1.3	9.3	10.7	7.5
Grenada	8.2	7.0	7.3	-4.8	1.8	8.1	-7.2	14.0	0.8	3.0
Haiti	2.2	2.7	0.9	-1.0	-0.3	0.4	-3.5	1.8	2.3	3.3
Jamaica	-1.2	1.0	0.7	1.5	1.1	2.3	1.0	1.4	2.5	1.5
Saint Kitts and Nevis	0.9	3.6	4.3	2.0	1.1	0.5	7.6	4.8	6.4	5.5
Saint Lucia	6.4	2.4	-0.2	-5.1	3.1	4.1	5.4	6.0	4.0	4.0
Saint Vincent and the Grenadines	5.2	4.4	1.8	1.0	3.7	3.2	6.2	3.6	8.7	5.0
Trinidad and Tobago	8.1	8.0	6.9	4.2	7.9	14.4	8.8	8.0	12.0	5.5

Source: UNCTAD secretariat based upon UNECLAC, CEPALSTAT various years.

Table 51

Latin America and the Caribbean: GDP per capita, based on purchasing power parity

(Current international dollars)

	2000	2001	2002	2003	2004	2005	2006	2007	2008[a]
South America									
Argentina	12 210	11 832	10 624	11 699	13 000	14 513	16 080	17 559	18 662
Bolivia	2 366	2 408	2 454	2 517	2 639	2 774	2 931	3 062	3 217
Brazil	7 936	8 113	8 351	8 502	9 113	9 548	10 073	10 637	11 110
Chile	9 240	9 674	9 935	10 442	11 212	12 089	12 811	13 745	14 506
Colombia	6 214	6 344	6 465	6 742	7 155	7 615	8 260	8 891	9 327
Ecuador	3 283	3 683	3 751	3 912	4 285	4 622	4 835	5 021	5 210
Guyana	4 071	4 246	4 355	4 404	4 587	4 631	5 004	5 404	5 732
Paraguay	4 312	4 417	4 404	4 582	4 847	5 060	5 339	5 638	5 848
Peru	4 881	4 932	5 190	5 430	5 782	6 274	6 856	7 410	7 869
Suriname	4 462	4 809	4 961	5 291	5 691	6 111	6 571	6 995	7 293
Uruguay	8 833	8 688	7 819	8 113	9 279	10 844	11 969	12 917	13 640
Venezuela, Bolivarian Rep. of	5 716	5 992	5 448	5 033	6 004	6 704	7 480	8 125	8 590
Central America									
Belize	5 868	6 122	6 351	6 871	7 396	7 409	7 835	8 108	8 240
Costa Rica	8 629	8 746	8 974	9 564	10 072	10 814	11 862	12 683	13 330
El Salvador	4 600	4 702	4 807	4 925	5 072	5 303	5 600	5 885	6 111
Guatemala	3 714	3 792	3 902	3 929	4 009	4 097	4 335	4 547	4 707
Honduras	2 503	2 567	2 621	2 708	2 860	2 999	3 199	3 378	3 470
Mexico	9 038	9 120	9 217	9 412	10 111	10 626	11 369	11 880	12 323
Nicaragua	3 217	3 294	3 290	3 357	3 544	3 719	3 886	4 055	4 224
Panama	6 169	6 234	6 370	6 659	7 236	7 845	8 593	9 395	10 216
Caribbean									
Antigua and Barbuda	10 089	10 336	10 590	11 147	11 924	12 842	14 705	15 489	15 865
Bahamas	16 883	17 169	17 614	17 985	18 578	19 398	20 440	21 360	22 336
Barbados	14 851	14 783	15 087	15 662	16 835	18 038	19 274	20 532	21 388
Dominica	4 969	4 877	4 710	4 815	5 104	5 445	5 840	6 180	6 465
Dominican Republic	6 690	6 999	7 331	7 242	7 488	8 327	9 377	10 241	10 732
Grenada	7 503	7 279	7 430	7 996	7 758	8 941	9 198	9 623	10 082
Haiti	1 786	1 780	1 764	1 772	1 745	1 777	1 840	1 914	1 994
Jamaica	3 601	3 722	3 815	3 963	4 097	4 270	4 494	4 654	4 806
Saint Kitts and Nevis	11 768	12 312	12 533	12 665	14 009	15 130	16 282	17 424	18 527
Saint Lucia	5 813	5 661	5 762	6 012	6 393	6 754	7 300	7 679	8 071
Saint Vincent and the Grenadines	5 817	5 952	6 243	6 548	7 187	7 575	8 343	8 923	9 635
Trinidad and Tobago	9 119	9 693	10 571	12 289	13 668	15 181	17 494	18 975	20 381

Source: UNCTAD secretariat based upon IMF 2008, World Economic Outlook.

[a] 2008: forecast by UNECLAC.

were also a contributing factor in the region's fifth consecutive balance of payments surplus, although the upswing in imports brought the surplus down from +1.7 per cent of GDP in 2006 to +0.7 per cent in 2007.

Increased Asian demand for oil and minerals and the increase in world prices, entailed a growing demand for the region's commodities as well as a further specialization in the production of raw materials and their derivatives in the past years, while manufacturing sectors have lost ground. Table 52 illustrates the export–specialization pattern for the region's seven largest economies.

In the manufactures markets in Europe and the United States, strong competition reigns between Latin American and Caribbean, and Asian exporters. Amongst the region's largest economies, Mexico is the most vulnerable to Asian competition. Intra-industry trade only partially developed in Latin America and the Caribbean, with the exception of Brazil and Mexico. Intraregional intra-industry trade in the region is also significantly lower than in Asia.

Specialization has also increased, with most Latin American countries showing a higher degree of export concentration in commodities than at the beginning of the decade.

The prices of the main exports in Colombia, Chile and Uruguay have been increasing faster than those of their imports. Specialization has also increased, with most Latin American economies showing a higher degree of export concentration in commodities than at the beginning of the decade. The trend towards greater specialization in commodities is most marked in the Bolivarian Republic of Venezuela, Ecuador, Bolivia and Chile; the exceptions are Costa Rica and Argentina.

Table 52

Specialization sectors for selected Latin American countries, 2005

Balassa Index

Product Name	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela, Bolivarian Rep. of	Average LAC [a]
Food and live animals	6.30	3.81	3.40	3.27	0.85	3.24	0.07	2.51
Beverages and tobacco	1.57	1.72	2.68	0.51	1.29	0.11	0.12	1.31
Crude materials. except food/fuels	3.13	5.46	10.52	1.77	0.46	7.94	0.16	2.82
Mineral fuels/lubricants	1.60	0.60	0.21	3.83	1.45	0.91	8.66	2.14
Animal/veg. oils/fats/waxes	22.07	3.56	0.30	1.60	0.10	2.63	0.01	2.86
Chemicals/products n.e.s.	0.74	0.55	0.47	0.74	0.32	0.21	0.16	0.44
Manufactured goods	0.75	1.32	2.54	0.92	0.59	1.44	0.49	0.92
Machinery/transport equipment	0.27	0.66	0.04	0.15	1.33	0.02	0.03	0.71
Miscellaneous manuf. articles	0.17	0.36	0.06	0.68	1.10	0.70	0.02	0.64
Commodities n.e.s.	0.57	0.12	0.90	0.88	0.11	5.28	0.06	0.40

Source: UNCTAD secretariat based upon OECD Development Centre (2007); based on WITS and Comtrade (2007) data.

[a] Latin America and Caribbean.

Note: The Balassa index measures the relative export performance by country and industry, defined as a country's share of world exports of a good divided by its share of total world exports.

Table 53 shows that all countries except the Bolivarian Republic of Venezuela have recorded continuous growth in exports since 2003. Paraguay's (+141 per cent) and Nicaragua's (+134 per cent) exports have been growing the fastest in the region; exports from El Salvador have risen 18.2 per cent and exports from the Bolivarian Republic of Venezuela have declined 14.6 per cent. Import growth has been highest in Ecuador (+151 per cent), Colombia (+132.6 per cent between 2000 and 2007), the Bolivarian Republic of Venezuela (+123.6 per cent) and Chile (+121 per cent). In Central America, the volume of imports has increased most in Guatemala (+96.5 per cent), Honduras (+78.1 per cent) and Costa Rica (+70.9 per cent). The value of exports has increased by 45 per cent and imports 56 per cent between 2000 and 2007.

Containerized trade of Latin America and the Caribbean is estimated to have reached 17.5 million TEUs in 2007. This is a rise of 26 per cent over 2004.

The growing trade of the region has not been matched by the corresponding transport infrastructure and services. The remainder of this chapter looks at the challenges with regards to maritime trade, shipping services, port reform and transport costs.

B. MARITIME TRADE

Types of commodities traded

Figures 22 and 23 illustrate the composition of seaborne exports from Latin American countries to other regions in terms of value (dollars) and volume (tons). Overall, there is an increase in the share of food and live animals (Standard International Trade Classification (SITC 0) and crude materials except fuel (SITC2). Crude materials were the most important export product in terms of value and volume to the Asia–Pacific region. Machinery (SITC 7) and classified manufactures (SITC 6) to North America and Latin America and the Caribbean (intraregional trade) had the highest shares of exports in terms of value. Figure 23 clearly depicts the dominance of crude materials (SITC 2) and food and live animals (SITC 0) in terms of volume. Four commodities – oil, copper, soy and coffee – account for approximately two thirds of total Latin American raw material exports. The majority of these exports, except coffee, are transported by bulk carriers.

The dominance of exports of crude materials also reflects in trade balances of the Latin American economies in terms of volume (tons) (Figure 24). In 2006, Brazil displayed the most significant imbalance, exporting seven times more than it imported.

Containerized trade

Latin America and Caribbean economies have a surplus in terms of trade volume (tons), mostly due to the exports of bulk cargoes, as regards manufactured goods and other containerized trade, there is a trade deficit. Overall, containerized trade of Latin America and the Caribbean is estimated to have reached 17.5 million TEUs in 2007. This is a rise of 26 per cent over 2004. In 2007, 9.9 million TEUs were imported into the region and 7.6 million TEUs were exported, creating an imbalance of 2.3 million TEUs. The highest imbalance was recorded for the trade with Asia–Pacific (see table 54).

In 2007, the largest share of containerized cargo was traded with North America (5.5 million TEUs), followed by Europe (4.2 million TEUs) and the Asia–Pacific region (3.8 million TEUs). In addition, 2.8 million TEUs were intraregional maritime trade and other regions (1.2 million TEUs).

In 2007, Mexico and several Caribbean countries had the largest trade deficits in terms of TEUs; Mexico imported 424,000 TEUs more than it exported. Brazil and Chile, on the other hand, achieved surpluses of 1.7 million and 671,000 TEUs, respectively.

Between 2000 and 2007, growth of containerized imports has been highest in Colombia (152 per cent), Brazil (128 per cent) and Chile (10 per cent). In terms of containerized exports, the highest growth can be observed in Peru (135 per cent), Brazil (120 per cent) and the Central American countries (104 per cent). In this period, exports have continuously outgrown imports. Table 55 clearly depicts the impact of the economic crisis in 2002/03 on imports to Argentina, Uruguay and Brazil. Since 2003, the economic upturn is strongly reflected in the rise of imports.

Table 53

Trade volume index, 2000–2007

Base year 2000 = 100

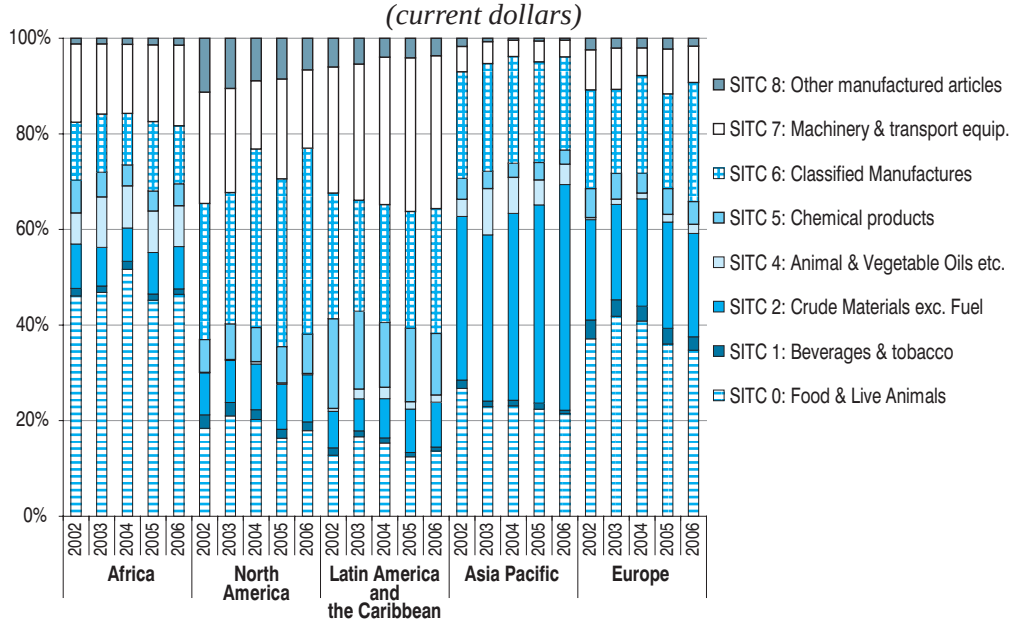
	2000	2001	2002	2003	2004	2005	2006	2007
Exports								
Latin America	100	102.7	103.7	107.7	118.9	128.7	137.5	144.9
South America								
Argentina	100	104.3	104.8	112.6	118.2	136.0	144.9	157.0
Bolivia	100	109.2	109.6	127.8	151.9	171.8	183.4	196.6
Brazil	100	109.6	119.0	137.7	163.8	178.5	185.7	198.6
Chile	100	107.4	107.4	117.5	135.7	141.2	144.0	151.9
Colombia	100	103.1	101.7	107.6	116.7	128.0	136.1	141.9
Ecuador	100	111.7	119.4	138.1	159.5	171.8	185.0	179.8
Paraguay	100	86.3	87.9	94.9	113.8	134.7	190.6	241.4
Peru	100	110.2	116.6	127.2	152.4	175.1	176.4	182.7
Uruguay	100	91.8	89.0	99.0	127.7	149.1	162.7	171.9
Venezuela, Bolivarian Rep. of	100	97.1	92.0	81.4	92.6	95.6	91.0	85.4
Central America								
Costa Rica	100	89.8	98.6	114.2	115.7	129.0	146.6	163.3
El Salvador	100	100.6	105.9	111.7	113.6	111.2	112.3	118.2
Guatemala	100	100.6	99.7	108.2	110.2	163.1	173.9	190.7
Honduras	100	126.2	142.3	144.1	162.6	166.1	164.4	173.9
Mexico	100	100.8	100.2	99.5	105.1	112.0	124.4	130.8
Nicaragua	100	117.4	121.9	140.7	172.1	191.7	219.5	234.3
Panama	100	102.8	91.2	88.8	103.3	125.3	137.1	155.8
Imports								
Latin America	100	100.8	94.0	94.4	108.2	120.6	136.5	155.9
South America								
Argentina	100	82.4	37.7	58.4	87.7	108.4	126.6	154.3
Bolivia	100	99.5	102.9	91.3	98.3	124.3	138.8	160.3
Brazil	100	102.9	90.5	87.1	103.1	108.8	126.2	158.7
Chile	100	101.3	101.9	112.4	134.3	163.8	183.7	212.0
Colombia	100	114.8	114.2	121.7	136.2	162.9	191.5	232.6
Ecuador	100	139.2	166.6	168.0	193.1	223.9	241.7	251.0
Paraguay	100	93.1	79.4	88.2	104.7	121.3	176.5	205.5
Peru	100	102.2	104.2	111.3	122.6	137.3	157.2	198.2
Uruguay	100	93.7	64.1	67.8	87.4	96.9	115.1	117.3
Venezuela, Bolivarian Rep. of	100	114.3	79.9	61.5	93.3	126.5	166.3	223.6
Central America								
Costa Rica	100	99.5	114.6	123.8	125.5	143.1	162.5	170.9
El Salvador	100	108.3	109.7	118.6	124.5	129.2	137.4	146.6
Guatemala	100	113.7	127.5	132.0	140.9	173.1	183.5	196.5
Honduras	100	121.7	128.4	135.2	152.8	157.4	161.5	178.1
Mexico	100	99.1	97.8	96.9	106.5	114.4	126.3	135.7
Nicaragua	100	102.3	105.0	111.0	124.6	136.3	147.4	153.2
Panama	100	98.5	92.6	89.3	103.2	115.0	125.4	151.5

Source: UNCTAD secretariat based upon UNECLAC, CEPALSTAT various years.

Figure 22

Exports from Latin American and Caribbean economies [a] by product group, 2002–2006

(current dollars)



Source: UNCTAD secretariat based upon International Transport Database (BTI), UNECLAC, 2006.

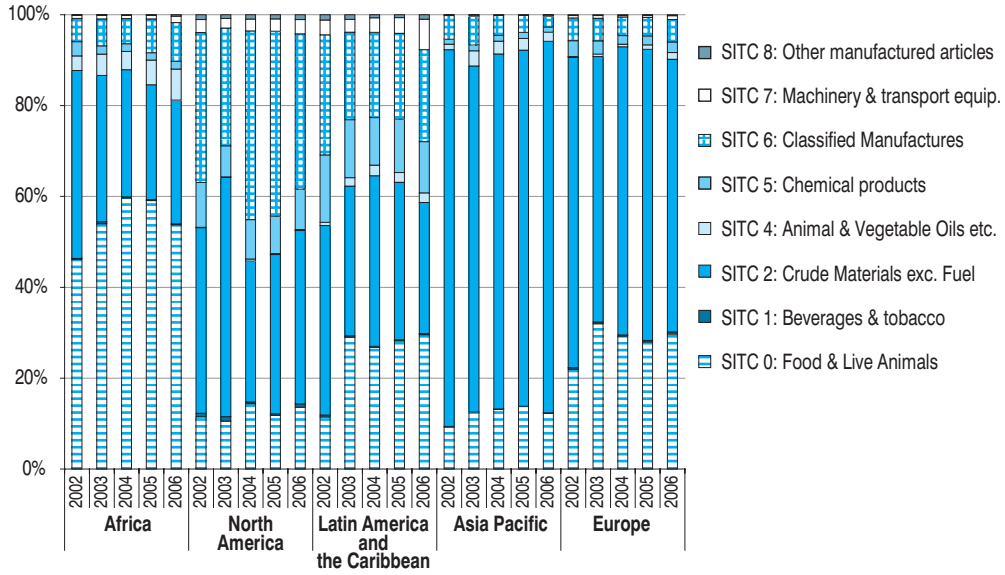
Note: SITC 3 and SITC 9 products are excluded in this figure.

[a] Argentina, Brazil, Chile, Uruguay, Peru, Ecuador, Mexico, Colombia, Paraguay and the Bolivarian Republic of Venezuela.

Figure 23

Exports from Latin American and Caribbean economies [a] by product group, 2002–2006

(volume in tons)



Source: UNCTAD secretariat based on International Transport Database (BTI), UNECLAC, year 2006.

