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NOTE

The *Review of Maritime Transport* is a recurrent publication prepared by the UNCTAD secretariat since 1968 with the aim of fostering the transparency of maritime markets and analysing relevant developments. Any factual or editorial corrections that may prove necessary, based on comments made by Governments, will be reflected in a corrigendum to be issued subsequently.

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ABBREVIATIONS AND EXPLANATORY NOTES

Abbreviations

AEO	Authorized Economic Operator
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AU	African Union
BAF	bunker adjustment factor
BCI	Baltic Exchange Capesize Index
bcm	billion cubic metres
BDI	Baltic Exchange Dry Index
bpd	barrels per day
BRIC	Brazil, Russian Federation, India and China
BWM Convention	International Convention for the Control and Management of Ships' Ballast Water and Sediments
CAF	currency adjustment factor
cbm	cubic metres
CBP	United States Customs and Border Protection
c.i.f.	cost, insurance and freight
CIS	Commonwealth of Independent States
CO_2	carbon dioxide
COMESA	Common Market for Eastern and Southern Africa
COMESA-CD	COMESA Customs Document
CSR	Special Register of Ships and Shipping Companies of the Canary Islands
DIS	Danish International Register of Shipping
dwt	deadweight tons
EAC	East African Community
ECA	Economic Commission for Africa
ECOWAS	Economic Community of West African States
EEDI	Energy Efficiency Design Index
EEOI	Energy Efficiency Operational Indicator
EIA	Energy Information Administration
EORI	Economic Operator Registration and Identification
ERF	European Union Road Federation
ESC	European Shippers' Council
EU	European Union
FEU	40-foot equivalent unit
FIS	French International Ship Register
FNTR	Fédération Nationale des Transports Routiers
f.o.b.	free on board
FPSO	floating production storage and offloading
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GHG	greenhouse gas
GT	gross tons
ICC	International Chamber of Commerce
ICIR	initial cash investment return
ICS	International Chamber of Shipping

ICT	information and communication technology
ICTSI	International Container Terminal Services Inc.
IDE	International Data Exchange
IEA	International Energy Agency
IICL	Institute of International Container Loss
ILO	International Labour Organization
IMB	International Maritime Bureau
IMF	International Monetary Fund
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
IPCC	Intergovernmental Panel on Climate Change
IRU	International Road Transport Union
ISO	International Organization for Standardization
ISPS Code	International Ship and Port Facility Security Code
ITO	international terminal operator
LDC	least developed country
ldt	light displacement ton
LLDC	landlocked developing country
LNG	liquefied natural gas
LOA	length overall
LPG	liquefied petroleum gas
LRIT	Long-Range Identification and Tracking system
LSCI	Liner Shipping Connectivity Index
mbd	million barrels per day
MCCC	Modernized Community Customs Code
MDG	Millennium Development Goal
MEPC	Marine Environment Protection Committee
mmt/y	million metric tons per year
MRA	mutual recognition agreement
MSC	Maritime Safety Committee (IMO)
mtoe	million tons oil equivalent
n.a.	not available
NAFTA	North American Free Trade Agreement
n.e.s.	not elsewhere specified
NGTF	Negotiating Group on Trade Facilitation
NIS	Norwegian International Ship Register
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of the Petroleum Exporting Countries
ppm	parts per million
SACU	Southern Africa Customs Union
SAD	South African document
SADC	Southern African Development Community
SDRs	Special Drawing Rights
SDT	special and differential treatment
SEMP	Ship Efficiency Management Plan
SIDS	small island developing State
SITC	Standard International Trade Classification
SMEs	small and medium-sized enterprises
SOLAS Convention	International Convention for the Safety of Life at Sea

TEU	20-foot equivalent unit
THC	terminal handling charges
TNC	transnational corporation
TRIE	Transit Routier Inter-Etats
UASC	United Arab Shipping Company
ULCC	ultra-large crude carrier
UNCITRAL	United Nations Commission on International Trade Law
UN-DESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNODC	United Nations Office on Drugs and Crime
VLCC	very large crude carrier
VLOC	very large ore carrier
VLOO	very large ore oiler
WAEMU	West African Economic and Monetary Union
WCO	World Customs Organization
WEF	World Economic Forum
WMU	World Maritime University
WS	Worldscale
WTO	World Trade Organization

Explanatory notes

- The Review of Maritime Transport 2009 covers data and events from January 2008 until June 2009. Where possible every effort has been made to reflect more recent developments.
- 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 terms *countries* and *economies* refer to countries, territories or areas.
- Since 2007, the presentation 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, United Nations Department of Economic and Social Affairs, 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-2007 editions of the *Review of Maritime Transport* 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
Container ships	
Post-Panamax Container ship	moulded breadth >32.31m
Panamax Container ship	moulded breadth < 32.31m

Source: Lloyd's Register – Fairplay.

EXECUTIVE SUMMARY

Against the background of a global financial crisis and economic downturn, growth in seaborne trade continued, albeit at a slower rate.

The year 2008 marked a major turning point in the history of the world economy and trade. Growth in the world economy slowed abruptly in the last part of 2008, with the deepening of the global financial crisis. Growth in developing economies and countries with economies in transition has turned out to be less resilient than expected.

In tandem with the global economic downturn and reduced trade, growth in international seaborne trade decelerated in 2008, expanding by 3.6 per cent as compared with 4.5 per cent in 2007. The volume of international seaborne trade in 2008 was estimated at 8.17 billion tons. Reflecting a sharp decline in demand for consumption goods, as well as a fall in industrial production in major economies and reduced energy demand, the deceleration in seaborne volumes affected all shipping sectors.

Existing forecasts suggest that the outlook for seaborne trade is uncertain and that some challenging times lie ahead for shipping and international seaborne trade. These challenges are further compounded by other developments, including maritime security at sea and the need to address the climate change challenge.

While demand fell, the supply of new vessels continued to grow.

At the beginning of 2009, the world merchant fleet reached 1.19 billion deadweight tons, a year-on-year growth of 6.7 per cent compared to January 2008. This growth was the result of vessel orders placed before the financial crisis, when the industry was still expecting continuing high growth rates in demand – which did not materialize (see chapter 1). As the world's shipping capacity continues to increase even during the current economic downturn, the industry finds itself confronted with a surge of oversupply (see chapter 3) and tumbling charter and freight rates (see chapter 4).

The demolition of existing tonnage is not enough to compensate for the downturn in demand and the increase in supply.

Since the beginning of the economic crisis, numerous orders at the world's shipyards have been cancelled. Shipbuilders have been spending more time on renegotiating existing contracts than on receiving new enquiries or orders. Although new orders for most vessel types have practically come to a standstill, vessels continue to be delivered by the world's shipyards, especially in the dry bulk segment. Even without the current economic crisis, the tonnage that entered the market in recent years would have led to an oversupply of tonnage and a decline in vessel prices. Prices for scrap metal in 2009 remain very low when compared to early 2008, and many vessel owners have preferred to hold on and lay off their ships, hoping for better times to come.

As a consequence of falling demand and increased supply, freight rates have fallen from their 2008 highs.

The beginning of 2008 saw a continuation of the buoyant trend experienced in the preceding year in all sectors. However, by the start of the third quarter of 2008 things had taken a turn for the worse, as the global financial crisis began to affect demand. Trade volumes in the bulk cargo and liner sectors sustained dramatic declines, which continued for the remainder of the year and well into 2009. The tanker market fared slightly better during 2008 compared to other sectors, although by the middle of 2009 all sectors were experiencing similar declines.

By the end of 2008, the effects of the global economic crisis could be seen in all major transport modes.

World container port throughput grew by an estimated 4 per cent to reach 506 million TEUs in 2008. Mainland Chinese ports accounted for approximately 22.6 per cent of the total world container port throughput. However, 2008 marked a turning point for port throughput as well as traffic volumes on other modes of transport. In China, the Russian Federation and India, rail freight traffic measured in ton-kilometres showed growth rates of 3.5 per cent, 5 per cent

and 8.4 per cent respectively for 2008. However, rail freight traffic declined in Europe by 5 per cent. In both Europe and the United States, rail freight declined significantly in the early months of 2009 compared to the same period in the previous year.

2008 saw the United Nations General Assembly adopt the "Rotterdam Rules", a new international convention on contracts for the international carriage of goods wholly or partly by sea.

After many years of preparatory work carried out under the auspices of the United Nations Commission on International Trade Law (UNCITRAL), the United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea was adopted by the United Nations General Assembly in December 2008. The new Convention, which requires 20 ratifications to enter into force, was opened for signature at a special signing conference held in Rotterdam in September 2009 and will be known as the "Rotterdam Rules". Policymakers will now need to carefully consider the merits of the new Convention and decide whether it complies with their expectations, both in terms of its substantive provisions and in terms of its potential to provide international uniformity of laws in the field.

Since 2004, the World Trade Organization's Doha Development Round has been negotiating on trade facilitation matters.

A major part of the trade facilitation measures proposed so far focuses on the time needed for the release and clearance of goods taking into account not only the loss of time, but also the consequences in terms of possible damages, opportunities missed and increased costs affecting the competitiveness of the products. At the end of 2008 and the beginning of 2009, the overall pace of negotiations in the World Trade Organization's Negotiating Group on Trade Facilitation slowed down, with less time being devoted to review of the textual proposals, and comments made by delegations limited to oral interventions. This situation changed in the second half of 2009, when signs of a possible compromise on contentious issues of the Doha Round emerged, and delegates adopted an ambitious work plan for the period up until the ministerial conference scheduled for early December 2009. Delegations are now aiming at finalizing by that date a first draft text for a new WTO agreement on trade facilitation.

Key challenges for international cooperation and regulation include piracy, supply-chain security and climate change.

The great number of disturbing incidents of piracy and armed robbery against ships – particularly off the Somali coast and in the Gulf of Aden – have become an increasing concern not only for the maritime industry that is heavily affected by these incidents, but also for international organizations, including the International Maritime Organization (IMO) and the United Nations. Joint efforts are being made in various forums to find adequate responses to piracy. In the field of maritime and supply-chain security, efforts to implement and refine relevant legal instruments and standards are ongoing. Noteworthy environment-related developments include IMO's continued commitment to making progress in a number of areas, including in relation to reducing emissions of greenhouses gases from international shipping and in its work towards the establishment of a relevant global regime.

Despite the global financial crisis, Africa experienced strong growth in 2008. However, Africa's share of world trade remains at 2.7 per cent.

Every year, the Review of Maritime Transport gives attention to transport developments in a particular region. The focus in 2009 is on developments in Africa since 2006 when UNCTAD last reported on the region. Despite the global financial crisis, the region still experienced strong growth in 2008 (5.1 per cent), the top performers being the resource-rich countries. Africa's share of world trade remains at 2.7 per cent. Global port-operating companies have sought to expand along the main international African shipping routes, however in some countries, physical, legal, social and economic constraints have prevented them from doing so effectively. High numbers of cross-border documents, poor inland connections, security issues, excessive transaction costs and delays are common. This has serious consequences in the case of landlocked countries, whose dependence on transit countries complicates export and import processes, with the costs of imported freight estimated to be three to five times higher than the world average. In recent years, however, there has been a growing recognition of the need to improve port operations and inland connectivity in the region. Even when new investments are being considered in Africa, these could be affected by the global financial crisis.

Chapter 1

DEVELOPMENTS IN INTERNATIONAL SEABORNE TRADE

On the heels of the unfolding global financial crisis and economic downturn, growth in the world economy and in global merchandise exports decelerated in 2008, and is projected to decline in 2009. Reduced global production and demand, and the resulting lower levels of trade, have undermined growth in seaborne trade. Downside risks, including the adverse feedback loop between the financial sector and the real economy, make the outlook for seaborne trade uncertain. Climate change and the need to adopt an international regulatory regime for greenhouse gas emissions from international shipping are adding a further challenge to the maritime transport sector.

A. WORLD ECONOMIC SITUATION AND PROSPECTS

1. World economic growth[1]

The year 2008 marked a major turning point in the history of the world economy and trade. Growth in the world economy measured by gross domestic product (GDP) slowed abruptly in the last part of 2008, as the financial crisis that had started in the United States in 2007 deepened and entered a more severe phase.

Global GDP expanded by just 2.0 per cent, a much slower rate than the 3.7 per cent recorded in 2007, and below the annual average rate of 3.5 per cent recorded during the period 1994–2008. The overall picture was one of continuing growth in the first three quarters of 2008 with oil-exporting countries in particular benefiting from record high commodity prices, followed by faltering growth in late 2008 and in the first half of 2009 – first in developed regions and then spreading to developing economies and countries with economies in transition (table 1). World output in 2009 is projected to contract by 2.7 per cent, heralding the first contraction in global output since the 1930s. As demand for maritime transport is derived from economic activities and trade, the global economic downturn entails serious implications for the maritime transport sector and seaborne trade.

Global GDP expanded by just 2.0 per cent, a much slower rate than the 3.7 per cent recorded in 2007 ...

Developed economies are leading the global downturn, with most of their economies already in recession. As a group, developed economies achieved a meagre growth of 0.7 per cent in 2008. GDP grew by 1.1 per cent in the United States, and by less than 1 per cent in the European Union. Japan and Italy were the hardest hit, with their outputs falling by 0.6 per cent and 1.0 per cent respectively. Advanced economies are expected to shrink by 4.1 per cent in 2009.

Developing economies and countries with economies in transition have also felt the brunt of the downturn.

In 2008, developing economies expanded output by 5.4 per cent, down from 7.3 per cent in 2007. Although significantly reduced, compared with its double-digit growth rate of the past few years, China continued to lead, with its GDP growing by 9.0 per cent. Other major developing economies, including Brazil, India and South Africa, recorded positive growth, although at slower rates compared to the performance they achieved in

Table 1

World economic growth, 2006–2009 [a]

(annual percentage change)

Region/country [b]	2006	2007	2008 [c]	2009 [d]
WORLD	3.9	3.7	2.0	-2.7
Developed economies	2.8	2.5	0.7	-4.1
of which:				
United States	2.8	2.0	1.1	-3.0
Japan	2.0	2.4	-0.6	-6.5
European Union (27)	3.1	2.9	0.9	-4.6
of which:				
Germany	3.0	2.5	1.3	-6.1
France	2.4	2.1	0.7	-3.0
Italy	1.9	1.5	-1.0	-5.5
United Kingdom	2.9	3.1	0.7	-4.3
Developing economies	7.2	7.3	5.4	1.3
of which:				
China	11.1	11.4	9.0	7.8
India	9.7	9.0	7.3	5.0
Brazil	4.0	5.7	5.1	-0.8
South Africa	5.4	5.1	3.1	-1.8
Transition economies	7.5	8.4	5.4	-6.2
of which:				
Russian Federation	6.7	8.1	5.6	-8.0

Source: UNCTAD secretariat calculations, based on the United Nations Department of Economic and Social Affairs (UN-DESA), National Accounts Main Aggregates Database, and the World Economic Situation and Prospects (WESP) 2009: Update as of mid-2009; Organization for Economic Cooperation and Development (OECD), Economic Outlook No 85, Preliminary Edition, June, 2009, Economic Commission for Latin America and the Caribbean, Economic Survey of Latin America and the Caribbean 2008-2009, July, 2009; and national sources.

[a] Calculations for country aggregates are based on GDP at constant 2000 dollars.

[b] Regions and country groups correspond to those defined in the UNCTAD's *Trade and Development Report*, 2009

[c] Preliminary estimates.

[d] Forecast.

2007. In aggregate, developing economies are expected to grow marginally in 2009 (1.3 per cent), with some countries, including Brazil and South Africa, suffering GDP contractions (of -0.8 per cent and -1.8 per cent, respectively).

Countries with economies in transition are affected too, with growth slowing to 5.4 per cent in 2008, compared to a rate of 8.4 per cent in 2007. The 2009 outlook for these economies is bleak, with GDP expected to fall by 6.2 per cent for the entire group, and by 8.0 per cent for the Russian Federation.

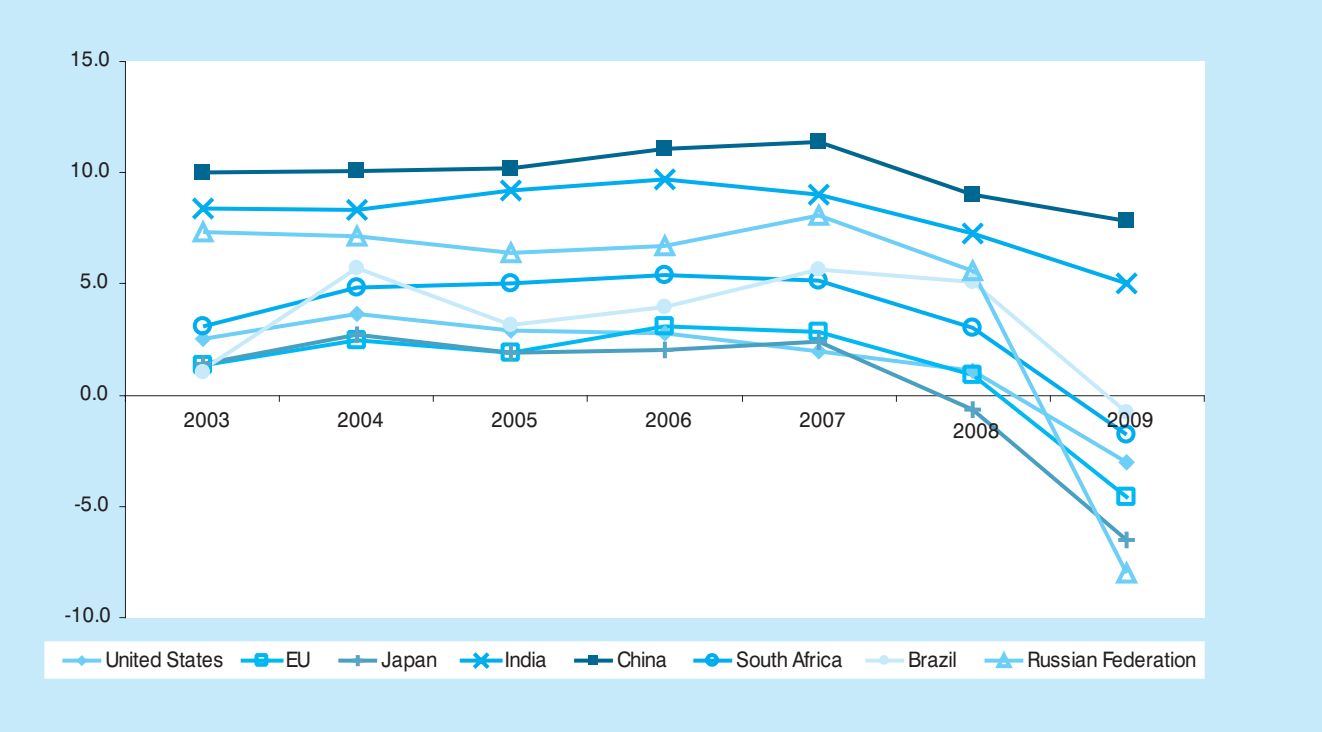
While the spillover of the downturn from developed to developing regions might have been slow, the contagion could not be prevented. China – the main engine of the global economic and trade expansion over recent years – could not insulate itself from the effects of the deteriorating economic situation when its major trading partners had already entered into recession. Growth in developing economies and countries with economies in transition has turned out to be less resilient than expected suggesting that there is no "decoupling" effect between the economies of developed and developing regions.

In an interdependent and globalized economy, developing economies and countries with economies in transition cannot be sheltered from the effects of a global downturn. The rapid spread of the economic downturn beyond advanced economies has been channelled – amongst other things – through financial and trade mechanisms: the credit crunch has made trade finance difficult and expensive, while global supply chains have acted as a conduit for the economic downturn. Therefore, the world is witnessing a broad, deep and synchronized downturn, which will be the first since the post-war era (see fig. 1 (a)).

Figure 1 (a)

World GDP growth, 2003–2009, selected countries

(annual percentage change)



Source: UNCTAD secretariat calculations, based on the United Nations Department of Economic and Social Affairs (UN-DESA), National Accounts Main Aggregates Database, and the World Economic Situation and Prospects (WESP) 2009: Update as of mid-2009; Organization for Economic Cooperation and Development (OECD), Economic Outlook No 85, Preliminary Edition, June, 2009, Economic Commission for Latin America and the Caribbean, Economic Survey of Latin America and the Caribbean 2008-2009, July, 2009; and national sources.

Developments affecting industrial production provide a good indicator of how severe the global downturn may be, and the extent to which demand for maritime transport services is being affected. Global industrial production dropped by 13 per cent in late 2008[2] and adversely affected demand for raw materials and energy. The Industrial Production Index of the Organization for Economic Cooperation and Development (OECD) dropped from 106.8 in 2007 to 104.9 in 2008. It fell significantly, to 98.7, over the last quarter of 2008, and this was down from 108.5, 107.4 and 105.1 registered during the first, second and third quarters respectively. By June 2009, the OECD Industrial Production Index had dropped further, standing at 91.3. Industrial production in emerging developing economies and countries with economies in transition – including Brazil, India and the Russian Federation – slowed too, albeit at a less dramatic pace than advanced economies. In 2008, industrial production in China increased on average by 17.6 per cent, up from 16.4 per cent recorded in 2007.[3] However, during the first eight months of 2009, industrial production in China was growing on average by 8.2 per cent, less than half the annual growth rate recorded in 2008.[4]

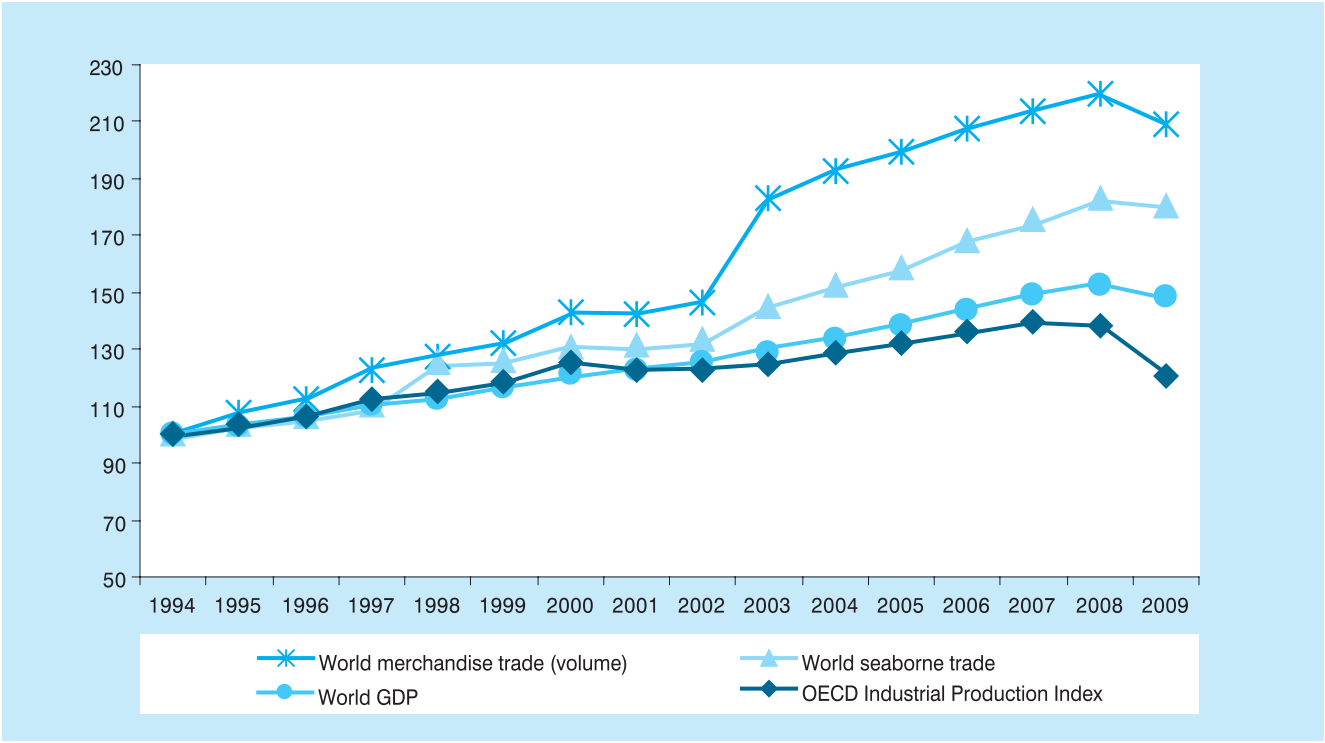
Highlighting the strong interdependence between industrial production, economic growth, global trade and maritime transport services, figure 1 (b) illustrates how these variables are moving in tandem, including falling in unison in 2008 and 2009. A contraction in industrial production reduces output and trade, and by extension, reduces demand for maritime transport services and depresses global seaborne trade.

A global economic recovery, and by extension, world merchandise trade and demand for maritime transport

Figure 1 (b)

Indices for world economic growth (GDP), OECD Industrial Production Index and world seaborne trade (volume), 1994–2009

(1994 = 100)



Source: UNCTAD secretariat on the basis of OECD Main Economic Indicators, June 2009; UNCTAD *Trade and Development Report 2009* and UNCTAD *Review of Maritime Transport*, various issues. The 2009 data for seaborne trade was derived by applying the growth rate forecasted by Fearnleys and Clarkson Research Services. The 2009 data for the volume of world merchandise trade was derived by applying the growth rate forecasted by WTO. Trade volumes data are derived from customs values deflated by standard unit values and adjusted price index for electronic goods.

services, will, to a large extent, depend on actions taken to reinvigorate economic activity, stimulate consumption and investment, and promote trade. Governments, individually, and as a group, including within the framework of the G-20,[5] are taking action and pledging to help overcome the crisis. Governments at the G-20 meeting held in London in April 2009 agreed on an additional $1.1 trillion support programme which includes, among other things, support for trade finance worth $250 billion. In addition, the Governments of some 40 economies – including Governments in developing regions, such as those of China and India – have taken policy measures, both monetary and fiscal (amounting to approximately $21 trillion) to stabilize their respective financial sectors and to stimulate their national economies.[6]

The IMF predicts – subject to the timely and effective implementation of the various policy and support measures adopted or planned – that the global economy will turn around in 2010, albeit at the sluggish rate of 1.9 per cent. It should be noted, however, that despite the various efforts to pull the world economy out of recession, credit conditions remain difficult, given the negative feedback loop between the financial sector and the real economy. Tighter credit conditions constrain investment and consumer spending, which, in turn, prevent economic recovery and undermine financial stability.

2. Merchandise trade[7]

Recent developments in international trade

The collapse in global demand has significantly impacted growth in world merchandise trade. In 2008, the volume of world merchandise exports grew by 2.0 per cent, four percentage points lower than 2007 (table 2). The magnitude of this deceleration is such that, unlike previous years, growth in export volumes did not outpace growth in global output. As shown in figure 2, trade has usually grown at a faster rate than GDP, with trade expanding two to three times faster. The multiplier effect is, to a large extent, the result of globalized production processes and trade in parts and components, greater economic integration, and the deepening and widening of global supply chains.[8]

In 2008, the volume of world merchandise exports grew by 2.0 per cent, four percentage points lower than 2007.

According to the World Trade Organization (WTO), monthly trade volumes of major developed and developing economies have been falling in tandem since September 2008. The global downturn that started in late 2008 is considered particularly severe, with recorded declines in trade being larger than in past slowdowns. The most commonly cited reason within the maritime industry for the speed with which the downturn has spread to global trade is the shortage of trade finance. In fact, banks stopped issuing letters of credit, and cargoes could not be lifted and trades executed. Developing economies' trade is particularly affected by the shortage of finance. Unmet demand for trade financing in developing economies is estimated to range between $100 billion and $300 billion annually.[9]

In 2008, North American export volumes grew by a meagre 1.5 per cent, while the European Union registered the slowest export growth of any region. The collapsing demand for imported goods, in particular consumer goods, resulted in both regions recording sharp falls in import volumes, -2.5 per cent for North America and -1.0 per cent for the European Union.

Developing economies and transition economies continued to drive growth in world merchandise trade, albeit at a slower pace than in 2007. Asia – led by China – expanded its export volumes by 4.5 per cent, a dramatic fall from the double-digit rate recorded in previous years. Growth in export volumes from China slowed to 8.5 per cent, less than half the growth rate recorded in 2007. Asia's imports – and those of China in particular – also grew at a slower pace than in 2007. Asia's openness to trade has made it more vulnerable to the recession, especially those countries that rely heavily on the production and export of manufactured goods, the demand for which has substantially dropped.

Other developing regions in Africa and the Middle East expanded their export and import volumes despite the relatively slower pace. Exporters of primary commodities, including oil and metals, maintained relatively high import volume levels, as they benefited from gains in the terms of trade as a result of price surges in the first half of 2008. Africa's export volumes grew by 3.0 per cent in 2008, compared to 4.5 per cent in 2007, while imports expanded by 13.0 per cent. Similarly, export volumes from the Middle East grew by 3.0 per cent (4.0 per cent in 2007), while imports grew by 10.0 per cent (14.0 per cent in 2007). Import volumes in Latin America expanded faster than in any other region. They increased at a double-digit rate (15.5 per cent), although at a slower pace than in 2007 and at a much

Table 2

Growth in the volume [a] of merchandise trade, by geographical region, 2006–2008

(percentages)

Exports			Countries/Regions	Imports		
2006	2007	2008		2006	2007	2008
8.5	6.0	2.0	**WORLD**	8.0	6.0	2.0
8.5	5.0	1.5	**North America**	6.0	2.0	-2.5
7.5	3.5	0.0	**European Union (27)**	7.0	3.5	-1.0
1.5	4.5	3.0	**Africa**	10.0	14.0	13.0
3.0	4.0	3.0	**Middle East**	5.5	14.0	10.0
4.0	3.0	1.5	**South and Central America[b]**	15.0	17.5	15.5
13.5	11.5	4.5	**Asia**	8.5	8.0	4.0
22.0	19.5	8.5	**China**	16.5	13.5	4.0
6.0	7.5	6.0	**Commonwealth of Independent States (CIS)**	20.5	20.0	15.0

Source: WTO press release: World trade 2008, prospects for 2009. March 2009.

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

[b] Includes the Caribbean.

faster pace than did exports (1.5 per cent as compared with 3.0 per cent in 2007).

The region with the fastest export volume growth and the second-highest import volume in 2008 was the Commonwealth of Independent States (CIS).[10] Export volumes expanded by 6.0 per cent as compared with 7.5 per cent in 2007, while imports grew by 15 per cent compared to 20 per cent in 2007.

Prospects for 2009 are rather gloomy. According to WTO, the volume of world exports is expected to fall by 10 per cent in 2009, the first drop since 1982 and the largest since the Second World War. The maritime transport industry is concerned that protectionist measures introduced in the face of the global economic downturn may hinder trade further, ultimately deepening the global recession.

Developed economies' trade is expected to contract the most, with exports falling by 14 per cent, while exports of developing economies are expected to drop by 7 per cent. Although faced with a relatively less dramatic export fall than in developed economies, developing economies are likely to be hit much harder as they rely much more on trade for their growth and development. For many developing economies, especially the most vulnerable and trade-dependent, a sharp decline in production, economic growth and trade constitutes a considerable setback to progress made to date in terms of alleviating poverty and attaining the Millennium Development Goals. The World Bank estimates that over 40 per cent of developing economies are highly exposed to the poverty effects of the crisis, and that in 2009, 55 million more people in developing economies will live below the poverty line than was expected before the crisis.

... growth in international seaborne trade continued albeit at the slower rate of 3.6 per cent in 2008 as compared with 4.5 per cent in 2007.

B. WORLD SEABORNE TRADE[11]

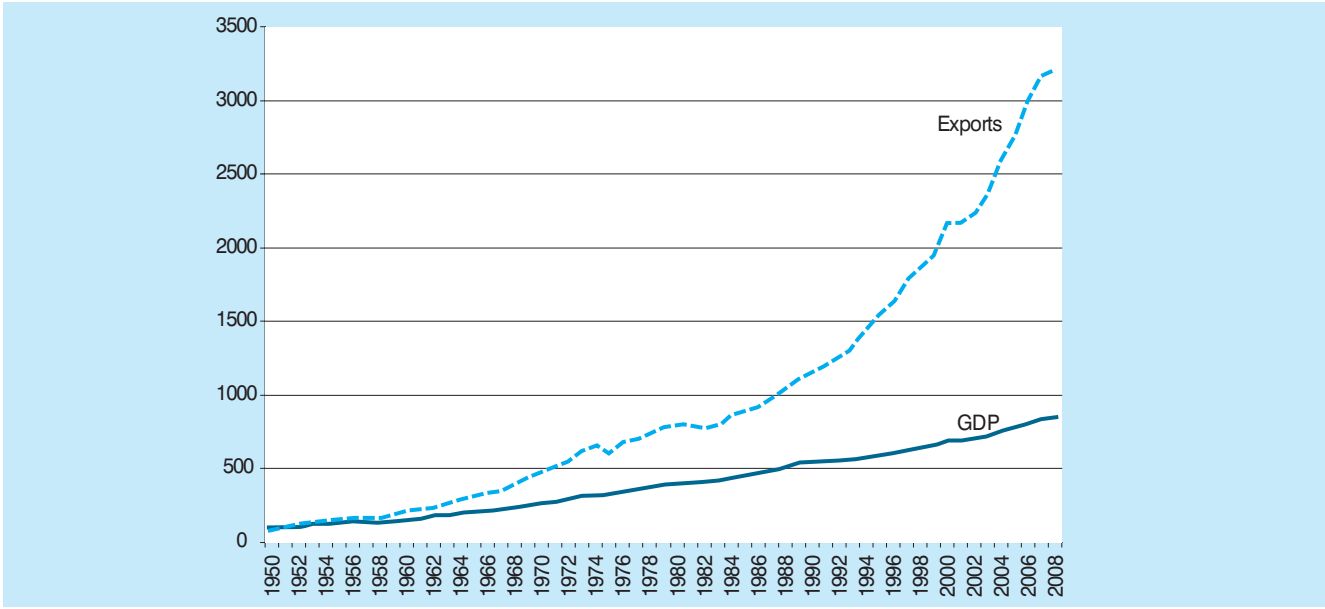
1. Overall seaborne trade

Following the global economic downturn and sharp decline in world merchandise trade in the last quarter of 2008, growth in international seaborne trade continued, albeit at the slower rate of 3.6 per cent in 2008 as compared with 4.5 per cent in 2007. UNCTAD estimates

Figure 2

Indices for world economic growth (GDP) and world merchandise exports (volume), selected years

(1950 = 100)



Source: UNCTAD, based on World Trade Organization, Table A1, Trade Statistics, 2008. Trade volumes data are derived from customs values deflated by standard unit values and adjusted price index for electronic goods.

the 2008 international seaborne trade at 8.17 billion tons of goods loaded, with dry cargo continuing to account for the largest share (66.3 per cent) (tables 3 and 4, and fig. 3).

Consistent with the past trend, major loading areas were located in developing regions (60.6 per cent), followed by developed economies (33.6 per cent) and countries with transition economies (5.9 per cent). Asia continued to dominate the picture, with a share of 40 per cent of total goods loaded, followed in descending order by the Americas, Europe, Africa and Oceania (fig. 4 (a)). As shown in figure 4 (b) on page 12, developing economies have consistently increased their share of global goods unloaded. Over the years, developing economies have increased their share of imports – including finished consumer goods, and also parts and components used as inputs in globalized production processes.

Reflecting a sharp decline in demand for consumption goods, as well as a fall in industrial production in major economies and reduced energy demand, especially in developed regions, the deceleration in seaborne volumes affected all shipping sectors. Growth in dry bulk trade is estimated at 4.7 per cent, as compared with 5.7 per cent in 2007. Accounting for about 16 per cent of world goods loaded in volume terms (tons), container trade recorded the sharpest deceleration, with a growth rate falling by more than half, from 11 per cent in 2007 to 4.7 per cent in 2008.[12] Measured in twenty-foot equivalent units (TEU), container trade volumes increased from 130 Million TEUs in 2007 to 137 Million TEUs in 2008.[13] Signs of reduced energy demand emerged in the oil trade sector, especially in developed regions. Together the volume of crude oil and products loaded grew by just 1.6 per cent, as compared with 2.1 per cent in 2007.

Some challenging times lie ahead for the shipping industry and international seaborne trade. Forecasts for seaborne trade have been marked downwards, with dry bulk – the mainstay of the boom experienced over the past few years – projected to fall sharply. Experts at Fearnleys, a leading shipbroker, expect world seaborne trade to fall by 1.4 per cent in 2009, before turning around and growing at a slower rate of 2.0 per cent in 2010. A similar outlook is projected for 2009 by Clarkson Shipping Services, another leading shipbroker. For 2009, Clarkson Research Services[14] are

Some challenging times lie ahead for the shipping industry and international seaborne trade.

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	2 648	1 888	3 009	7 545
2007	2 705	2 013	3 164	7 882
2008 [b]	2 749	2 097	3 322	8 168

Source: Estimated by the UNCTAD secretariat, on the basis of data supplied by reporting countries, ports and specialized sources. Data have been updated to the most recent available.

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

[b] Preliminary.

expecting dry cargo volumes to fall by 4.4 per cent, the first drop since 1983. Within the dry bulk trade, the largest decline is expected to affect Phosphate Rock volumes (-9 per cent), Bauxite and Alumina (-5.8 per cent), Coal (-2.3 per cent) and Grains (- 0.6 per cent). Iron ore volumes are expected to remain steady due in particular to continued high import volumes of China which are determined not only by China's consumption needs but also the prices negotiated for iron ore. Negotiated iron ore prices determine the balance between use of locally produced and imported iron ore.[15] Oil trade, including crude and oil products, is expected to remain at practically the same level as 2008. As for the future prospects for liquefied natural gas trade, it will very much depend on the global economic situation and energy demand as well as on the completion of a number of ongoing projects.

Since the early 2000s, the shipping industry and global seaborne trade expanded at healthy rates, benefiting in particular from the boom in trade driven by the economic expansion of emerging dynamic developing economies such as China and India. The buoyant markets that emerged, and the sustained record-high freight rates (see chapter 4 for more details) made the world almost forget the cyclical nature of shipping and its notorious volatility.[16] In common with other economic sectors – and even more so in view of the fact that demand for maritime transport services is derived from economic growth and the need to carry goods between producers and consumers as well as buyers and sellers – shipping is vulnerable to economic downturns. The vulnerability of shipping to the broader economic situation is illustrated by the significant contraction in trade volumes of the early-1980s recession, and also by the slowdown in the growth of global seaborne trade in the late 1990s when the Asian financial crisis erupted. At the same time, these precedents also underscore the ability of shipping and seaborne trade to rebound and recover from economic downturns and reduced trade.

Other developments affecting seaborne trade

The current preoccupation with the financial crisis and global recession should not play down concerns over other challenges that affect maritime transport and seaborne trade. These include, for example, security at sea, which is being challenged by a surge in piracy incidents in key strategic transit points such as the Gulf of Aden (see chapter 6 for more details). In 2008, the rise in

Table 4

World seaborne trade in 2006–2008, 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	7 545.0	1 783.0	865.2	4 896.9	7 720.1	1 833.2	895.0	4 991.9
	2007	7 882.0	1 813.9	891.1	5 177.1	8 061.3	1 995.0	906.2	5 160.1
	2008	8 168.0	1 834.1	915.3	5 418.6	8 180.7	1 891.4	910.0	5 379.4
Developed economies	2006	2 460.5	132.9	336.4	1 991.3	4 165.7	1 283.0	535.5	2 347.2
	2007	2 623.6	134.2	363.5	2 125.8	3 990.5	1 246.0	524.0	2 220.5
	2008	2 742.0	116.9	375.4	2 249.7	4 028.7	1 180.8	510.8	2 337.1
Transition economies	2006	410.3	123.1	41.3	245.9	70.6	5.6	3.1	61.9
	2007	417.9	124.4	39.9	253.7	76.8	7.3	3.5	66.0
	2008	480.2	133.4	33.9	312.8	88.1	6.3	4.5	77.4
Developing economies	2006	4 674.2	1 527.0	487.5	2 659.7	3 483.7	544.6	356.4	2 582.8
	2007	4 840.6	1 555.3	487.8	2 797.5	3 994.1	741.7	378.7	2 873.6
	2008	4 945.8	1 583.8	506.1	2 856.0	4 063.9	704.3	394.7	2 964.9
Africa	2006	704.0	353.8	86.0	264.2	357.5	41.1	39.9	276.5
	2007	719.6	362.5	81.8	275.3	376.6	45.5	45.5	285.6
	2008	718.7	358.8	83.7	276.2	377.7	42.2	45.2	290.3
America	2006	1 030.7	251.3	93.9	685.5	376.3	49.6	60.1	266.6
	2007	1 076.8	252.3	90.1	734.5	423.0	76.0	64.0	283.0
	2008	1 135.6	258.6	100.1	776.9	432.8	78.8	65.4	288.5
Asia	2006	2 932.7	917.6	307.5	1 707.7	2 737.0	453.9	249.6	2 033.5
	2007	3 037.0	936.0	315.7	1 785.3	3 181.0	620.2	262.2	2 298.6
	2008	3 084.2	961.8	322.1	1 800.3	3 239.7	583.2	277.0	2 379.4
Oceania	2006	6.8	4.4	0.1	2.4	12.9	0.0	6.7	6.2
	2007	7.1	4.5	0.1	2.5	13.5	0.0	7.0	6.5
	2008	7.3	4.6	0.1	2.5	13.8	0.0	7.1	6.6

(continued over)

piracy activities in the Gulf of Aden brought the issue of maritime security to the forefront of international debate. In addition to the direct impact on ships, crews and cargoes, and on the maritime industry and governments, piracy threatens global seaborne trade (over 80 per cent of international seaborne trade moving through the Gulf of Aden is with Europe),[17] and impacts on energy security and the environment. By hijacking large tankers, seizing their cargoes, and delaying or preventing their delivery, and by causing oil spills or other incidents causing environmental damage, piracy poses additional risks and costs to all. The implications entail increased military presence and operations in affected areas, the re-routing of ships to bypass the Gulf of Aden and the Suez Canal, higher insurance premiums, and increased costs associated with the hiring of security personnel and the installation of deterrent equipment.

Carriers can either avoid the piracy-ridden areas by re-routing their ships via the Cape of Good Hope, or accept additional risks and costs and continue to sail along the same lanes.[18] Re-routing via the Cape of Good Hope will likely affect the Egyptian authorities (e.g. foreign currency earnings, GDP), the Suez Canal Authority (e.g. operating earnings, unemployment), Mediterranean port authorities and terminals (e.g. reduced vessel calls and transhipments), and also industry and consumers because of additional costs. Based on 2007 data, the total annual round-trip costs of routing via the Suez Canal has been estimated at $25.7 billion, whereas

Table 4 (continued)

Country group	Year	Goods loaded				Goods unloaded			
		Total	Crude	Products	Dry cargo	Total	Crude	Products	Dry cargo
		Percentage share							
World	2006	100.0	23.6	11.5	64.9	100.0	23.8	11.6	64.7
	2007	100.0	23.0	11.3	65.7	100.0	24.8	11.2	64.0
	2008	100.0	22.5	11.2	66.3	100.0	23.1	11.1	65.8
Developed economies	2006	32.6	7.5	38.9	40.7	54.0	70.0	59.8	47.0
	2007	33.3	7.4	40.8	41.1	49.5	62.5	57.8	43.0
	2008	33.6	6.4	41.0	41.5	49.3	62.4	56.1	43.5
Transition economies	2006	5.4	6.9	4.8	5.0	0.9	0.3	0.4	1.2
	2007	5.3	6.9	4.5	4.9	1.0	0.4	0.4	1.3
	2008	5.9	7.3	3.7	5.8	1.1	0.3	0.5	1.4
Developing economies	2006	62.0	85.7	56.3	54.3	45.1	29.7	39.8	51.7
	2007	61.4	85.7	54.7	54.0	49.6	37.2	41.8	55.7
	2008	60.6	86.4	55.3	52.7	49.7	37.2	43.4	55.1
Africa	2006	9.3	19.8	9.9	5.4	4.6	2.2	4.5	5.5
	2007	9.1	19.8	9.2	5.3	4.7	2.3	5.0	5.5
	2008	8.8	19.6	9.2	5.1	4.6	2.2	5.0	5.4
America	2006	13.7	14.1	10.9	14.0	4.9	2.7	6.7	5.3
	2007	13.7	13.9	10.1	14.2	5.3	3.8	7.1	5.5
	2008	13.9	14.1	10.9	14.3	5.3	4.2	7.2	5.4
Asia	2006	38.9	51.5	35.5	34.9	35.5	24.8	27.9	40.7
	2007	38.5	51.6	35.4	34.5	39.5	31.1	28.9	44.6
	2008	37.8	52.4	35.2	33.2	39.6	30.8	30.4	44.2
Oceania	2006	0.1	0.2	0.0	0.1	0.2	0.0	0.8	0.1
	2007	0.1	0.3	0.0	0.1	0.2	0.0	0.8	0.1
	2008	0.1	0.3	0.0	0.1	0.2	0.0	0.8	0.1

Source: Estimated by the UNCTAD secretariat, on the basis of data supplied by reporting countries, ports and specialized sources. Data have been updated to the most recent available.

costs – including inventory costs of cargo – when ships are routed via the Cape of Good Hope are estimated at $32.2 billion.[19] Taking into account all cost factors, it was estimated that re-routing 33 per cent of cargo via the Cape would cost shipowners an additional $7.5 billion per annum.[20] These costs will ultimately be passed on to shippers and consumers.

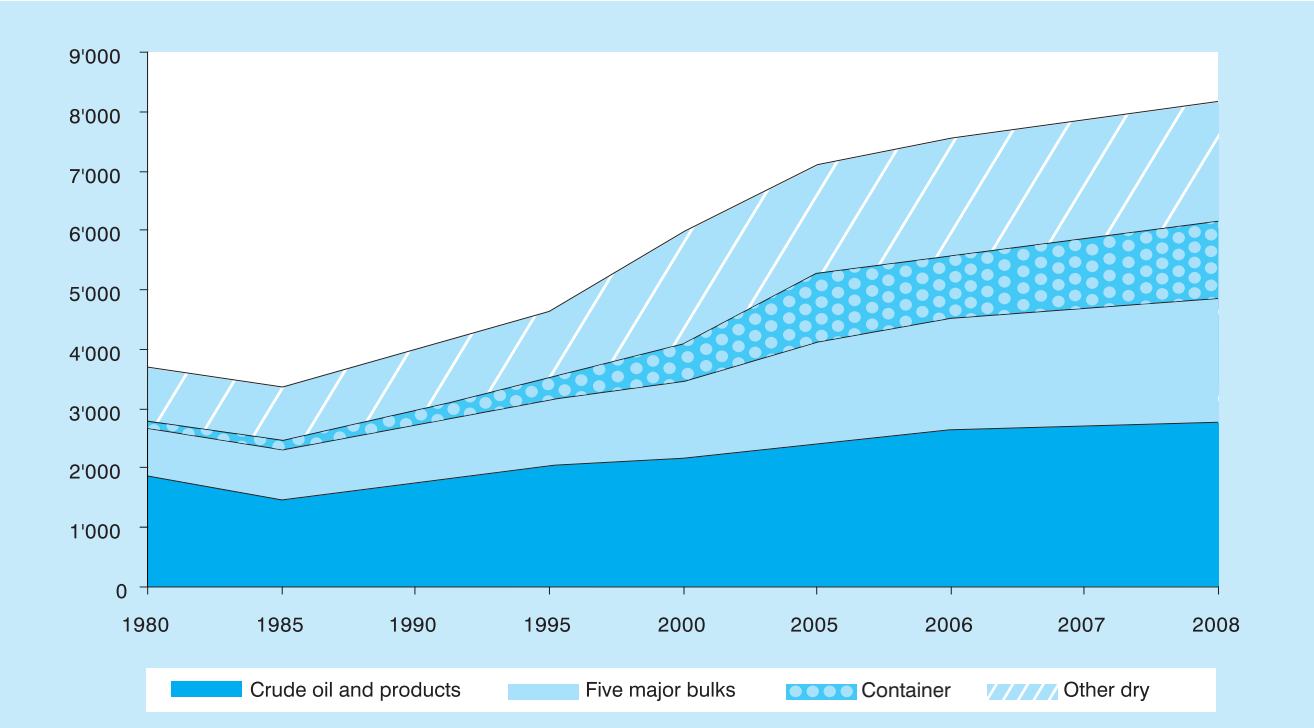
Independently of the piracy concerns, the confluence of other factors, including the global economic downturn, the fall in oil prices and, by extension, in fuel costs, as well as the decline in trade volumes, have already resulted in large containerships being re-routed via the Cape of Good Hope. For example, Maersk Line's AE7 service has been routed via the Cape on its eastbound leg to Asia. CMA CGM and China Shipping Container Line have taken similar action with a joint service.[21] While taking this longer route leads to greater fuel consumption and adds another 7 to 10 days as ships continue to reduce speed, lines were considering it more economical. However, as bunker fuel prices started to increase in mid-2008,[22] the decision to divert various ships around the Cape of Good Hope was being revisited and the policy of re-routing to the Cape of Good Hope was being reversed.[23]

Ships that continue to transit via the Gulf of Aden and the Suez Canal have to purchase a war risk insurance coverage at $20,000 per ship per voyage (excluding injury, liability and ransom coverage), as compared with the $500 required a year ago to purchase additional

Figure 3

International seaborne trade, selected years

(millions of tons loaded)



Source: *Review of Maritime Transport*, various issues. Data for container trade based on Clarkson Research Services, Shipping Review Database, Spring 2009.

insurance coverage.[24] Overall, it is estimated that the increased cost of war risk insurance premiums for the 20,000 ships passing through the Gulf of Aden could reach as much as $400 million.[25]

In addition to security at sea, shipping and seaborne trade are affected by developments pertaining to a number of other intertwined issues, namely energy security, energy prices and bunker fuel costs, as well as climate change. The climate change challenge, in particular, entails critical implications for shipping and trade in view of the current negotiations under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). Set to conclude in December 2009, these negotiations aim to adopt a successor agreement to the Kyoto Protocol. Such an agreement is expected to include a regulatory regime for greenhouse gas emissions from international shipping. No doubt, any such instrument will affect the maritime transport industry and international seaborne trade (see section D).