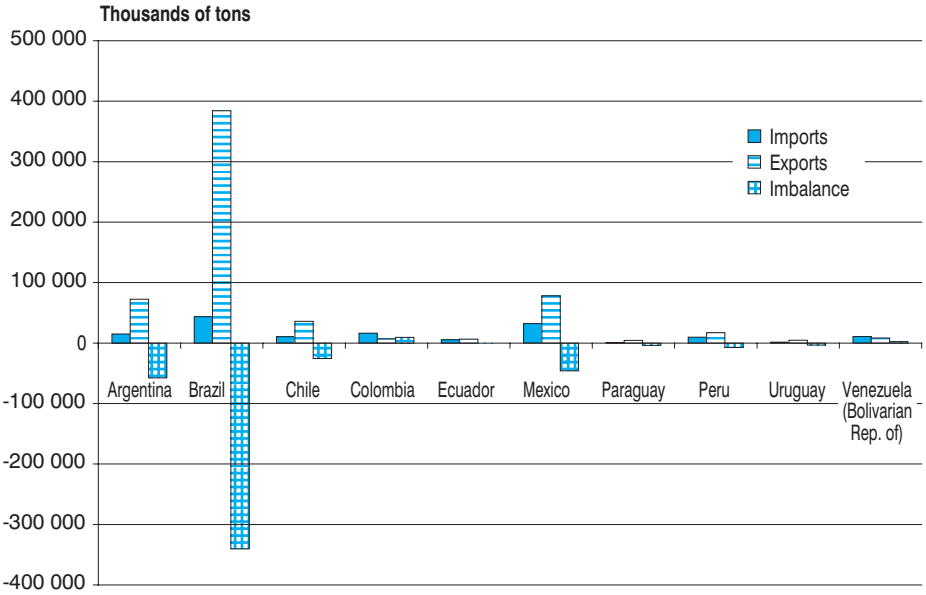
Note: SITC 3 and SITC 9 products are excluded in this figure.

[a] Argentina, Brazil, Chile, Uruguay, Peru, Ecuador, Mexico, Colombia, Paraguay and the Bolivarian Republic of Venezuela.

Figure 24

Maritime trade balance imports and exports, 2006

(Thousands of metric tons)



Source: UNCTAD secretariat based upon International Transport Database (BTI), UNECLAC, 2006.

Note: SITC 3 and SITC 9 products are excluded in this presentation.

Table 56 shows the evolution of maritime containerized trade in TEUs in the period 2004 –2007. Imports from Asia to the region displayed some of the highest growth rates. Imports from that region to Colombia rose 82 per cent, to Argentina 78 per cent, to Brazil 68 per cent, to Chile 58 per cent and to Mexico 52 per cent during the period. Export volumes from Latin America and the Caribbean to the Asia–Pacific region was significantly lower, which added to the growing trade imbalance between the regions. Central America[179] experienced the highest growth in containerized trade in exports to North America. Containerized exports from the Caribbean and Mexico to North America declined by 49 per cent and 16 per cent respectively in the same period. Mexico was able to increase its exports to Asia–Pacific by 73 per cent. Trade from Mexico and the Caribbean to other Latin American and Caribbean countries showed growth rates of 45 per cent and 39 per cent, respectively.

The recent growth in the demand for export products and expansion of trade activities throughout the region created new opportunities and challenges for the maritime and port industry, especially for the supply of shipping services and port infrastructure development.

C. SHIPPING

Liner shipping services

The impacts of concentration in liner shipping and the quality of service are especially important for regions with lower trade volumes, which lead more easily to oligopolistic market structures.

Generally, shipping lines have adopted two strategies for achieving economies of scale in liner services – firstly, by internal economies of scales, increasing the ship sizes, and secondly, by increasing the size of the shipping company through organic growth or mergers and acquisitions. Where strategies of takeover were not possible or effective, shipping lines searched for economies of scale in conferences and alliances.

The achievements in economies of scale are reflected by the continuous growth of ship size within the market.

Table 54

Containerized trade balance, 2007

TEUs

		Argentina	Brazil	Central America	Chile	Colombia	The Caribbean	Mexico	Other countries on the East Coast of South America	Other Countries on the West Coast of South America	Peru	Venezuela (Bolivarian Republic of)
Africa	**Export**	66 002	244 526	2 993	10 356	4 780	9 756	7 546	8 437	6 853	3 095	3 589
	Import	3 822	10 816	1 290	1 430	2 831	6 006	13 127	3 898	611	2 210	1 868
	Imbalance	62 180	233 710	1 703	8 926	1 949	3 750	-5 581	4 539	6 242	885	1 721
Asia Pacific	**Export**	85 598	453 080	18 281	304 842	12 470	12 016	131 456	22 638	8 125	43 063	21 207
	Import	133 709	909 696	260 088	213 797	142 194	138 050	619 099	44 687	56 671	133 698	78 731
	Imbalance	-48 111	-456 616	-241 807	91 045	-129 724	-126 034	-487 643	-22 049	-48 546	-90 635	-57 524
Europe	**Export**	296 356	1 161 029	220 390	287 743	120 879	166 122	218 287	62 701	55 725	80 070	56 744
	Import	99 981	425 690	123 982	76 474	57 371	249 348	217 505	43 672	27 189	53 601	97 809
	Imbalance	196 375	735 339	96 408	211 269	63 508	-83 226	782	19 029	28 536	26 469	-41 065
North America	**Export**	176 422	924 135		305 402	312 825	347 100	183 898	32 644	187 801	86 376	120 861
	Import	89 307	253 236	388 050	103 196	139 312	368 948	73 991	24 892	53 280	65 034	120 066
	Imbalance	87 115	670 899	718 492	202 206	173 513	-21 848	109 907	7 752	134 521	21 342	795
Latin America and the Caribbean	**Export**	120 708	379 121	74 397	215 248	129 862	85 428	219 619	31 553	28 424	65 028	63 130
	Import	86 934	91 497	201 720	89 369	134 129	223 572	256 463	43 895	49 016	95 298	140 625
	Imbalance	33 774	287 624	-127 323	125 879	-4 267	-138 144	-36 844	-12 342	-20 592	-30 270	-77 495
Total global	**Export**	825 433	3 428 569	1 442 984	1 165 825	623 446	632 864	788 075	169 036	311 912	281 155	265 899
	Import	440 862	1 730 331	1 022 140	494 353	562 732	1 019 311	1 211 643	165 638	195 318	359 621	445 731
	Imbalance	384 571	1 698 238	420 844	671 472	60 714	-386 447	-423 568	3 398	116 594	-78 466	-179 832

Source: UNCTAD secretariat based upon UNECLAC Perfil Maritimo 2008 and Global Insight: Several publications.

Note: Figures for 2007 are preliminary.

Table 55

Imports and exports of containerized trade

(Index, base year 2000)

	2000	2001	2002	2003	2004	2005	2006	2007
Imports								
Argentina	1.00	0.88	0.40	0.62	0.86	0.97	1.08	1.20
Chile	1.00	0.97	1.10	1.19	1.48	1.70	1.89	2.10
Colombia	1.00	1.12	1.17	1.28	1.57	1.86	2.25	2.52
Other countries WCSA	1.00	0.94	1.02	1.00	1.25	1.27	1.35	1.44
Venezuela (Bolivarian Republic of)	1.00	1.25	0.90	0.66	1.12	1.29	1.45	1.56
Central America	1.00	1.09	1.15	1.24	1.46	1.54	1.90	2.04
Peru	1.00	0.97	1.05	1.10	1.41	1.66	1.82	2.00
Other countries ECSA	1.00	0.89	0.72	0.74	0.99	1.02	1.24	1.34
The Caribbean	1.00	1.09	1.09	1.04	1.25	1.36	1.48	1.52
Mexico	1.00	1.13	1.23	0.92	1.06	1.14	1.30	1.39
Brazil	1.00	1.00	0.83	0.83	1.51	1.73	2.06	2.28
Total LAC	1.00	1.05	1.00	0.95	1.27	1.41	1.62	1.76
Exports								
Argentina	1.00	1.10	1.23	1.47	1.56	1.68	1.81	2.00
Chile	1.00	1.11	1.09	1.27	1.56	1.59	1.82	1.86
Colombia	1.00	0.95	1.07	1.31	1.50	1.66	1.78	1.86
Other countries WCSA	1.00	0.97	0.98	1.03	1.11	1.18	1.36	1.40
Venezuela (Bolivarian Republic of)	1.00	0.93	0.84	0.84	1.05	1.05	0.97	0.91
Central America	1.00	1.02	1.04	1.11	1.22	1.31	1.90	2.04
Peru	1.00	1.25	1.31	1.30	1.68	1.92	2.24	2.35
Other countries ECSA	1.00	1.15	1.00	1.37	1.55	1.85	1.87	1.96
The Caribbean	1.00	1.00	1.06	1.18	1.47	1.63	0.99	1.01
Mexico	1.00	1.70	1.35	1.25	1.39	1.45	1.55	1.65
Brazil	1.00	1.09	1.28	1.55	1.88	1.97	2.13	2.20
Total LAC	1.00	1.11	1.15	1.30	1.54	1.63	1.74	1.82

Source: UNCTAD secretariat based on UNECLAC, data provided by Global Insight Inc. (www.globalinsight.com).

Table 56

Containerized trade, 2004–2007

TEUs

	Origin/Destination		2004	2005	2006	2007	Change 2004-2007
Argentina	Africa	Export	48 459	56 223	60 882	66 002	36%
		Import	2 910	3 409	3 549	3 822	31%
	Asia Pacific	Export	69 244	74 720	80 594	85 598	24%
		Import	75 121	95 454	114 919	133 709	78%
	Europe	Export	260 292	273 844	282 481	296 356	14%
		Import	77 049	86 510	93 252	99 981	30%
	North America	Export	121 347	124 159	136 321	176 422	45%
		Import	74 645	77 094	82 318	89 307	20%
	Latin America and the Caribbean	Export	101 179	110 201	114 971	120 708	19%
		Import	67 806	73 263	78 667	86 934	28%
	Total global	Export	641 836	693 924	744 939	825 433	29%
		Import	316 934	357 141	396 885	440 862	39%
Brazil	Africa	Export	191 063	206 086	225 366	244 526	28%
		Import	7 791	7 890	10 164	10 816	39%
	Asia Pacific	Export	338 384	390 149	432 252	453 080	34%
		Import	540 058	642 669	796 923	909 696	68%
	Europe	Export	966 941	1022 407	1097 907	1161 029	20%
		Import	308 852	352 669	413 288	425 690	38%
	North America	Export	939 028	938 437	966 183	924 135	-2%
		Import	197 868	201 390	224 322	253 236	28%
	Latin America and the Caribbean	Export	316 066	315 896	357 315	379 121	20%
		Import	63 378	76 129	83 076	91 497	44%
	Total global	Export	2940 584	3079 350	3319 649	3428 569	17%
		Import	1144 342	1310 341	1563 646	1730 331	51%
Central America	Africa	Export	2 471	2 645	2 774	2 993	21%
		Import	1 108	1 116	1 257	1 290	16%
	Asia Pacific	Export	14 509	16 175	17 872	18 281	26%
		Import	162 240	184 758	235 037	260 088	60%
	Europe	Export	142 863	171 732	206 745	220 390	54%
		Import	85 810	89 495	122 015	123 982	44%
	North America	Export	635 063	654 309	1028 031	1106 542	74%
		Import	319 740	325 747	364 327	388 050	21%
	Latin America and the Caribbean	Export	54 051	63 019	69 905	74 397	38%
		Import	134 384	139 998	187 632	201 720	50%
	Total global	Export	864 777	924 250	1343 660	1442 984	67%
		Import	732 676	775 483	954 002	1022 140	40%

Table 56 (continued)

	Origin/Destination		2004	2005	2006	2007	Change 2004-2007
Chile	Africa	Export	6 875	7 207	9 221	10 356	51%
		Import	1 301	1 240	1 323	1 430	10%
	Asia Pacific	Export	270 453	269 384	282 278	304 842	13%
		Import	135 574	160 307	189 735	213 797	58%
	Europe	Export	247 662	241 140	273 220	287 743	16%
		Import	58 622	70 616	74 104	76 474	30%
	North America	Export	261 772	274 325	335 508	305 402	17%
		Import	70 965	80 438	87 903	103 196	45%
	Latin America and the Caribbean	Export	162 854	170 192	200 134	215 248	32%
		Import	72 713	78 924	82 496	89 369	23%
	Total global	Export	979 406	995 867	1137 348	1165 825	19%
		Import	347 043	399 780	444 856	494 353	42%
Columbia	Africa	Export	3 887	3 868	4 451	4 780	23%
		Import	2 329	2 480	2 706	2 831	22%
	Asia Pacific	Export	12 337	11 374	11 865	12 470	1%
		Import	78 200	97 086	123 442	142 194	82%
	Europe	Export	91 554	99 494	113 059	120 879	32%
		Import	42 610	48 884	54 587	57 371	35%
	North America	Export	272 670	315 983	311 926	312 825	15%
		Import	92 349	105 355	121 005	139 312	51%
	Latin America and the Caribbean	Export	97 464	99 763	117 743	129 862	33%
		Import	90 765	107 613	121 324	134 129	48%
	Total global	Export	503 867	558 510	597 992	623 446	24%
		Import	351 777	415 830	503 084	562 732	60%
The Caribbean	Africa	Export	6 909	7 392	8 632	9 756	41%
		Import	5 087	5 309	5 861	6 006	18%
	Asia Pacific	Export	10 938	10 665	11 958	12 016	10%
		Import	87 718	102 156	125 836	138 050	57%
	Europe	Export	147 788	143 103	154 628	166 122	12%
		Import	203 589	226 103	247 746	249 348	22%
	North America	Export	682 011	770 587	352 906	347 100	-49%
		Import	306 093	339 150	360 198	368 948	21%
	Latin America and the Caribbean	Export	61 449	76 312	81 539	85 428	39%
		Import	210 553	207 140	217 824	223 572	6%
	Total global	Export	918 286	1017 712	620 550	632 864	-31%
		Import	839 758	908 666	989 597	1019 311	21%

Table 56 (continued)

Origin/Destination			2004	2005	2006	2007	Change 2004-2007
Mexico	Africa	Export	3 350	6 700	6 999	7 546	125%
		Import	12 419	12 552	12 956	13 127	6%
	Asia Pacific	Export	76 028	109 989	123 045	131 456	73%
		Import	407 192	461 950	558 487	619 099	52%
	Europe	Export	204 720	187 437	203 309	218 287	7%
		Import	194 718	201 047	216 049	217 505	12%
	North America	Export	218 678	190 848	185 031	183 898	-16%
		Import	66 921	67 689	73 200	73 991	11%
	Latin America and the Caribbean	Export	151 272	179 382	198 751	219 619	45%
		Import	218 127	224 916	244 782	256 463	18%
	Total global	Export	666 983	695 590	742 033	788 075	18%
		Import	922 852	994 902	1134 773	1211 643	31%
Other countries on the East Coast of South Americ	Africa	Export	6 505	7 011	7 867	8 437	30%
		Import	3 172	3 329	3 784	3 898	23%
	Asia Pacific	Export	17 035	19 975	20 996	22 638	33%
		Import	27 366	30 382	39 910	44 687	63%
	Europe	Export	48 136	53 773	59 039	62 701	30%
		Import	31 173	34 147	42 496	43 672	40%
	North America	Export	31 145	43 272	32 833	32 644	5%
		Import	23 311	21 472	21 529	24 892	7%
	Latin America and the Caribbean	Export	25 578	28 334	30 444	31 553	23%
		Import	34 591	33 978	40 611	43 895	27%
	Total global	Export	133 505	159 226	160 643	169 036	27%
		Import	122 204	126 142	152 526	165 638	36%
Other Countries on the West Coast of South America	Africa	Export	4 069	4 764	6 112	6 853	68%
		Import	308	523	581	611	98%
	Asia Pacific	Export	5 825	6 585	7 713	8 125	39%
		Import	38 831	46 380	51 504	56 671	46%
	Europe	Export	44 059	50 939	51 112	55 725	26%
		Import	23 255	26 424	27 250	27 189	17%
	North America	Export	157 957	160 270	188 336	187 801	19%
		Import	63 223	50 060	51 394	53 280	-16%
	Latin America and the Caribbean	Export	21 692	23 234	26 566	28 424	31%
		Import	39 847	43 240	46 371	49 016	23%
	Total global	Export	247 742	262 082	301 374	311 912	26%
		Import	170 744	172 276	184 093	195 318	14%

Table 56 (continued)

Origin/Destination			2004	2005	2006	2007	Change 2004-2007
Peru	Africa	Export	2 241	2 263	2 791	3 095	38%
		Import	1 785	2 031	2 154	2 210	24%
	Asia Pacific	Export	30 842	33 591	39 492	43 063	40%
		Import	87 728	101 075	119 749	133 698	52%
	Europe	Export	57 930	62 598	75 092	80 070	38%
		Import	37 126	47 091	51 608	53 601	44%
	North America	Export	61 306	73 790	86 100	86 376	41%
		Import	59 747	61 285	56 651	65 034	9%
	Latin America and the Caribbean	Export	46 510	55 003	61 201	65 028	40%
		Import	60 548	78 553	88 285	95 298	57%
	Total global	Export	201 673	230 090	267 854	281 155	39%
		Import	253 358	297 988	327 185	359 621	42%
Venezuela (Bolivarian Republic of)	Africa	Export	3 060	3 229	3 225	3 589	17%
		Import	1 602	1 691	1 814	1 868	17%
	Asia Pacific	Export	18 290	19 660	20 701	21 207	16%
		Import	45 105	56 988	69 049	78 731	75%
	Europe	Export	38 956	46 025	54 299	56 744	46%
		Import	80 228	88 915	94 938	97 809	22%
	North America	Export	190 377	181 238	145 248	120 861	-37%
		Import	83 538	98 557	113 383	120 066	44%
	Latin America and the Caribbean	Export	57 489	57 690	60 661	63 130	10%
		Import	102 892	115 272	128 162	140 625	37%
	Total global	Export	308 540	308 163	284 461	265 899	-14%
		Import	318 428	366 879	413 424	445 731	40%

Source: UNCTAD secretariat based upon UNECLAC Perfil Maritimo 2008 and Global Insight: Several publications.

Note: Figures for 2007 are estimates from September 2007.

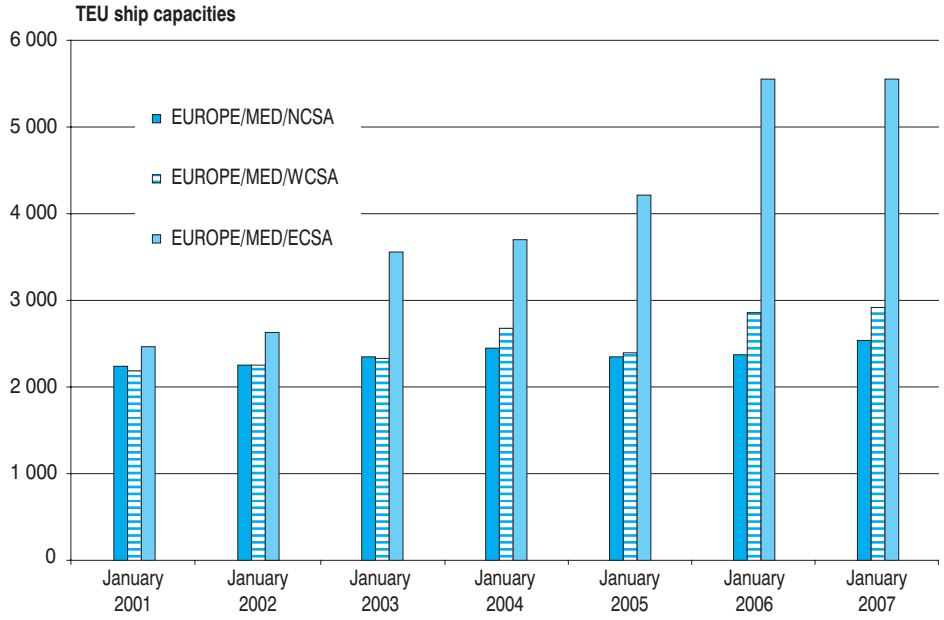
Figure 25 illustrates the increase of ship size in the trades between South America and the European/Mediterranean market since 2000. Increases in ship size on the West Coast of South America (WCSA) could be greater if the draft restrictions were eliminated in a number of main ports. In the case of WCSA–Europe, Mediterranean and the United States East Coast and Gulf of Mexico, ship size is also limited by the Panama Canal. The widening of the canal will open new opportunities for bigger ships in these services.

Shipping capacity on routes to South America has increased.