2. World shipments by country groups

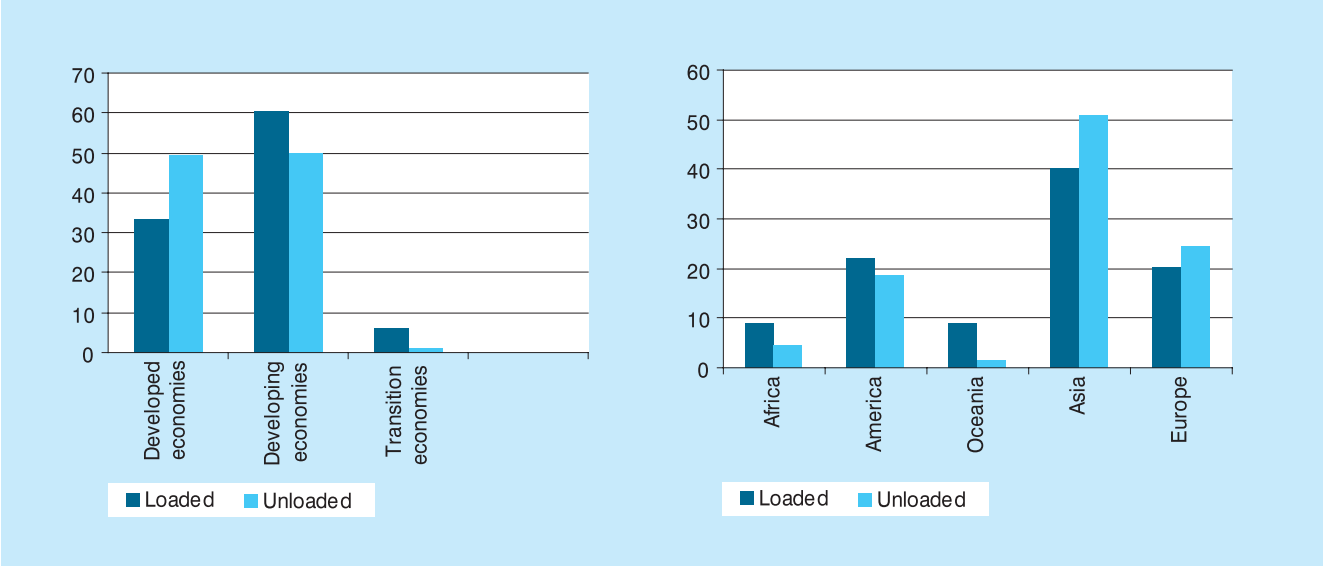
Developed economies

In 2008, developed economies accounted for 33.6 per cent of global goods loaded. Europe accounted for the lion's share of this total, with 43.3 per cent, followed by Australia and New Zealand (26.3 per cent), North America (24.1 per cent) and Israel and Japan (6.3 per cent). Dry cargo remained the mainstay of developed regions' exports. Developed economies accounted for 49.3 per cent of all goods unloaded at ports globally. Goods unloaded in European ports accounted for 47.7 per cent of all goods unloaded globally. The next-largest importer of goods by sea was North America (27.2 per cent), followed by Australia and New Zealand (22.5 per cent), and finally by Israel and Japan (2.6 per cent). More than half the goods unloaded at developed economies' ports were made of dry cargo, with crude oil imports accounting for a little less than one third.

Figure 4 (a)

World seaborne trade, by country group and region, 2008

(percentage share in tonnage)

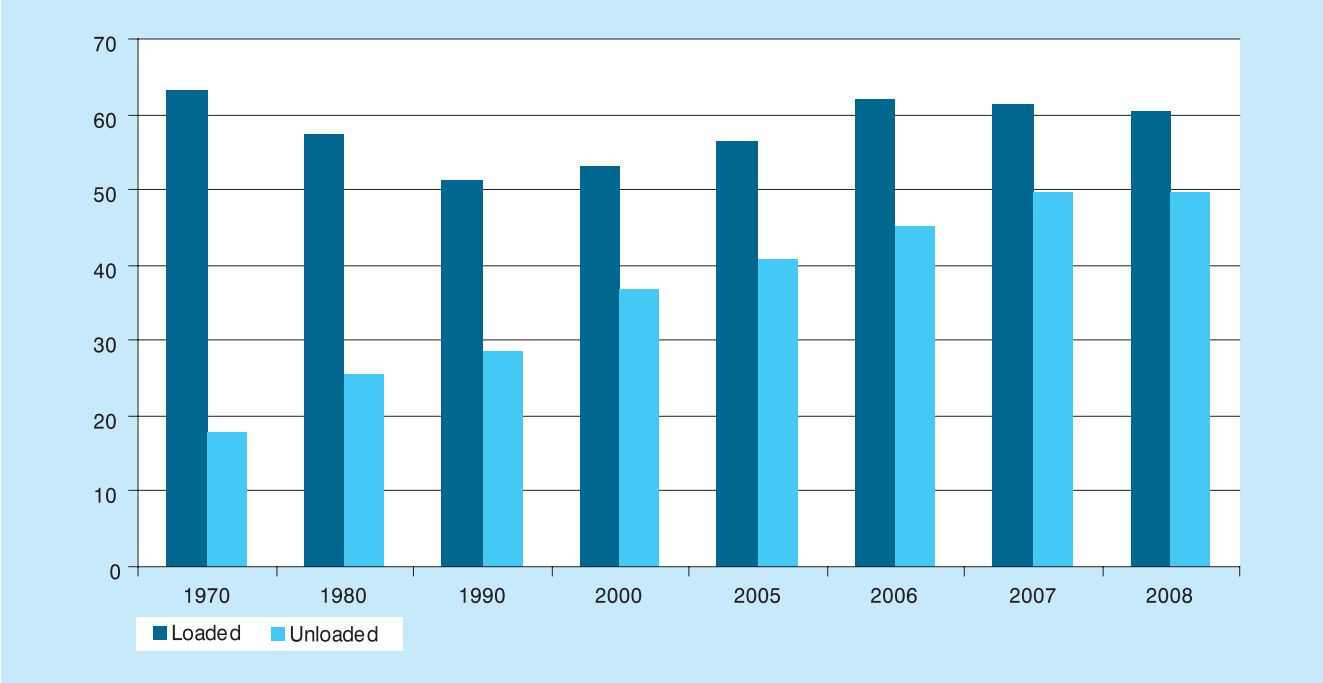


Source: Compiled by the UNCTAD secretariat, on the basis of data supplied by reporting countries, ports and specialized sources.

Figure 4 (b)

Developing countries' seaborne trade, selected years

(percentage share in tonnage)



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

Developing economies

In 2008, 60.6 per cent of goods loaded in the world originated in developing regions. A total of 49.7 per cent of global seaborne imports were received at developing economies' ports (see fig. 4 (b)). In 2008, over 86 per cent of crude oil exported by sea globally and 55.3 per cent of total world exports of petroleum products originated in developing economies. In terms of goods unloaded, ports in developing economies accounted for 55.1 per cent of world dry cargo imports, 43.4 per cent of world petroleum products, and 37.2 per cent of crude oil. Developing Asia continues to account for the largest share of developing economies' seaborne trade. Transition economies accounted for 5.9 per cent of world goods loaded and 1.1 per cent of world goods unloaded. Crude oil shipments loaded at their ports are estimated to have reached 7.3 per cent of total world oil loaded, reflecting, in particular, increasing oil exports from the CIS.

3. Demand for shipping services

Demand for maritime transport services is more adequately expressed in ton-miles, as this reflects the evolution of both the cargo volumes as well as the distances travelled and the geographical distribution of suppliers and consumers and buyers and sellers. As indicated in table 5, and based on estimates by Fearnleys, world seaborne trade measured in ton-miles amounted to 32,746 billion ton-miles in 2008. This represents an increase of 4.2 per cent over the previous year, a rate equivalent to the Fearnleys estimated growth rate for seaborne trade measured in tons.

In 2008, dry cargo ton-miles increased by 5.5 per cent, up from 5.3 per cent recorded in 2007. Ton-miles for the five major dry bulks slowed down, increasing only by 5.0 per cent – down from a 7.0 per cent increase in 2007. For the remaining dry cargoes (minor bulks and liner cargoes), ton-miles expanded by 6.0 per cent, reflecting mainly growth in volumes.

The new geography of trade (e.g. South–South trade, changes in the composition of trade, and a larger share of trade in parts and components) and deeper international economic integration are to some extent reflected in the figures featured in table 5. Ton-miles increased by a factor of three between 1970 and 2000, and expanded by 43 per cent between 2000 and 2008. Rapid growth in world ton-miles partly reflects the growing importance of some dynamic emerging developing economies, such as China and India. Industrialization in these economies, their fast-growing demand for raw materials required for industrial production, and their desire to diversify sources of supply have led these economies to tap into resources found in distant locations such as Latin America and Africa. In addition to the world economic and trade situation and prospects, the outlook for ton-miles will also depend on policies and measures affecting the composition and direction of trade flows (e.g. measures to promote energy security by switching to alternative energies, promoting domestic production over imports, and climate-change action favouring sourcing from shorter distances or switching to cleaner fuel sources etc.). Growth in world ton-miles will also likely be influenced by the development stage of economies. Some fast-growing developing regions will likely become much less dependent on the industrial or agricultural sectors. Consumption needs in some economies may evolve to reflect higher incomes and more sophisticated consumption preferences. These structural changes are likely to affect demand for maritime transport services and maritime transport activity measured in ton-miles.

C. SECTORS OF WORLD SEABORNE TRADE

1. Seaborne trade in crude oil and petroleum products[26]

General developments affecting oil seaborne trade

In 2008, the oil seaborne trade was particularly affected by developments in energy prices and markets, by the world economic situation, and by the rising profile of environmental considerations, including global climate change.

For the first time since the 1980s, global oil demand fell in the third quarter of 2008, as a result of reduced demand in developed economies, especially in Japan, and in the United States which saw its biggest fall since 1982. The economic downturn dampened these economies' demand for energy, owing to a reduction in production, manufacturing and consumer demand for goods.

In 2008, energy consumption in developing economies and countries with economies in transition continued to grow, although at a slower pace, with consumption among exporting regions in the Middle East and Africa remaining robust. While the outlook for 2009 and beyond will depend on the extent and duration of the economic

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	1 029	7 290	1 978	1 849	1 073	5 259	3 891	16 440
2000	8 180	1 319	9 499	2 545	2 509	1 244	6 638	6 790	22 927
2001	8 074	1 345	9 419	2 575	2 552	1 322	6 782	6 930	23 131
2002	7 848	1 394	9 898	2 731	2 549	1 241	6 879	7 395	23 516
2003	8 390	1 460	9 850	3 035	2 810	1 273	7 118	7 810	25 124
2004	8 795	1 545	10 340	3 444	2 960	1 350	9 521	8 335	26 814
2005	8 875	1 652	10 527	3 918	3 113	1 686	9 119	8 730	28 376
2006	8 983	1 758	10 741	4 192	3 540	1 822	9 976	9 341	30 058
2007	9 214	1 870	11 084	4 544	3 778	1 927	10 676	9 665	31 425
2008	9 300	1 992	11 292	4 849	3 905	2 029	11 209	10 245	32 746

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.

downturn and financial crisis, the International Energy Agency (IEA) expects oil demand to fall by 2.4 million barrels per day (mbd) in 2009.

In 2008, global oil supply was not constrained, and remained above 2007 levels with production growth exceeding consumption growth due to increased production by the Organization of Petroleum Exporting Countries (OPEC). Increased production in OPEC countries helped offset the fall in non-OPEC production, namely from Mexico and the North Sea.

In addition to developments affecting oil supply and demand, oil prices fluctuated significantly throughout 2008, declining sharply before fixing at a much lower level with the abrupt eruption of the global financial and economic crises. After rising steadily throughout 2007, oil prices, as illustrated by Brent spot prices,[27] surpassed the $143 per barrel (pb) mark in July 2008, before crashing to a low of $33.73 pb in December 2008, trending upwards again in the first half of 2009 and hovering around $69 pb in September 2009. Brent spot prices increased by over 147 per cent between January 2007 and July 2008, and then fell by 70 per cent between July and December 2008. Rising oil prices reflected the tight balance between supply and demand and the effect of increased speculation. Despite oil production cuts announced by OPEC in October 2008, crude oil prices continued to fall, with average crude oil prices for 2008 nevertheless remaining higher than in 2007. Annual oil prices increased for the seventh consecutive year, a first in the nearly 150-year history of the oil industry. Combined with the economic slowdown, the relatively higher average oil prices implied higher import bills, which contributed to keeping oil demand flat in 2008. Prices for natural gas and coal followed similar trajectories. During 2008, all types of primary energy saw their average prices increase significantly.

With the collapse in energy prices in the last part of 2008, it must be taken into consideration that low oil prices have the potential to provide disincentives to undertake the much needed investments in energy-related infrastructure and technology, and in alternative energy. Markedly low energy prices discourage investment in exploration and production, especially in the context of the steady rise in the extraction and processing costs associated with reservoir characteristics and

increasingly remote or difficult-to-access discoveries. Environmental considerations also often add to the end production cost. Scaling up investments in these areas is considered crucial to address the triple challenge of meeting energy needs, environmental sustainability, and economic growth and development. The *International Energy Outlook 2009* of the United States Energy Information Administration projects the world market energy consumption to increase by 44 per cent between 2006 and 2030[28] (slower than the growth projected by the IEA's *World Energy Outlook 2008*). Total world energy use is projected to grow by 17 per cent between 2006 and 2015, and by about 23 per cent between 2015 and 2030, with non-OECD economies accounting for the largest share of the growth. Liquids are expected to remain the world's dominant energy source, given their importance for transportation. World consumption of liquids and other petroleum is forecast to grow from 85 mbd in 2006 and 107 mbd in 2030, with unconventional liquids making up about 13 per cent of total liquid production.

As economic recovery is anticipated to re-emerge in 2010,[29] all countries are expected to resume their appetite for energy. However, the speed, scale and order of this recovery are difficult to predict with certainty, making future energy projections a difficult task. The IEA predicts that to meet the projected global demand in 2030, about $26 trillion of infrastructure-related investments (e.g. offshore rigs, pipelines, refineries and pump units) will be needed. Given the current worldwide economic and financial crises, the IEA also predicts that a significant investment decline in the global energy sector will occur in 2009. Investment in oil and gas exploration is expected to slide by 21 per cent or $100 billion in 2009, as compared with 2008.[30] As oil prices do not cover production costs, new exploration projects are being cancelled. With fossil fuels being finite and increasingly depleted, and with world economic growth expected to pick up in 2010, oil prices have the potential to surge again and disrupt the supply and demand balance.

The opportunity offered by the various stimulus packages, and the so-called Global Green New Deal spearheaded by the United Nations Environment Programme (UNEP) together with other United Nations organizations, is one of the initiatives that could provide certain options out of the current dilemma.[31] The Global Green New Deal also has the potential to help reshape the future landscape of oil supply and demand, as well as its trade and transport. The Global Green New Deal in particular aims to revive the international economy and forge a new global economic development that is environmentally sustainable and supportive of the achievement of the Millennium Development Goals.

An important consideration in any debate on energy security and environmental sustainability is the potential for renewable energy to supplement and/or replace finite fossil-fuel sources. The renewable energy sectors continued to grow, despite the global economic downturn. Projects continued to progress and much economic stimulus legislation included components for supporting renewable energy. Development assistance for renewables in developing economies expanded, reaching about $2 billion in 2008. Many forms of policy support measures, such as subsidy programmes and new laws and policies were adopted (e.g. in Australia, Brazil, Chile, China, Egypt, Japan, Luxembourg, Mexico, the Netherlands, South Africa, the Syrian Arab Republic, Uganda and the United States).[32] Annual renewable energy investment increased by a factor of four since 2004, to reach $120 billion in 2008. Solar photovoltaic capacity increased sixfold, while wind power capacity increased 250 per cent, and total power capacity from renewables increased 75 per cent, including significant gains in small hydro, geothermal, and biomass power generation. The United States became the leader in new capacity investment, with $24 billion invested, or 20 per cent of total global investment, and overtook Germany, the long-time wind power capacity leader. For the fifth consecutive year China doubled its wind capacity, moving up the ranks to become fourth in the world. Developing economies, particularly India and China, are increasingly playing a major role in both the manufacture and installation of renewable energy.[33]

Oil production and consumption

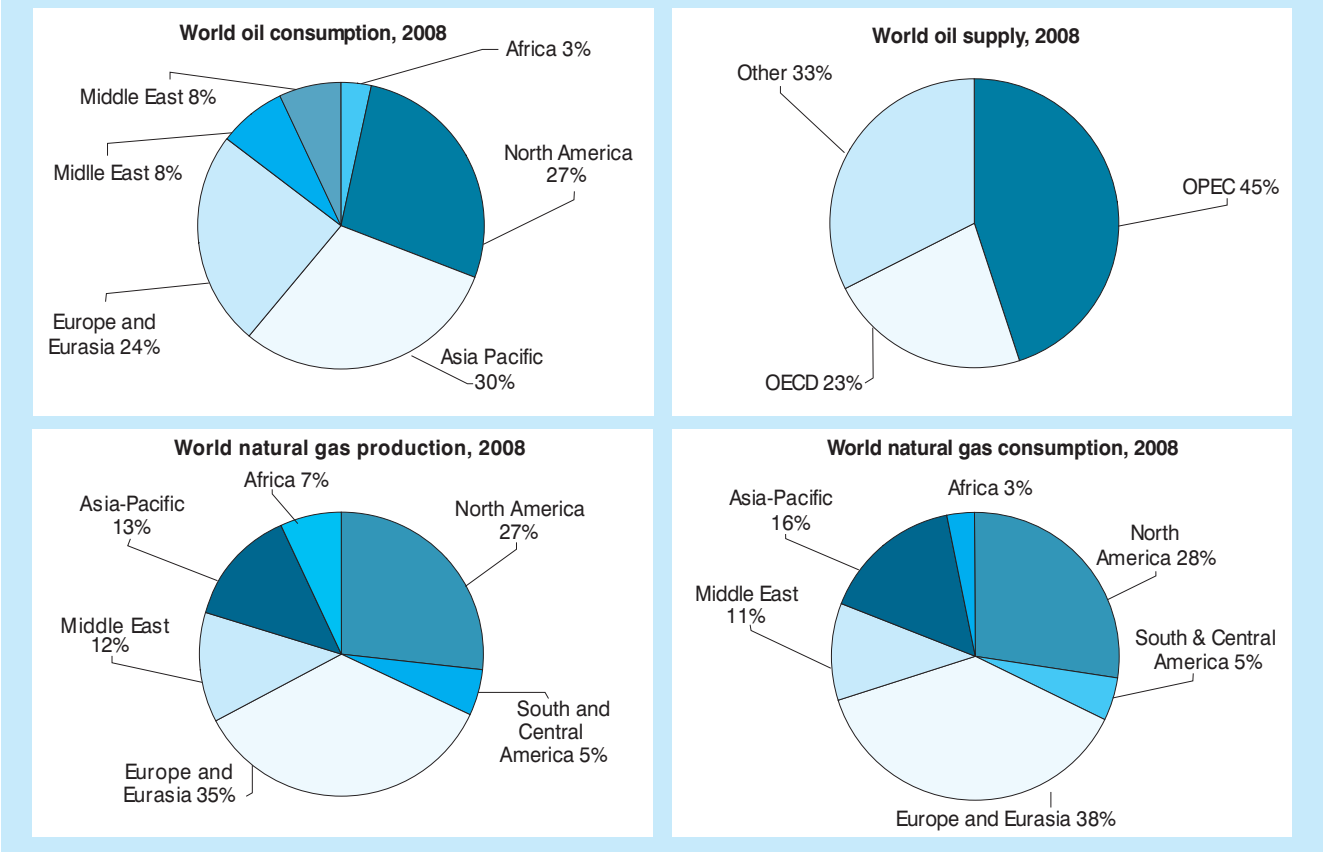
In 2008, global oil production[34] increased by 0.4 per cent (380,000 barrels per day) to reach 81.8 mbd. Oil supply is concentrated in Western Asia, certain transition economies, North America and Africa. In 2008, production in OECD countries fell by 4.0 per cent, with a share of 22.5 per cent of global oil production. OPEC countries increased production by 2.7 per cent, raising their share in global oil production from 43.8 per cent in 2007 to 44.9 per cent in 2008 (see fig. 5).

For the first time since 1983, world oil demand declined by 0.6 per cent to reach 84.4 mbd, the largest fall since 1982. Led by a drop of 6.4 per cent in the United States, consumption in OECD countries fell by 3.2 per cent to 47.3 mbd, a third consecutive year of decline. Outside

Figure 5

Oil and natural gas: major producers and consumers, 2008

(percentages)



Source: UNCTAD secretariat, on the basis of data published by British Petroleum in the *BP Statistical Review of World Energy 2009.*

the OECD, consumption increased by 3.1 per cent, a slower pace than in 2007. The strong growth among oil-exporting countries was partly offset by a slower growth among Asia-Pacific consumers.

Against a backdrop of a deeper and wider global economic downturn and financial crisis, the IEA projects a further decline (3.0 per cent) in global oil demand in 2009, as well as a drop in supply (0.3 per cent). Reduced production is due to OPEC's production cuts introduced in response to falling oil prices and in anticipation of a decline in global demand.

OPEC members

Although OPEC began cutting production late in the year, average annual production rose by 2.7 per cent in 2008. Western Asia OPEC accounted for the entire increase, with Saudi Arabian production rising by 4.0 per cent to 10.8 mbd, and Iraqi output growing by 13.0 per cent to 2.4 mbd.

In 2008, Saudi Arabia remained the number one world producer with a share of 13.1 per cent of total world production. It accounted for 29.5 per cent of OPEC's total production. Other major producers within the group included the Islamic Republic of Iran (11.8 per cent of OPEC's total production) and the United Arab Emirates (8.1 per cent). The share of OPEC members outside Western Asia and Africa (Ecuador and the Bolivarian Republic of Venezuela) stood at 8.4 per cent, while African members' share of OPEC's total production fell from 22.2 per cent in 2007 to 21.5 per cent in 2008.

OECD members

In 2008, North America remained the main crude oil producer among OECD members, with a share

of 71.4 per cent of the group's total supply. The United States – which accounted for more than one third of OECD's oil production – reduced its output by 1.8 per cent. Production in Europe fell by 4.9 per cent, reflecting a drop in all relevant producers, namely Denmark, Italy, Norway and the United Kingdom.

Other producers

In 2008, the total production of non-OPEC and non-OECD economies – including the Russian Federation, China and Brazil – increased marginally by 0.7 per cent over the previous year. With a total of 26.7 mbd, the market share of these countries remained steady at 32.6 per cent. The Russian Federation decreased production by 0.8 per cent, to 9.9 mbd. Other producers have either increased (e.g. China, Brazil) or decreased (e.g. Argentina, India, Viet Nam) their production levels.

Refinery developments

In 2008, the total throughput of world refineries dropped by 0.3 per cent to 75.2 mbd. OCED countries continued to account for over half of this total. A decline in throughput was recorded in all developed regions: throughput from refineries in the United States fell by 3.4 per cent, while that of Canada, Europe, Australasia and Japan fell by 2.1 per cent, 0.2 per cent, 1.4 per cent and 1.2 per cent respectively. According to the IEA, no new refineries have been built in the United States in 29 years, and the expansion of existing facilities in the country has failed to keep pace with rising demand. Europe's last new refinery was completed in 1989.

In contrast, refineries in developing economies recorded some growth, for example Africa (1.0 per cent), the Middle East (0.6 per cent) and China (4.4 per cent). Increased refinery capacity is expected to come online in developing Asia, as illustrated by the commissioning of a new export-oriented refinery in Jamnagar, India, which holds a capacity of 0.6 mbd and is expected to supply diesel to Europe. New refining capacity in the Middle East and Asia is also expected in 2010, although several of the projects have been held up due to the deterioration of the economic situation. Current tight economic conditions and lack of credit, combined with the capital-intensive nature of refinery expansion plans, suggest that the required investments may be further deferred and may create a lag in supply when the economy recovers and demand rebounds. In 2005, the IEA estimated that global refining capacity needs to increase by 42 per cent to 118 mbp by 2030, and that oil companies and Governments worldwide will need to spend $487 billion between 2005 and 2030 to keep pace with demand for products such as gasoline, diesel and jet fuel.[35] That being said, commentators also argue that the large investments required to develop new refineries might not be economically viable, given the limited volumes of crude oil that are left to refine. The energy sector is close to bumping up against supply constraints, and the gradual depletion of world crude oil and the imminent "peak oil" (i.e. world oil production has already started to decline or will soon start to decline) are likely to make additional refinery expansions unnecessary.

Crude oil shipments

In 2008, the share of tanker trade in the total world seaborne trade amounted to 33.7 per cent. World shipments of tanker cargoes reached 2.75 billion tons, two thirds of which were crude oil. Crude oil seaborne shipments increased by an estimated 1.1 per cent, to reach 1.83 billion tons (table 4). Unlike other bulk and container trade sectors, tanker markets fared relatively better, with shipowners' earnings holding up. The phasing out of single-hull tankers in 2010 and the conversion during the year of some tankers into oil storage units helped moderate the incidence of an oversupply of tonnage. However, the delivery schedule for the remainder of 2009 highlights the significant supply and demand imbalance that will affect tanker trade, with potential implications for freight rates and earnings.

Crude oil seaborne shipments increased by an estimated 1.1 per cent.

In 2008, Western Asia remained one of the major crude oil loading areas, with 758.9 million tons. Other loading areas included, South America's northern and eastern seaboards (132.3 million tons), Central Africa (131.5 million tons), Northern Africa (116.6 million tons), Western Africa (99.1 million tons), and the Caribbean and Central America (92.3 million tons). Major unloading areas included Europe (483.4 million tons loaded), North America (453.9 million tons) and Japan (215.2 million tons). Major unloading developing regions included Southern and Eastern Asia (414.1 million tons) and South-Eastern Asia (133.0 million tons). With demand for oil expected to remain robust in developing regions, namely in China, India and the Middle East, it is hoped that some excess

capacity resulting from the economic downturn would be absorbed by this new additional demand.

Shipments of petroleum products

In 2008, world shipments of petroleum products are estimated to have increased by 2.7 per cent, to reach 915.3 million tons. Developed regions accounted for 41.0 per cent of world petroleum products loaded, and 56.1 per cent of world petroleum products unloaded. Developing economies accounted for 55.3 per cent of world products loaded and 43.4 per cent of world products unloaded. Economies in transition accounted for the balance. Although demand for petroleum products is also influenced by the wider international environment, including the performance of the world economy, such demand remains particularly subject to unforeseen events, including natural disasters and weather-related incidents.

In 2008, world shipments of petroleum products are estimated to have increased by 2.7 per cent ...

An abrupt economic downturn, ship capacity oversupply, high stock levels brought about by lower oil prices (the United States and China have been reported to have used the opportunity to fill their strategic petroleum reserves), all combined with a global limited refinery capacity provide a good indication of the challenges that lie ahead for petroleum products trade.

Natural gas production and consumption

In 2008, world production of natural gas increased by 3.8 per cent over the previous year, to reach 3,065.6 billion cubic metres (bcm). The Russian Federation remained the world's largest producer with a market share of 19.6 per cent, followed by the United States with a share of 19.3 per cent. Other producers included Canada (5.7 per cent), the Islamic Republic of Iran (3.8 per cent), Norway (3.2 per cent), Algeria (2.8 per cent), China (2.5 per cent), Indonesia (2.3 per cent) and Malaysia (2.0 per cent) (see fig. 5).

During the same year, world natural gas consumption increased by 2.5 per cent, to reach 3,018.7 bcm. The United States and the Russian Federation remained the main natural gas consumers, with market shares of 22.0 per cent and 13.9 per cent respectively. Other major consumers included the Islamic Republic of Iran (3.9 per cent), Canada (3.3 per cent), the United Kingdom (3.1 per cent) and Japan (3.1 per cent).

The natural gas sector also went through two distinct phases: a tight supply and demand balance with rising energy prices, followed by a weakening demand and a plummeting of spot prices. The combination of weak demand and lower prices could undermine future investments.

Liquefied natural gas shipments

In 2008, the liquefied natural gas (LNG) trade remained steady with the total volume of LNG shipped amounting to 226.5 bcm. LNG importers included a mix of developed and developing economies, namely France, India, Japan, the Republic of Korea, Spain and the United States. The main LNG exporters were located in developing regions, with Qatar being the largest (17.5 per cent). Other exporters included Algeria, Indonesia, Malaysia and Nigeria.

Over the years, LNG trade has been constrained by difficulties in sourcing sufficient gas supplies, with a number of liquefaction projects suffering from delays in the approval and building process. As most ships are ordered to serve specific LNG projects, a surplus of LNG capacity is created when the completion of the projects is delayed and the relevant cargo is not available for carriage. However, the world is now experiencing a major reversal of the situation: a boom in supply is being met with falling demand.

On the supply side, at least seven new LNG export terminals are expected to start in 2009. At least 82 million tons per year of new liquefaction capacity are due on stream in North America over the next three years. Sakhalin II was reported to have loaded its first ship in March 2009, while the completion of two trains at the Qatargas 2 project is imminent. The Middle East LNG expansion is in full flow, with the Yemen LNG project coming on stream in 2009. It is estimated that once all the projects that were delayed in 2008 come on stream, some 45 million tons per year of new LNG capacity will be online and will boost existing capacity by 25 per cent. On the demand side, the LNG trade in 2008 had also suffered from the economic downturn and a suppressed demand, especially for electricity usage. Another side-effect of the economic downturn was the impact on gas prices. For example, it was reported that in September 2008, Asian utilities were willing to pay up to $21 per million British thermal units for spot LNG

cargoes. By March 2009, LNG prices had collapsed by 75 per cent.[36]

2. Dry cargo shipments[37]

General developments

Dry bulk trade, the mainstay of the boom experienced by the shipping industry over the past few years, slowed down in 2008 (with a 4.7 per cent growth rate as compared to 5.7 per cent in 2007) and is forecast to fall by more than 4.4 per cent in 2009. The total volume of dry bulk cargoes loaded in 2008 stood at 5.4 billion tons. These shipments accounted for 66.3 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 2.1 billion tons. The difference was made up of minor bulks and liner cargoes, which together were estimated at 3.3 billion tons. Figures 6 (a) and (b) present an overview of the major players involved in the production, consumption and trade of some major dry bulks.

The collapse that started in the fourth quarter of 2008 has been more readily visible in the dry bulk sector. The Baltic Dry Index fell sharply, and average earnings for bulk carriers in October 2008 were 80 per cent lower than their levels in April of the same year. The main driver of the slowdown in 2008 and the projected slump of 2009 relate to steel production cuts in all-major steel producing regions. Steel production is a key indicator for the bulk shipping market as it determines the demand for raw materials such as iron ore and coal and the need for larger bulkers (e.g. capesize ships). In 2008, China's steel production slowed down as the real estate sector in China reached a plateau, and as developers were having difficulties in obtaining finance for new projects. An important factor that helped the dry bulk sector show some resilience in the face of falling demand and tight trade finance relates to the supply side of the bulk carrier market. In 2008, deliveries of bulk carriers were modest compared to tankers and container ships. Ultimately, the ship capacity ordered might be reduced by way of cancellations or conversions into other ship types, although empirical evidence has shown that there have been very few such conversions reported. Most negotiations with the yards have focused on delaying the delivery of vessels so as to limit the impact the supply side will have in 2009–2011 (see chapter 2 for more details). With projected fall in dry bulk volumes and growth in bulker tonnage capacity, the short- to medium-term outlook for the dry bulk sector looks challenging.

World crude steel production and consumption

In 2008, world steel production declined by 1.2 per cent, standing at 1.3 billion tons. Steel production declined in nearly all major steel-producing economies, including the European Union (-5.3 per cent), North America (-5.5 per cent), Japan (-1.2 per cent), the CIS (-8.1 per cent) and South America. Asia continued to account for more than half of the world's total production, with China producing more than 500 million tons in one year – a 2.6 per cent increase over 2007. The Republic of Korea and India expanded their production too, at 3.8 per cent and 3.7 per cent respectively. ArcelorMittal – accounting for 10 per cent of world steel output, the world's leading steel producer by volume – announced plans to reduce production in North America by 35 per cent and in Europe by 30 per cent. The company made temporary production cuts totalling up to 45 per cent of global production capacity in order to accelerate inventory reduction, and it has also paused growth plans for the immediate future.[38] Steel production and revenues in the United States are expected to fall in 2009, while China's steelmakers are expected to collectively decrease active production by 20 per cent in 2009.[39]

Production of ferrous scrap, which averages 300 million tons per year globally, is also affected by the economic downturn.[40] Until mid-2008, global steel production and prices were at historic highs, after which demand and prices for steel products began to decline, followed by a declining demand for scrap. As the global economy retracted, buyers of scrap steel in Asia and Europe began cancelling orders, which may lead to a scrap steel oversupply of more than 5 million tons in ports, ships and yards. Profit margins have dropped in the scrap steel industry from $200 to $20 per ton.

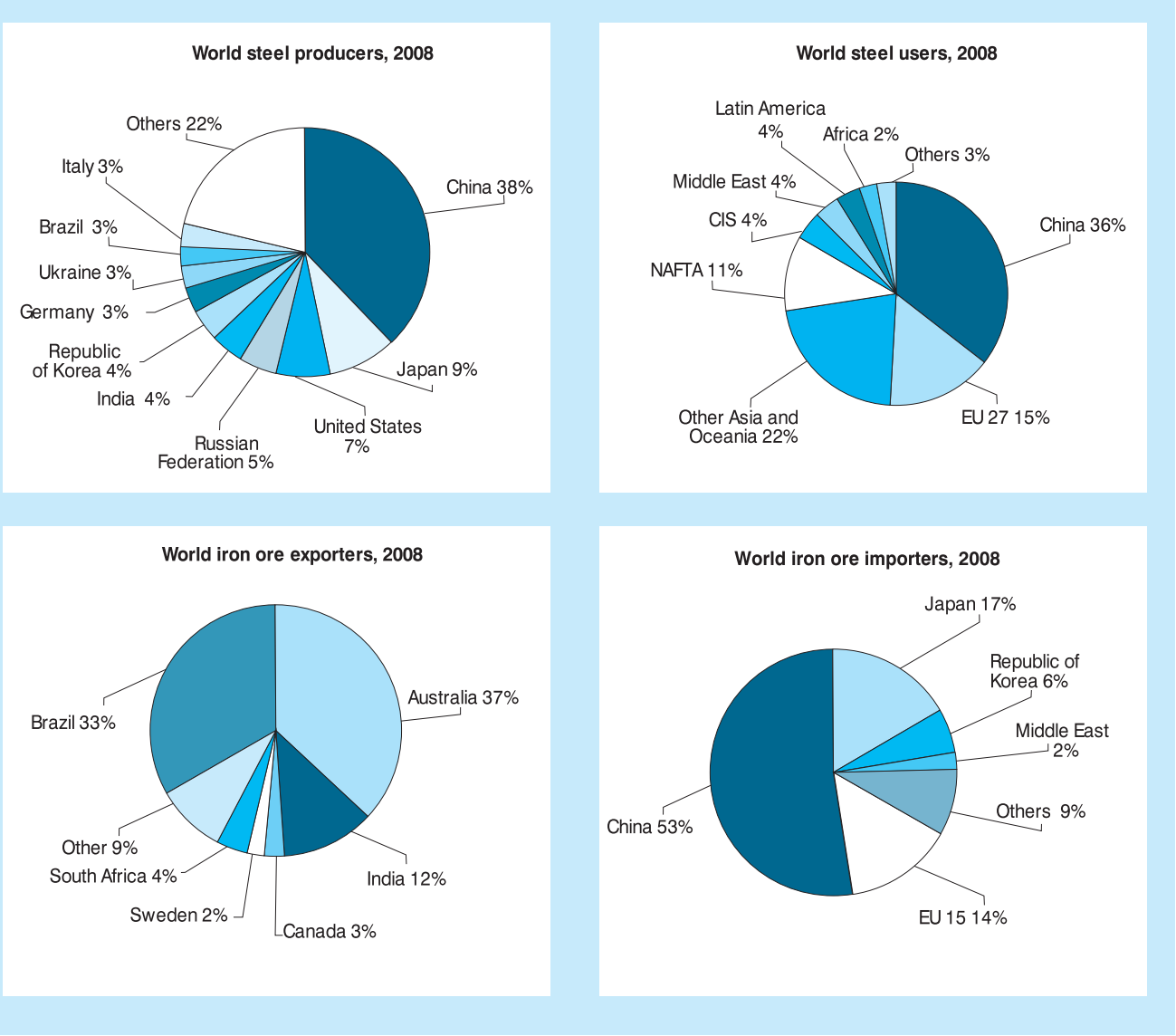
World steel consumption fell by 0.3 per cent in 2008, bringing the total to 1.2 billion tons. China continued to drive Asia's steel consumption, which increased by 3.4 per cent during the year. The Asian region remained the world's largest consumer, with a share of 55.8 per cent. Consumption increased in Central/South America and in Africa, which saw their consumption expand by 8.3 per cent and 3.5 per cent respectively.

Reflecting the global economic context and the geographical spread of the financial and economic downturn to developing regions, world steel consumption is expected to fall by 14.9 per cent in 2009. The economic downturn and difficulties associated with the credit

Figure 6 (a)

Major bulks (steel and iron ore): producers, consumers and traders in 2008

(world market share in percentages)



Source: UNCTAD secretariat, on the basis of data supplied by Clarkson Research Services in *Shipping Review and Outlook*, spring 2009; and *Dry Bulk Trade Outlook*, May 2009; and by the International Iron and Steel Institute, June 2009.

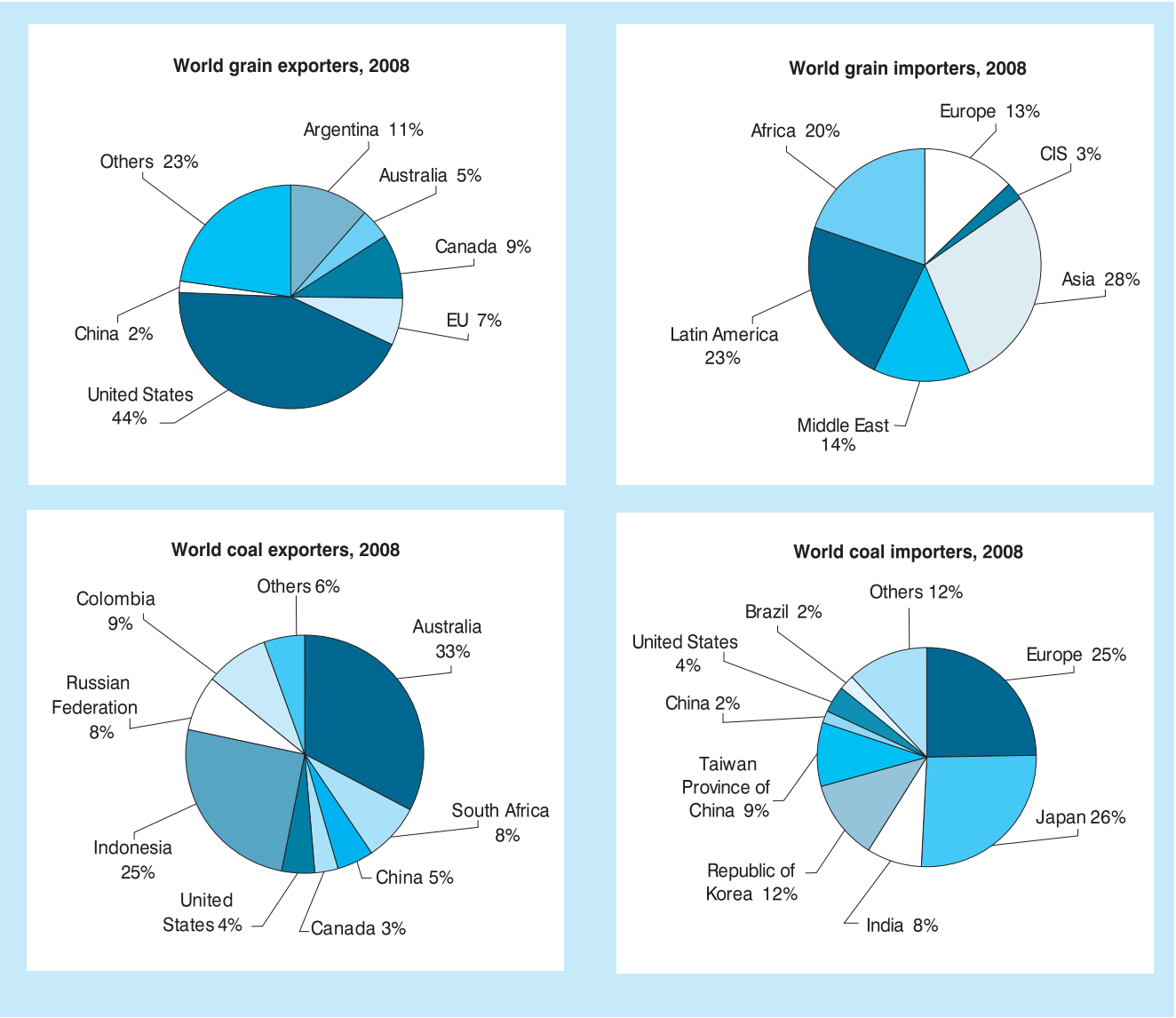
and financial sectors have already adversely affected customers of the steel used in construction, industrial equipment and vehicles. Reduced consumption of steel has led to a rapid decline in steel prices, prompting steelmakers in Asia, Europe and North America to cut output and delay mill-expansion plans. The largest drop in consumption levels is expected to affect the NAFTA region, followed by the European Union, the CIS, Central/South America, and the Middle East. Consumption in Asia is expected to decline by 8.1 per cent.

In 2008, the world steel industry furthered its commitments to advancing sustainability by taking measures aimed at reducing the carbon footprint of the industry. In June 2009, the World Steel Organization launched its Climate Action Recognition Programme and a new dedicated website – the climate change microsite. A key objective of the Climate Action Recognition Programme is to measure the current level of emissions from the production of steel worldwide, to enable individual steel plants to position themselves against

Figure 6 (b)

Major bulks (coal and grain): producers, consumers and traders in 2008

(world market share in percentages)



Source: UNCTAD secretariat, on the basis of data supplied by Clarkson Research Services in *Shipping Review and Outlook*, spring 2009; and *Dry Bulk Trade Outlook*, May 2009; by the Economist Intelligence Unit in *World Commodity Forecasts: Food, Feedstuffs And Beverages*, May 2009; and by the International Grains Council, April 2009.

both average and best performance, and to identify scope for improvement.[41]

Iron ore shipments

Iron ore is a widely used metal in areas such as structural engineering, and for industrial applications, and also in the automotive sector. The major iron ore producers include China, Australia, Brazil, India, the Russian Federation, the United States, South Africa, Canada and Sweden. The world's largest producers of iron ore are Vale in Brazil, BHP Billiton, and Rio Tinto (Australia/United Kingdom). In late 2008, BHP Billiton abandoned its plans for a $66 billion takeover of Rio Tinto, arguing that the steep drop in commodity prices combined with the unfavourable financial environment made the takeover no longer feasible.[42] Instead, in June 2009, Rio Tinto and BHP Billiton signed a non-binding agreement to establish a production joint venture covering both companies' Western Australian iron ore

assets. The joint venture will encompass all current and future Western Australian iron ore assets and liabilities, and will be owned fifty-fifty by both companies.[43]

The world's iron ore shipments were estimated at 844 million tons in 2008, an increase of 6.5 per cent over 2007. While many exporters increased their volumes in 2008, others – including Canada, Sweden, Mauritania and Peru – recorded a fall. Together, Australia and Brazil accounted for over two thirds of world iron ore exports. Australia regained its position as the world's largest iron ore exporter, increasing its volumes by 16.0 per cent to reach 309.5 million tons. Exports from Brazil amounted to 281.7 million tons, an increase of 4.6 per cent over 2007. The balance of world iron ore exports originated in India (101.1 million tons), South Africa (31.6 million tons), Canada (22.4 million tons), Sweden (17.6 million tons), Mauritania (12.4 million tons) and Peru (6.9 million tons).

With 444.1 million tons unloaded in Chinese ports in 2008, China remained the main destination for world iron ore shipments. Its imports grew at a slightly slower rate than in 2007 (16.0 per cent). Other major importers included Japan with 140.4 million tons (a 1.1 per cent increase), and Western Europe with 127.5 million tons (a 5.3 per cent decrease). Smaller importers in Asia, such as the Republic of Korea, recorded increases of 3.3 per cent, while others, such as Taiwan Province of China, and Pakistan, recorded a decline in their imports. Iron ore imports into India and the Philippines remained steady at their 2007 levels. At the regional level, imports into North America dropped by 12.5 per cent, while imports into South America and the Middle East increased by 3.3 per cent and 18.7 per cent respectively.

The record trade growth in the first half of 2008 and the collapse experienced in the second half make 2008 a year of two parts: a prosperous part and a poor part. Before the end of 2008, major iron miners saw iron ore prices fall, as global steel output declined. Leading iron producers and exporters, including in Brazil, have already cut or are planning to cut production.[44] Looking ahead, Clarkson Research Services expects global iron ore trade volumes to remain steady in 2009 and to grow rapidly (16 per cent) in 2010, driven mainly by expected growth in China.[45]

Coal production and consumption

Coal is a fossil fuel energy source which is much more abundant than oil or gas; there are around 130 years of coal remaining worldwide. Different types of coal have different uses. Steam coal – also known as thermal coal – is mainly used in power generation. Coking coal – also known as metallurgical coal – is mainly used in steel production. Other important users of coal include alumina refineries, paper manufacturers, and the chemical and pharmaceutical industries. Several chemical products can be made from the by-products of coal. Refined coal tar is used in the manufacture of chemicals such as creosote oil, naphthalene, phenol and benzene.

In 2008, world coal production increased by 5.3 per cent, reaching 3,324.9 million tons oil equivalent (mtoe), with much of global coal production being used in the country in which it was produced. China remained the world's largest producer, with a share of 42.5 per cent, followed by the United States (18.0 per cent), Australia (6.6 per cent), South Africa (4.2 per cent), the Russian Federation (4.6 per cent), India (5.8 per cent) and Indonesia (4.2 per cent).

In 2008, global coal consumption slowed, rising by just 3.1 per cent. Nevertheless, coal remained the fastest-growing fuel in the world for the sixth consecutive year. China – the world's largest consumer (with a 42.6 per cent share) – increased its consumption by 6.8 per cent. While below the 10-year average, this growth rate was sufficient to account for 85 per cent of global growth. Consumption growth outside China was negligible (0.6 per cent) with growth rates below the 10-year average for all regions except South/Central America and Africa, which increased their coal consumption by 3.3 per cent and 4.0 per cent respectively.

Coal mining raises a number of environmental challenges, including soil erosion, dust, noise pollution, water pollution, and impacts on local biodiversity. However, the most important challenge facing the coal industry and the international community is how to reconcile the growing use of coal with climate change action. According to the World Coal Institute, the coal industry is committed to minimizing its greenhouse gas emissions and action is being taken in a number of areas. The IEA maintains that replacing older coal-fired power stations with larger more efficient plants could reduce global greenhouse gas emissions by 5.5 per cent. Carbon capture and storage technology is being considered as a potential solution that could offer deep cuts in greenhouse gas emissions from coal-fired power while maintaining the energy infrastructure needed for growth.[46]

World coal shipments

In 2008, coal shipments were estimated to have reached 814.5 million tons, a volume increase of 3.2 per cent over 2007. Reflecting the adverse effects of the economic difficulties that erupted in the fourth quarter of 2008, this rate is half the growth rate recorded in 2007. Thermal coal exports were estimated at 590.1 million tons, representing 72.4 per cent of world coal shipments, while coking coal shipments increased by 4.1 per cent to reach 224.4 million tons.

Together, Indonesia and Australia accounted for over half the world's thermal coal shipments. Indonesia continued to overtake Australia as the largest thermal coal exporter. In 2008, Indonesia increased its thermal coal exports by 6.1 per cent to reach 200 million tons. Less troubled by the logistical problems it experienced in 2007, Australia increased its coal exports by 8.5 per cent. Other major thermal coal exporters in 2008 included South Africa (61.5 million tons), Colombia (68.7 million tons), China (35.8 million tons), the Russian Federation (60.4 million tons) and the Bolivarian Republic of Venezuela (6.2 million tons).

In 2008, Australia remained the world's largest coking coal exporter, with a total of 136.9 million tons, a fall of 0.5 per cent over 2007. Other lesser exporters, such as Canada, have also recorded a decline in their export volumes. Marked growth was achieved by the United States, with an increase of 34.0 per cent. The main destinations of both types of coal exports (thermal and coking) are Japan and the European Union, which together accounted for 48.1 per cent of the world's coal imports in 2008. In 2008, thermal coal imports into China fell by 11.0 per cent, while imports into the Republic of Korea increased by 18.2 per cent.

Coal shipments are forecast to decline by 2.3 per cent in 2009. The coking coal trade is forecast to drop by 6.4 per cent in 2009. Thermal coal shipments are also likely to be negatively affected, as industrial production cuts have the effect of impacting on electricity consumption. Reduced demand for coal and the expected growth in ship carrying capacity are likely to negatively affect freight rates and profitability.

Grain market

According to the International Grains Council, production of grain (wheat and coarse grain) increased from 1,588 million tons in 2007 to 1,697 million tons in 2008. World wheat production increased by 6.5 per cent, as farmers increased planted areas in response to favourable prices. A large output was recorded in all major exporting areas, especially in Australia (+63.3 per cent), the Russian Federation (+28.9 per cent), the European Union (+26.6 per cent) and the United States (+21.9 per cent).

In 2008, world grain shipments are estimated to have grown by 5.6 per cent, reaching 323.3 million tons. Wheat totalled about 110 million tons, while coarse grains such as corn, barley, soybeans, sorghum, oats, rye and millet totalled 213.3 million tons. In 2008, Canada and the United States accounted for 53.1 per cent of world grain exports (excluding soybean). Export growth in North America was driven by increased exports of both wheat and coarse grains from the Unites States. Argentina maintained its 11.2 per cent share, while Australia and the European Union recorded declines in their export volumes.

Asia remained the main unloading area for grain (excluding soybean) with 67.5 million tons, followed by Latin America (54 million tons), Africa (42.4 million tons), the Middle East (32 million tons), Europe (27.6 million tons) and the CIS (6.6 million tons). Japan, by far the largest importer (with a 9.8 per cent share in 2008), reduced its grain imports by 5.3 per cent. Overall, imports into Asia fell by 7.4 per cent. Imports increased by 6.6 per cent in the Middle East, 7.0 per cent in Africa, 2.4 per cent in Latin America, and more than doubled in Europe.

Trade in grain is expected to decline in both 2009 (-0.6 per cent) and 2010 (-6.0 per cent). Argentina, Canada and the United States are expected to record a decline in coarse grain exports. Improved weather conditions in some grain importing countries mean that shortages in those regions will no longer need to be met by imports.

In addition to the unfolding of the global financial and economic crises, 2008 witnessed the eruption of a global food crisis which resulted in high and dramatically increasing prices of food, shortages and declining food stocks. According to the Director-General of the Food and Agriculture Organization of the United Nations (FAO), globally there are now 1.02 billion people hungry, up 11.0 per cent from 915 million in 2008. To put things in context: one in six people in the world. In addition to the direct effect on incomes and employment, the global financial crisis reduced the already scarce

capital available for investment in agriculture in Africa, which amplified the effect of the food crisis.[47]

The food crisis highlighted the vulnerability of developing economies, especially Africa, to food insecurity. Agricultural productivity in Africa compares unfavourably with other regions, and has not seen any real improvement over the past decades. Yields and productivity per worker have both remained low, whereas in other regions they have increased.[48] Of the 36 countries worldwide currently facing a food security crisis, 21 are African, and it is estimated that there are now over 300 million Africans facing chronic hunger – nearly a third of the continent's population. It is estimated that doubling the productivity of food staples across Africa by 2015 would lift over 70 million people out of poverty, and turn Africa from a region with a food deficit into a region with a food surplus, with food prices that were 20–40 per cent lower.[49] The World Bank estimates that demand for food will have risen by 50 per cent in 2030, as a result of rising affluence and the growing world population. Meeting growing food demand will require major investment in the agricultural sectors of developing economies, particularly in Africa. This entails some implications for the demand for maritime transport services, ship tonnage capacity, and port handling equipment, and potentially a change in the geography of trade. Pending the requisite investments and productivity gains in the agricultural sectors, Africa could reverse its dependency on food imports and emerge as a world exporter of grains and other agricultural-based food products.

Other bulk shipments

Bauxite resources are located in Africa (33 per cent), Oceania (24 per cent), South America and the Caribbean (22 per cent), Asia (15 per cent), and other areas (6 per cent). In 2008, world trade of bauxite and alumina was estimated to have reached 83.5 million tons. During the same year, major loading areas of bauxite included Asia (32.7 per cent of market share), Africa (28.7 per cent), the Americas (25.6 per cent) and Australia (12.2 per cent). The main importing areas are Europe and North America.

With respect to alumina, Australia was the major exporter, accounting for about half of world exports, while Jamaica alone contributed 14.0 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.