Shipping capacity on routes to South America has increased in response to market demands. Capacity on routes between the North Coast South America (NCSA)–North America, East Coast of South America (ECSA)–North America, Asia–West Coast South America (WCSA), and Europe–ECSA more than doubled between 2000 and 2007. The direct impact of changes in economic development, such as the economic crisis in 2002 and 2003, which struck especially the countries on the ECSA, is clearly visible in the figures (table 57) and show how quickly the shipping sector

Figure 25

Containership size development, South America–Europe Mediterranean trades, 2000–2007



Source: UNCTAD secretariat, based upon ComPair Data 2000–2007.

Table 57

Liner shipping capacity development in major South American trade routes, 2000–2007

Index, base year 2000

	2000	2001		2002		2003		2004		2005		2006		2007
	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan
Asia–ECSA	100	99.4	120.0	124.3	120.2	106.5	107.0	121.3	127.2	136.1	164.8	210.6	209.3	194
Asia–WCSA	100	125.0	127.7	136.5	141.2	141.4	127.0	164.5	174.3	190.9	240.7	260.8	277.7	236
Europe–ECSA	100	106.9	142.9	142.9	149.0	176.3	193.0	190.6	191.8	211.2	241.5	241.8	n.a.	253
Europe–NCSA[i]	100	87.5	129.8	134.7	147.4	147.4	141.6	137.2	135.4	109.8	124.4	127.7	132.0	171
Europe–WCSA	100	78.9	91.4	92.1	105.4	106.9	127.0	128.4	126.4	119.2	143.6	137.8	139.7	148
North America–ECSA	100	205.3	133.5	n.a.	149.8	189.5	198.7	181.6	158.9	238.5	245.4	246.1	252.6	240
North America–NCSA	100	113.8	123.1	141.1	147.6	181.9	163.0	139.4	179.6	150.9	155.5	193.2	193.3	223

Source: UNCTAD secretariat based upon data from American Shipper various years.

reacts to market changes. During the time of the economic crisis, capacity was stagnant and even declined on certain routes (e.g. Asia–ECSA and Asia–WCSA for July 2002 to January 2003).

Besides the general increase of shipping capacity, the capacity for transport of reefer containers[180] has grown substantially. The changes in trade composition and the growing importance of food products (e.g. fruits and fish) have also increased the demand for capacity for the transport of refrigerated cargo. The shipping service industry has responded by offering reefer capacities which in 2007 were more than three times higher as in 2000 (see table 58).

The capacity for transport of reefer container has grown substantially.

In containerized transport, the age of the fleet is an indicator for the implementation of technology in the region. Table 59 shows fleet evolution in containerized services to and from the three main coastal regions in South America during the period 2000 to 2007. The route that has experienced the highest level of fleet renewal is Europe–WCSA. Services on the Europe–WCSA and Europe–ECSA, had the most modern fleet with an average ship age of seven years.

The oldest and the most diverse fleet operate on the routes Asia–WCSA, North America–ECSA and North America–NCSA. The lowest level of fleet replenishment can be observed on the Asia WCSA routes between 2000 and 2007.

Latin America and the Caribbean display a highly varying level of integration within the global liner shipping network. South American countries on average have a higher level of connectivity presented in UNCTAD's Liner Shipping Connectivity Index (LSCI) than Central American and Caribbean countries (see chapter 5).

The clear advantage of hub ports in terms of connectivity becomes evident in figure 26 with Jamaica, the Dominican Republic, the Bahamas and Puerto Rico in the Caribbean, and Mexico and Panama in Central America, having the highest level of connectivity, respectively.

The changes in the level of connectivity in the period 2004–2007 also shows that the position of the traditional hub port locations (i.e. Jamaica and Panama) is rather stable, while the level of connectivity of the medium-size economies displays the highest level of variation in the respective period. Further, the more peripheral countries and small economies show lower rankings in the LSCI in 2007 in comparison to 2004/2005, which indicates that these countries have been less successful in extending their direct connectivity to other countries. As reported previously by UNCTAD, in Latin America and the Caribbean, there appears to be a growing "connectivity divide". The change can also be seen as an indication of the further extension of hub and spoke networks structures in the region, which reduces the level and reach of point-to-point services from smaller ports.

Table 58

Reefer capacity development in major South American trade routes, 2000–2007

Index, base year 2000

	2000	2001		2002		2003		2004		2005		2006		2007
	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan
Asia–ECSA	100	88.7	196.9	227.7	209.2	207.7	202.9	233.7	254.4	277.9	329.0	444.4	453.3	380
Asia–WCSA	100	129.1	147.4	182.5	194.4	203.4	188.7	215.9	243.3	263.2	319.6	368.5	381.3	299
Europe–ECSA	100	110.6	171.1	171.1	164.3	172.8	247.7	265.3	272.3	290.6	343.0	329.4	n.a.	362
Europe–NCSA	100	78.7	137.9	175.4	204.5	204.5	189.0	185.3	183.2	144.2	167.2	167.5	174.3	249
Europe–WCSA	100	59.4	79.4	111.7	136.3	136.0	228.9	315.0	351.6	294.9	419.4	386.3	373.8	422
North America–NCSA	100	107.1	121.5	172.2	180.2	221.9	213.2	177.5	230.3	196.4	211.9	282.9	268.8	303

Source: UNCTAD secretariat based upon data from *American Shipper*, various years.

Table 59

Development of fleet age in main routes to South America, 2000–2007

			Asia–ECSA	Asia–WCSA	Europe–ECSA	Europe–NCSA	Europe–WCSA	North America–ECSA	North America–NCSA
2000	**Jul**	Average year of construction	1991	1995	1994	1993	1991	1993	1992
		Standard deviation	7.3	5.4	6.2	7	8.1	6.2	7.6
2001	**Jan**	Average year of construction	1992	1996	1994	1993	1990	1994	1992
		Standard deviation	7	4.5	5.7	7.1	8.4	6.9	7.7
	Jul	Average year of construction	1993	1996	1995	1992	1990	1993	1992
		Standard deviation	6.9	3.4	5	6.8	8.8	7.8	7.4
2002	**Jan**	Average year of construction	1993	1997	1995	1992	1990	..	1994
		Standard deviation	7.1	3.4	5	6.8	8.9	..	6.2
	Jul	Average year of construction	1992	1997	1995	1993	1992	1995	1994
		Standard deviation	7.4	3.9	5.1	7.2	8.7	6.4	6.2
2003	**Jan**	Average year of construction	1992	1998	1995	1993	1992	1995	1995
		Standard deviation	9.2	2.4	5.9	7.2	8.7	6	5.6
	Jul	Average year of construction	1991	1998	1996	1994	1996	1994	1995
		Standard deviation	9	2.3	5.6	6.3	6.4	7.7	6
2004	**Jan**	Average year of construction	1994	1997	1996	1994	1997	1995	1995
		Standard deviation	6.3	4.4	6.2	7.1	6.8	7.7	5.7
	Jul	Average year of construction	1994	1998	1997	1994	1997	1998	1994
		Standard deviation	7	3	6.4	7.1	7	4.8	6.4
2005	**Jan**	Average year of construction	1996	1998	1996	1993	1996	1995	1996
		Standard deviation	7.3	3.5	7.6	7.4	6.8	7.9	5.8
	Jul	Average year of construction	1997	1997	1996	1994	1997	1995	1996
		Standard deviation	5.5	4.7	7.2	7.4	6.8	8.6	5.3
2006	**Jan**	Average year of construction	1998	1997	1996	1993	1997	1996	1996
		Standard deviation	5.7	5.2	7.8	7.6	6.8	7.8	6.3
	Jul	Average year of construction	1998	1998	..	1995	1998	1997	1996
		Standard deviation	5.8	4.4	..	7.1	5.5	6.6	6.6
2007	**Jan**	Average year of construction	1999	1997	2000	1996	2000	1997	1997
		Standard deviation	5.9	6.9	5.5	6.7	2.8	6	6.8
Average improvement of fleet age 2000–2007 (years)			-1	-7	-2	-5	2	-5	-3

Source: UNCTAD secretariat based upon data from *American Shipper*, various years.

Transport costs

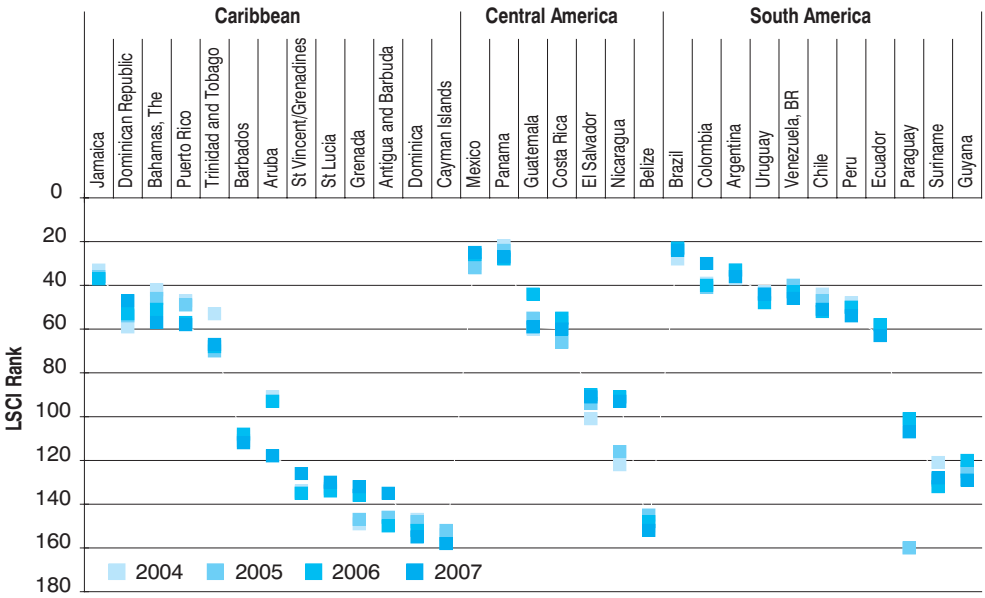
Liner shipping freight rates in Latin America and the Caribbean have increased considerably since 2002.

In line with global trends (see also chapter 4), liner shipping freight rates in Latin America and the Caribbean have increased considerably since 2002. UNECLAC's index of freight rates from the ECSA, WCSA and Central America–NCSA in the second quarter of 2007 was 55 per cent higher than in 2002. Freight rates on the presented routes have shown a similar evolution pattern between 2001 and 2007 (see figure 27). The strongest surge can be observed between the first quarter of 2003 and third quarter of 2004, when the index climbed almost 60 per cent.

Table 60 presents the relation of c.i.f./f.o.b. values in international maritime transport as an indicator for transport costs for imports from world regions to South American countries in 2005 and 2006. Intraregional

Figure 26

Connectivity in Latin America and the Caribbean, 2004–2007

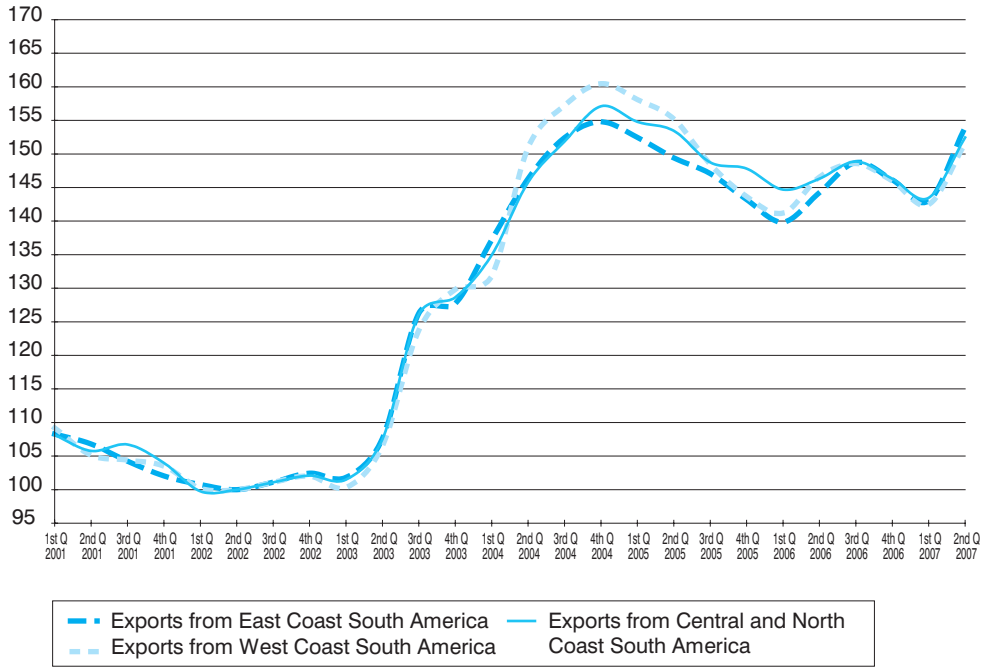


Source: UNCTAD secretariat's Liner Shipping Connectivity Index, calculated on the basis of data provided by *Containerisation International*.

Figure 27

Container freight rate index, 2001–2007

base 2nd quarter 2002=100



Source: UNCTAD secretariat based upon UNECLAC, Perfil Marítimo 2008.

Table 60

Transport costs for imports to selected South American countries, 2005 and 2006

(Percentages of c.i.f. value)

Import to	Export regions	2005	2006
Argentina	Africa	6.9	7.6
	Asia/Pacific	9.6	8.5
	Europe	5.2	5.0
	Latin America and the Caribbean	7.5	6.6
	North America	6.3	6.7
Brazil	Africa	8.4	9.4
	Asia/Pacific	11.1	9.4
	Europe	6.0	5.8
	Latin America and the Caribbean	7.4	7.3
	North America	6.2	6.0
Chile	Africa	11.6	12.7
	Asia/Pacific	12.4	11.0
	Europe	8.1	7.4
	Latin America and the Caribbean	8.8	7.9
	North America	9.3	7.5
Colombia	Africa	14.7	16.0
	Asia/Pacific	13.3	12.7
	Europe	8.6	8.4
	Latin America and the Caribbean	10.9	11.1
	North America	9.0	9.3
Ecuador	Africa	..	16.1
	Asia/Pacific	..	12.7
	Europe	..	9.5
	Latin America and the Caribbean	..	11.4
	North America	..	11.5
Paraguay	Africa	10.0	10.5
	Asia/Pacific	16.0	13.2
	Europe	12.3	10.1
	Latin America and the Caribbean	10.6	9.5
	North America	15.9	9.2
Peru	Africa	13.5	13.0
	Asia/Pacific	12.0	11.4
	Europe	11.5	11.6
	Latin America and the Caribbean	9.7	10.3
	North America	12.7	12.1
Uruguay	Africa	9.5	9.0
	Asia/Pacific	8.9	8.5
	Europe	7.0	7.3
	Latin America and the Caribbean	7.9	6.7
	North America	7.6	8.7

Source: UNCTAD secretariat, based upon data provided by UNECLAC's International Transport Database BTI.

Note: Excluding SITC 3 and 9 products.

imports face relatively higher transport costs in relation to the value of the product than imports from Europe, North America and the Asia–Pacific region. It can be observed that imports to countries of the ECSA face lower transport costs in relation to higher product values for both years presented.

An analysis at shipments level for different product groups (figure 28) illustrates that the greatest economies of scale are realized in transport products that are usually transported in bulk ships (SITC 2, 4 and 10). The least economies of scale can be realized in transport of machinery (SITC 7).

Ports in Latin America have experienced significant growth rates over the last 10 years.

D. PORTS

Ports in Latin America and the Caribbean accounted for approximately 6.8 per cent of world container throughput in 2006. This share is distributed evenly between the South American ports and the ports in Central America and the Caribbean.

Ports in Latin America have experienced significant growth rates over the last 10 years. Container ports have been the central focus of attention, but ports and terminals for bulk cargoes show even higher growth rates, driven by the demand for commodities. Data on bulk terminals is sparse, because many of them are operated by private companies, which do not share data on port throughput.

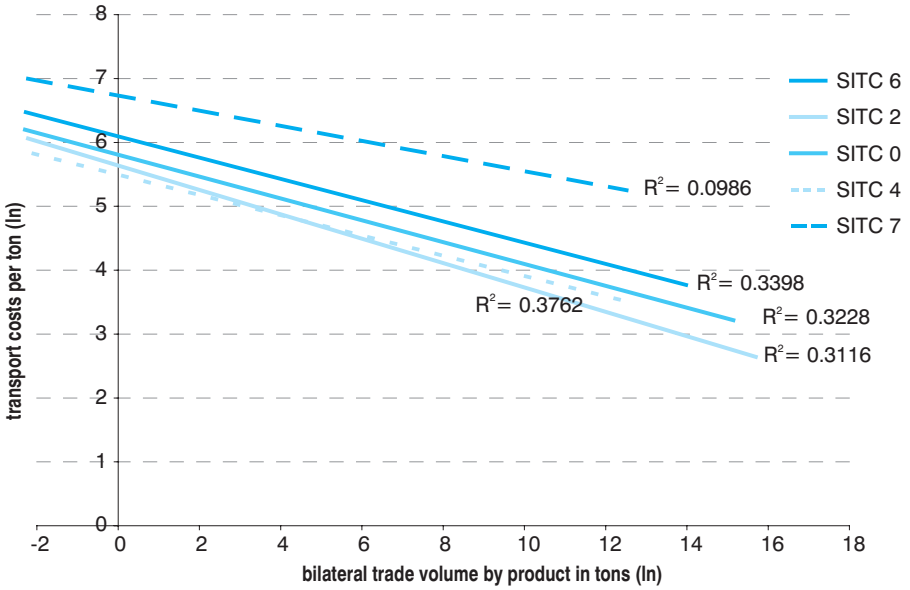
Ports in Latin America and the Caribbean handled approximately 1.5 billiion metric tons.[181] In terms of overall traffic volumes (tons) through ports Brazil is the leading country with over 714 million tons, followed by Mexico (271 million tons), Argentina (141 million tons) and Chile (112 million tons) (see table 61).

In the period 2004–2007, Belize, Colombia and Uruguay experienced the highest growth rates in port throughput volumes (in tons). The port throughput figures in tons also reflect the dominance of bulk trade in countries such as Brazil, Argentina, and Chile. If current average growth rates continue, port throughput will double in seven years. The speed of this development poses a number of opportunities and challenges to port and hinterland access development.

As regards containerized port traffic, table 62 shows that Brazil (8.7 million TEUs) continues to be the country with the highest volume of port throughput in 2007, followed by Panama (3.9 million TEUs) and Mexico

Figure 28

Economies of scale in maritime transport in imports to South American countries, SITC product groups, 2006



Source: UNCTAD secretariat based upon International Transport Database BTI–2006.

Table 61

Port traffic by country in Latin America

(Thousands of tons)

	Region	2004	2005	2006	2007	Change 2004-2007
Brazil	South America	618 796	645 560	629 177	714 817	15.5%
Mexico	Central America	264 530	282 720	286 724	271 638	2.7%
Argentina	South America	100 843	101 495	134 758	141 258	40.1%
Colombia	South America	99 000	100 500	102 610	112 973	14.1%
Chile	South America	91 453	104 922	103 123	112 650	23.2%
Ecuador	South America	70 642	69 685	75 250	40 716	[a]
Panama	Central America	26 246	34 198	36 685	32 386	23.4%
Jamaica	Caribbean	16 998	18 624	20 177	19 998	17.6%
Peru	South America	16 998	17 946	19 005	18 561	9.2%
Guatemala	Central America	14 717	15 755	16 081	15 968	8.5%
Dominican Republic	Caribbean	15 208	14 987	15 055	15 586	2.5%
Costa Rica	Central America	10 794	11 051	12 706	13 615	26.1%
Venezuela (Bolivarian Republic of)	South America	11 205	9843	10 544	11 426	2.0%
Uruguay	South America	7670	8416	10 528	10 215	33.2%
Honduras	Central America	8 765	9 273	9 464	9 902	13.0%
El Salvador	Central America	4 686	5 098	5 965	4 372	-6.7%
Guadeloupe	Caribbean	2 741	2 973	3 137	3 436	25.3%
Nicaragua	Central America	2 328	2 505	2 707	2 919	25.4%
Barbados	Caribbean	1 189	1 202	1 308	1 313	10.4%
Netherlands Antilles	Caribbean	809	895	915	985	21.8%
Belize	Central America	251	247	256	723	187.9%
Saint Lucia	Caribbean	418	498	535	548	31.2%
Bolivia	South America	625	n.a.	n.a.	n.a.	
Trinidad and Tobago	Caribbean	6 254	6 520	13 239	n.a.	