The largest sedimentary deposits of phosphate rock are found in North Africa, China, the Middle East and the United States. In 2008, world trade of rock phosphate totalled 32 million tons. Morocco remained the major exporter, and the United States the major importer. Morocco's exports accounted for nearly half of world shipments, the bulk of which was exported to Europe and the Americas. Shipments by lesser exporters in other African countries and the Middle East accounted for 40 per cent of world exports. High phosphate rock prices have renewed the interest in exploiting the offshore resources of Mexico and Namibia.

The minor dry bulks (manufactures, agribulks, metals and minerals) were estimated to have remained at 993 billion tons in 2008. Agricultural products (soymeal and oilseed) and metals and minerals (e.g. scrap) each increased by a meager 1.0 per cent, while manufactures (e.g. steel products) dropped marginally (-1.0 per cent). Trade in steel products accounted for 60.1 per cent of this total, and unlike forest products, fell by 1.2 per cent compared to 2007. Minor bulk volumes are expected to decline by 5.0 per cent in 2009 and grow again by 4.0 per cent in 2010.[50]

3. Liner shipments of containerized cargoes[51]

The balance of 2.32 billion tons of dry cargoes included cargo carried in containers along the three major east–west liner trade routes: the trans-Pacific, Asia–Europe, and the trans-Atlantic. In 2008, the world total of containerized trade was estimated at 137 million TEUs (1.3 billion tons), an increase of 5.4 per cent over the previous year.[52] Over the last two decades, global container trade is estimated to have grown at an average annual rate of about 10 per cent. The share of containerized trade in the world's total dry cargo increased from 5.1 per cent in 1980 to 25.4 per cent in 2008. The value of world maritime container trade grew from $2 trillion in 2001 to $4 trillion in 2008 accounting for around one in every $14 of global economic output.[53] Against a backdrop of growing container trade and profitable earnings, the shipping industry responded by investing in larger and more sophisticated container ships and

In 2008, the world total of containerized trade was estimated at 137 million TEUs (1.3 billion tons), an increase of 5.4. per cent over the previous year.

equipment, as well as in container port and terminal operations. A key feature of container trade over recent years has been the large order book and increased tonnage supply. Expecting a continuously booming trade, shipowners have consistently commissioned large tonnage capacity, keeping shipyards busy. An important share of the container capacity on order is expected to be delivered in the midst of depressed global trade and a contracting global economy.

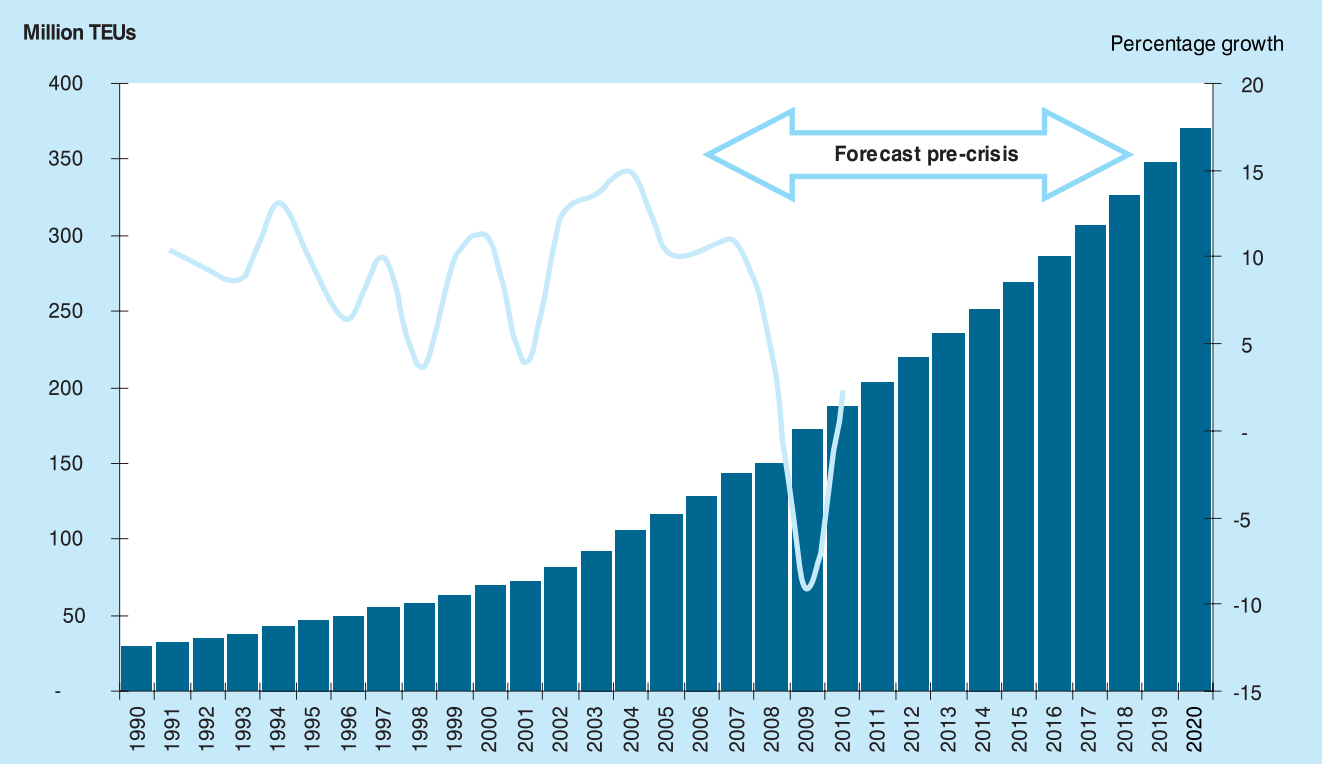
Since the worsening of the global financial crisis and the unfolding of a worldwide economic downturn, the landscape of container trade has changed and the prospects have become uncertain. As illustrated in figure 7, projections for container trade made before the unfolding of the current global economic crisis, appear less likely to materialize if the current downward trend is maintained or deepened. A few years back, Drewry Shipping Consultants forecast that container trade would double by 2016 to reach 287 million TEUs, and more than double by 2020 to exceed 371 million TEUs. Although much will depend on the duration and the extent of the current economic downturn and financial crisis, the abrupt fall in container trade volumes since 2008 and into 2009 makes the realization of such a forecast uncertain. Despite the positive growth expected starting 2010, the relevant rate remains significantly below the pre-crisis levels. Clarkson Shipping Services are forecasting a 9 per cent drop in container trade for 2009 and a sluggish growth in 2010 (2.2 per cent).[54] Similarly, Drewry Shipping Consultants is forecasting a fall of 10.3 per cent for 2009 and a marginal growth in 2010.[55] With growing container-carrying capacity and declining and uncertain container traffic, container trade will face difficult times ahead. Drewry suggests that even

... the landscape of container trade has changed and the prospects have become uncertain.

Figure 7

Global container trade, 1990–2020

(TEUs and percentage change)



Source: Drewry Shipping Consultants. *Container Market Review and Forecast 2006/2007* and *2008/2009,* and Clarkson Research Services Limited, *Container Intelligence Monthly,* September 2009.

Notes: Forecasts of container trade volumes for 2009–2020 were made in 2006/2007 and precede the global financial and economic crisis of late 2008. Annual percentages changes for 2008–2010 are obtained from *Container Intelligence Monthly,* September 2009.

if container market conditions were to be restored to return to balance by 2013, at least 3 million TEU of capacity would need to be cancelled or deferred.[56] This entails some critical implications for investments in container ship tonnage capacity, shipyards, container port developments, cargo handling equipment, and container production.

Loss in consumer confidence in the developed regions resulted in plummeting consumption of manufactured goods, and consequently, in declining container trade volumes and lower freight rates at a time when the tonnage supply is at its peak. With over 10 per cent of container ship capacity reported to be idle, and despite cancellations and slippage, a collapse in demand and cargo flows is putting huge pressure on the container trade sector.

Although growth in container trade seem to have been less affected on certain routes and in certain directions, including the North–South and South–South trades, growth in container trade has slowed considerably in 2008, with, at best, a 10 per cent increase in volumes on non-mainlane East-West routes and 3.8 per cent on North-South routes.[57] Cargo flows on the trans-Atlantic route recorded a positive growth (1.5 per cent), albeit much slower than the rate recorded in 2007. Container cargo flows on the trans-Pacific and Asia-Europe routes contracted on both routes (table 6).

Climate change is a global challenge and "a defining issue of our era".

A combination of lower freight rates, depressed trade volumes and tonnage oversupply provided additional reasons for shipowners to rethink their strategies and reconsider their cost calculations. As a result, and in an effort to cut costs, services are being cut (e.g. by the end of 2008, APL, the New World Alliance, COSCON, Maersk Line and others had cut service strings from the trade) and trades have being re-routed via the Cape of Good Hope. This route was deemed more economical, given the economic situation and the lower bunker fuel prices.

Recent analysis suggests that a restructuring of certain economies is taking place. China is expanding its imports (i.e. re-stocking and domestic consumption) without expanding its exports. During the second quarter of 2008, there were about 56 tons of Chinese imports for every 100 tons of exports. In the equivalent quarter in 2009, this ratio increased to 80 tons of Chinese imports for every 100 tons of exports. This shift in the overall balance of containerized trade is likely to have implications for liner shipping operators serving the Chinese market.[58]

D. MARITIME TRANSPORT AND THE CLIMATE CHANGE CHALLENGE

Climate change is a global challenge and "a defining issue of our era."[59] Compelling scientific evidence and a better understanding of the economics of climate change have moved the issue to the forefront of the international agenda. The impacts of climate variability and climate change (see box 1) are already being felt, in particular in the more vulnerable countries.[60] Unchecked climatic changes may reach tipping points, resulting in disastrous and irreversible consequences for humanity. In any event, time is a real concern. According to the IEA, current trends suggest that if no decisive action is taken within the next two years – including relevant investment decisions to determine the type of technologies that will be locked in

Table 6

Estimated cargo flows on major trade routes, 2007–2008

(millions of TEUs and percentage change)

Year	Trans-Pacific		Europe–Asia		Transatlantic	
	Asia–USA	USA–Asia	Asia–Europe	Europe–Asia	USA–Europe	Europe–USA
2007	15 247 955	4 986 106	17 236 936	10 085 181	2 711 037	4 464 206
2008	14 527 722	5 614 366	16 740 642	10 500 068	2 938 168	4 343 506
% change	-4.7%	12.6%	-2.9%	4.1%	8.4%	-2.7%

Source: Containerisation International. Online, accessed in September 2009.

Box 1

Scientific evidence, global warming and some associated effects

The atmospheric concentration of carbon dioxide (CO_2), the most significant greenhouse gas (GHG), has increased from 280 parts per million (ppm) in the pre-industrial period to 379 ppm in 2005. The increased concentration of greenhouse gases in the atmosphere and the associated warming effect are considered to cause climate change. Over the last century, the global average surface temperature increased by around 0.74°C. Under "business as usual" scenarios, the climate models of the Intergovernmental Panel on Climate Change (IPCC) indicate a further temperature rise of 1.1–6.4°C during the twenty-first century. To ensure that the global average temperature increase does not exceed 2°C above pre-industrial levels – the threshold above which dangerous climate change effects are likely to be triggered (tipping point) – the atmospheric concentration levels of CO_2 should be stabilized at 350–400 ppm, while emissions should peak by 2015 and decline thereafter.

Observations from all regions and oceans show that many natural systems are being affected. The effects observed include a decline in mountain glaciers and in snow cover, a change in the Arctic ice coverage, and a rise in the global average sea level. The sea level rise is thought to be caused by increased volumes of water in the ocean basins (due to melting ice) and by the thermal expansion of seawater. The average global sea level increased by 0.17m over the last century. Relative sea level rise is particularly relevant, and varies according to local conditions, including land subsidence. More frequent extreme weather conditions – such as storms, heatwaves, droughts, and an increased intensity of tropical cyclones – are also being observed. Scientists are also concerned about abrupt climate change effects. These so-called "surprise effects" relate, amongst other things, to the instability of the ice sheets and to the planet's feedback mechanisms (self-reinforcing loop). The uncertainty about these effects is due to the limited information on the nature of climate–carbon cycle feedbacks. For example, reaching climatic tipping points could lead to a potentially "abrupt" effect known as shutdown of the thermohaline ocean circulation, or to an acceleration of global warming due to released methane from thawing permafrost.

Clear signs of urgency are already apparent, with many developing countries – especially countries in Africa, and small island developing States (SIDS) – in the grip of increasing temperatures, severe droughts, encroaching seas, devastating floods, melting ice, changing weather patterns, and cyclones with increasing destructive power. These factors can – just as much as the financial and economic crises – compromise global security, upset human settlement and induce migration. They can also shift agricultural and industrial production, trade, infrastructure and operations, including in coastal zones and ports, and can affect any field related to shipping routes and navigation.

Source: UNCTAD, based on an extensive review of literature, including *IPCC Fourth Assessment Report 2007; IPCC Third Assessment Report 2001; IPCC Second Assessment Report 1995; IPCC Special Report;* IPCC (1997), *The Regional Impacts of Climate Change: An Assessment of Vulnerability*; United Nations Development Programme, *Human Development Report 2007/2008;* UNEP (2007), *Global Environmental Outlook – Environment for Development (GEO-4);* and projections by the United States National Snow and Ice Data Centre and Naval Postgraduate School, Monterey, California, 2008.

– the world will miss forever the opportunity to stabilize emissions at "manageable" levels, along either the 450 parts per million (ppm) or the 550 ppm CO_2-equivalent scenarios.[61] Economists have also warned that the costs of inaction significantly outweigh the costs of mitigation, and that delaying action now will only make future action more costly.[62] The current global economic crisis shows how a relatively small reduction of output, such as 1 or 2 per cent of GDP, may have considerable and disturbing implications for businesses, employment, trade, and the well-being of societies.

Like other economic sectors, maritime transport, which by volume carries over 80 per cent of global trade, has a role to play in addressing this formidable challenge. International maritime transport is playing a part in contributing to climate change, but more importantly, it is also likely to be directly and indirectly impacted itself, by the various climate change factors such as rising sea levels, extreme weather events and rising temperatures.[63] The wide-ranging impacts of climate change, including on maritime transport, and their potential implications for trade, economic growth and development, underscore the need to integrate climate considerations into strategies for transport planning and development. Increasingly, it is being recognized that considered and concerted action is urgently required to ensure effective control of greenhouse gas emissions and to establish the requisite adaptive capacity, especially in developing countries.

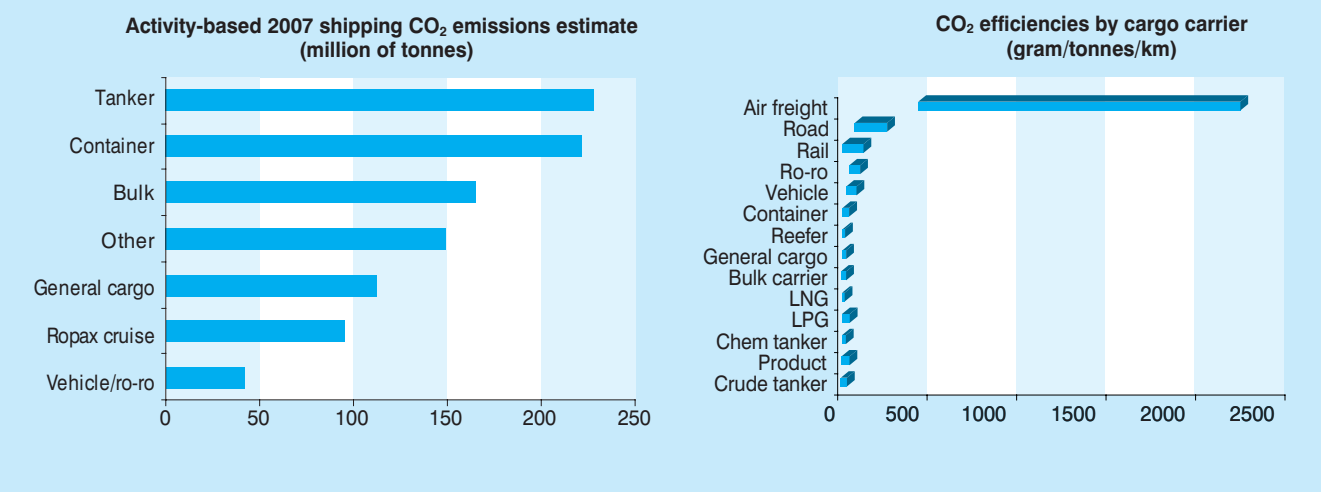
Greenhouse gas emissions from international shipping are significant[64] and are set to grow with increased demand for maritime transport services, driven by economic and demographic growth.[65] Possible mitigation measures are therefore being considered, at both the regulatory and industry levels. As may be recalled, emissions from international shipping are currently not covered under the UNFCCC and the Kyoto Protocol. Rather, parties to the UNFCCC have asked the International Maritime Organization (IMO) to address the question of emissions of greenhouse gases from ships.[66] In view of the ongoing UNFCCC negotiations towards the adoption of an international climate change agreement in December 2009,[67] IMO has recently intensified its work in the field.[68]

1. Greenhouse gas emissions from international shipping and efforts at mitigation

Maritime transport compares favourably to other modes of transport both in terms of fuel efficiency and of climate-friendliness (see fig. 8). However, as shown in table 7, CO_2 emissions from international shipping are estimated to account for between 1.6 per cent and 4.1 per cent of world CO_2 emissions from fuel combustion. The *Second IMO GHG Study 2009* – the most recent relevant study prepared on behalf of IMO – estimated

Figure 8

Shipping sector CO_2 emission and CO_2 efficiencies by cargo carrier (gram/ton/km)



Source : UNCTAD, based on IMO 2000 Updated On Greenhouse Gas Emission from Ships, 2008. Includes international and domestic shipping and excludes fishing and military vessels.

CO_2 emissions from international shipping at 870 million tons in 2007. According to the same study, these emissions are projected to increase by a factor of 2.2 to 3.1 between 2007 and 2050.[69]

Maritime transport relies heavily on oil, in particular on heavy grade fuel oil for propulsion, and is not yet in a position to adopt energy substitutes. Although renewable energy in the form of wind and solar power can be used on board ship as additional power, the total share of energy that can be covered in this way is limited by the availability and variable intensity of wind and solar energy, as well as by the current technology. While LNG gas may be used as an alternative fuel in shipping, there remains the challenge of finding sufficient space for the onboard storage of the fuel, and also concerns over increases in the emission of methane – another greenhouse gas. Furthermore, current LNG technology is only available for certain types of ships with a certain number of engines. The potential for using biofuel is limited by technology-related issues, and also by cost.[70]

... a significant potential for reducing GHG emissions is available through technical and operational measures ...

The Second IMO GHG Study 2009 estimates that a significant potential for reducing GHG emissions is available through technical[71] and operational measures which, in combination, could increase efficiency and reduce the emissions rate by 25 per cent to 75 per cent compared to current levels. Many of these measures are likely to be cost-effective, with obstacles to implementation likely to be unrelated to financial considerations. For example, in the case of renewable energy, limitations posed by the availability and variable intensity of wind and solar energy could prove challenging for the implementation.[72] Technical measures affecting ship

Table 7

Estimates of fuel consumption, CO_2 emissions from international shipping, and projected growth

	Base year	CO_2: millions of tonnes	Fuel: millions of tonnes	Percentage of world fuel combustion [a]	Projected emissions growth
Second IMO GHG Study 2009	2007	870	277	3.1	By a factor of 1.1-1.2 by 2020 & 2.2-3.1 by 2050 [c]
IMO/Group of Experts (2007)	2007	1120	369	4.1	+30% by 2020
IMO GHG Study (2000)	1996	419.3	138	1.6	--
IEA (2005)	2005	543	214	2.0	--
TRT Trasporti e Territorio	2006	1003	NA	3.7	--
Endressen et al., 2007 [b]	2002	634	200	2.3	+ 100–200% by 2050
Eide et al., 2007 [b]	2004	704	220	2.6	+ 100–200% by 2050
Eide et al., 2007 [b]	2006	800	350	2.9	+ 100–200% by 2050
Corbett et al., 2003 [b]	2001	912	289	3.1	--

[a] Based on IEA 2005 data for world CO_2 emissions from fuel combustion.

[b] Obtained from secondary sources, including the Second IMO GHG Study 2009.

[c] Base values, and according to six main scenarios under the IPCC *Special Report on Emission Scenarios*: A1F1, A1B, A1T, A2, B1 and B2.

design (mainly new buildings) and operational measures (all ships) each have the potential to reduce CO_2 emissions by 10 to 50 per cent.[73] Technology and operational fuel-saving and GHG emission reduction strategies can be grouped into strategies affecting vessel design, engine design, propulsion systems, other technology-related strategies, and operational measures (box 2).

Recognizing the importance for the maritime transport sector of contributing to global efforts at reducing emissions of greenhouse gases, IMO's Marine Environment Protection Committee (MEPC)is considering a number of mitigation measures aimed at reducing emissions of greenhouse gases from international shipping.[74] In addition to the technical and operational measures with CO_2 reduction potential, a number of supporting policy measures are also being considered to ensure an effective reduction of CO_2 emissions. Relevant policies currently under consideration at the Marine Environment Protection Committee include:

(a) policies aimed at reducing maritime emissions irrespective of the ship design, operation or energy source (e.g. market-based instruments such as emissions trading,

Box 2

Potential efficiency gains of selected technology and operational measures

Strategy	Potential efficiency gains
Efficiency of scale	<4 per cent
Design for reduced ballast operation	<7 per cent
Lightweight construction	<7 per cent
Optimum hull dimensions	<9 per cent
Air lubrification	<15 per cent
Bulbous bow	<20 per cent
Diesel electric drives	5-30 per cent
Waste heat recovery	<10 per cent
Counter-rotating propellers	<12 per cent
Propeller efficiency monitoring	<5 per cent
Efficient propeller speed modulation	<5 per cent
Wind power: Flettner rotor	<30 per cent
Wind power: kites and sails	<20 per cent
Solar power	<4 per cent
Automation	<10 per cent
Fuel additives	<2 per cent
Port turnaround time	<10 per cent
Propeller surface maintenance	<10 per cent
Hull coating	<5 per cent
Ship speed reduction	<23 per cent
Voyage planning and weather routing	<10 per cent
Overall energy awareness	<10 per cent

Source: UNCTAD, based on Philippe Crist, "Greenhouse gas emissions reduction potential from international shipping", discussion paper no. 2009-11, International Transport Forum, May 2009.

an emissions levy or an international compensation fund);

(b) policies aimed at improving the operational fuel efficiency of the fleet (e.g. market-based instruments such as the Energy Efficiency Operational Indicator (EEOI) levy, the Energy Efficiency Design Index (EEDI) levy/benefit scheme; command-and-control instruments such as the mandatory the EEOI limit, mandatory EEOI reporting, and the mandatory Ship Efficiency Management Plan (SEMP); and, voluntary measures, such as voluntary agreements to improve EEOI and to implement SEMP);

(c) policies aimed at improving the design efficiency of the fleet (e.g. market-based instruments such as the EEDI levy, the EEDI levy/benefit scheme; command-and-control instruments such as the mandatory EEDI limit for new ships; and voluntary measures, such a voluntary agreement to improve EEDI and voluntary standards); and

(d) policies aimed at reducing fuel life-cycle carbon emissions, such as policies that favour the use of natural gas or biofuels (e.g. market-based instruments such as a differentiated levy, and command-and-control instruments such as a fuel life-cycle carbon emissions standard and a biofuel standard).

While market-based instruments are likely to be cost-effective policy instruments with high environmental effectiveness,[75] there remains the need to improve understanding of the respective merits of different options and to assess the potential implications of the proposed mitigation measures for global trade and market distortions, especially regarding the trade and development of developing countries.[76] There also remains the question of how best to reconcile the principle of common but differentiated responsibilities under the UNFCCC, and the principle of uniform application/obligations under the IMO.[77]

... there remains the need to improve understanding of the respective merits of different options and to assess the potential implications of the proposed mitigation measures for global trade and market distortions ...

2. Adaptation requirements and funding

While international maritime transport contributes to global greenhouse gas emissions, it is important to note that maritime transport systems are also likely to be directly and indirectly impacted by various climate change factors such as rising sea levels, extreme weather events and rising temperatures. The type, range and magnitude of impacts will vary according to local conditions, transportation systems, designs and policies, and also according to the capacity to adapt and to minimize the costs.[78] Direct impacts may affect maritime transport infrastructure, operations and maintenance, and also shipping patterns; while indirect effects could result from changes in demand for maritime transport services.[79] These may be induced by climatic changes affecting trade, investment decisions, demographics, agricultural production, forests, energy exploration, energy demand, or fishing activity.

Against the background of a globalized world economy and growing interdependence between countries, climatic impacts on transport systems – in particular ports and other transport infrastructure in the coastal zone – entail serious implications for all countries: developed and developing, coastal and landlocked. Given the critical role of maritime transport in enabling global trade and growth, well-functioning and efficient ports and shipping services are crucial for global trade, international production processes and deeply integrated economies.[80]

Although attention has mainly been paid so far to the question of mitigation, a better understanding of the effects of climate change, and any relevant implications for maritime transport and for access to cost-efficient and sustainable international transport services is important, so that appropriate adaptation measures may be taken to ensure that countries will be able to cope. This is particularly relevant for costal states, especially the most vulnerable countries such as small island developing States (SIDS) and the least developed countries (LDCs), which are both highly exposed and least able to adapt, but also for landlocked developing countries (LLDCs), whose ability to access global markets ultimately depends on access to efficient maritime transport services.