Source: UNCTAD secretariat based upon UNECLAC– Perfil Marítimo, *Containerisation International* and individual port data for 2006 and 2007.

[a] Data for some ports are estimates. Data for Ecuador 2007 does not include private terminal data.

Table 62

Ranking of port activity by country in Latin America and Caribbean

(TEUs)

	2004	2005	2006	2007	Average annual growth 2004-2007
Brazil	4 977 180	5 302 242	7 122 054	8 713 984	25.03%
Panama	2 428 762	2 731 705	2 949 072	3 907 839	20.30%
Mexico	1 902 754	2 133 476	2 676 774	3 063 539	20.34%
Chile	1 544 935	1 715 999	2 041 145	2 680 939	24.51%
Jamaica	1 356 034	1 670 800	2 150 408	2 016 792	16.24%
Argentina	1 251 895	1 490 378	1 800 000	1 863 954	16.30%
Colombia	875 415	953 331	1 333 764	1 835 018	36.54%
Bahamas	1 059 581	1 121 285	1 390 000	1 636 000	18.13%
Peru	806 567	991 681	1 085 040	1 175 329	15.24%
Venezuela (Bolivarian Republic of)	920 884	1 069 008	1 218 798	1 125 221	7.40%
Costa Rica	734 088	778 651	828 781	976 621	11.01%
Ecuador	564 093	632 237	670 237	894 320	19.51%
Guatemala	750 343	785 868	809 348	830 936	3.58%
Trinidad and Tobago	449 468	322 466	632 266	714 972	19.69%
Honduras	555 703	553 013	593 800	636 435	4.84%
Uruguay	423 343	454 517	519 218	596 487	13.63%
Dominican Republic	537 316	355 404	366 255	309 344	-14.14%
Guadeloupe	108 658	154 263	154 506	168 839	18.46%
El Salvador	45 315	49 151	124 331	144 458	72.93%
Barbados	82 028	88 758	98 511	99 623	7.15%
Netherlands Antilles	82 087	89 229	90 759	97 271	6.17%
Nicaragua	16 983	18 951	47 854	58 614	81.71%
Belize	35 565	35 891	38 005	39 191	3.40%
Saint Lucia	24 965	60 747	30 656	32 339	9.85%

Source: UNCTAD secretariat based upon UNECLAC – Perfil Marítimo and individual port data.

3 million TEUs) The average annual growth rates in Latin America and the Caribbean was 19 per cent from 2004 to 2007. If the current trend continues, port throughput in 2008 will be double that of 2004. In 2007, total container port throughput in Latin America was around 33.6 million TEUs.

The need to double port capacity in a short period of time means capacity improvements need to be given a high priority in national port policies. This development will require significant investment.

The three biggest container ports – Santos, Brazil; Kingston, Jamaica; and Colon-Manzanillo, Panama – each handled over 2 million TEUs in 2007 (see table 63). Their market share is equal to 19.65 per cent of total port throughputs in Latin America and the Caribbean. The top 10 ports account for around 45 per cent of the region's total container throughputs.

The top 10 ports account for 47.5 per cent of the region's total container throughputs.

The region's key trans-shipment hubs are (a) Manzanillo, Panama, with 84.4 percent of its overall port throughput being trans-shipment; (b) Kingston, Jamaica (85.9 per cent); (c) Freeport, Bahamas (99 per cent); and (d) Balboa, Panama (84.9 per cent).[182] Recently, ports in Cartagena, Colombia, and Point Lisas, Trinidad and Tobago, have started to challenge the traditional hub ports by increasing their share of trans-shipment traffic. The success of these new entrants is partly reflected in the latest reduction in concentration of port throughput on the NCSA (figure 29).

Terminal construction in smaller ports – e.g. Rio Grande, Brazil; Manta, Ecuador; and Mejillones, Chile – has created new opportunitiesfor liner services.

Private sector involvement in ports

The participation of private sector companies in port operations has contributed to significant infrastructure investment and gains in efficiency. Private sector participation in Latin America has been driven by port reforms since the 1990s. Today, about 65 per cent of all ports in the region operate under a landlord scheme. Recent research[183] has emphasized the positive impact of port privatization on efficiency in port and port-related operations in Latin America and the Caribbean. Sound institutional and effective frameworks able to adapt to market changes, reducing transaction costs and organizing and leadership of clusters are key success factors.[184]

With growing opportunities for private sector involvement, the presence of international terminal operators has increased in the region. International port operators are operating in the terminals of almost all main ports in South America, Panama, Mexico and the main container hub ports in the Caribbean (i.e. Jamaica, Bahamas, Puerto Rico, and Trinidad and Tobago). International operators continue to extend their market shares in the region and to control the strategically important ports in trade (see figure 30).

In June 2007, APM Terminals (APMT) assumed full ownership of the Terminal de Containers do Vale do Itajai S/A at the Port of Itajai in Southern Brazil. A terminal expansion plan will increase the facility's capacity to over 1 million TEUs. APMT further strengthened its presence in the region in October 2007, when purchasing a majority share of Alinport S.A. at the Port of Posorja, near Guayaquil, Ecuador. Construction has begun, with the opening of the planned 700,000 TEU capacity terminal facility expected in late 2009. This latest acquisition will bring the number of international terminal operators competing in Ecuador to three: ICTSI in Guayaquil, Hutchison Whampoa in Manta and APMT in Posorja.

In Brazil, the private sector is estimated to have invested $600 million in container facilities since the beginning of the privatization process in the 1990s, however it is expected that the current developments and new port projects and expansions in Santos, Rio Grande, Santa Catarina, Itajai, Manaus and other locations will require a further $2.5 billion over the next five years.

Tenders for concessions and the preparation of the legal framework for operation of port terminals in the main ports in Central American countries, other than Mexico, are trailing behind. Previous reform efforts, such as the port labour reform in Acajutla, El Salvador have resulted in significant efficiency gains, but did not bring new investments to the port. The development of a new port in La Union, El Salvador, as a port which could also serve Nicaragua and Honduras, is expected to be operational in 2009.

Port infrastructure and efficiency differs significantly throughout Latin America and even the best performing ports rank behind ports in other regions with comparable traffic volumes. Investments in ports have been increasing with private sector involvement since the start

Table 63

Top 25 container ports by port throughput in Latin America and the Caribbean

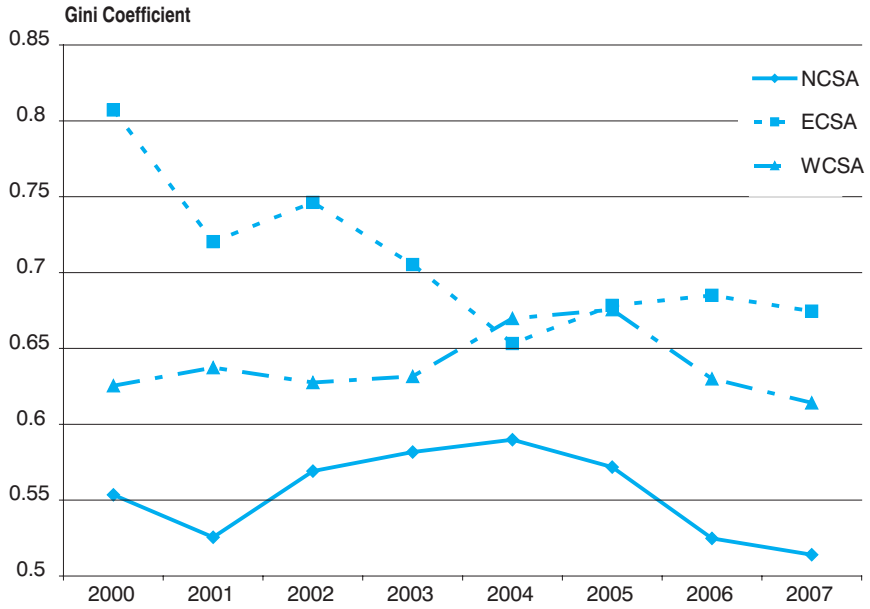
(TEUs)

Country	Port	2004	2005	2006	2007	Average annual growth 2004-2007
Brazil	Santos	1 882 838	2 267 921	2 855 480	2 532 900	10.39%
Jamaica	Kingston	1 356 034	1 670 800	2 150 408	2 016 792	14.15%
Panama	Colon (MIT, Evergreen, Panama Port)	1 943 712	2 054 285	1 946 986	2 056 095	1.89%
Argentina	Buenos Aires (includes Exolgan)	1 138 503	1 370 015	1 624 077	1 710 905	14.54%
Bahamas	Freeport	1 059 581	1 121 285	1 390 000	1 636 000	15.58%
Mexico	Manzanillo	829 603	872 386	1 249 630	1 411 146	19.37%
Panama	Balboa	465 091	664 185	988 583	1 833 778	57.98%
Peru	Callao	727 840	887 035	938 119	1 022 246	11.99%
Venezuela (Bol. Rep. of)	Puerto Cabello	597 930	746 810	844 952	831 732	11.63%
Brazil	Itajai	564 012	644 000	842 519	668 521	5.83%
Costa Rica	Puerto Limon-Moin	667 344	688 563	765 672	842 903	8.10%
Brazil	Rio Grande	617 808	665 111	712 907	607 275	-0.57%
Colombia	Cartagena (includes S.P.R, El Bosque, Contecar)	397 186	549 860	711 529	795 380	26.05%
Mexico	Veracruz	591 736	620 858	674 872	729 717	7.24%
Chile	San Antonio	639 762	773 048	673 000	650 697	0.57%
Colombia	S.P.R Buenaventura	347 938	403 471	622 233	914 720	38.02%
Chile	Valparaiso	388 353	377 275	613 889	845 234	29.59%
Brazil	Paranagua	379 068	420 000	609 840	595 261	16.23%
Ecuador	Guayaquil	516 557	567 608	603 693	597 622	4.98%
Uruguay	Montevideo	423 343	454 517	519 218	596'487	12.11%
Honduras	Puerto Cortes	466 805	468 563	507 980	553'139	5.82%
Brazil	Rio de Janeiro	343 082	326 000	375 570	636 299	22.86%
Mexico	Altamira	297 017	324 601	342 656	407 625	11.13%
Venezuela (Bol. Rep. of)	La Guaira	261 036	269 114	341 846	341'846	9.41%
Guatemala	Santo Tomas de Castilla	323 045	332 251	333 816	376 666	5.25%

Source: UNCTAD secretariat based upon UNECLAC – Perfil Marítimo and individual port data 2008.

Figure 29

Gini Index – concentration of port throughput by coast, 2000–2007



Source: UNCTAD secretariat.

of the port devolution[185] processes in the 1990s. The effectiveness of liberalization and the developed regulatory and institutional frameworks have not always created the most fruitful environment for success. In a recent investment climate survey, over 50 per cent of Latin American businesses considered inadequate infrastructure to be a serious problem.[186]

Despite the success of private sector involvement in ports and a growing port throughput, access to ports and hinterlands have become a crucial factor in transport and port efficiency. Significant emphasis needs to be placed on the development of infrastructure to provide accessibility to port hinterlands.

The persistent high transport costs in Latin American maritime trade can be partly attributed to management and legal variables, as well as to infrastructure and superstructure restrictions. Empirical evidence has shown that port infrastructure and excessive regulatory mechanisms lead to higher transport costs, as is also underlined in the results from the 2007 *World Bank Doing Business Report*.[187]

Regional integration and infrastructure development have been recognized as key issues for success in the region. The IIRSA initiative[188] in South America and the Plan Puebla Panama[189] Central America have evolved, both working on the development of infrastructure, providing financing mechanism and realization of infrastructure projects with regional impact.

E. VESSEL REGISTRATION

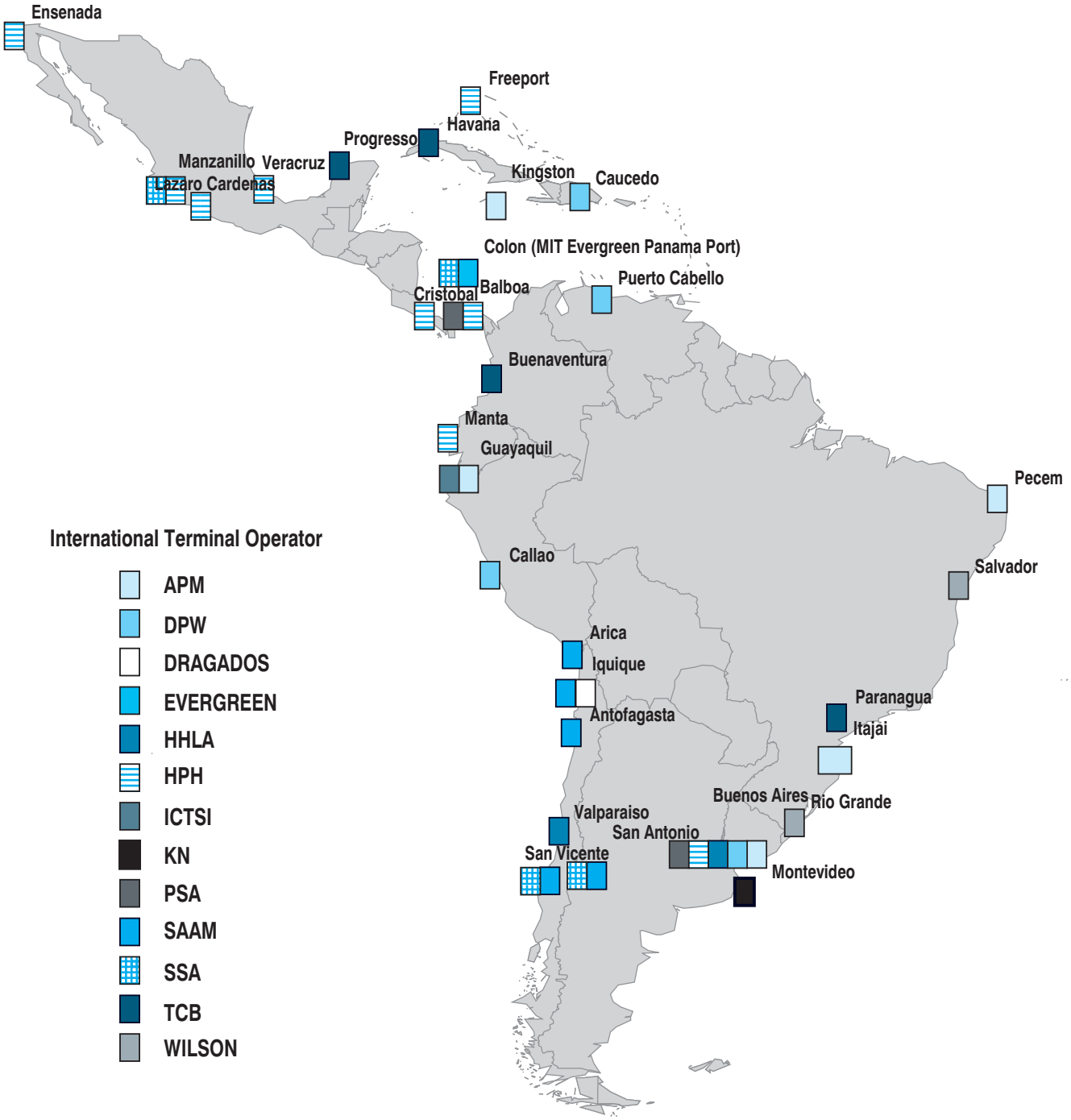
Thirty-three per cent of the world fleet is registered in Latin America and the Caribbean (see table 64). In 2008, this was equal to 363 million dwt. Five of the 10 major open and international registries are in Latin America and the Caribbean; they account for 56 per cent of the tonnage. Their biggest share is in general cargo vessels (72 per cent), bulk carriers (65 per cent) and container ships (50 per cent).

Thirty-three per cent of the world fleet is registered in Latin America and the Caribbean.

Panama, the Bahamas and Antigua and Barbuda flag 89 per cent of all the ships registered in Latin America and the Caribbean.

Figure 30

Geographical distribution of international terminal operators in Latin America and the Caribbean, 2008



Source: UNCTAD secretariat based upon and updated from Wilmsmeier G. and Sánchez R. (2006), Port development in Latin America. The complementarity and divergence of systems. Annual meeting of American Geographers. AAG. Chicago.

Note: The borders and names on this map do not imply official support or acceptance from the United Nations. Abbreviations used: APM: APM Terminals; DPW: Dubai Ports World; HHLA: Hamburger Hafen und Logistik AG; HPH: Hutchison Whampoa Inc.; ICTSI: International Container Terminal Services, Inc.; KN: Katoen Natie; PSA: PSA Singapore; SAAM: Sudamericana Agencias Aéreas y Marítimas S.A.; SSA: SSA Marine; TCB: Terminales de contenedores e instalaciones multiproposito Grup TCB.

Table 64

Participation of Latin America and Caribbean flags of registration,[a] types of ship[b]

(dwt, 1 January 2008)

	Total fleet	Oil tankers	Bulk carriers	General cargo[c]	Container ships	Other types
Share among major 10 open and international registries	56%	45%	65%	72%	50%	68%
Share of world total	33%	27%	40%	34%	27%	33%

Source: UNCTAD secretariat on the basis of data provided by Lloyd's Register-Fairplay.

[a] The designations employed and the presentation of material in this table refer to flags of registration and do not imply the expression of any opinion by the Secretariat of the United Nations concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of its frontiers.

[b] Ships of 100 GT and over, excluding the Great Lakes fleets of the United States, Canada and the United States ReserveFleet.

[c] Including passenger/cargo.

Table 65 illustrates the growth of vessel registration in Latin America and the Caribbean. Vessel registration in the region has shifted away from South American countries towards Caribbean countries, which have focused on ship registrations as a new source of economic activity. At the beginning of 2008, 10.7 per cent of the fleet registered in Latin America and the Caribbean was running flags from ECSA countries, in comparison to 58.7 per cent in 1980. A similar development can be observed on the WCSA; in 2008, 4.2 per cent of the Latin American and Caribbean fleet was running flags from this region, one third of the participation in 1980.

Central American countries show a small participation in the world fleet, with the exception of Panama and Mexico. The composition of the fleet in 2008 was as follows: 23.0 per cent were tankers, 25.4 per cent dry bulk carriers, 27.6 per cent general cargo vessels, 16.1 per cent containerships and 7.7 per cent other types of vessels. Since 2000, the share of tankers (23.6 per cent) has been constant. The share of containerships has increased, while the share of dry bulk carriers have decreased. The share of tankers may increase in the next few years, given that Petrobras, Brazil has plans to significantly expand its fleet over the next few years and thus also contribute to shipbuilding activities in Brazil.

The composition of the open and international registries in the region shows that these countries have specialized in certain ship types. By way of example, 51.6 per cent of the ships registered in Panama in 2008 are dry bulk carriers. The fleet registered in the Bahamas consists of 51.1 per cent oil tankers, while Bermuda seems to focus on dry bulk (43.7 per cent) and general cargo ships (42.4 per cent) (for details see table 66).