Adaptation to the effects of climate change is not a "one size fits all" process. The impacts of climate change will vary from country to country, as will the institutions and legal and political tools available to decision-makers. Adaptation actions need to be tailored to the circumstances

and abilities of different countries and regions. In this respect, available funding is a key consideration, and in the context of adaptation, financing requirements as they pertain to maritime transportation networks must be better understood.[81] Identifying adaptation needs and the requisite funding is not a straightforward exercise. Uncertainty still remains with regard to the costs of climate adaptation for maritime transport, including in developing countries, and also with regard to the way funding should be generated and delivered. The issues highlighted here were discussed in more detail at a recent intergovernmental expert meeting convened by UNCTAD, entitled "Maritime Transport and the Climate Change Challenge".[82] Experts emphasized the urgent need to reach agreement in the ongoing negotiations towards a regulatory regime for greenhouse gas emissions from international shipping. At the same time, experts noted with great concern that so far, insufficient attention had been paid to the potential impacts and implications of climate change for transportation systems, and in particular for ports – key nodes in the supply chain and vital for global trade. Increased focus on responding to the challenge was important for the long-term prospects of the maritime transport sector, and more generally for global trade. Planning for the already predicted impacts should be pursued without delay. Among other things, experts called for increased scientific research, and well-targeted and appropriate vulnerability studies – especially for ports and transport infrastructure in coastal zones in developing countries – to help assess potential climate-change impacts and develop appropriate adaptation responses. Scientists and engineers, industry, international organizations and policymakers were called upon to increase their cooperation, in order to ensure that up-to-date relevant information on climate-change impacts and adaptation measures was available, widely disseminated, and taken into account by policymakers, transportation planners and development strategists.

Increased focus on responding to the challenge was important for the long-term prospects of the maritime transport sector and, more generally, global trade.

ENDNOTES

1 For a more comprehensive overview of world economic development, see the *Trade and Development Report 2009,* available at http://www.unctad.org/Templates/WebFlyer.asp?intItemID=4579&lang=1.

2 International Monetary Fund (IMF), *World Economic Outlook Update*. Global economic slump challenges policies. January 2009.

3 Clarkson Research Services. *Dry Bulk Trade Outlook*, September 2009.

4 ibid.

5 The G-20 refers to the Group of Twenty Finance Ministers and Central Bank Governors. In 2009, the 20 members of the Group included nine developing economies (e.g. Argentina, Brazil, China and India) and one economy in transition (the Russian Federation). Together, the G-20 economies account for around 90 per cent of global GDP, 80 per cent of world trade (including European Union intra-trade) and two thirds of the world's population.

6 UN-DESA. Monthly briefing on the world economic situation and prospects. 2 April 2009.

7 Based, in particular, on information published by the World Trade Organization (WTO) in "World trade 2008, prospects for 2009". Press release. March 2009. Available at http://www.wto.org/english/news_e/pres09_e/pr554_e.pdf.

8 According to research by the World Bank, the elasticity of global trade volumes to real world GDP has increased gradually from around 2 in the 1960s to above 3 in 2008, as a consequence of production-sharing networks and lean retailing. As a result, trade drops faster when GDP falls, and grows faster when recessions end and GDP growth picks up again.

9 See, for example, the "Report to the Trade Policy Review Body (TPRB) from the Director-General on the financial and economic crisis and trade-related developments". JOB(09)/30. 26 March 2009. See also the Reuters India article entitled "Trade finance shortfall up to $300 billion - World Bank". 19 March 2009.

10 It should be noted that when data are obtained from external sources, including, for example, WTO, reference is made to the Commonwealth of Independent States (CIS) and not to economies in transition. The CIS is comprised of former republics of the Soviet Union.

11 Projections for 2009 and 2010 by leading firms providing shipping market intelligence, including Clarkson Research Services, Fearnleys and Drewry Shipping Consultants are provisional and are likely to be revised over the year given the uncertainty that prevails. The recovery in the dry bulk sector rests heavily on China's performance and therefore, on the effect of the stimulus money allocated to infrastructure investments and on the strength of domestic demand in China.

12 Clarkson Research Services Limited. *Container Intelligence Monthly*. September 2009.

13 ibid.

14 Clarkson Research Services Limited. *Dry Bulk Trade Outlook*. September 2009

15 See, for example: "Who will blink first in iron ore price talks?" China Trade News. 4 July 2009.

16 See, for instance: Stopford M (2006). *Maritime Economics.* Second edition. See also: "International shipping: global regulation for a global industry – conclusions from modal workshop 4 at the 2009 International Transport Forum – statement by the International Chamber of Shipping and the International Maritime Organization", available at: http://www.internationaltransportforum.org/2009/workshops/pdf/Mws4-conclusions.pdf; and UNCTAD Transport Newsletter No. 24, available at: http://www.unctad.org/en/docs/websdtetlb20042_en.pdf.

17 United States Department of Transportation, Maritime Administration. "Economic impact of piracy in the Gulf of Aden on global trade". Available at: http://www.marad.dot.gov/documents/HOA_Economic%20Impact%20of%20Piracy.pdf

18 See, for example: Beddow M. More carriers cut out Suez. *Containerisation International*. 11 November 2008.

19 PowerPoint presentation by G. De Monie, Senior Director, Policy Research Corporation, European Commission. Seminar: Piracy and armed robbery against shipping. 21 January 2009.

20 ibid.

21 See also: Beddow M. Maersk reschedules AE7 eastbound service away from Suez. *Containerisation International*. 26 January 2009.

22 In May 2009, Rotterdam-sourced IFO 380 doubled as compared with December.

23 Wackett M. Bunker prices surge 25 per cent in May. *Containerisation International*. 28 May 2009. See also: Sanga B. Shipping lines return to piracy-prone route. *Business Daily*. 1 July 2009.

24 Osler D. The long way around. *Lloyd's List*. 26 November 2008.

25 Frank J. and Osler D. Piracy could add $400m to owners' insurance cover costs. *Lloyd's List*. 20 November 2008.

26 UNCTAD secretariat, based on various specialized sources, including the International Energy Agency's *Oil Market Report*, various issues; British Petroleum's *BP Statistical Review of World Energy 2009*, available at http://www.bp.com; *Fearnleys Review 2008*; *Shipping Review and Outlook* from Clarkson Research Services Limited, spring 2009; *DynaLiners* from Dynamar, various issues; and various press articles from *Fairplay* at http://www.fairplay.co.uk and from *Lloyd's List* at http://www.lloydslist.com/ll/home/index.htm.

27 Energy Information Administration. Daily and monthly Europe Brent spot price FOB (dollars per barrel). Accessed September 2009.

28 Based on the reference scenario whereby current laws and policies throughout the projection period remain unchanged.

29 Based on various forecasts, including by IMF.

30 Reuters. 21 per cent slide in energy investment in 2009. 25 May 2009.

31 In 2008, UNEP – together with other United Nations sister organizations – launched the Global Green New Deal initiative, as part of the international responses to the prevailing economic and financial crisis. The aim is to revive the international economy and to forge a new global economic development model based on reducing environmental

harm and scarcities, training workers for twenty-first century skills, creating new opportunities to employ those skills, and reducing the carbon dependency and resource use of all economies, while improving conditions for meeting the Millennium Development Goals. UNEP estimates the financial cost at $750 billion.

[32] Renewable Energy Policy Network for the Twenty-First Century (REN21). *Renewables Global Status Report, 2009 Update.*

[33] ibid.

[34] 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.

[35] IEA. *World Energy Outlook 2009.*

[36] *LNG World Shipping Journal*. March/April 2009.

[37] UNCTAD secretariat, based on various specialized sources, including the International Iron and Steel Institute (http://www.worldsteel.org); Clarkson Research Services Limited's *Dry Bulk Trade Outlook*, September 2009, and *Shipping Review and Outlook*, spring 2009; *Fearnleys Review 2008*; the International Aluminium Institute's Historical Statistics, available at http://www.world-aluminium.org/Statistics/Historical+statistics; the International Grains Council (http://www.igc.org.uk); the Mineral Information Institute (http://www.mii.org); and various press articles from *Fairplay* and *Lloyd's List.*

[38] Arcelor Mittal, *Safe Sustainable Steel*, Activity Report 2008 (http://www.arcelormittal.com/index.php?lang=en&page=638).

[39] United States Geological Survey. *Mineral Commodity Summaries 2009.*

[40] ibid.

[41] For additional information about the Climate Action Recognition Programme and the microsite, visit http://www.worldsteel.org.

[42] Clarkson Research Services Limited. *Dry Bulk Trade Outlook.* December 2008.

[43] See: Rio Tinto and BHP Billiton announce West Australian iron ore production joint venture. Rio Tinto media release (http://www.riotinto.com/media/5157_18100.asp). 5 June 2009.

[44] United States Geological Survey. *Mineral Commodity Summaries 2009.*

[45] Clarkson Research Services Limited. *Dry Bulk Trade Outlook*. September 2009.

[46] For additional information, see: Coal and the environment, at http://www.worldcoal.org/coal-the-environment. World Coal Institute.

[47] See also: UNCTAD (2008), "Addressing the global food crisis: Key trade, investment and commodity policies in ensuring sustainable food security and alleviating poverty"; UNCTAD policy brief no. 6, February 2009, "Sustaining African agriculture organic production"; and UNCTAD policy brief no. 2, June 2008, "Tackling the global food crisis".

[48] See, for example: UNCTAD. "Food security in Africa: learning lessons from the food crisis". TD/B/EX(47)/3. 21 April 2009.

[49] Alliance for a Green Revolution in Africa. "Strategy for an African Green Revolution", available at http://www.agra-alliance.org/files/936_file_AGRA_Strategy_20090609.pdf.

[50] Clarkson Research Services Limited. *Dry Bulk Trade Outlook*. September 2009.

[51] Based on information published by Clarkson Research Services in *Shipping Review and Outlook* (autumn 2008 and spring 2009) and *Container Intelligence Monthly*, various issues; and on information in *Containerisation International Magazine*, various issues; Containerisation International Online (http://www.ci-online.co.uk); data supplied by Drewry Shipping Consultants; and Dynamar, *DynaLiners Trades Review*, 2009.

[52] Clarkson Research Services. *Shipping Review and Outlook, Spring 2009 and Container Intelligence Monthly, September 2009.*

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57 Clarkson Research Services. *Container Intelligence Monthly.* September 2009.

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61 See IEA's *World Energy Outlook 2008.* See also: Centurelli R. "World energy outlook 2008: focus on post-2012 climate scenarios" – a presentation delivered at the UNCTAD Multi-year Expert Meeting on Transport and Trade Facilitation: Maritime Transport and the Climate Change Challenge. Available at: http://www.unctad.org/sections/wcmu/docs/cimem1p22_en.pdf .

62 See, for example: Stern N (2006). *The Economics of Climate Change – The Stern Review* (http://www.hm-treasury.gov.uk/sternreview_index.htm). See also: Stern N and Edenhofer O. "Towards a global green economy – recommendations for immediate G-20 action". Report submitted to the G-20 London summit. 2 April 2009.

63 For more detailed consideration of the issues raised here, see: UNCTAD, "Maritime transport and the climate change challenge". TD/B/C.I/MEM.1/2. Available at: http://www.unctad.org/ttl/legal.

64 For example, based on country data on GHG emissions from the UNFCCC and data published in the Second IMO GHG Study 2009, the CO_2 emissions in 2006 from international shipping (838 million tons) were equivalent to Germany's total CO_2 emissions (843.4 million tons) and larger than the United Kingdom's CO_2 emissions (556.6 million tons).

65 See, for example, the Second IMO GHG Study 2009. MEPC 59/INF.10. 9 April 2009.

66 See article 2 of the Kyoto Protocol.

67 Additional information about current negotiations under the UNFCCC is available at: http://unfccc.int/2860.php.

68 See also chapter 6. For additional information about current developments at IMO, see, for example: resolution A.963(23), MEPC 77/4, MEPC 57/4/6, MEPC 57/21, MEPC 58/4/5, MEPC 58/23, MEPC 59/4, MEPC 59/4/7, MEPC 59/4/40 and MEPC 59/INF.29. Available at http://www.imo.org.

69 Future emissions of CO_2 from international shipping were estimated in accordance with the scenarios developed by the IPCC in the *Special Report on Emission Scenarios* and are based on three categories of parameters, namely economic growth (demand for maritime transport services), transport efficiency and energy.

70 IMO. Second IMO GHG Study 2009. MEPC 59/INF.10.

71 For an overview of existing and potential relevant technologies, see, for example: Gunton P. "Controlling GHGs: For love or money?" Lloyd's Register – Fairplay. Paper submitted to UNCTAD Multi-year Expert Meeting on Transport and Trade Facilitation: Maritime Transport and the Climate Change Challenge (http://www.unctad.org/ttl/legal).

72 IMO. Second IMO GHG Study 2009. MEPC 59/INF.10.

73 ibid.

74 See, in particular, the technical and operational measures and policy options set out in the Second IMO GHG Study 2009. MEPC 59/INF.10.

75 Second IMO GHG Study 2009. MEPC 59/INF.10.

76 A 2008 study by CE Delft, entitled "Left on the high seas: Global climate policies for international transport" argues that climate change mitigation by the maritime transport sector could bring significant climate benefits, and also costs – ranging from direct impacts such as higher costs for food imports, to indirect impacts such as changed incentives for fragmentation of production. It could also result in increased demand for ships with lower CO_2 emissions. This entails a number of implications for research and development in terms of the relevant shipbuilding technology, and also for shipyard services – the majority of which are located in developing Asia, namely in China and in the Republic of Korea.

77 This issue constitutes a key point of divergence of views about a global regime to regulate GHG emissions from shipping. See, for example, a summary of relevant discussions contained in UNCTAD's Report of the Multi-year Expert Meeting on Transport and Trade Facilitation: Maritime Transport and the Climate Change Challenge. TD/B/C.I/MEM.1/3. Available at: http://www.unctad.org/en/docs/cimem1d3_en.pdf. See also a note by the IMO secretariat, entitled "Prevention of air pollution from ships, Shipping-relevant ideas and proposals to the UNFCCC process in 2008" MEPC 59/INF.29, 22 May 2009.

78 See, for instance: United States Climate Change Programme (2008), *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: Gulf Coast Study, Phase I*; and National Research Council (2008), *Potential Impacts of Climate Change on U.S. Transportation*. See also "Maritime transport and the climate change challenge", a note by the UNCTAD secretariat, TD/B/C.I/MEM.1/2, 9 December 2008; and Savonis M (United States Department of Transportation), "The Gulf Coast study", a presentation delivered at the UNCTAD Multi-year Expert Meeting on Transport and Trade Facilitation: Maritime Transport and the Climate Change Challenge (http://www.unctad.org/sections/wcmu/docs/cimem1p16_en.pdf).

79 ibid.

80 See, for example, the report by the UNCTAD secretariat entitled "Maritime security: ISPS code implementation, costs and related financing". UNCTAD/SDTE/TLB/2007/1. The report relays the results of a global survey questionnaire of the world maritime industry and States parties to the Safety of Life and Sea Convention (SOLAS Convention). The study highlighted some of the difficulties faced by many ports in developing countries when seeking to upgrade infrastructure, equipment and operations to satisfy the new international security requirements adopted under the auspices of IMO as part of the 2002 amendments to the SOLAS Convention, including the International Ship and Port Facility Security Code (ISPS code). In many developing countries, constraints faced by ports hinder the effective integration of these countries into the global transport and trading networks.

81 See, for example: UNFCCC (2007), "Investment and financial flows to address climate change"; and UNDP (2008), *Negotiations on Additional Investment and Financial Flows to Address Climate Change in Developing Countries.*

82 For further information about the meeting, as well as all relevant documentation, including a background note by the secretariat, the report of the meeting, and presentations by experts, see: http://www.unctad.org/ttl/legal.

Chapter 2

STRUCTURE, OWNERSHIP AND REGISTRATION OF THE WORLD FLEET

At the beginning of 2009, the world merchant fleet reached 1.19 billion deadweight tons (dwt), a year-on-year growth of 6.7 per cent compared to January 2008. This growth was the result of vessel orders placed before the financial crisis, when the industry was still expecting continuing high growth rates in demand – which did not materialize (see chapter 1). As the world's shipping capacity continues to increase even during the current economic downturn, the industry finds itself confronted with a surge in oversupply (see chapter 3) and tumbling charter and freight rates (see chapter 4).

This chapter presents the supply-side dynamics of the world maritime industry. The information and data comprehensively cover the structure, ownership and registration of the world fleet. Particular focus will be placed on the fleet's age profile, as this helps to visualize long-term trends for different vessel types. The chapter also reviews deliveries and demolitions of ships, tonnage on order, newbuilding prices, and markets for second-hand tonnage, and discusses the industry's possibilities of adjusting to the economic crisis.

A. STRUCTURE OF THE WORLD FLEET

1. World fleet growth and principal vessel types

Trends in vessel types

During the 12 months up to 1 January 2009, the deadweight tonnage of oil tankers increased by 2.5 per cent and that of bulk carriers by 7.0 per cent (see fig. 9 and table 8). For the first time, the total tonnage on dry bulk carriers has exceeded the tonnage on oil tankers. Together, the two types of ships represent 71.2 per cent of the world total tonnage, a slight decrease from the 71.5 per cent of January 2008. The fleet of general cargo ships increased by only 3.2 per cent in 2008, resulting in a decline of this category's share of the total world fleet to 9.1 per cent. The fleet of container ships increased by 17.3 million deadweight tons (dwt), or 11.9 per cent, and now represents 13.6 per cent of the total world fleet. Several specialized other types of ships have also recorded high growth rates: in 2008, the tonnage of liquefied gas carriers grew by 21.1 per cent, and that of offshore supply vessels grew by 9.1 per cent. In total, at the beginning of 2009, the world merchant fleet reached 1.19 billion dwt, a year-on-year growth rate of 6.7 per cent compared to January 2008. Since the beginning of the decade, the tonnage on general cargo ships has increased by 7 per cent, dry and liquid bulk tonnage by 52 and 48 per cent respectively, and containerized tonnage by an impressive 154 per cent.

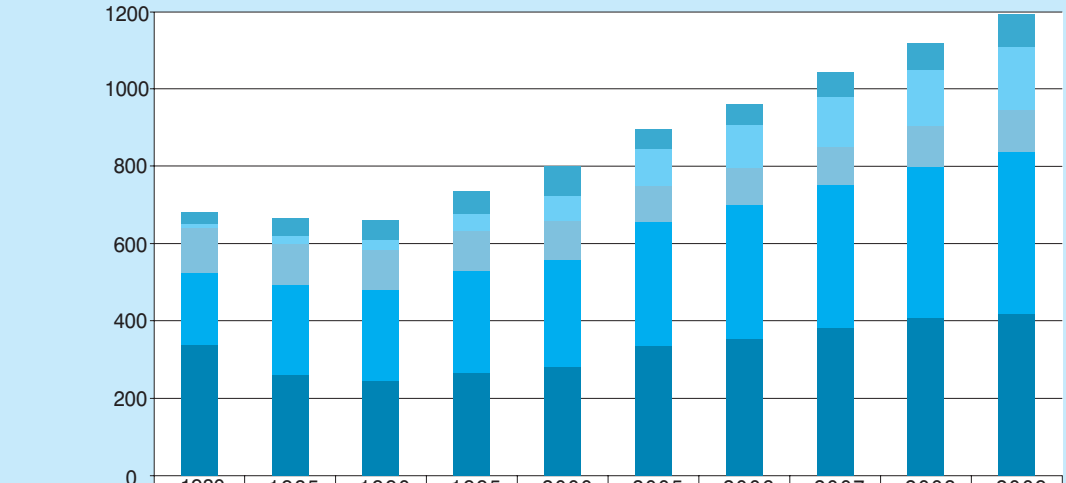
The world container ship fleet

The world fleet of fully cellular container ships continued to expand substantially in 2008: by the beginning of 2009 there were 4,638 ships, with a total capacity of 12.14 million TEUs – an increase of 8.5 per cent in the number of ships and 12.9 per cent in TEU capacity over the previous year. This notable difference in the two growth rates indicates the corresponding development in the size of container ships. Indeed, ship sizes also continued to increase, with the average carrying capacity per ship growing from 2,516 TEUs in January

Figure 9

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	2009
Other	31	45	49	58	75	49	53	63	69	85
Container	11	20	26	44	64	98	111	128	145	162
General cargo	116	106	103	104	101	92	96	101	105	109
Dry bulk	186	232	235	262	276	321	346	368	391	418
Oil tanker	339	261	246	268	282	336	354	383	408	418

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

[a] Cargo-carrying vessels of 100 gross tons and above.

2008 to 2,618 TEUs in January 2009 (see table 9). The average carrying capacity of new cellular container ships that entered service in 2008 was 3,489 TEU, a further increase from the previous year's 3,291 TEU.

In 2008, the largest new container ship that entered service was the Panama-flagged *MSC Daniela*, with 13,800 TEU, owned and operated by the Swiss-based Mediterranean Shipping Company. The smallest fully cellular vessels built in 2008 were three 604-TEU ships owned by the Singapore-based company PIL. During the first 10 months of 2009, the largest new container ships were two vessels of 13,800 TEU owned and operated by the Mediterranean Shipping Company. On 31 October 2009, there were 218 new 2009-built fully cellular container ships with a combined capacity of 899,284 TEU in service, with an average size of 4,125 TEU.[1]

Almost 80 per cent of ships and almost 90 per cent of TEU capacity of 2008-built fully cellular containerships are gearless

The trend towards more gearless vessels continued in 2008. Almost 80 per cent of ships and almost 90 per cent of the TEU capacity of 2008-built fully cellular container ships are gearless (table 10), whereas up to 10 years ago, almost half of newly built ships were still geared (fig. 10). When the first specialized container ships entered service in the 1960s and 1970s, they were initially all gearless, that is to say, they depended on the ports' cranes to load and unload the containers. During the 1980s and 1990s, ships were increasingly often equipped with their own cranes – a trend that has subsided in the current decade as more and more ports have been modernized and have invested in specialized container gantry cranes. Smaller or financially weaker ports – especially in developing countries – that have not been able to invest in specialized container cranes are confronted today with a situation whereby they can only accommodate an ever-diminishing proportion of the global container ship fleet.

Table 8

World fleet size by principal types of vessel, 2008–2009[a]

(beginning-of-year figures, thousands of dwt)

Principal types	2008	2009	Percentage change 2009/2008
Oil tankers	407 881	418 266	2.5
	36.5	*35.1*	*-1.4*
Bulk carriers	391 127	418 356	7.0
	35.0	*35.1*	*0.1*
General cargo ships	105 492	108 881	3.2
	9.4	*9.1*	*-0.3*
Container ships	144 655	161 919	11.9
	12.9	*13.6*	*0.6*
Other types of ships	68 624	84 895	23.7
	6.1	*7.1*	*1.0*
Liquefied gas carriers	30 013	36 341	21.1
	2.7	*3.0*	*0.4*
Chemical tankers	8 236	8 141	-1.2
	0.7	*0.7*	*-0.1*
Offshore supply	20 687	22 567	9.1
	1.9	*1.9*	*0.0*
Ferries and passenger ships	5 948	6 083	2.3
	0.5	*0.5*	*0.0*
Other/ n.a.	3 740	11 762	214.5
	0.3	*1.0*	*0.7*
World total	1 117 779	1 192 317	6.7
	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 gross tons and above. Percentage shares are shown in italics.

Table 9

Long-term trends in the cellular container ship fleet[a]

World total	1987	1997	2007	2008	2009	Growth 2009/2008
Number of vessels	1 052	1 954	3 904	4 276	4 638	8.47
TEU capacity	1 215 215	3 089 682	9 436 377	10 760 173	12 142 444	12.85
Average vessel size	1 155	1 581	2 417	2 516	2 618	4.04

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

[a] Vessels of 100 gross tons and above. Beginning-of-year figures, except those from 1987, which are mid-year figures.

Table 10

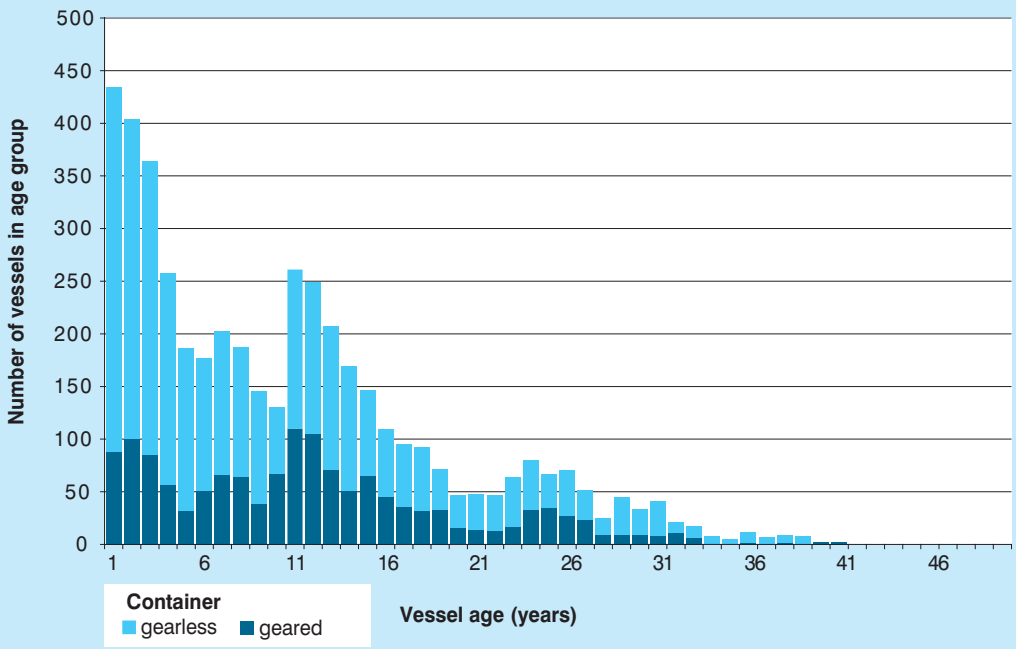
Geared and gearless fully cellular container ships built in 2007 and 2008

	Geared			Gearless			Total		
	2007	2008	Change %	2007	2008	Change %	2007	2008	Change %
Ships	93	88	-5.4	306	346	13.1	399	434	8.8
Percentage of ships	*23.3*	*20.3*		*76.7*	*79.7*		*100.0*	*100.0*	
TEU	136 956	154 708	13.0	1 176 011	1 359 454	15.6	1 312 967	1 514 162	15.3
Per cent of TEU	*10.4*	*10.2*		*89.6*	*89.8*		*100.0*	*100.0*	
Average vessel size	1 473	1 758	19.4	3 843	3 929	2.2	3 291	3 489	6.0

Source: Compiled by the UNCTAD secretariat, on the basis of data on the existing container ship fleet, from *Containerisation International Online*, May 2008 (2007 data) and May 2009 (2008 data).

Figure 10

Geared and gearless fully cellular container ships by age



Source: Compiled by the UNCTAD secretariat, on the basis of data on the existing container ship fleet, from *Containerisation International Online*, May 2009.

2. Age distribution of the world merchant fleet

As shown in table 11, the average age per ship in January 2009 stood at 23.0 years, corresponding to an average age per dwt of 13.97 years.[2] The average age per ship tends to be higher than the age per dwt, as ship sizes have grown over time, and younger (larger) ships thus contribute with more dwt to the total fleet; in fact, 57.2 per cent of ships and only 23.8 per cent of the world's tonnage is 20 years and older. Vessels registered in the 10 major open and international registries, which together account for 54 per cent of the world's tonnage, are younger than the world average, with an average ship age of under 17 years (12.3 years per dwt); only 38.9 per cent of ships and 20.8 per cent of dwt of the major open registry fleet is 20 years and older, while 51.8 per cent of tonnage is younger than 10 years.

Table 11

Age distribution of the world merchant fleet, by vessel type, as of 1 January 2009

(percentage of total ships and dwt)

Country grouping / Vessel type		0–4 years	5–9 years	10–14 years	15–19 years	20 years and +	Average age (years)
WORLD							
Bulk carriers	*Ships*	16.7	14.9	15.8	10.1	42.5	17.22
	dwt	22.9	18.7	17.5	12.1	28.8	14.27
	Average vessel size (dwt)	74 114	67 761	59 763	64 459	36 584	
Container ships	*Ships*	31.5	19.5	21.7	11.0	16.4	10.92
	dwt	39.8	23.5	17.1	8.6	11.1	9.01
	Average vessel size (dwt)	44 162	42 065	27 492	27 169	23 608	
General cargo	*Ships*	9.3	7.8	9.6	11.0	62.3	24.44
	dwt	13.7	9.9	12.9	9.4	54.1	22.12
	Average vessel size (dwt)	7 281	6 299	6 635	4 219	4 295	
Oil tankers	*Ships*	22.1	14.8	11.1	12.2	39.7	17.55
	dwt	29.9	28.3	15.7	13.6	12.6	10.72
	Average vessel size (dwt)	55 467	78 246	58 072	45 673	12 999	
Other types	*Ships*	8.2	9.3	9.1	9.5	63.9	25.26
	dwt	24.9	15.4	9.6	9.6	40.5	18.24
	Average vessel size (dwt)	4 645	2 540	1 616	1 554	973	
All ships	*Ships*	11.6	10.4	10.5	10.2	57.2	23.00
	dwt	26.9	21.7	15.8	11.7	23.8	13.97
	Average vessel size (dwt)	27 735	24 817	17 992	13 709	4 983	
DEVELOPING ECONOMIES							
Bulk carriers	*Ships*	18.1	14.1	15.9	9.3	42.6	16.90
	dwt	23.7	16.8	17.1	12.7	29.6	14.32
	Average vessel size (dwt)	74 424	67 470	61 317	78 171	39 543	
Container ships	*Ships*	31.4	17.6	21.8	11.6	17.6	11.20
	dwt	41.7	21.3	16.6	8.8	11.5	8.98
	Average vessel size (dwt)	44 235	40 356	25 449	25 316	21 843	
General cargo	*Ships*	9.9	7.7	7.8	8.7	65.9	24.72
	dwt	14.1	7.9	12.0	8.6	57.4	22.55
	Average vessel size (dwt)	7 437	5 392	8 050	5 201	4 555	
Oil tankers	*Ships*	20.4	11.4	10.8	10.9	46.5	18.84
	dwt	29.7	23.1	14.4	16.7	16.1	11.74
	Average vessel size (dwt)	60 081	83 522	55 234	63 078	14 280	
Other types	*Ships*	10.4	8.6	8.5	8.9	63.7	24.77
	dwt	22.8	13.3	8.7	9.3	45.9	19.53
	Average vessel size (dwt)	4 098	2 895	1 905	1 959	1 347	
All ships	*Ships*	13.3	9.7	10.0	9.2	57.7	22.55
	dwt	27.1	18.4	15.2	12.9	26.5	14.56
	Average vessel size (dwt)	29 033	27 059	21 586	19 925	6 566	
DEVELOPED ECONOMIES							
Bulk carriers	*Ships*	8.5	16.4	16.7	15.9	42.5	19.51
	dwt	16.8	28.7	19.8	10.0	24.7	14.33
	Average vessel size (dwt)	84 057	74 583	50 318	26 671	24 639	
Container ships	*Ships*	30.2	27.3	22.5	9.2	10.8	9.79
	dwt	36.4	30.6	18.3	7.2	7.6	8.47
	Average vessel size (dwt)	53 456	49 750	36 082	34 868	31 133	
General cargo	*Ships*	11.4	11.9	19.3	20.2	37.2	20.81
	dwt	19.4	18.9	19.7	12.8	29.2	17.34
	Average vessel size (dwt)	6 576	6 135	3 943	2 467	3 044	
Oil tankers	*Ships*	24.2	22.9	13.7	19.2	20.0	14.21
	dwt	31.1	39.5	16.7	8.1	4.6	8.43
	Average vessel size (dwt)	48 644	65 355	45 954	15 905	8 689	
Other types	*Ships*	6.8	11.8	11.2	10.0	60.3	25.08
	dwt	20.9	22.2	14.7	11.2	31.0	16.59
	Average vessel size (dwt)	2 960	1 798	1 254	1 072	491	
All ships	*Ships*	9.5	13.3	13.0	12.2	52.1	23.03
	dwt	27.1	32.0	17.7	9.0	14.2	11.56
	Average vessel size (dwt)	19 817	16 648	9 409	5 095	1 881	

Table 11 continued

Country grouping Vessel type		0–4 years	5–9 years	10–14 years	15–19 years	20 years and +	Average age (years)
COUNTRIES WITH ECONOMIES IN TRANSITON							
Bulk carriers	*Ships*	9.3	4.3	9.6	13.6	63.2	22.56
	dwt	12.1	6.0	12.4	17.0	52.6	20.98
	average vessel size (dwt)	46 796	50 127	46 134	44 806	29 859	
Container ships	*Ships*	18.5	10.4	20.4	14.2	36.5	15.62
	dwt	33.6	21.9	6.2	15.5	22.8	11.74
	average vessel size (dwt)	42 599	49 265	7 189	25 545	14 673	
General cargo	*Ships*	7.1	9.0	5.7	10.3	68.0	24.22
	dwt	7.8	5.1	4.9	7.3	75.0	26.87
	average vessel size (dwt)	3948	2045	3 088	2 556	3 976	
Oil tankers	*Ships*	11.4	8.1	5.0	8.4	67.1	23.81
	dwt	30.4	22.2	7.3	13.4	26.6	13.75
	average vessel size (dwt)	33 606	34 731	18 355	20 198	4 987	
Other types	*Ships*	4.8	4.0	4.0	13.1	74.1	25.41
	dwt	27.8	22.2	6.9	12.2	30.9	15.51
	average vessel size (dwt)	19 063	18 410	5746	3 085	1 382	
All ships	*Ships*	7.1	6.7	5.6	11.5	69.1	24.30
	dwt	19.1	12.9	8.4	13.3	46.3	20.18
	average vessel size (dwt)	19 340	13 946	10 926	8 439	4 857	
TEN MAJOR OPEN AND INTERNATIONAL REGISTRIES							
Bulk carriers	*Ships*	21.9	16.7	16.8	8.2	36.4	15.13
	dwt	26.7	18.9	17.4	10.5	26.5	13.13
	average vessel size (dwt)	76 584	70 903	64 896	80 523	45 620	
Container ships	*Ships*	33.9	19.3	21.0	11.0	14.7	10.33
	dwt	41.0	22.4	15.8	9.0	11.8	8.97
	average vessel size (dwt)	42 088	40 370	26 127	28 378	27 877	
General cargo	*Ships*	13.4	9.2	13.0	11.3	53.3	20.46
	dwt	16.0	11.3	15.4	8.5	48.8	19.15
	average vessel size (dwt)	10 862	11 224	10 741	6 886	8 307	
Oil tankers	*Ships*	34.2	21.7	13.3	10.0	20.8	11.34
	dwt	29.7	29.9	16.9	13.7	9.8	9.71
	average vessel size (dwt)	64 682	102759	94 804	10 1865	35 070	
Other types	*Ships*	16.8	10.7	10.4	8.0	54.1	21.87
	dwt	31.8	14.5	8.4	7.2	38.1	16.72
	average vessel size (dwt)	19 945	14 150	8 439	9 503	7 389	
All ships	*Ships*	22.3	14.7	14.5	9.7	38.9	16.63
	dwt	29.3	22.5	16.3	11.1	20.8	12.34
	average vessel size (dwt)	47 055	54 950	40 492	41 107	19 200	

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

[a] Vessels of 100 gross tons and above.

By vessel type, the average age of tankers stands at 17.5 years (10.7 per dwt), and the average age of bulk carriers at 17.2 (14.3 per dwt). General cargo vessels are the oldest vessel type, with an average age of 24.4 years (22.1 per dwt) and 54.1 per cent of tonnage 20 years and older. Only 23.6 per cent of general cargo tonnage is younger than 10 years, reflecting the trend that general cargo is increasingly containerized. The youngest fleet continues to be that of container ships, with an average age per ship of 10.9 years (9.0 years average per dwt); 39.8 per cent of tonnage on container ships is younger than five years, and only 11.1 per cent is 20 years and older. Among country groups, the container ship fleet registered in developing countries is the youngest, followed by developed countries and countries with economies in transition.

... 39.8 per cent of tonnage on containerships is younger than five years ...

The impressive growth of the world fleet over the last two decades is illustrated by the age profile of today's fleet (fig. 11). Today there is five times more tonnage in service that was built in 2008 (i.e. one year old, as illustrated in fig. 11) than tonnage built 20 years earlier. Most of the growth of the world fleet is in open and international registries, i.e. the share of the nationally flagged tonnage is higher among older ships than among those built more recently. The age profile also illustrates the peaks of tonnage delivered in 1977, 1983, 1992, 1996 and 2008. An interesting and more detailed picture of the fleet's age profile is obtained when looking at different vessel types, flags of registration, and countries of ownership (figures 12, 13 and 14).

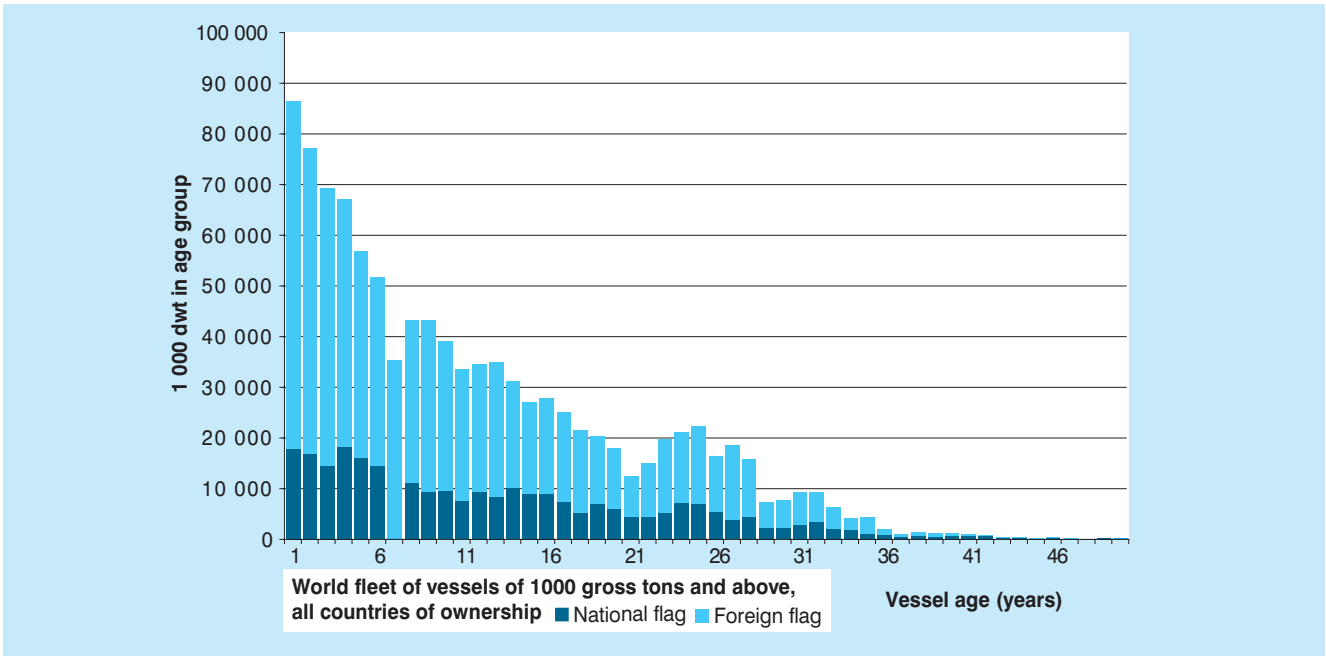
The tonnage of container ships, and also on chemical and liquefied gas tankers, has surged over the last three to five years, while new deliveries of specialized refrigerated tonnage has almost come to a standstill …

The delivery of new tonnage on different vessel types has varied markedly over the last five decades (fig. 12). The tonnage of container ships, and also on chemical and liquefied gas tankers, has surged over the last three to five years, while new deliveries of specialized refrigerated tonnage has almost come to a standstill since 2001, as more and more container ships also cater for reefer cargo; the reefer capacity of container ships is forecast to increase by a further 40 per cent until 2012. Dry bulk carriers and oil tankers have seen a relatively steady growth, while deliveries of general cargo and ro-ro tonnage has been more volatile. The share of foreign-flagged tonnage is lowest for general cargo and ro-ro vessels, and highest for liquefied gas carriers and refrigerated cargo.

The age profile of different flags of registration varies widely too (fig. 13). Some of the major open registries have relatively young fleets; they include Antigua and Barbuda (average age per dwt 8.4 years), the Bahamas (12.4), Bermuda (13.6), the Cayman Islands (10.6), Liberia (11.0), the Marshall Islands (9.6), Panama (11.0) and the Philippines (12.6). Other open registries specialize in far older fleets; they include Cambodia (average age per dwt 27.9 years), Dominica (21.2), Mongolia (29.8), Saint Kitts and Nevis (29.3), Saint Vincent and the

Figure 11

Age profile of world fleet, all vessel types[a]

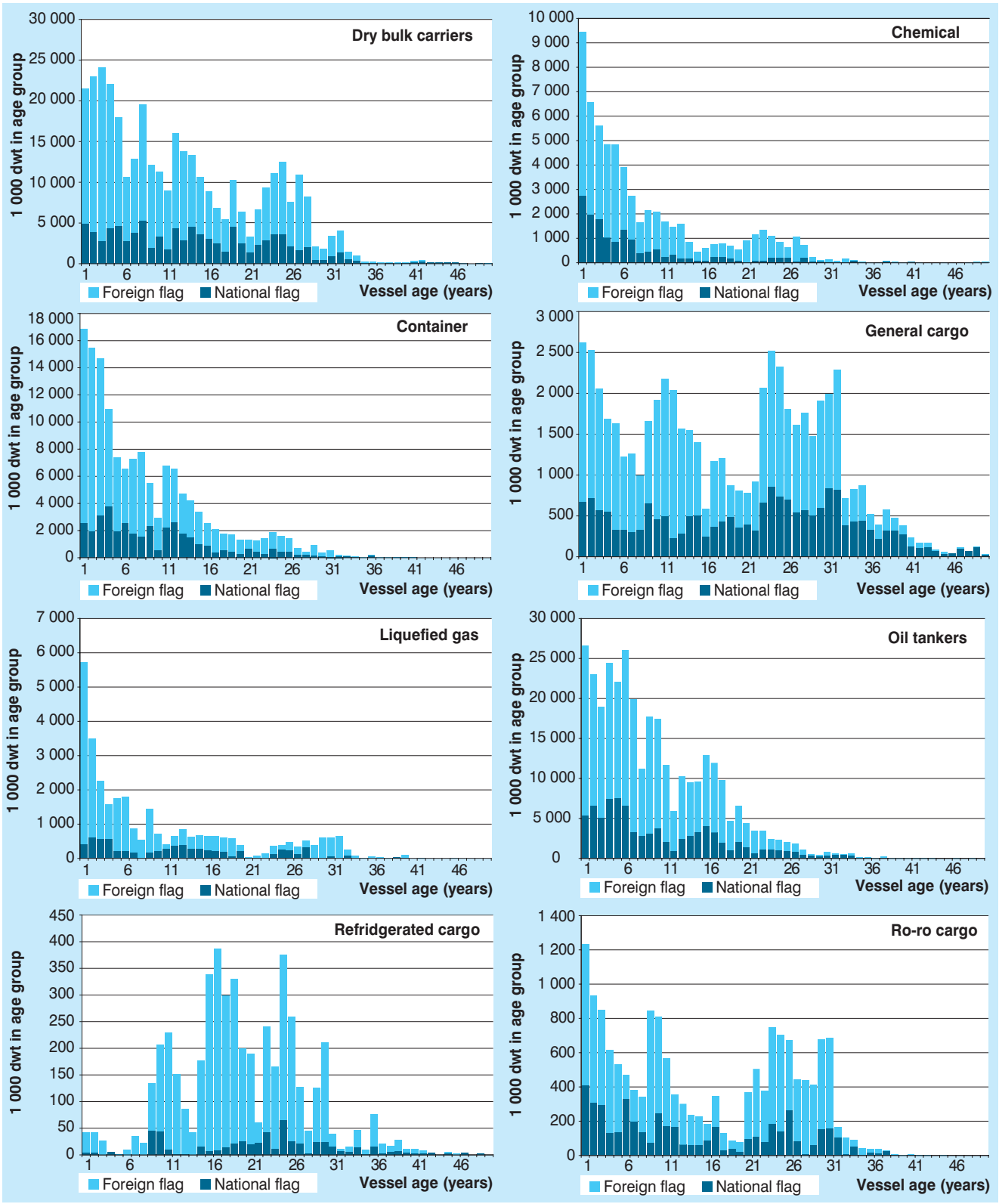


Source: Compiled by the UNCTAD secretariat, on the basis of data supplied by Lloyd's Register – Fairplay.

[a] Vessels of 1,000 gross tons (GT) and above built between 1958 and 2008.

Figure 12

Age profiles of world fleet for eight major vessel types



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

Figure 13

Age profiles of world fleet: major flags of registration of developing countries, countries with economies in transition, and open and international registries located in developing countries

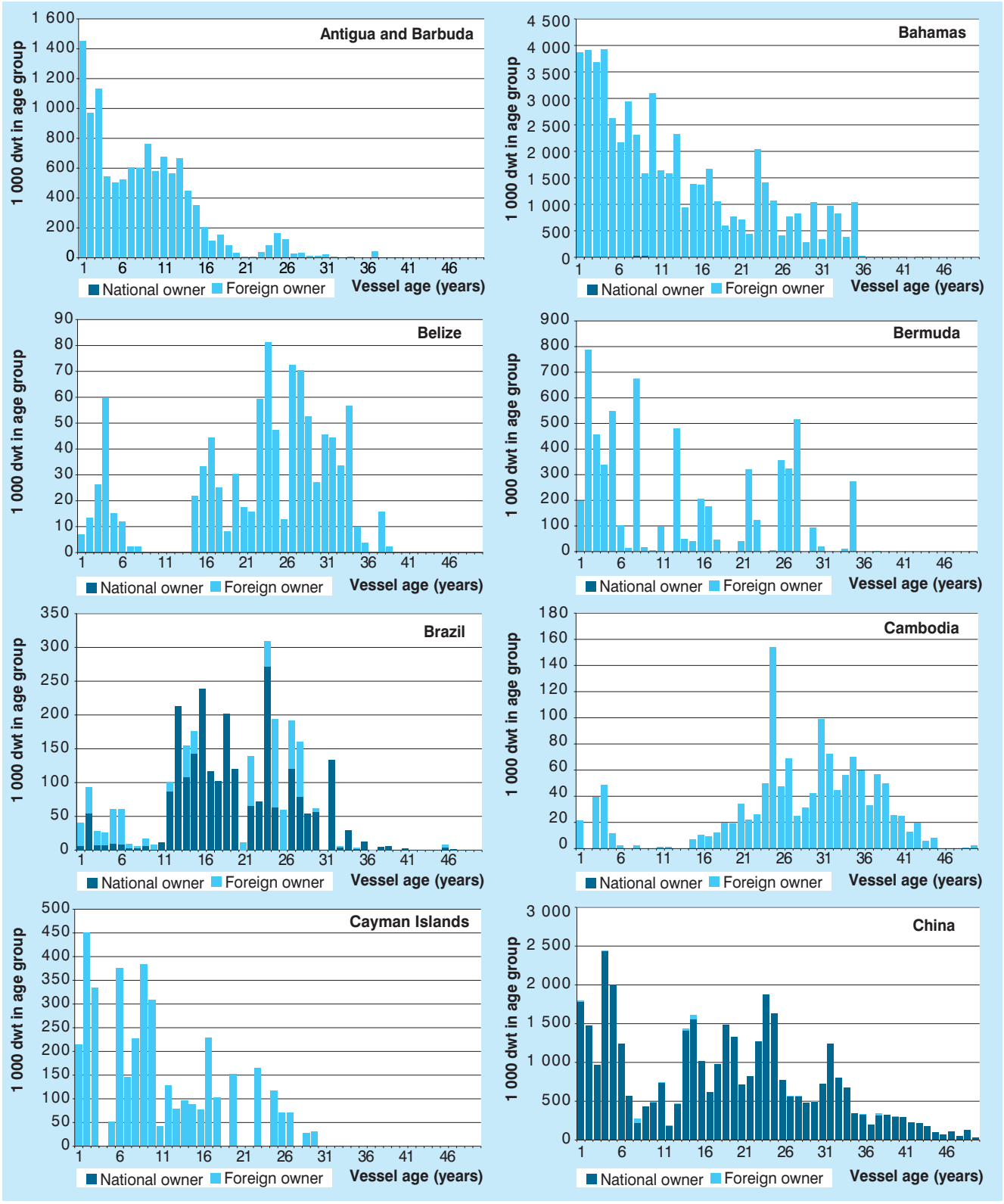


Figure 13 (continued)

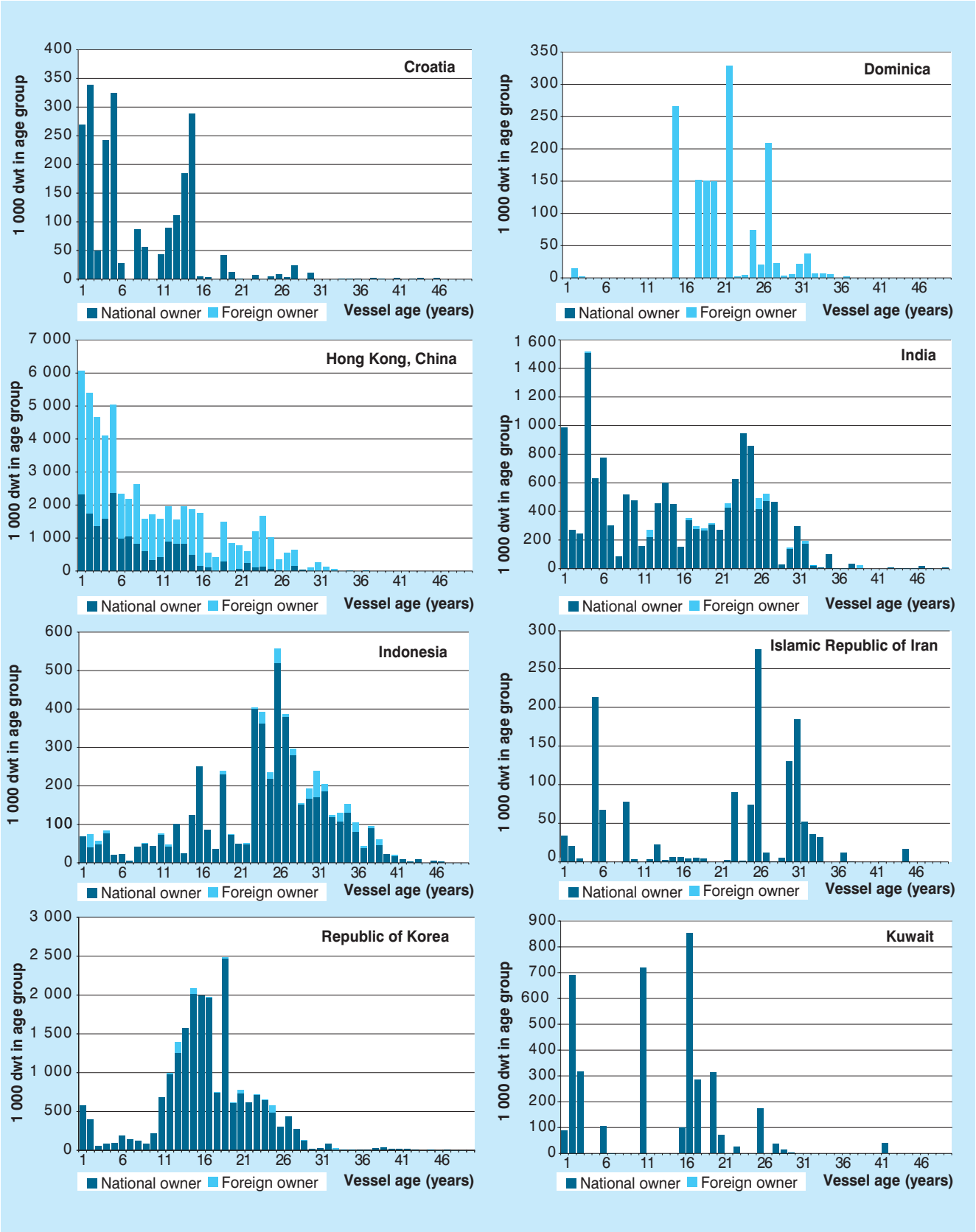


Figure 13 (continued)