Table 65

Merchant fleets of the world and of Latin American and Caribbean countries, selected years

(In thousand dwt)

	Year	Total	Oil tankers	Bulk carriers	General	Container ships	Other types
World total	1980	682 768	339'324	185 652	115 824	11 243	30 725
	1990	658 377	245 936	234 659	102 676	25 955	49 151
	2000	808 377	285 442	281 655	102 653	69 216	69 412
	2004	895 843	336 156	320 584	92 048	98 064	48 991
	2008	1 117 779	407 881	391 127	105 492	144 655	68 624
Latin America – total [a]	1980	21 794	7 914	6 183	6 547	37	1 113
	1990	25 529	7 501	9 025	6 348	364	2 291
	2000	34 051	7 645	9 934	9 837	3 540	3 095
	2004	36 741	8 687	10 299	9 672	5 345	2 738
	2008	41'802	9'615	10'621	11'563	6'760	3'244
East Coast South America	1980	12 649	4 866	3 893	3 491	0	399
	1990	14 459	5 119	6 303	1 907	214	916
	2000	6 923	3 039	2 625	687	196	376
	2004	5 131	2 444	1 403	528	189	567
	2008	4514	2286	945	416	246	621
West Coast South America	1980	2 717	484	929	1 212	0	92
	1990	2 770	558	973	1 022	0	217
	2000	1 646	615	370	236	77	348
	2004	1 740	818	323	189	21	389
	2008	1783	864	299	196	21	403
Others (including Mexico, Caribbean and Central America) [a]	1980	6 428	2 564	1 361	1 844	37	622
	1990	8 300	1 824	1 749	3 419	150	1 158
	2000	25 482	3 991	6 939	8 914	3 267	2 371
	2004	29 871	5 425	8 574	8 955	5 135	1 783
	2008	35 505	6 464	9 376	10 951	6 493	2 220

Source: UNCTAD *Review of Maritime Transport*, various issues.

[a] Vessels registered in Antigua and Barbuda, the Bahamas, Bermuda, Panama and Saint Vincent and the Grenadines are not included since these are included in the top 10 major open and international registries. See also annex III.

Table 66

Merchant fleets of Latin America and the Caribbean by flag of registration [a] and types of ship, [b] as of 1 January 2008

(In thousand dwt)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
Anguilla	1	0	0	1	0	0
Argentina	1 143	628	144	115	18	238
Aruba	0	0	0	0	0	0
Barbados	1 006	242	389	301	0	74
Belize	1 490	50	294	918	9	219
Bolivia	127	50	7	49	0	21
Brazil	3 296	1 645	802	289	227	334
British Virgin Islands	11	0	0	1	0	10
Cayman Islands	4 358	2 238	1 719	259	0	142
Chile	1 088	459	299	101	21	207
Colombia	111	13	0	55	0	43
Costa Rica	0	0	0	0	0	0
Cuba	77	25	9	13	0	31
Dominica	1 734	755	796	148	0	36
Dominican Republic	7	0	0	6	0	1
Ecuador	377	309	0	3	0	65
El Salvador	2	0	0	0	0	2
Falkland Islands [d]	36	0	0	1	0	35
Grenada	1	0	0	1	0	0
Guatemala	4	1	0	0	0	4
Guyana	42	7	0	28	0	7
Haiti	2	0	0	1	0	0
Honduras	795	265	108	325	2	94
Jamaica	248	3	200	33	11	0
Mexico	1 519	1 005	28	78	0	409
Netherlands Antilles	1 713	51	374	909	102	278
Nicaragua	3	1	0	1	0	1
Paraguay	59	4	0	47	6	1
Peru	207	83	0	37	0	87
Saint Kitts and Nevis	977	205	219	520	2	30
Suriname	7	3	0	3	0	0
Trinidad and Tobago	19	4	0	0	0	14
Turks and Caicos Islands	0	0	0	0	0	0
Uruguay	75	14	0	12	0	49

Table 66 (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
Venezuela	1 574	875	281	58	2	358
French Guyana	0	0	0	0	0	0
Guadeloupe	5	0	0	2	0	4
Antigua and Barbuda	11 183	29	1 229	3 635	6 205	85
Bahamas	59 744	30 510	13 239	6 610	1 998	7 387
Bermuda	9 870	2 100	3 438	123	813	3 397
Panama	252 564	66 342	130 433	17 274	30 007	8 508
Saint Vincent and the Grenadines	8 503	651	3 723	3 610	154	365
Total	363 981	108 567	157 731	35 569	39 578	22 536

Source: UNCTAD secretariat based upon *Fairplay* 2008.

[a] The designations employed and the presentation of material in this table refer to flags of registration and do not imply the expression of any opinion by the Secretariat of the United Nations concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of its frontiers.

[b] Ships of 100 GT and over, excluding the Great Lakes fleets of the United States, Canada and the United States Reserve Fleet.

[c] Including passenger/cargo.

[d] A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

1 For a more comprehensive overview of world economic development, see UNCTAD's *Trade and Development Report, 2008*, www.unctad.org.

2 IMF (2008). World Economic and Social Survey, Global Financial Stability Report, Containing Systemic Risks and Restoring Financial Soundness. April: 10.

3 The 27 European Union Members are: Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland.

4 Based on information published by WTO) in the World Trade 2007, Prospects 2008, Press Release, April 2008; WTO Statistics Database, *International Trade Statistics, 2007*; and *World Trade Report, 2007* (www.wto.org).

5 It should be noted that when data is obtained from external sources including, for example, WTO, reference is made to the CIS and not the economies in transition. The CIS is comprised of the former Soviet Union Republics.

6 See, for example, "Major Deals Between China and Africa", Reuters, 2 November 2006, where it was reported that in January 2006 China's top offshore oil producer CNOOC agreed to pay $2.3 billion for a stake in an oil and gas field in Nigeria, while in April 2006 China concluded an offshore exploration deal with Kenya. See also Dynaliners, Liner Trade 2006.

7 For South–South trade, see, for example, a background note prepared by the UNCTAD secretariat entitled "New and dynamic sectors of trade: the South-South dimension", TD/B/COM.1/EM.34/2, 10 August 2007; and a compilation by UNCTAD entitled "Some key issues in South-South trade and economic cooperation: outcome and papers presented to the workshop on trade", UNCTAD/DITC/TNCD/2005/6, 28 April 2005. See also a joint UNCTAD and JETRO report entitled "South–South trade in Asia: the role of regional trade agreements", UNCTAD/DITC/TAB/MISC/2008/2, 2008.

8 See *Acid News*, March 2008, which reports about a study by J. Corbett, J. Winebrake, E. Green, V. Eyring, and A. Lauer entitled *Mitigating Health Impacts of Ship Pollution through Low Sulfur Fuel Options: Initial Comparison of Scenarios*. See the following website for further information on related work: www.catf.us/projects/international_air_quality/shipping.

9 IMO (2007). Review of MARPOL Annex VI and the NOx Technical Code, Report on the Outcome of the Informal Cross Government/Industry Scientific Group of Experts Established to Evaluate the Effects of the Different Fuel Options Proposed under the Revision of MARPOL: Annex VI, BLG 12/6/1, 20 December.

10 UNCTAD secretariat, based on various specialized sources, including International Energy Agency (IEA) *Oil Market Report*, various issues, British Petroleum (BP) *Statistical Review of World Energy*, 2008 (www.bp.com), Fearnleys', *Review* 2007, Clarkson Research Services, *Shipping Review and Outlook*, Spring 2008, Dynamar, DynaLiner, various issues, and various press articles from Fairplay at http://www.fairplay.co.uk and Lloyd's List at http://www.lloydslist.com/ll/home/index.htm.

11 Algeria, Indonesia, Islamic Republic of Iran, Iraq, Kuwait, Libyan Arab Jamahiriya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and the Bolivarian Republic of Venezuela. Angola joined OPEC on 1 January 2007.

12 Energy Information Administration (EIA), International Energy Price Information, accessed on 23 September 2008 (http://www.eia.doe.gov/emeu/international/prices.html#Crude).

13 For a good overview, see Kjell Aleklett, Reserve Driven Forecasts for Oil, Gas and Coal and Limits in Carbon Dioxide Emissions, Peak Oil, Peak Gas, Peak Coal and Peak CO2, Discussion Paper No 2007-18. December 2007, Uppsala University, Sweden. See also M.R. Simmons, The Peak Oil Debate as the EIA Turns 30, EIA 2008 Energy Conference, 7 April 2008; Paul Roberts, Tapped Out, National Geographic Magazine, June 2008.

14 Energy Information Administration (EIA) (2007). *International Energy Outlook 2007:* Chapter 3. May.

15 BP (2008). *Statistical Review of World Energy*.

16 See National Petroleum Council (NPC), *Facing the Hard Truth About Energy, A Comprehensive View to 2030 of Global Oil and Natural Gas*, 18 July 2007. Projections include those by the IEA, the Energy Information Administration (EIA) and the Association for the Study of Peak Oil France (ASPO). For additional information on the peak oil debate see ASPO's website http://www.peakoil.net. See also Melvin Jasmin and Missy Ryan, *World Crude Production Has Peaked: Pickens*, Reuters, 17 June 2008, Paul Roberts, *Tapped Out*, National Geographic Magazine, June 2008. See also, for example, a film documentary released in 2007 entitled *A Crude Awakening*. Related information is available at http://www.oilcrashmovie.com/film.html.

[17] Includes crude oil, shale oil, oil sands and NGLs (the liquid content of natural gas where this is recovered separately). Excludes liquid fuels from other sources such as biomass and coal derivatives.

[18] Includes inland demand, international aviation, marine bunkers, refinery fuel and loss, as well as fuel ethanol and biodiesel.

[19] *Lloyd's List* (2008). Middle East Refining Will Increase EU Gasoline Glut, The European Surplus is Expected to Rise from Today's 40 m Tons to nearly 60 m by 2020. 13 March.

[20] UNCTAD secretariat, based on various specialized sources, including the International Iron and Steel Institute (IISI) (www.worldsteel.org), Clarkson Research Services, *Dry Bulk Trade Outlook*, May 2008, Clarkson *Shipping Review & Outlook*, Spring 2008, Fearnleys, *Review 2007*, International Aluminium Institute (IAI) (http://www.world-aluminium.org), *Historical Statistics*, International Grains Council (www.igc.org.uk), Mineral Information Institute (MII) (www.mii,org) and various press articles from *Fairplay* and *Lloyd's List.*

[21] International Iron and Steel Institute (IISI) (2007). *A global Sector Approach to CO2 Emissions Reduction for* the Steel Industry, Position Paper, December.

[22] Knut A. Dohle, DBV, Environmental aspects of container transportation, How will requirements in the future influence container transportation at sea? 2006.

[23] For additional information on the food crisis see, for example, "Addressing the Global Food Crisis: Key trade, investment and commodity policies in ensuring sustainable food security and alleviating poverty". UNCTAD/OSG/2008/1, 30 May 2008.

[24] Based on information published in *Shipping Review & Outlook*, Clarkson Research Services, Fall 2007 and Spring 2008; *Container Intelligence Monthly*, various issues; *Containerisation International Magazine*, various issues; Containerisation International Online (www.ci-online.co.uk); data supplied by Drewry Consultants Ltd.; and Dynaliners, *Liner Trade 2007, an Overview*, 2008.

[25] UNCTAD estimates based on data supplied by Drewry Shipping Consultants in 2007 as well as on information published in Drewry, *Container Market Review 2006/2007*.

[26] Drewry Shipping Consultants, 2007.

[27] With respect to trade flows with the Far East; Africa includes West, East and Southern Africa.

[28] Jeff Rubin and Benjamin Tal, Will Soaring Transport Costs Reverse Globalization?, CIBC World Markets Inc., StrategEcon, 27 May 2008. The authors maintain that "Higher energy prices are impacting transport costs at an unprecedented rate. So much so that, the cost of moving goods, not the cost of tariffs, is the largest barrier to global trade today. In fact, in tariff-equivalent terms, the explosion in global transport costs has effectively offset all the trade liberalization efforts of the last three decades. Not only does this suggest a major slowdown in the growth of world trade, but also a fundamental realignment in trade patterns".

[29] *Transport Intelligence*, Soaring fuel prices have yet to dent demand for freight transport, TI Briefing, 28 May 2008. It was noted, in particular, that despite recent hikes in oil prices, "sea freight and, to a lesser extent, air freight volumes still growing modestly".

[30] UNCTAD estimate based on international seaborne trade data for 2007 and global trade data supplied by Global Insight in 2007. It should be noted that this share amounts to 90 per cent of world merchandise trade when intra-European trade is excluded.

[31] Based on data on world bunker prices, monthly averages in $/tonne published on *Containerisation International*, ci-online, http://www.ci-online.co.uk.

[32] Dynamar B.V Transport and Shipping Information, DynaLiners, *Weekly News Summary, Analysis and Commentary on Liner Shipping*, 47/2007, 23 November 2007, page 6.

[33] See World Shipping Council (WSC), *Record Fuel Prices Places Stress on Ocean Shipping*, 2 May, 2008.

[34] Based on a private communication with Bunkerworld, the expert provider of market information for the marine fuels market (www.bunkerworld.com). For additional information on fuel taxation see the Transport, Health and Environment Pan-European Program (PEP) website at http://www.thepep.org/chwebsite/chviewer.aspx?cat=d10.

[35] See for example, *The Slow Route to Fuel Savings*, Loyd's Ship Manager (LSM), May 2008; Bonita Nightingale, *Life in the Slow Lane*, Lloyd's Shipping Economist (LSE), March 2008 and Erik Kirschbaum, *Harnessing Kite Power to a Ship*, International Herald Tribune, 20 January 2008.

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37 Mike Wackett, *Maersk Suspends AE5 Service as Fuel Crisis Deepens*, Asia Mediterranean Northern Europe Financial Services, 20 June 2008.

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39 Mike Wackett, Are Carriers Justified in Charging Non-Freight Paying Consignees BAF?, Asia Financial Services, 11 July 2008.

40 For example Wallenius Wilhelmsen Logistics (WWL), a Swedish/Norwegian maritime transport provider**,** has designed a concept car and ro-ro carrier the *EC Orcelle* which can use renewable energy sources, including the sun, wind and waves as well as fuel cell technology, to meet all propulsion and onboard power requirements. Solar energy is harnessed through photovoltaic panels in the ship's three sails, which also help propel the ship using wind power. For further information see WWL website at http://www.2wglobal.com/www/WEP/index.jsp. See also *World Cargo News* at http://www.worldcargonews.com/htm/n20050405.548544.htm. See also the International Maritime Organization (IMO) work on the safety of maritime navigation and the protection of the marine environment at www.imo.org.

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43 Bill DiBenedetto, Fuel Burn: Rising Energy Costs are Spurring Companies to Re-evaluate Supply Chains, The Journal of Commerce Online, 18 June 2008.

44 This contrasts for example with the 1979 surge in oil prices where the increased cost burden was simply passed on from carriers to shippers and manufacturers, before hitting the retail customers. This is particularly relevant in the context of the apparel and textile sector. See for example, Mike Flanagan, *Analysis: Will Rising Oil Prices Boost Local Sourcing?*, just-style.com, 3 July 2008.

45 Freight rates are averages for East-bound and West-bound freight rates. Bunker prices are for Cst 380, Rotterdam. Data is downloaded from www.ci-online.co.uk.

46 Based on data obtained from Containerisation International, ci-online, www.ci-online.co.uk.

47 See for example D. Hummels, *Transportation Costs and International Trade in the Second Era of Globalization*, Journal of Economic Perspectives, Vol 21, 3(2007) 131-154. See also UNCTAD Transport Newsletter No. 31, March 2006, on *Ports and International Transport Costs*; and Transport Newsletter No. 24, June 2004, on *Recent Trends in Liner Shipping Freight Rates.*

48 See for example, D. Hummels, *Towards a Geography of Trade Costs*, University of Chicago, January 1999 and *Transportation Costs and International Trade in the Second Era of Globalization*, Journal of Economic Perspectives, volume 21, Number 3, 2007 (pages 131-154); J. Korinek, *Clarifying Trade Costs in Maritime Transport*, Working Party of the Trade Committee, OECD, 25 April 2008 (TAD/TC/WP(2008)10) and N. Limão and A J. Venables, *Infrastructure, Geographical Disadvantage, Transport Costs and Trade*, Journal of Economic Literature, December 2000. See also UNCTAD Transport Newsletter No. 38, March 2008, on *The modal split of international goods transport*; and No. 33, September 2006, on *Trade, Liner Shipping Supply, and Maritime Freight Rates*.

49 Ibid.

50 World Trade Organization (WTO), Statistics Database, Merchandise Trade by Commodity, 2006 (www.wto.org).

51 See also Larry Rohter, Shipping Costs Start to Crimp Globalization, International Herald Tribute, 2 August 2008: "The industries most likely to be affected by the sharp rise in transportation costs are those producing heavy or bulky goods that are particularly expensive to ship relative to their sale price. Steel is an example. (…) Motors and machinery of all types, car parts, television sets and other home appliances could also be affected".

52 Ibid.

53 See Mike Flanagan, Analysis: Will Rising Oil Prices Boost Local Sourcing?, jus-style.com, 3 July 2008.

54 Drewry Supply Chain Advisors, China's Apparel Supply Chains Will They Become Uncompetitive?, November 2007.

55 Frank Pendle and Renata Stiles, Global Market Review of Luxury of Apparel–Forecasts to 2014, September 2008.

56 See China Loses its Competitive Edge in Clothing, juste-style.com, 22 July 2008.

57 Professor Alan McKinnon, *The Potential of Economic Incentives to Reduce CO2 Emissions from Goods Transport*, Logistics Research Centre, Heriot-Watt University, Edinburg, UK, May 2008

58 See Dynamar, Dynaliners Trades Review 2008, p.20.

59 Professor Alan McKinnon, *The Potential of Economic Incentives to Reduce CO2 Emissions from Goods Transport*, Logistics Research Centre, Heriot-Watt University, Edinburg, UK, May 2008.

60 Ibid.

61 Jeff Rubin and Benjamin Tall, *The Carbon Tariff*, CIBC World Markets Inc, 27 March 2008. See also Issue Brief No. 2, International Centre for Trade and Development (ICTSD), *Climate, Equity and Global Trade*, December 2007.

62 The European Community Shipowners' Associations (ECSA) and the International Chamber of Shipping (ICS), *Climate Change and Shipping*, ECSA Position Paper, 10 January 2008.

63 See Mike Flanagan, Analysis: Will Rising Oil Prices Boost Local Sourcing?, jus-style.com, 3 July 2008.

64 Based on data from the Network for Transport and the Environment published in *Environment*, 10 January 2008, Container Shipping Information Service (CSIS), http://www.shipsandboxes.com/eng.

65 See for example, K.J. Wilson, J. Falkingham, H. Melling and R. De Abeu, *Shipping in the Canadian Arctic: Other Possible Climate Change Scenarios*, IEEE International 2004.

66 Based on IMF data on world nominal GDP in 2007 and data on global oil production in 2007 published in *BP Statistical Review* 2008. See also Robert F. Wescott, Ph.D, *What Would $120 Oil Mean for the Global Economy?*, Securing America's Future Energy, April 2006.

67 See Stern Review: the Economics of Climate Change, October 2006 (http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_Report.cfm).

68 Ibid.

69 Information in this chapter is based on data on vessels of 1,000 GT and above, as the country of ownership of smaller ships is not always available. Vessels of 1,000 GT and above account for 92.8 per cent (1.038 billion dwt) of the world total of 1.118 billion dwt for all ships of 100 GT or above.

70 Information in this chapter is based on data on vessels of 100 GT and above, except where the vessel owner's nationality is considered. For the latter case, data is for vessels of 1,000 GT and above.

71 The figures on the operational productivity of the world fleet are indicative estimates, only. While the data on the world fleet covers all commercial ships, including those that are employed in cabotage traffic, the UNCTAD estimates of international sea-borne trade do not include cabotage.

72 UNCTAD secretariat based on Drewry Shipping Consultants, *Shipping Insight*, various issues; Fearnleys *Review* 2006; Clarkson Research Services, *Shipping Review and Outlook*, 2006 and 2007.

73 http://www.nytimes.com/2008/01/02/business/02cnd-oil.html?hp

74 http://www.economist.com/business/displaystory.cfm?story_id=11332313.

75 http://www.telegraph.co.uk/money/main.jhtml?view=DETAILS&xml=/money/2008/04/22/ cnoil122.xml&CMP=ILC-mostviewedbox.

76 http://www.telegraph.co.uk/money/main.jhtml?xml=/money/2008/04/17/cnoil117.xml.

77 http://omrpublic.iea.org/currentissues/full.pdf.

78 *Shipping Insight.* February 2008.

79 Addition information on the WS system can be found on www.worldscale.co.uk. See also Worldscale Association Ltd. (London) and Worldscale Association NYC Inc.

80 An archaic term derived from the maximum size vessel permitted under the Average Freight Rate Assessment procedure for adjusting long term oil freight contract rates.

81 http://www.teekay.com/index.aspx?page=newsletter&article_id=121.

82 Regulation (EC) No 457/2007 of the European Parliament and of the Council of 25 April 2007 amending Regulation (EC) No 417/2002 on the accelerated phasing-in of double-hull or equivalent design requirements for single-hull oil tankers, *OJ L 113, 30.4.2007, pg. 1–2.* This regulation entered into force on 20 May 2007: http://eurlex.europa.eu/LexUriServ/site/en/oj/2007/l_113/l_11320070430en00010002.pdf.

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85 *Clarkson Dry Bulk Trade Outlook*, various issues.

86 http://fearnbulk.com/index.gan?id=146&subid=0.

87 *Clarkson's Dry Bulk Trade Outlook*, Vol. 14, No.5, May 2008: 5.

88 UNCTAD secretariat based on Drewry Shipping Insight, various issues; *Containerisation International*, various issues; *Containerisation International Online* www.ci-online.co.uk); Clarkson Research Services, *Container Intelligence Monthly*, various issues, and *Shipping Review & Outlook*, 2006 and 2007; *Dynaliners Trades Review*, 2007; *Lloyds Shipping Economist*, various issues; and *Fairplay*, various issues.

89 Touristik International GmbH & Co.

90 http://www.mpb.md.go.th/knowledge/containertype.pdf.

91 F.o.b (free on board) – a transport term meaning that the cost of loading the goods onto the main mode of transport is included in the purchase price of the goods.

92 UNCTAD secretariat on the basis of information published in *Containerisation International*, 2006 and 2007 issues.

93 http://www.thehindu.com/2008/05/29/stories/2008052957600300.htm.

94 http://kpwd.gov.in/pdf/portpolicy.pdf.

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96 Drewry (2007). Global Terminal Operators Report.

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98 Barnes Reports (2008). Worldwide Freight Trucking Long Distance Industry.

99 *Transport Intelligence, Global Freight Forwarding 2007.*

100 http://www.businessdictionary.com.

101 This figure includes only dedicated fully-cellular container vessels, whereas the actual container carrying fleet capacity is higher than this sum, as other types of vessels (e.g. general cargo or Ro-Ro ships) are also capable of carrying containers.

102 WT/L/579, Doha Work Programme, decision adopted by the General Council on 1 August 2004, annex D.

103 WTO negotiations on trade facilitation – compilation of members' textual proposals, TN/TF/W/43/Rev.14.

104 World Trade Organization negotiating group on trade facilitation, TN/TF/W/137, TN/TF/W/142 and TN/TF/W/147.

105 Annex D organizations include UNCTAD, WCO, the World Bank, OECD and the IMF.

106 WTO negotiations on trade facilitation – self assessment guide, TN/TF/W/143/Rev.2.

107 WTO negotiating group on trade facilitation, TN/TF/W/137: 3.

108 SAFE framework of standards to secure and facilitate global trade, rev. June 2007: 6, footnote 1.

109 See SAFE framework, rev. June 2007, Subsection 5.2: 37.

110 SAFE framework, rev. June 2007: 55.

111 *WCO News*, N°54, October 2007: 30.

112 WCO Trends and Patterns Report – *A Capacity Building Estimate*, ISSUE 2, December 2007: 16 (http://www.wcoomd.org).

113 Burundi, Kenya, Rwanda, United Republic of Tanzania and Uganda.

114 WCO Columbus ProgrammeBrochure – *Enhancing the global dialogue on capacity-building* (http://www.wcoomd.org).

115 A Columbus Programme Phase 2: Implementation Tool, available at www.wcoomd.org.

116 WCO Trends and Patterns Report – *A Capacity-Building Estimate, Moving from words to action*. Issue 1 (CBE 1), June 2007; WCO Trends and Patterns Report – *A Capacity-Building Estimate*; *The Implementation Path*. Issue 2 (CBE 2), December 2007; WCO Trends and Patterns Report - *A Capacity-Building Estimate; From Words to Action to Implementation*. Issue 3, June 2008. The three reports are available for downloading at www.wcoomd.org.

117 See CBE 1: 15, 18.

118 See CBE 2: 9.

119 Regulation No. 1875/2006 was published in the *Official Journal* L 360, 19 December 2006: 64.

120 For further information on the implementation of the AEO programme see the European Commission's website, see http://ec.europa.eu.

121 See art. 1.12 of Regulation (EEC) No. 2454/93, as amended by art. 1 of Regulation (EC) No. 1875/2006.

122 See AEO Guidelines (TAXUD/2006/1450): 8.

123 Modernized Community Customs Code – frequently asked questions (MEMO/08/101) of 19 February 2008.

124 The AEO guidelines (TAXUD/2006/1450) and the AEO compact model (TAXUD/2006/1452) are available at http://ec.europa.eu.

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129 Ibid.

130 See EU press release IP/06/1821. See also RMT 2007: 105.

131 See EU press release, IP/08/87. 25 January 2008.

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139 See also *Review of Maritime Transport 2007*: 107.

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142 See resolution MSC.243 (83) on the establishment of the IDE on an interim basis.

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147 Additional information is available on the website of the International Organization for Standardization (ISO) at http://www.iso.org/iso/home.htm.

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150 IMO, Marine Environment Protection Committee (MEPC). *Report of the Marine Environment Protection Committee on its fifty-seventh session*. MEPC 57/21, 7 April 2008. See also the website of the United Nations Framework Convention on Climate Change (UNFCC) at http://unfccc.int/methods_and_science/emissions_from_intl_transport/items/1057.php.

151 See Summary of Status of IMO Conventions, 30 June 2008, available at www.imo.org.

152 See only *IMO Briefing* 34, 1 July 2008. *Oslo meeting prepares ground on GHG reduction mechanism*, available at www.imo.org.

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161 Those installed on ships constructed in or after 1 January 2011.

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167 MEPC. *Report of the Intersessional Correspondence Group on Greenhouse Gas Related Issues, Submitted by Australia and the Netherlands*. MEPC 57/4/5, 21 December 2007, paragraphs 5.2 to 6.8.

168 Market-based approach to achieving environmental objectives that allows those reducing GHG emissions below a set threshold to use or trade the excess reductions to offset emissions at another source at a national or international level.

169 *IMO Briefing* 34, 1 July 2008. *Oslo meeting prepares ground on GHG reduction mechanism*, available at www.imo.org.

170 See the terms of reference of the Intersessional Correspondence Group, MEPC, *Report of the Marine Environment Protection Committee on its fifty-seventh session.* MEPC 57/21, 7 April 2008: 57.

171 See MEPC. *Report of the Marine Environment Committee on its fifty-sixth session.* MEPC 56/23, 30 July 2007 and *IMO Briefing* 26, 20 July 2007 (www.imo.org).

172 See the website of the GEF/UNDP/IMO Global Ballast Water Management Programme (GloBallast) http://globallast.imo.org/.

173 See Summary of Status of IMO Conventions, 30 June 2008, available at www.imo.org.

174 See *IMO Briefing* 26, 20 July 2007.

175 See *IMO Briefing* 10, 28 March 2008. For additional information about the convention, see *Review of Maritime Transport 2007:* 109.

176 See *IMO Briefing* 03, 25 February 2008.

177 The port or coastal State, the flag State, the seafarer's State, the shipowner and the seafarers themselves.

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179 Panama, Costa Rica, Honduras, El Salvador, Guatemala, Belize and Nicaragua.

180 Reefer container: A thermal container with refrigerating appliances (mechanical compressor unit, absorption unit etc.) to control the temperature of cargo.

181 The figures are based on data from BTI, port data from 287 ports as presented in UNECLAC's Maritime Profile and COCATRAM. Port statistics for 2007 are still spares and only few ports have published their figures for 2007.

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186 Fay and Morrison (2006). Infrastructure in Latin America and the Caribbean: recent development and key challenges. Directions in Development: Infrastructure. Washington, DC. The World Bank.

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188 For details see http://www.iirsa.org.

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Annex I

Classification of countries and territories [a b c d]

I. Developed economies

Code 1	Bermuda Canada Greenland	Saint Pierre and Miquelon United States of America
Code 2	Austria Belgium Bulgaria Cyprus Czech Republic Denmark Estonia Faroe Islands Finland France French Guiana Guadeloupe Germany Gibraltar Greece Hungary Iceland Ireland Italy	Latvia Lithuania Luxembourg Malta Martinique Monaco Netherlands Norway Poland Portugal Reunion Romania Slovakia Slovenia Spain Sweden Switzerland United Kingdom of Great Britain and Northern Ireland
Code 3	Israel	Japan
Code 4	Australia	New Zealand

II. Transition economies

Code 5.1 **In Europe**	Albania Belarus Bosnia and Herzegovina Croatia Montenegro Moldova	Russian Federation Serbia The former Yugoslav Republic of Macedonia Ukraine
Code 5.2 **In Asia**	Armenia Azerbaijan Georgia Kazakhstan	Kyrgyzstan Tajikistan Turkmenistan Uzbekistan

III. Developing economies

Code 6.1 **North Africa**	Algeria Egypt Libyan Arab Jamahiriya	Morocco Tunisia
Code 6.2 **Western Africa**	Benin Burkina Faso Cape Verde Côte d'Ivoire Gambia Ghana Guinea Guinea-Bissau Liberia	Mali Mauritania Niger Nigeria Saint Helena Senegal Sierra Leone Togo
Code 6.3 **Eastern Africa**	Burundi Comoros Djibouti Ethiopia Eritrea Kenya Madagascar Malawi Mauritius	Mozambique Rwanda Seychelles Somalia Sudan Uganda United Republic of Tanzania Zambia Zimbabwe
Code 6.4 **Central Africa**	Angola Cameroon Central African Republic Chad Congo	Democratic Republic of Congo Equatorial Guinea Gabon Sao Tome and Principe
Code 6.5 **Southern Africa**	Botswana Lesotho Namibia	South Africa Swaziland
Code 7.1 **Caribbean**	Anguilla Antigua and Barbuda Aruba Bahamas Barbados British Virgin Islands Cayman Islands Cuba Dominica Dominican Republic Grenada	Haiti Jamaica Montserrat Netherlands Antilles Saint Kitts and Nevis Saint Lucia Saint Vincent and Grenadines Trinidad and Tobago Turks and Caicos Islands United States Virgin Islands

Code 7.2 **Central America**	Belize Costa Rica El Salvador Guatemala	Honduras Mexico Nicaragua Panama
Code 7.3 **South America - Northern Seaboard**	Guyana Suriname	Venezuela, Bolivarian Republic of
Code 7.4 **South America – Western Seaboard**	Chile Colombia	Ecuador Peru
Code 7.5 **South America – Eastern Seaboard**	Argentina Bolivia Brazil	Falkland Islands (Malvinas) [e] Paraguay Uruguay
Code 8.1 **Western Asia**	Bahrain Iraq Jordan Kuwait Lebanon Oman	Qatar Saudi Arabia Syrian Arab Republic Turkey United Arab Emirates Yemen
Code 8.2 **Southern Asia**	Afghanistan Bangladesh Bhutan India Iran, Islamic Republic of	Maldives Nepal Pakistan Sri Lanka
Code 8.3 **Eastern Asia**	China Democratic People's Republic of Korea Hong Kong, China	Macao, China Mongolia Republic of Korea Taiwan Province of China
Code 8.4 **South–Eastern Asia**	Brunei Darussalam Cambodia Indonesia Lao People's Democratic Republic Malaysia Myanmar	Philippines Thailand Timor-Leste Singapore Viet Nam
Code 9 **Oceania**	American Samoa Christmas Island (Australia) Fiji French Polynesia Guam Kiribati Marshall Islands Nauru	New Caledonia Papua New Guinea Samoa Solomon Islands Tonga Tuvalu Vanuatu Wake Islands

Notes to Annex I

[a] This classification is for statistical purposes only and does not imply any judgement regarding the stage of development or the political situation of any country or territory.

[b] The following are groups of countries or territories used for presenting statistics in this *Review*:

Developed Economies: Codes 1, 2, 3 and 4

Transition Economies: Codes 5.1 and 5.2

Developing Economies: Codes 6, 7, 8 and 9

of which:	in Africa:	Codes 6.1, 6.2, 6.3, 6.4 and 6.5
	in America:	Codes 7.1, 7.2, 7.3, 7.4 and 7.5
	in Asia:	Codes 8.1, 8.2, 8.3 and 8.4
	in Oceania:	Code 9

[c] In certain tables, where appropriate, open-registry countries are recorded in a separate group.

[d] Trade statistics are based on data recorded at the ports of loading and unloading. Trade originating in or destined for neighbouring countries is attributed to the country in which the ports are situated; for this reason, landlocked countries do not figure in these tabulations. On the other hand, statistical tabulations on merchant fleets include data for landlocked countries that possess fleets.

[e] A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Annex II

World seaborne trade [a] by country groups

(In millions of tons)

Area [a]	Year	Goods loaded			Total goods loaded	Goods unloaded			Total goods unloaded
		Oil		Dry cargo		Oil		Dry cargo	
		Crude	Products [b]			Crude	Products [b]		
Developed economies									
North America	2006	22.1	86.3	490.8	599.2	510.8	155.6	492.0	1 158.4
Code 1	2007	23.3	90.9	516.4	630.6	524.2	159.7	504.9	1 188.8
Europe	2006	100.8	262.6	816.0	1 179.4	546.0	281.4	1 243.4	2 070.8
Code 2	2007	100.5	264.6	819.9	1 185.0	528.4	275.6	1 304.5	2 108.5
Japan and Israel	2006	0.0	11.7	152.4	164.1	210.5	55.8	582.5	848.7
Code 3	2007	0.0	11.9	165.4	177.3	220.9	55.0	590.5	866.4
Australia and New Zealand	2006	12.3	4.0	662.1	678.4	27.1	16.5	52.5	96.1
Code 4	2007	12.3	4.0	662.8	679.1	28.6	16.7	53.6	98.9
Subtotal: Developed economies	2006	135.2	364.6	2 121.3	2 621.1	1 294.3	509.3	2 370.4	4 174.0
	2007	136.1	371.4	2 164.5	2 672.0	1 302.1	507.1	2 453.6	4 262.8
Economies in transition	2006	115.0	47.3	95.3	257.6	5.6	2.7	46.3	54.6
Codes 5.1 and 5.2	2007	128.5	50.6	104.6	283.7	6.3	2.6	48.7	57.6
Developing economies									
North Africa	2006	132.8	37.7	75.0	245.5	8.1	11.0	125.9	145.0
Code 6.1	2007	139.6	39.2	81.4	260.2	9.2	14.3	147.0	170.5
Western Africa	2006	221.0	9.1	21.1	251.2	6.7	12.3	54.8	73.8
Code 6.2	2007	238.6	9.9	22.7	271.2	7.1	12.5	57.2	76.8
Eastern Africa	2006	12.0	1.1	14.2	27.3	2.4	7.5	28.7	38.6
Code 6.3	2007	12.7	1.3	15.4	29.4	2.5	8.0	31.1	41.6
Central Africa	2006	109.3	5.8	5.6	120.7	0.0	1.0	9.1	10.1
Code 6.4	2007	117.4	6.3	6.1	129.8	0.0	0.9	9.1	10.0
Southern Africa	2006	0.0	6.0	129.7	135.7	25.6	2.6	36.8	65.0
Code 6.5	2007	0.0	6.3	137.6	143.9	25.7	2.6	39.1	67.4
Subtotal Developing Africa	2006	475.1	59.7	245.6	780.4	42.8	34.4	255.3	332.5
	2007	508.3	63.0	263.2	834.5	44.5	38.3	283.5	366.3
Caribbean and Central America	2006	124.0	15.0	85.9	224.9	13.2	36.0	104.8	154.0
Codes 7.1 and 7.2	2007	119.8	15.9	90.5	226.2	14.2	39.6	99.6	153.4
South America: northern and eastern seaboard	2006	115.6	44.2	538.2	698.0	20.8	8.1	96.1	125.0
Codes 7.3 and 7.5	2007	117.4	45.5	601.1	764.0	21.9	8.4	101.4	131.7
South America: western seaboard	2006	31.9	10.6	123.9	166.4	15.4	6.5	40.1	62.0
Code 7.4	2007	33.5	11.1	139.0	183.6	16.0	7.0	42.0	65.0
Subtotal Developing America	2006	271.5	69.8	748.0	1 089.3	49.4	50.6	241.0	341.0
	2007	270.7	72.5	830.6	1 173.8	52.1	55.0	244.0	351.1

Annex II (continued)

Area [a]	Year	Goods loaded			Total goods loaded	Goods unloaded			Total goods unloaded
		Oil		Dry cargo		Oil		Dry cargo	
		Crude	Products [b]			Crude	Products [b]		
Western Asia	2006	709.4	115.8	192.6	1 017.8	36.2	37.0	336.8	410.0
Code 8.1	2007	726.7	117.8	206.7	1 051.2	37.6	37.6	363.9	439.1
Southern and Eastern Asia	2006	27.6	72.5	985.4	1 085.5	405.8	103.1	1 407.5	1 916.4
Codes 8.2 and 8.3	2007	27.6	76.5	1 054.1	1 158.2	424.8	101.9	1 466.4	1 993.1
South-Eastern Asia	2006	64.2	62.5	667.0	793.7	95.2	94.9	329.7	519.8
Code 8.4	2007	64.2	62.7	715.2	842.1	95.8	89.5	364.0	549.3
Subtotal Developing Asia	2006	801.2	250.8	1 845.0	2 897.0	537.2	235.0	2 074.0	2 846.2
	2007	818.5	257.1	1 976.1	3 051.7	558.2	229.0	2 194.3	2 981.5
Developing Oceania	2006	4.3	0.1	2.2	6.6	0.0	6.5	5.8	12.3
Code 9	2007	4.3	0.1	2.4	6.8	0.0	6.7	6.2	12.9
Subtotal: Developing economies and territories	2006	1 552.1	380.4	2 840.8	4 773.3	629.4	326.5	2 576.1	3 532.0
	2007	1 601.8	392.7	3 072.3	5 066.8	654.8	329.0	2 728.0	3 711.8
World total	2006	1 802.3	792.3	5 057.4	7 652.0	1 929.3	838.5	4 992.8	7 760.6
	2007	1 866.4	814.7	5 341.4	8 022.5	1 963.2	838.7	5 230.3	8 032.2

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by reporting countries, ports and specialized sources and published on ports' websites.

[a] See annex I for the composition of groups.

[b] Including LNG, LPG, naphtha, gasoline, jet fuel, kerosene, light oil, heavy fuel oil and others.

Annex III (a)

Merchant fleets of the world by flags of registration, [a] groups of countries and types of ship [b] as of 1 January 2008

(In thousands of GT)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPING ECONOMIES OF AFRICA						
Algeria	736	16	121	45	0	554
Angola	57	5	0	10	0	42
Benin	1	0	0	0	0	1
Cameroon	17	0	0		0	14
Cape Verde	29	3	0	9	0	18
Comoros	766	158	115	400	4	89
Congo	4		0	0	0	4
Democratic Republic of the Congo	14	1	0	0	0	12
Côte d'Ivoire	9	1	0	0	0	8
Djibouti	4	0	0	0	0	4
Egypt	1 162	295	388	266	48	164
Equatorial Guinea	29	0		3	0	25
Eritrea	14	2	0	10	0	3
Ethiopia	123	5	0	118	0	0
Gabon	14	1	0	4	0	9
Gambia	35	4	0	27	0	4
Ghana	116	3	0	13	0	100
Guinea	20	0	0	1	0	19
Guinea-Bissau	7	0	0	1	0	5
Kenya	15	5	0	0	0	10
Libyan Arab Jamahiriya	98	8	0	44	0	45
Madagascar	35	5	0	15	0	16
Mauritania	52	0	0	1	0	51
Mauritius	40	0	0	14	0	27
Morocco	490	78	0	30	72	309
Mozambique	38	0	0	6	0	33
Namibia	126	0	0	2	0	124
Nigeria	431	280	10	18	0	124
Sao Tome and Principe	30	1	4	21	0	4
Senegal	46	0	0	1	0	45
Seychelles	183	95	0	43	0	45
Sierra Leone	476	61	11	309	14	81
Somalia	10	1	0	4	0	5
South Africa	193	0	0	0	27	165
Saint Helena	4	0	0	0	0	4
Sudan	26	1	0	22	0	3
Togo	19	0	0	4	0	14
Tunisia	140	16	17	3	0	104
United Republic of Tanzania	38	8	0	21	0	10
DEVELOPING ECONOMIES OF AFRICA						
Total	5 644	1 052	666	1 465	166	2 292

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPING ECONOMIES OF AMERICA						
Anguilla	1	0	0	1	0	0
Argentina	837	363	87	85	13	289
Aruba	0	0	0	0	0	0
Barbados	727	156	234	244	0	93
Belize	1 258	36	192	754	7	268
Bolivia	103	31	4	37	0	30
Brazil	2 290	1 031	471	246	195	347
Cayman Islands	2 850	1 309	1 016	405	0	121
Chile	908	275	179	154	17	284
Colombia	89	8	0	39	0	42
Costa Rica	4	0	0	0	0	4
Cuba	61	15	6	9	0	30
Dominica	998	422	424	106	0	45
Dominican Republic	10	0	0	5	0	4
Ecuador	300	179	0	3	0	119
El Salvador	7	0	0	0	0	7
Falkland Islands [d]	49	0	0	1	0	48
Grenada	3	0	0	1	0	2
Guatemala	6	0	0	0	0	6
Guyana	42	5	0	23	0	14
Haiti	2	0	0	1	0	0
Honduras	710	147	63	248	2	250
Jamaica	171	2	118	39	8	4
Mexico	1 218	613	19	86	0	500
Netherlands Antilles	1 274	30	200	740	81	222
Nicaragua	6	1	0	0	0	4
Paraguay	51	3	0	38	6	5
Peru	273	51	0	25	0	196
Saint Kitts and Nevis	687	133	134	376	2	43
Suriname	5	2	0	3	0	0
Trinidad and Tobago	51	4	0	3	0	44
Turks and Caicos Islands	1	0	0	0	0	1
Uruguay	114	9	0	9	0	96
Venezuela	1 057	507	170	44	2	334
British Virgin Islands	16	0	0	1	0	15
DEVELOPING ECONOMIES OF AMERICA						
Total	16 175	5 332	3 316	3 728	332	3 467
DEVELOPING ECONOMIES OF ASIA						
Bahrain	326	81	43	2	96	104
Bangladesh	441	68	52	254	35	31
Brunei Darussalam	483	1	0	2	0	480
Cambodia	2 065	91	416	1 412	34	112
China	25 064	4 736	10 208	4 831	3 447	1 842
Hong Kong (China)	35 700	8 064	18 324	2 278	6 559	476
India	9 098	4 917	2 431	488	157	1 106

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
Indonesia	5 670	1 419	575	2 059	392	1 226
Iran (Islamic Republic of)	3 140	1 652	836	324	157	171
Iraq	159	48	0	39	0	72
Jordan	369	139	16	121	14	79
Democratic People's Republic of Korea	979	91	154	625	22	87
Republic of Korea	13 227	2 222	7 173	1 254	1 372	1 207
Kuwait	2 426	1 838	54	98	214	222
Lao People's Democratic Republic	3	0	0	3	0	0
Lebanon	136	1	34	91	0	10
Macao (China)	2	0	0	0	0	2
Malaysia	6 971	2 798	314	491	694	2 675
Maldives	126	10	0	104	0	12
Mongolia	687	27	402	237	0	21
Myanmar	203	3	35	136	0	29
Oman	24	2	0	2	0	21
Pakistan	351	160	36	130	0	25
Philippines	5 032	432	2 465	1 361	166	608
Qatar	620	303	15	32	184	86
Saudi Arabia	943	333	0	303	149	157
Singapore	35 942	16 536	7 212	3 419	6 535	2 240
Sri Lanka	161	11	30	84	16	20
Syrian Arab Republic	354	1	34	308	8	3
Taiwan Province of China	2 751	777	1 198	112	481	183
Thailand	2 846	397	892	1 093	255	208
Timor-Leste	1	0	0	0		1
Turkey	4 987	724	2 122	1 437	365	339
United Arab Emirates	809	243	87	82	214	182
Viet Nam	2 541	576	420	1 223	90	231
Yemen	29	11	0	5	0	13
DEVELOPING ECONOMIES OF ASIA	164 664	48 711	55 579	24 440	21 655	14 279
DEVELOPING ECONOMIES OF OCEANIA						
American Samoa	7	0	0	0	0	7
Fiji	32	0	0	9	0	22
French Polynesia	47	0	0	22	0	25
Guam	3	0	0	0	0	3
Kiribati	152	29	16	96	0	11
New Caledonia	10	0	0	2	0	7
Papua New Guinea	85	2	6	60	0	17
Samoa	10	0	0	8	0	2
Solomon Islands	12	0	0	2	0	10
Tonga	68	1	6	47	0	14
Tuvalu	855	608	42	137	9	58
Vanuatu	1 956	95	872	344	25	620
DEVELOPING ECONOMIES OF OCEANIA						
Total	3 235	736	943	728	35	794
DEVELOPING ECONOMIES TOTAL	189 718	55 831	60 503	30 361	22 187	20 833

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPED ECONOMIES						
Australia	1 829	252	410	145	7	1 015
Austria	14	0	0	10	4	0
Belgium	4 091	1 280	1 364	286	153	1 008
Bulgaria	928	24	635	149	66	53
Canada	2 765	512	1 117	100	16	1 019
Denmark	9 486	1 784	369	455	5 565	1 314
Estonia	390	8	0	21	0	360
Finland	1 570	363	26	458	29	694
France	6 280	2 598	176	93	1 608	1 805
French Guyana	1	0	0	0	0	0
Germany	12 910	494	156	234	11 327	699
Greece	35 875	20 634	10 154	363	2 574	2 151
Guadeloupe	8	0	0	1	0	7
Iceland	180	0	0	1	0	178
Ireland	187	13	0	99	5	71
Israel	728	3	0	4	712	9
Italy	12 837	3 419	1 954	2 342	1 159	3 964
Japan	12 765	2 262	2 772	2 240	384	5 106
Latvia	262	66	0	57	0	139
Lithuania	426	3	20	219	3	180
Luxembourg	884	152	209	186	89	247
Martinique	1	0	0	0	0	0
Netherlands	6 125	437	3	2 345	1 432	1 907
New Zealand	391	74	12	157	0	148
Norway	18 152	6 878	2 439	4 026	167	4 641
Poland	193	11	0	34	0	148
Portugal	1 071	284	100	344	26	317
Reunion	4	0	0	0	0	4
Romania	270	32	0	82	0	156
Slovakia	238	0	42	196	0	1
Slovenia	2	0	0	0	0	2
Spain	3 054	590	27	326	263	1 848
Saint Pierre and Miquelon	1	0	0	0	0	1
Sweden	4 045	584	33	2 346	0	1 081
Switzerland	562	46	286	55	170	4
United Kingdom	14 975	1 335	1 451	2 429	6 630	3 130
United States	11 369	2 328	1 217	1 588	3 204	3 031
United States Virgin Islands	3	0	0	0	0	3
DEVELOPED ECONOMIES Total	164 870	46 465	24 972	21 398	35 594	36 441

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
TRANSITION ECONOMIES						
Albania	69	0	0	68	0	1
Azerbaijan	708	227	0	101	0	381
Croatia	1 374	512	594	127	0	141
Georgia	1 046	83	305	535	17	107
Kazakhstan	55	29	0	3	0	22
Moldova	49	14	4	31	0	1
Montenegro	13	0	0	12	0	1
Russian Federation	7 529	1 193	517	2 944	92	2 782
Turkmenistan	52	6	0	17	0	29
Ukraine	1 145	34	100	612	29	370
TRANSITION ECONOMIES Total	12 041	2 098	1 520	4 449	138	3 835
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES						
Antigua and Barbuda	8 562	18	758	2 839	4 874	72
Bahamas	43 780	16 655	7 457	6 600	1 782	11 287
Bermuda	9 197	1 124	1 776	119	770	5 408
Cyprus	18 800	3 700	8 977	1 679	3 749	695
Isle of Man	8 448	4 812	1 678	396	160	1 402
Liberia	76 546	32 250	13 209	3 904	22 979	4 204
Malta	28 201	8 659	13 063	3 563	1 452	1 465
Marshall Islands	36 103	18 544	9 105	1 649	4 056	2 749
Panama	168 291	36 710	71 862	22 169	26 893	10 657
Saint Vincent and the Grenadines	5 966	357	2 128	2 833	125	523
INTERNATIONAL REGISTRIES Total	403 896	122 828	130 013	45 751	66 840	38 463
Unknown flag	4 254	763	554	1 370	54	1 512
WORLD TOTAL [e]	774 779	227 986	217 563	103 330	124 814	101 085

Annex III (b)

Merchant fleets of the world by flags of registration, [a] groups of countries and types of ship [b] as of 1 January 2008

(In thousands of dwt)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPING ECONOMIES OF AFRICA						
Algeria	744	26	204	55	0	458
Angola	47	8	0	12	0	27
Benin	0	0	0	0	0	0
Cameroon	10	0	0	3	0	6
Cape Verde	22	4	0	12	0	6
Comoros	1 045	273	198	501	5	68
Congo	1	0	0	0	0	1
Côte d'Ivoire	17	2	0	1	0	14
Democratic Republic of the Congo	5	1	0	0	0	4
Djibouti	1	0	0	0	0	1
Egypt	1 703	508	679	311	58	148
Equatorial Guinea	19	1	0	6	0	13
Eritrea	16	3	0	10	0	3
Ethiopia	159	9	0	150	0	0
Gabon	8	1	0	4	0	3
Gambia	12	5	0	5	0	2
Ghana	86	5	0	16	0	64
Guinea	10	0	0	0	0	10
Guinea-Bissau	2	0	0	0	0	2
Kenya	14	8	0	0	0	6
Libyan Arab Jamahiriya	97	13	0	57	0	27
Madagascar	32	7	0	18	0	7
Mauritania	25	0	0	1	0	24
Mauritius	37	0	0	12	0	25
Morocco	336	113	0	28	72	124
Mozambique	30	0	0	11	0	19
Namibia	77	0	0	4	0	73
Nigeria	626	477	13	26	0	111
Sao Tome and Principe	38	1	7	27	0	2
Senegal	19	0	0	2	0	17
Seychelles	243	156	0	57	0	30
Sierra Leone	588	101	17	418	18	34
Somalia	9	2	0	4	0	4
South Africa	117	0	0	0	30	87
Saint Helena	1	0	0	0	0	1
Sudan	29	1	0	26	0	1
Togo	40	14	0	24	0	2
Tunisia	13	0	0	4	0	9
United Republic of Tanzania	79	24	26	4	0	25
DEVELOPING ECONOMIES OF AFRICA Total	6 357	1 762	1 145	1 808	182	1 459

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPING ECONOMIES OF AMERICA						
Anguilla	1	0	0	1	0	0
Argentina	1 143	628	144	115	18	238
Aruba	0	0	0	0	0	0
Barbados	1 006	242	389	301	0	74
Belize	1 490	50	294	918	9	219
Bolivia	127	50	7	49	0	21
Brazil	3 296	1 645	802	289	227	334
British Virgin Islands	11	0	0	1	0	10
Cayman Islands	4 358	2 238	1 719	259	0	142
Chile	1 088	459	299	101	21	207
Colombia	111	13	0	55	0	43
Costa Rica	0	0	0	0	0	0
Cuba	77	25	9	13	0	31
Dominica	1 734	755	796	148	0	36
Dominican Republic	7	0	0	6	0	1
Ecuador	377	309	0	3	0	65
El Salvador	2	0	0	0	0	2
Falkland Islands [d]	36	0	0	1	0	35
Grenada	1	0	0	1	0	0
Guatemala	4	1	0	0	0	4
Guyana	42	7	0	28	0	7
Haiti	2	0	0	1	0	0
Honduras	795	265	108	325	2	94
Jamaica	248	3	200	33	11	0
Mexico	1 519	1 005	28	78	0	409
Netherlands Antilles	1 713	51	374	909	102	278
Nicaragua	3	1	0	1	0	1
Paraguay	59	4	0	47	6	1
Peru	207	83	0	37	0	87
Saint Kitts and Nevis	977	205	219	520	2	30
Suriname	7	3	0	3	0	0
Trinidad and Tobago	19	4	0	0	0	14
Turks and Caicos Islands	0	0	0	0	0	0
Uruguay	75	14	0	12	0	49
Venezuela	1 574	875	281	58	2	358
DEVELOPING ECONOMIES OF AMERICA Total	22 111	8 935	5 668	4 315	401	2 791
DEVELOPING ECONOMIES OF ASIA						
Bahrain	394	154	60	2	100	78
Bangladesh	617	118	89	346	48	17
Brunei Darussalam	423	2	0	3	0	419
Cambodia	2 824	145	662	1 903	43	70
China	37 124	8 063	17 469	6 315	4 105	1 171
Democratic People's Republic of Korea	1 388	158	254	892	30	55
Hong Kong (China)	59 210	14 623	33 518	3 067	7 508	494
India	15 041	8 791	4 201	664	203	1 182

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
Indonesia	6 859	2 289	944	2 651	516	459
Iran (Islamic Republic of)	5 222	3 048	1 420	419	211	123
Iraq	202	78	0	54	0	70
Jordan	508	293	26	148	18	24
Republic of Korea	21 141	3 984	13 166	1 498	1 606	888
Kuwait	3 974	3 337	93	86	227	230
Lao People's Democratic Republic	5	0	0	5	0	0
Lebanon	154	1	54	92	0	8
Macao (China)	2	0		0	0	2
Malaysia	9 448	5 087	538	587	842	2 395
Maldives	164	21	0	138	0	6
Mongolia	1 061	48	679	315	0	19
Myanmar	237	5	49	169	0	14
Oman	16	3	0	2	0	11
Pakistan	565	288	66	184	0	27
Philippines	6 659	696	3 954	1 573	183	252
Qatar	894	546	22	48	202	77
Saudi Arabia	1 104	558	0	319	156	72
Singapore	55 550	29 576	13 308	2 576	7 709	2 382
Sri Lanka	215	19	49	115	21	12
Syrian Arab Republic	517	2	53	452	8	2
Taiwan Province of China	4 308	1 327	2 183	154	583	61
Thailand	4 224	700	1 471	1 550	346	157
Timor-Leste	0	0	0	0	0	0
Turkey	7 300	1 265	3 631	1 815	455	135
United Arab Emirates	1 028	408	142	90	227	163
Viet Nam	3 893	943	684	1 906	114	247
Yemen	26	17	0	2	0	6
DEVELOPING ECONOMIES OF ASIA Total	252 297	86 591	98 783	30 139	25 459	11 325
DEVELOPING ECONOMIES OF OCEANIA						
American Samoa	1	0	0	0	0	1
Fiji	16	0	0	7	0	9
French Polynesia	32	0	0	25	0	7
Guam	2	0	0	0	0	2
Kiribati	193	46	27	115	0	5
New Caledonia	5	0	0	3	0	2
Papua New Guinea	98	3	9	75	0	11
Samoa	10	0	0	9	0	1
Solomon Islands	6	0	0	2	0	5
Tonga	75	1	7	58	0	9
Tuvalu	1 441	1 108	72	212	13	35
Vanuatu	2 486	191	1 450	223	29	593
DEVELOPING ECONOMIES OF OCEANIA Total	4 365	1 350	1 565	729	41	679
DEVELOPING ECONOMIES TOTAL	285 129	98 638	107 161	36 992	26 084	16 253

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPED ECONOMIES						
Australia	2 144	430	649	136	10	919
Austria	18	0	0	12	6	0
Belgium	6 467	2 438	2 642	191	173	1 023
Bulgaria	1 314	35	1 017	160	78	25
Canada	3 169	849	1 708	90	17	505
Denmark	11 075	2 933	705	401	6 189	847
Estonia	110	13	0	27	0	70
Finland	1 203	609	38	375	37	144
France	7 914	4 718	346	55	1 776	1 020
French Guyana	0	0	0	0	0	0
Germany	15 031	816	324	301	13 234	357
Greece	61 384	38 273	18 928	417	2 820	945
Guadeloupe	5	0	0	2	0	4
Iceland	73	0	1	1	0	71
Ireland	184	18	0	136	7	22
Israel	855	5	0	5	840	5
Italy	13 267	5 616	3 651	1 478	1 301	1 221
Japan	14 810	4 217	4 893	2 278	402	3 020
Latvia	255	108	0	59	0	88
Lithuania	385	6	29	274	4	72
Luxembourg	1 120	237	368	103	108	304
Martinique	1	0	0	1	0	0
Netherlands	6 217	687	6	2 886	1 621	1 017
New Zealand	362	121	17	174	0	50
Norway	23 949	12 046	4 416	3 347	199	3 941
Poland	115	17	0	26	0	72
Portugal	1 125	509	170	264	33	148
Reunion	2	0	0	0	0	2
Romania	273	51	0	100	0	123
Slovakia	327	0	60	266	0	1
Slovenia	0	0	0	0	0	0
Spain	2 746	1 061	43	206	331	1 105
Saint Pierre and Miquelon	0	0	0	0	0	0
Sweden	2 424	868	47	1 260	0	248
Switzerland	887	69	504	74	236	5
United Kingdom of Great Britain	15 888	2 100	2 724	1 947	7 547	1 570
United States	12 139	3 981	2 316	916	3 389	1 537
US Virgin Islands	1	0	0	0	0	1
DEVELOPED ECONOMIES Total	207 241	82 833	45 603	17 969	40 356	20 481

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
TRANSITION ECONOMIES						
Albania	99	0	0	98	0	1
Azerbaijan	611	315	0	112	0	183
Croatia	2 191	959	1 049	147	0	36
Georgia	1 473	141	508	738	25	60
Kazakhstan	68	50	0	2	0	17
Moldova	72	25	4	42	0	1
Montenegro	14	0	0	14	0	1
Russian Federation	7 135	1 720	726	3 328	92	1 270
Turkmenistan	46	8	0	15	0	22
Ukraine	1 149	56	160	698	27	207
TRANSITION ECONOMIES Total	12 858	3 275	2 447	5 194	144	1 798
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES						
Antigua and Barbuda	11 183	29	1 229	3 635	6 205	85
Bahamas	59 744	30 510	13 239	6 610	1 998	7 387
Bermuda	9 870	2 100	3 438	123	813	3 397
Cyprus	29 431	6 561	15 964	2 061	4 570	277
Isle of Man	13 850	8 529	3 207	447	206	1 460
Liberia	117 519	57 990	23 938	3 667	27 257	4 667
Malta	45 218	15 354	23 339	4 124	1 785	616
Marshall Islands	59 600	33 720	16 504	1 884	5 008	2 485
Panama	252 564	66 342	130 433	17 274	30 007	8 508
Saint Vincent and the Grenadines	8 503	651	3 723	3 610	154	365
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES Total	607 484	221 788	235 015	43 433	78 002	29 246
Unknown flag	5 067	1 348	901	1 904	67	846
WORLD TOTAL [e]	**1 117 779**	**407 881**	**391 127**	**105 492**	**144 655**	**68 624**

Notes to annex III

Source: Lloyd's Register–Fairplay.

[a] The designations employed and the presentation of material in this table refer to flags of registration and do not imply the expression of any opinion by the Secretariat of the United Nations concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of its frontiers.

[b] Ships of 100 GT and over, excluding the Great Lakes fleets of the United States, Canada and the United States Reserve Fleet.

[c] Including passenger/cargo.

[d] A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

[e] Excluding estimates of the United States Reserve Fleet and the United States and Canadian Great Lakes fleets.

Annex IV

UNCTAD Liner Shipping Connectivity Index

	2004		2005		2006		2007		2008		% change
	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	2008/ 2004
China	100.0	1	108.3	1	113.1	1	127.9	1	137.4	1	37.4
Hong Kong, China	94.4	2	96.8	2	99.3	2	106.2	2	108.8	2	15.2
Singapore	81.9	4	83.9	4	86.1	3	87.5	4	94.5	3	15.4
Germany	76.6	7	78.4	7	80.7	7	89.0	3	89.3	4	16.5
Netherlands	78.8	6	80.0	5	81.0	6	84.8	5	87.6	5	11.1
United States	83.3	3	87.6	3	85.8	4	83.7	6	82.5	6	-1.0
United Kingdom	81.7	5	79.6	6	81.5	5	76.8	9	78.0	7	-4.5
Belgium	73.2	8	74.2	8	76.2	8	73.9	10	78.0	8	6.6
Malaysia	62.8	12	65.0	12	69.2	10	81.6	7	77.6	9	23.5
Republic of Korea	68.7	10	73.0	9	71.9	9	77.2	8	76.4	10	11.2
Spain	54.4	15	58.2	15	62.3	14	71.3	11	67.7	11	24.3
Japan	69.2	9	66.7	11	64.5	13	62.7	13	66.6	12	-3.6
France	67.3	11		10	67.8	11	64.8	12	66.2	13	-1.6
Taiwan Province of China	59.6	13	63.7	13	65.6	12	62.4	14	62.6	14	5.1
Italy	58.1	14	62.2	14	58.1	15	58.8	15	55.9	15	-3.9
United Arab Emirates	42.9	16	49.2	16	50.0	16	45.4	17	52.5	16	22.6
Egypt	38.1	18	39.2	18	46.7	17	48.2	16	48.8	17	28.2
Saudi Arabia	35.8	19	36.2	20	40.7	19	45.0	18	47.4	18	32.4
Sri Lanka	34.7	20	33.4	21	37.3	20	42.4	19	46.1	19	32.9
India	34.1	21	36.9	19	42.9	18	40.5	20	42.2	20	23.5
Australia	26.6	26	28.0	27	27.0	30	26.8	33	38.2	21	43.7
Thailand	31.0	23	31.9	22	33.9	22	35.3	21	36.5	22	17.6
Turkey	25.6	29	27.1	28	27.1	29	32.6	23	35.6	23	39.2
Portugal	17.5	41	16.8	43	23.6	36	25.4	38	35.0	24	99.4
Canada	39.7	17	39.8	17	36.3	21	34.4	22	34.3	25	-13.6
Mexico	25.3	30	25.5	32	29.8	26	31.0	25	31.2	26	23.2
Brazil	25.8	28	31.5	23	31.6	23	31.6	24	30.9	27	19.5
Panama	32.1	22	29.1	24	27.6	28	30.5	27	30.4	28	-5.0
Oman	23.3	31	23.6	35	20.3	42	29.0	31	30.4	29	30.4
Sweden	14.8	48	26.6	29	28.2	27	25.8	35	30.3	30	105.1
Philippines	15.5	45	15.9	45	16.5	49	18.4	48	30.3	31	95.9
Malta	27.5	25	25.7	31	30.3	25	29.5	29	29.9	32	8.7
Morocco	9.4	78	8.7	84	8.5	85	9.0	81	29.8	33	217.2
Lebanon	10.6	67	12.5	62	25.6	34	30.0	28	28.9	34	173.6
South Africa	23.1	32	25.8	30	26.2	31	27.5	32	28.5	35	23.2
Greece	30.2	24	29.1	25	31.3	24	30.7	26	27.1	36	-10.2
Denmark	11.6	64	24.3	34	25.4	35	22.1	42	26.5	37	129.2
Romania	12.0	61	15.4	48	17.6	45	22.5	41	26.4	38	119.2
Argentina	20.1	37	25.0	33	25.6	33	25.6	36	25.7	39	27.9
Indonesia	25.9	27	28.8	26	25.8	32	26.3	34	24.8	40	-4.0

Annex IV (continued)

	2004		2005		2006		2007		2008		% change
	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	2008/ 2004
Pakistan	20.2	*36*	21.5	*37*	21.8	*38*	24.8	*39*	24.6	*41*	21.9
Ukraine	11.2	*65*	10.8	*68*	14.9	*56*	16.7	*55*	23.6	*42*	111.3
Iran (Islamic Republic of)	13.7	*52*	14.2	*53*	17.4	*47*	23.6	*40*	22.9	*43*	67.4
Uruguay	16.4	*43*	16.6	*44*	16.8	*48*	21.3	*44*	22.9	*44*	39.1
Colombia	18.6	*39*	19.2	*41*		*40*	29.1	*30*	21.6	*45*	16.3
New Zealand	20.9	*34*	20.6	*38*	20.7	*39*	20.6	*45*	20.5	*46*	-1.9
Venezuela (Republic Bolivarian of)	18.2	*40*	19.9	*40*	18.6	*43*	20.3	*46*	20.5	*47*	12.3
Dominican Republic	12.5	*59*	14.0	*54*	15.2	*53*	19.9	*47*	20.1	*48*	61.3
Israel	20.4	*35*	20.1	*39*	20.4	*41*	21.4	*43*	19.8	*49*	-2.7
Viet Nam	12.9	*55*	14.3	*52*	15.1	*54*	17.6	*50*	18.7	*50*	45.7
Nigeria	12.8	*56*	12.8	*59*	13.0	*60*	13.7	*68*	18.3	*51*	42.6
Jamaica	21.3	*33*	22.0	*36*	23.0	*37*	25.5	*37*	18.2	*52*	-14.5
Ghana	12.5	*58*	12.6	*61*	13.8	*59*	15.0	*61*	18.1	*53*	45.3
Senegal	10.2	*72*	10.1	*78*	11.2	*67*	17.1	*53*	17.6	*54*	73.7
Mauritius	13.1	*54*	12.3	*63*	11.5	*64*	17.2	*52*	17.4	*55*	32.8
Chile	15.5	*44*	15.5	*47*	16.1	*52*	17.5	*51*	17.4	*56*	12.5
Peru	14.8	*47*	15.0	*50*	16.3	*50*	16.9	*54*	17.4	*57*	17.5
Côte d'Ivoire	14.4	*50*	14.5	*51*	13.0	*61*	15.0	*62*	16.9	*58*	17.6
Jordan	11.0	*66*	13.4	*57*	13.0	*62*	16.5	*56*	16.4	*59*	48.8
Bahamas	17.5	*42*	15.7	*46*	16.2	*51*	16.5	*57*	16.4	*60*	-6.5
Slovenia	13.9	*51*	13.9	*55*	11.0	*70*	12.9	*69*	15.7	*61*	12.6
Puerto Rico	14.8	*46*	15.2	*49*	14.7	*57*	16.0	*58*	15.6	*62*	5.4
Guatemala	12.3	*60*	13.9	*56*	18.1	*44*	15.4	*59*	15.4	*63*	25.7
Croatia	8.6	*85*	12.2	*64*	10.5	*72*	12.3	*70*	15.4	*64*	79.1
Russian Federation	11.9	*62*	12.7	*60*	12.8	*63*	14.1	*66*	15.3	*65*	28.7
Yemen, Republic	19.2	*38*	10.2	*76*	9.4	*75*	14.3	*64*	14.4	*66*	-24.8
Ecuador	11.8	*63*	12.9	*58*	14.2	*58*	14.3	*63*	13.2	*67*	11.2
Trinidad and Tobago	13.2	*53*	10.6	*71*	11.2	*68*	13.7	*67*	12.9	*68*	-2.3
Costa Rica	12.6	*57*	11.1	*67*	15.1	*55*	15.3	*60*	12.8	*69*	1.5
Syrian Arab Republic	8.5	*86*	11.8	*65*	11.3	*66*	14.2	*65*	12.7	*70*	49.0
Togo	10.2	*71*	10.6	*70*	11.1	*69*	10.6	*75*	12.6	*71*	23.2
Benin	10.1	*73*	10.2	*75*	11.0	*71*	11.2	*72*	12.0	*72*	18.7
Cyprus	14.4	*49*	18.5	*42*	17.4	*46*	18.0	*49*	11.8	*73*	-17.9
Congo	8.3	*87*	9.1	*81*	9.1	*77*	9.6	*79*	11.8	*74*	42.3
Namibia	6.3	*102*	6.6	*99*	8.5	*86*	8.4	*89*	11.1	*75*	77.1
Cameroon	10.5	*69*	10.6	*69*	11.4	*65*	11.7	*71*	11.0	*76*	5.6
Kenya	8.6	*84*	9.0	*82*	9.3	*76*	10.9	*73*	10.9	*77*	27.4
United Republic of Tanzania	8.1	*90*	8.6	*86*	8.7	*81*	10.6	*76*	10.5	*78*	29.1
Djibouti	6.8	*98*	7.6	*91*	7.4	*95*	10.5	*77*	10.4	*79*	54.3
Fiji	8.3	*88*	8.3	*87*	7.2	*97*	7.4	*97*	10.3	*80*	24.9
Angola	9.7	*76*	10.5	*73*	9.5	*74*	9.9	*78*	10.2	*81*	5.7

Annex IV (continued)

	2004		2005		2006		2007		2008		% change
	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	2008/ 2004
Finland	9.5	*77*	10.2	*77*	8.6	*84*	10.7	*74*	9.7	*82*	2.9
Poland	7.3	*92*	7.5	*92*	7.5	*94*	7.9	*94*	9.3	*83*	28.1
Honduras	9.1	*80*	8.6	*85*	8.3	*88*	8.8	*84*	9.3	*84*	1.6
New Caledonia	9.8	*75*	10.3	*74*	9.0	*78*	8.8	*83*	9.2	*85*	-6.1
French Polynesia	10.5	*70*	11.1	*66*	8.9	*79*	8.6	*86*	9.0	*86*	-13.8
Gabon	8.8	*81*	8.8	*83*	8.7	*80*	8.6	*87*	8.9	*87*	1.8
Nicaragua	4.8	*122*	5.3	*116*	8.1	*91*	7.9	*93*	8.9	*88*	87.5
Mozambique	6.6	*99*	6.7	*98*	6.7	*99*	7.1	*99*	8.8	*89*	32.7
El Salvador	6.3	*101*	7.3	*94*	8.1	*90*	7.9	*91*	8.7	*90*	37.6
Guam	10.5	*68*	10.5	*72*	9.6	*73*	8.7	*85*	8.6	*91*	-18.4
Netherlands Antilles	8.2	*89*	8.2	*89*	7.8	*92*	9.2	*80*	8.6	*92*	4.9
Mauritania	5.4	*112*	6.0	*106*	6.3	*102*	7.9	*92*	7.9	*93*	48.0
Norway	9.2	*79*	8.3	*88*	7.3	*96*	7.8	*96*	7.9	*94*	-14.4
Madagascar	6.9	*96*	6.8	*96*	8.3	*87*	8.0	*90*	7.8	*95*	13.4
Lithuania	5.2	*115*	5.9	*108*	5.7	*105*	6.8	*101*	7.8	*96*	48.7
Algeria	10.0	*74*	9.7	*79*	8.7	*83*	7.9	*95*	7.8	*97*	-22.5
Ireland	8.8	*82*	9.7	*80*	8.2	*89*	8.9	*82*	7.6	*98*	-13.0
Tunisia	8.8	*83*	7.6	*90*	7.0	*98*	7.2	*98*	7.0	*99*	-20.7
Papua New Guinea	7.0	*94*	6.4	*103*	4.7	*119*	6.9	*100*	6.9	*100*	-0.6
Samoa	5.4	*110*	5.3	*113*	5.1	*113*	6.5	*104*	6.7	*101*	22.5
American Samoa	5.2	*117*	5.3	*115*	4.9	*115*	6.3	*106*	6.4	*102*	24.5
Guinea	6.1	*104*	6.9	*95*	8.7	*82*	8.5	*88*	6.4	*103*	4.6
Bangladesh	5.2	*116*	5.1	*119*	5.3	*109*	6.4	*105*	6.4	*104*	23.2
Saint Kitts and Nevis	5.5	*108*	5.3	*114*	5.6	*106*	6.2	*109*	6.2	*105*	12.8
Kuwait	5.9	*106*	6.8	*97*	4.1	*127*	6.2	*108*	6.1	*106*	4.6
Cuba	6.8	*97*	6.5	*101*	6.4	*100*	6.7	*102*	6.1	*107*	-9.7
Bahrain	5.4	*111*	4.3	*126*	4.4	*124*	6.0	*110*	5.8	*108*	6.7
Latvia	6.4	*100*	5.8	*110*	5.1	*112*	5.9	*111*	5.5	*109*	-13.4
Estonia	7.1	*93*	6.5	*100*	5.8	*103*	5.8	*113*	5.5	*110*	-22.3
Maldives	4.2	*126*	4.1	*130*	3.9	*131*	4.8	*121*	5.4	*111*	31.3
Sudan	7.0	*95*	6.2	*104*	5.7	*104*	5.7	*114*	5.4	*112*	-22.5
Libyan Arab Jamahiriya	5.3	*114*	5.2	*118*	4.7	*118*	6.6	*103*	5.4	*113*	2.2
Barbados	5.5	*109*	5.8	*111*	5.3	*108*	5.8	*112*	5.4	*114*	-2.1
Guinea-Bissau	2.1	*152*	5.2	*117*	5.0	*114*	5.1	*117*	5.3	*115*	151.9
Comoros	6.1	*105*	5.8	*109*	5.4	*107*	5.5	*115*	5.2	*116*	-15.1
Aruba	7.4	*91*	7.5	*93*	7.5	*93*	5.1	*118*	5.1	*117*	-30.9
Bulgaria	6.2	*103*	5.6	*112*	4.5	*122*	4.8	*120*	5.1	*118*	-17.5
Gambia	4.9	*119*	6.1	*105*	4.8	*116*	4.7	*122*	5.0	*119*	1.1
Sierra Leone	5.8	*107*	6.5	*102*	5.1	*111*	5.1	*119*	4.7	*120*	-18.9
Iceland	4.7	*123*	4.9	*121*	4.8	*117*	4.7	*123*	4.7	*121*	0.0
Saint Vincent and the Grenadines	3.6	*134*	3.6	*135*	3.4	*135*	4.3	*126*	4.5	*122*	27.1
Seychelles	4.9	*120*	4.9	*120*	5.3	*110*	5.3	*116*	4.5	*123*	-8.0

Annex IV (continued)

	2004		2005		2006		2007		2008		% change
	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	LSCI	Rank	2008/ 2004
Vanuatu	3.9	*128*	4.5	*123*	4.4	*126*	4.3	*127*	4.4	*124*	11.3
Guyana	4.5	*124*	4.4	*125*	4.6	*120*	4.3	*129*	4.4	*125*	-4.0
Suriname	4.8	*121*	4.2	*129*	3.9	*132*	4.3	*128*	4.3	*126*	-10.7
Liberia	5.3	*113*	6.0	*107*	4.6	*121*	4.5	*124*	4.3	*127*	-19.6
Saint Lucia	3.7	*132*	3.7	*133*	3.4	*134*	4.2	*130*	4.2	*128*	14.9
Tonga	3.8	*131*	4.8	*122*	4.5	*123*	4.1	*133*	4.2	*129*	11.1
Faeroe Islands	4.2	*125*	4.4	*124*	4.4	*125*	4.5	*125*	4.2	*130*	-0.4
Grenada	2.3	*149*	2.5	*147*	3.4	*136*	4.1	*132*	4.2	*131*	82.6
Solomon Islands	3.6	*133*	4.3	*127*	4.0	*129*	4.1	*131*	4.2	*132*	14.8
Georgia	3.5	*137*	3.8	*132*	2.9	*143*	3.2	*141*	4.0	*133*	16.5
Equatorial Guinea	4.0	*127*	3.9	*131*	3.8	*133*	3.4	*138*	3.9	*134*	-4.6
Micronesia (Federated States of)	2.8	*144*	2.9	*144*	1.9	*155*	3.1	*142*	3.9	*135*	37.5
Antigua and Barbuda	2.3	*146*	2.6	*146*	2.4	*150*	3.8	*135*	3.8	*136*	63.8
Virgin Islands (U.S.)	1.8	*155*	3.0	*142*	3.2	*139*	3.8	*134*	3.8	*137*	115.3
Palau	1.0	*158*	1.0	*159*	1.9	*156*	3.1	*144*	3.8	*138*	264.1
Northern Mariana Islands	2.2	*151*	2.2	*153*	1.9	*157*	2.9	*150*	3.8	*139*	73.4
Brunei Darussalam	3.9	*129*	3.5	*136*	3.3	*137*	3.7	*136*	3.7	*140*	-5.9
Myanmar	3.1	*139*	2.5	*149*	2.5	*149*	3.1	*143*	3.6	*141*	16.4
Cape Verde	1.9	*153*	2.3	*151*	2.8	*146*	2.5	*154*	3.6	*142*	91.1
Cambodia	3.9	*130*	3.3	*140*	2.9	*144*	3.3	*140*	3.5	*143*	-10.8
Haiti	4.9	*118*	3.4	*137*	2.9	*145*	2.9	*149*	3.4	*144*	-29.9
Democratic Republic of the Congo	3.1	*142*	3.0	*141*	2.7	*147*	2.7	*151*	3.4	*145*	10.0
Eritrea	3.4	*138*	1.6	*155*	2.2	*154*	0.0	*162*	3.3	*146*	-2.9
Somalia	3.1	*140*	1.3	*158*	2.4	*151*	3.1	*147*	3.2	*147*	4.8
Qatar	2.6	*145*	4.2	*128*	3.9	*130*	3.6	*137*	3.2	*148*	21.7
Montenegro	2.9	*143*	2.9	*143*	3.0	*142*	3.0	*148*	3.2	*149*	9.6
Czech Republic	0.4	*161*	0.4	*161*	0.4	*161*	0.4	*161*	3.2	*150*	627.0
Marshall Islands	3.5	*136*	3.7	*134*	3.3	*138*	3.1	*145*	3.1	*151*	-12.5
Kiribati	3.1	*141*	3.3	*139*	3.1	*141*	3.1	*146*	3.1	*152*	-0.2
Switzerland	3.5	*135*	3.4	*138*	3.2	*140*	3.3	*139*	3.0	*153*	-14.6
Sao Tome and Principe	0.9	*159*	1.3	*157*	1.6	*159*	1.6	*159*	2.5	*154*	179.2
Belize	2.2	*150*	2.6	*145*	2.6	*148*	2.6	*152*	2.3	*155*	5.9
Dominica	2.3	*147*	2.5	*148*	2.3	*152*	2.4	*155*	2.3	*156*	-0.7
Greenland	2.3	*148*	2.3	*150*	2.3	*153*	2.3	*157*	2.3	*157*	-2.2
Albania	0.4	*162*	0.4	*162*	0.4	*162*	2.3	*156*	2.0	*158*	396.1
Tuvalu	na	*na*	na	*na*	na	*na*	na	*na*	1.8	*159*	na
Cayman Islands	1.9	*154*	2.2	*152*	1.8	*158*	1.8	*158*	1.8	*160*	-6.2
Bermuda	1.5	*156*	1.6	*156*	1.6	*160*	1.6	*160*	1.6	*161*	2.0
Iraq	1.4	*157*	1.6	*154*	4.1	*128*	2.6	*153*	1.2	*162*	-13.9
Paraguay	0.5	*160*	0.5	*160*	6.3	*101*	6.3	*107*	0.7	*163*	23.4

Source: UNCTAD, calculated from data of Containerisation International Online, www.ci-online.co.uk.