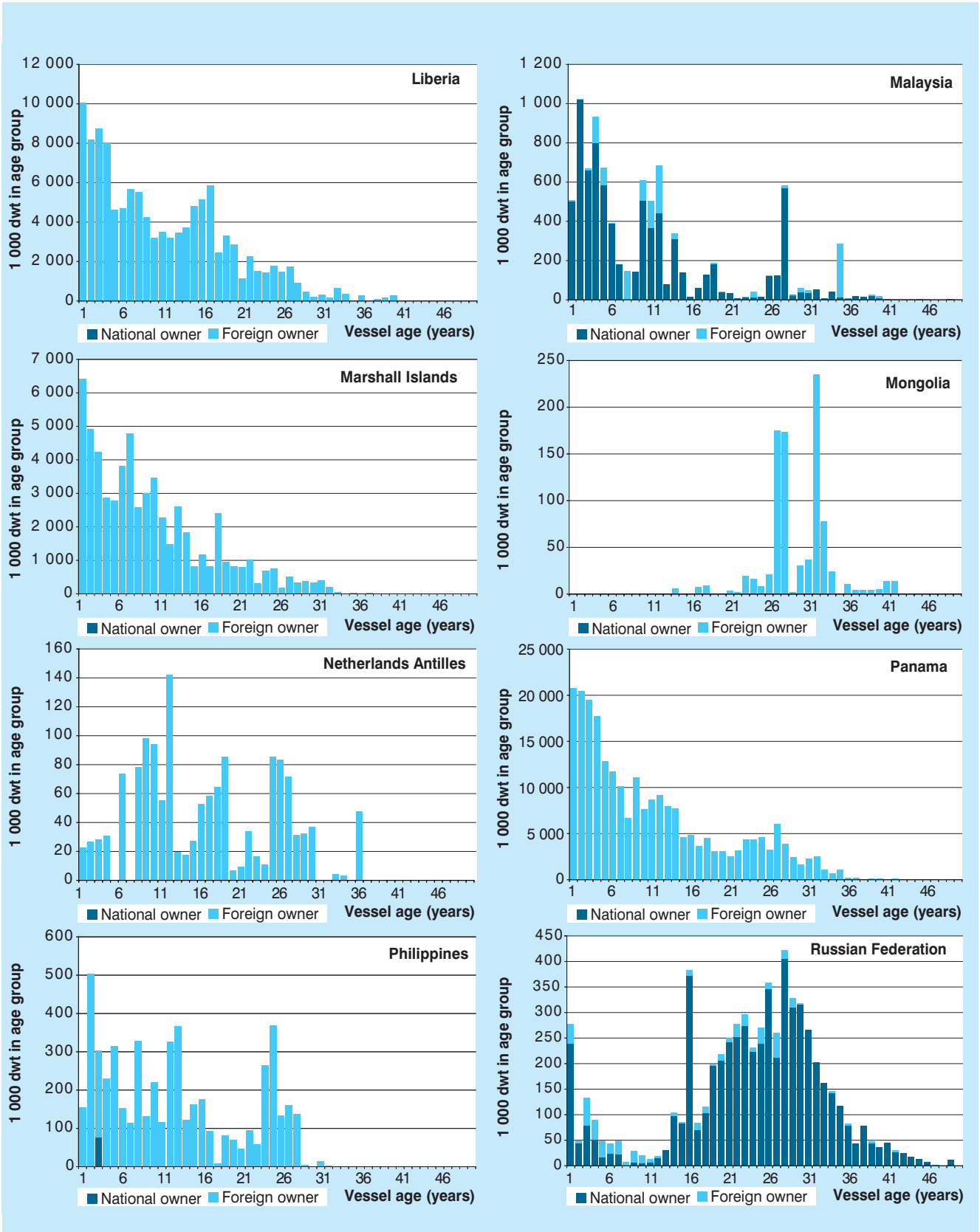


Figure 13 (continued)

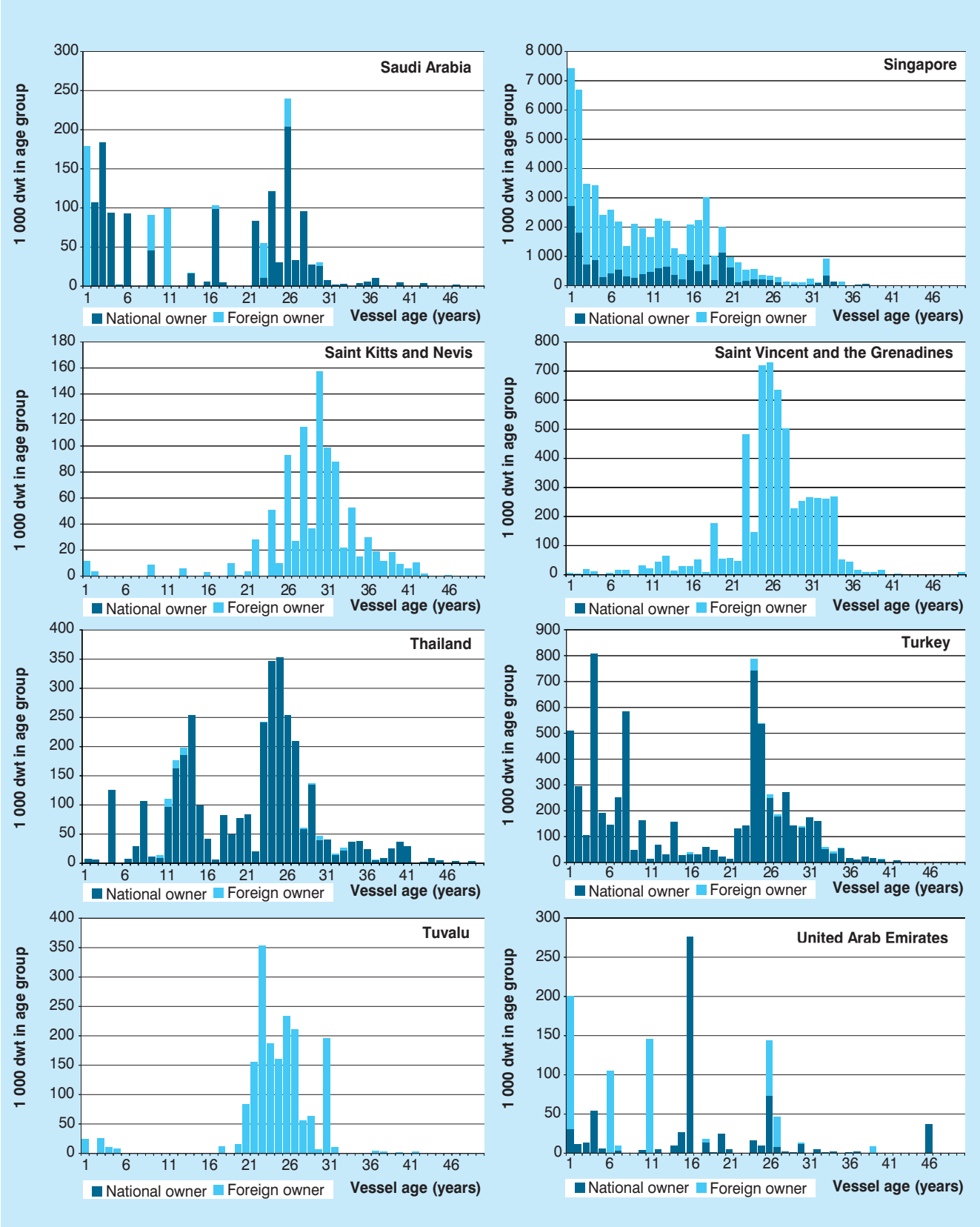
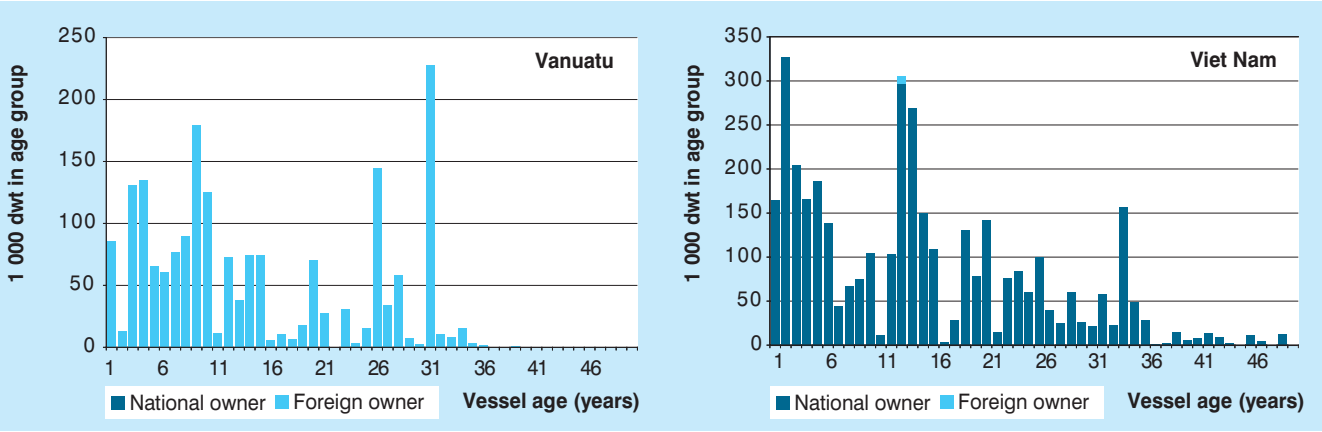


Figure 13 (continued)



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

Figure 14

Age profiles of world fleet: developing countries and countries with economies in transition among the major 35 vessel-owning countries

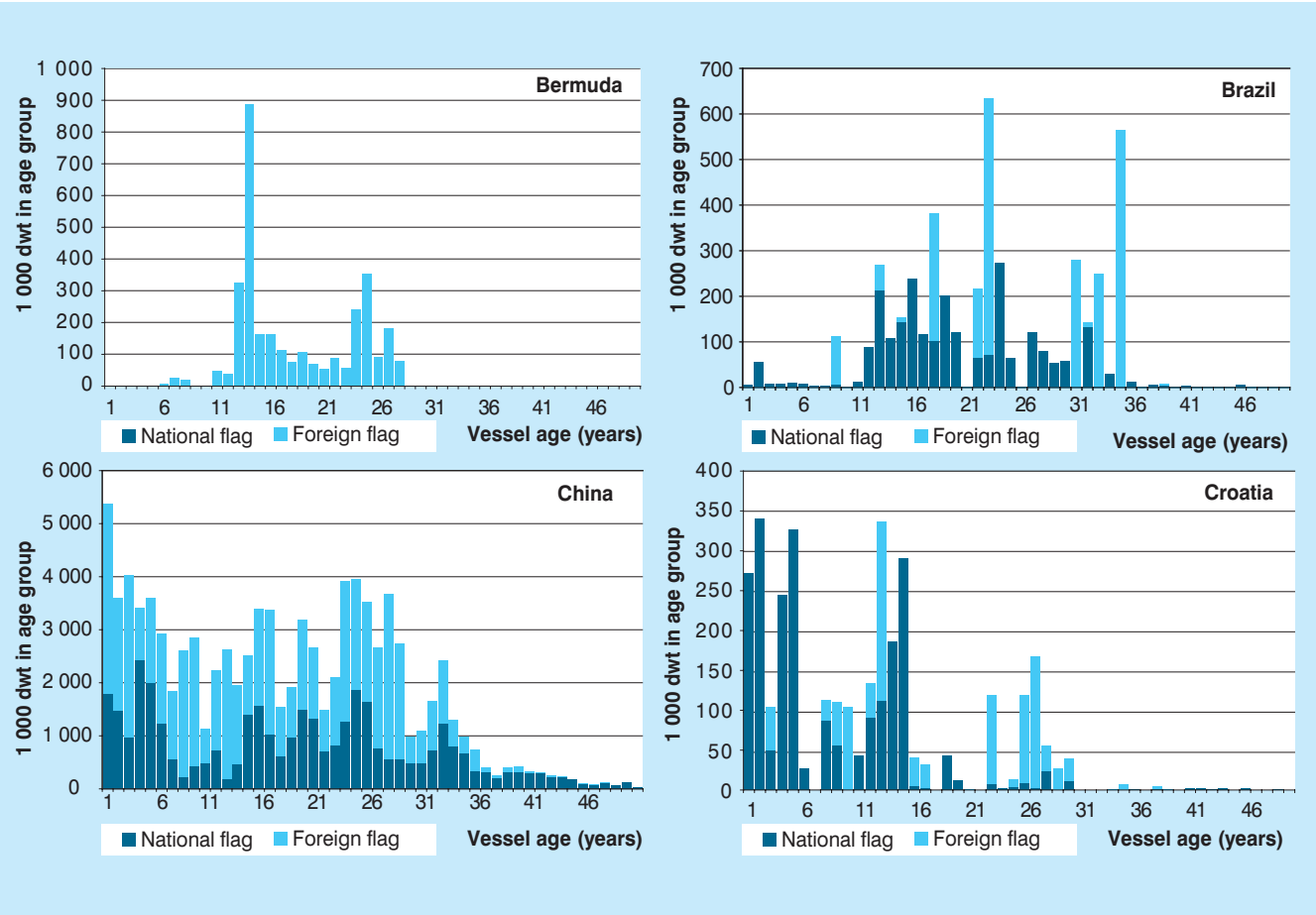


Figure 14 (continued)

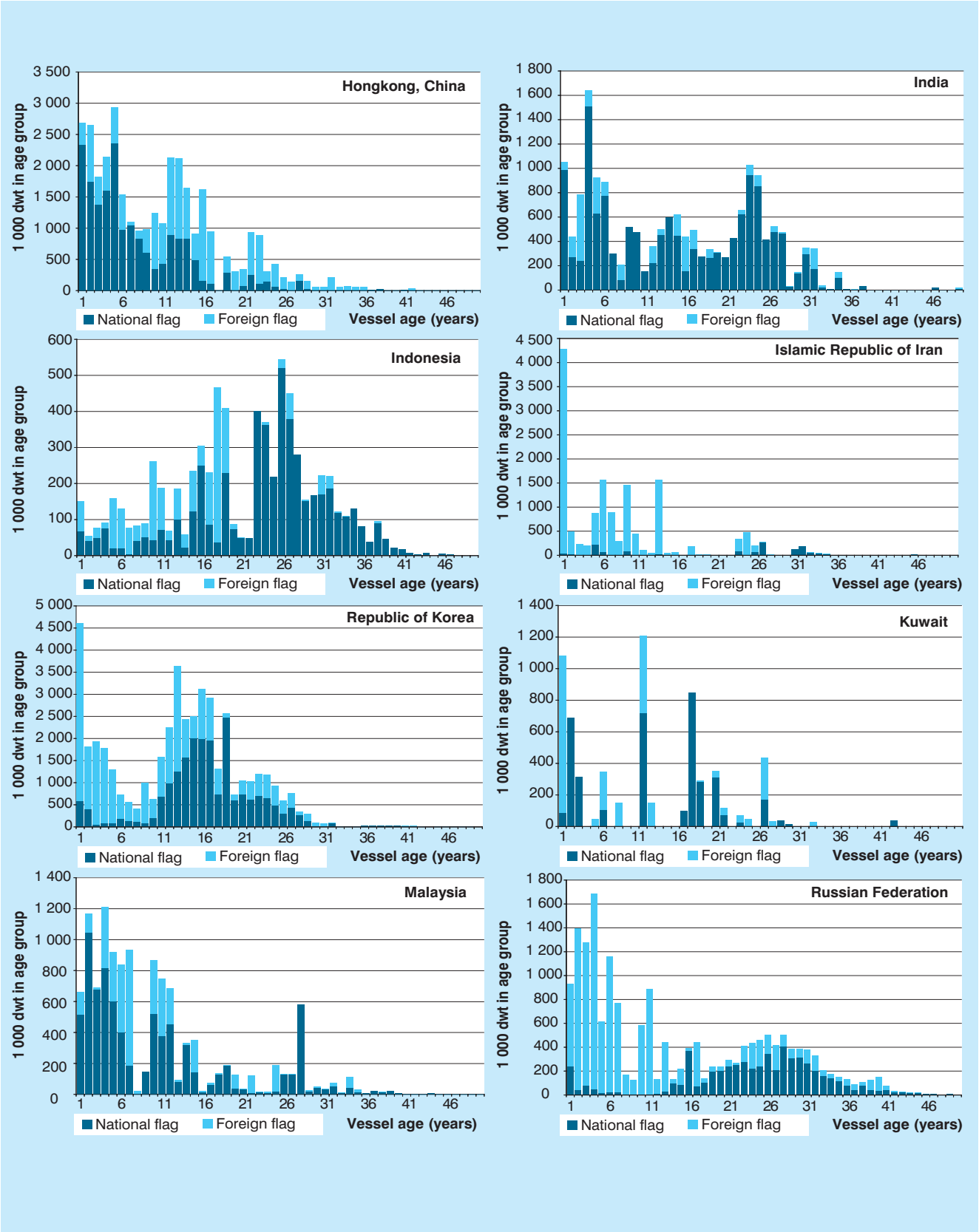
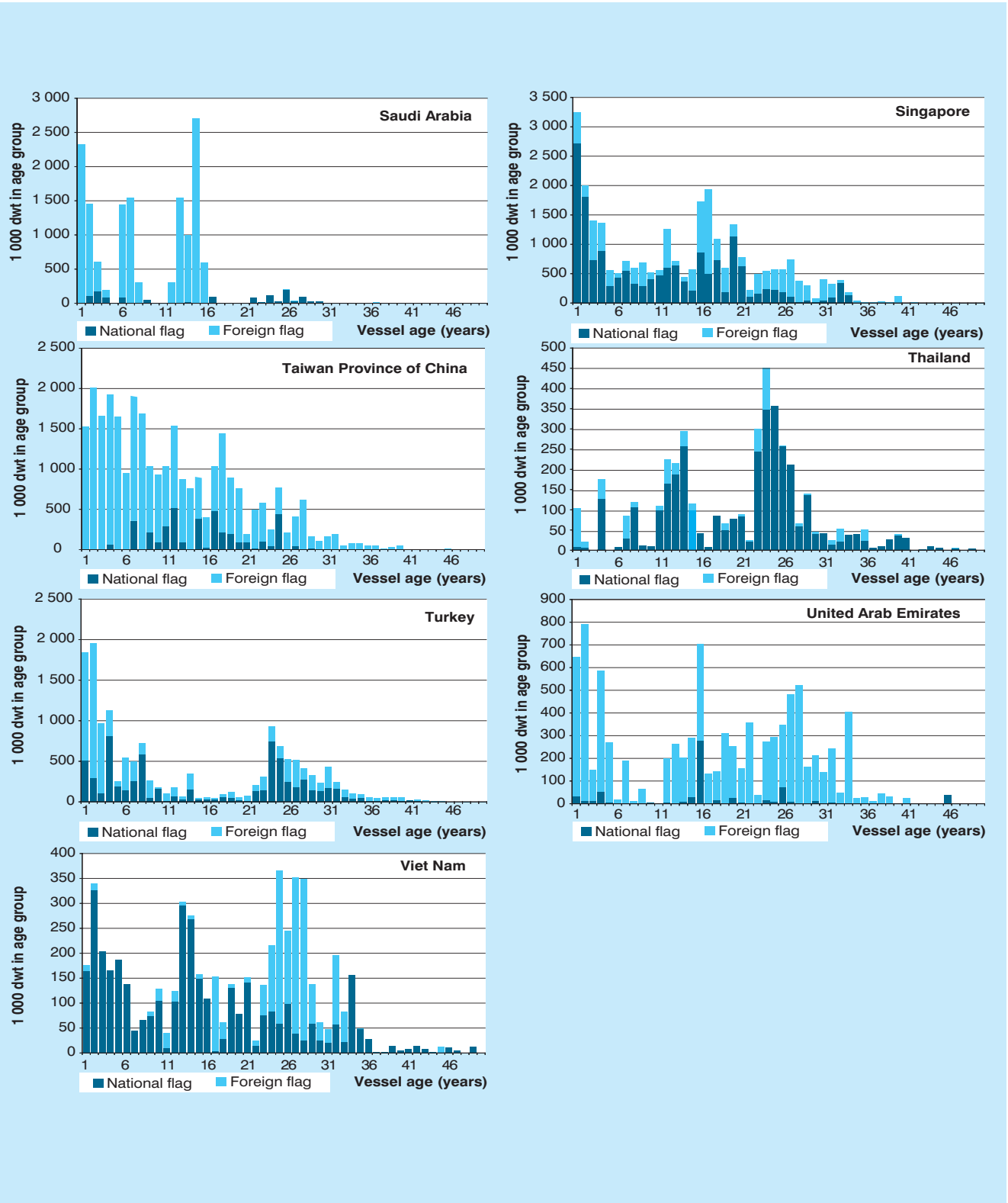


Figure 14 (continued)



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

Grenadines (26.4) and Tuvalu (24.5). A comparison between the age profile of a registry's fleet and the likelihood of the flag being targeted by different port state control regimes shows a high correlation. By way of example, the three oldest fleets among those listed above are included in the "black lists" of the Paris and Tokyo memorandums of understanding on port state control, while the three youngest fleets are on the "white lists", that is to say, ships flying the flag of those countries are less likely to be detained during port state control inspections.[3]

Many flags of registration cater mostly for nationals of the same country, and their age profile is thus mostly determined by the structure of the nationally controlled fleet. These include Brazil (average age per dwt 19.6 years), China (18.2), Croatia (8.1), India (15.2), Indonesia (24.2), the Islamic Republic of Iran (21.1), Kuwait (12.6), Malaysia (11.1), the Republic of Korea (16.8), the Russian Federation (23.4), Saudi Arabia (14.9), Thailand (21.2), Turkey (16.0) and Viet Nam (14.7).

Nationals of the top 35 countries together control 95.60 per cent of the world fleet …

Some registries provide their country's flag to foreign-owned ships while at the same time maintaining an important nationally controlled fleet that uses the national flag; these include Hong Kong (China) (average age per dwt 9.5 years), Singapore (10.0) and the United Arab Emirates (14.4). Brazil and Saudi Arabia, too, have a certain fleet of foreign-owned ships that use the national flag; in the case of Brazil, this includes a large number of new offshore supply vessels that are owned by companies from Italy, Norway, the United States, and other countries.

Figure 14 provides an overview of the age profiles of nationally owned tonnage. Almost all nationally owned fleets include some ships that are nationally flagged, as well as foreign-flagged ships. A curious special case is Bermuda: vessel owners from Bermuda exclusively register their ships under flags other than Bermuda (including the Bahamas, Croatia, the Marshall Islands, the Philippines, and the Spanish international registry CSR), while at the same time, the flag of Bermuda is in fact one of the most widely used – albeit only by non-Bermudan owners. Owners from Indonesia, the Republic of Korea and the Russian Federation have most of their younger tonnage registered under foreign flags, while older ships mostly fly the national flag. In Brazil, Singapore and Viet Nam, on the other hand, the older tonnage is in fact more likely to use a foreign flag, as compared to the younger nationally controlled tonnage.

Owners from Indonesia, the Republic of Korea and the Russian Federation have most of their younger tonnage registered under foreign flags, while older ships mostly fly the national flag.

B. OWNERSHIP OF THE WORLD FLEET

The 35 countries with the largest fleets owned by nationals are ranked in table 12, according to deadweight tonnage.[4] Nationals of the top 35 countries together control 95.60 per cent of the world fleet, a further increase over the 95.37 per cent historical record of January 2008. Japan has overtaken Greece as the country with the largest controlled fleet, totalling 173.3 million dwt and 3,720 ships of 1,000 GT and above. Greece has a controlled fleet of 169.4 million dwt (3,064 ships), followed by Germany (105 million dwt; 3,522 ships), China (92.8 million dwt; 3,499 ships) and Norway (50.2 million dwt; 2,027 ships). Together, those five countries hold a market share of 53.5 per cent; the top 10 countries together hold a market share of 70 per cent. Of the top 35 countries, 16 are from Asia, 15 are from Europe, and 4 are from the Americas, while none are from Africa or Oceania. Of the top 35 countries and territories, 17 are classified as developed (see annex I), 16 as developing, and 2 as economies in transition.

More than other vessel types, container ships are increasingly operated by companies that do not own the vessels they use; indeed, major liner shipping companies charter many of the ships that they use to offer their services. Of the fully cellular container ship fleet in service today, 65.5 per cent of ships (corresponding to 55.1 per cent of TEU capacity) are operated by liner shipping companies that do not own the ship themselves.[5] This share is even higher for smaller and older geared container ships, whereas the newer and larger gearless ships are more often owned by the major liner operators themselves.

Several developing countries, especially from Asia but also from South America, are host to important liner shipping operators, whereas

Table 12

The 35 countries and territories with the largest controlled fleets (dwt), as of 1 January 2009[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. 09	Total as a percentage of world total, 1 Jan. 08	Change in percentage share
Japan	733	2 987	3 720	12 199 536	161 085 699	173 285 235	92.96	15.68	15.58	0.10
Greece	720	2 344	3 064	52 833 486	116 593 204	169 426 690	68.82	15.33	16.81	-1.48
Germany	479	3 043	3 522	17 428 475	87 525 237	104 953 712	83.39	9.50	9.07	0.43
China	1 944	1 555	3 499	37 204 731	55 594 490	92 799 221	59.91	8.40	8.18	0.22
Norway	783	1 244	2 027	11 542 923	38 673 312	50 216 235	77.01	4.54	4.51	0.03
Republic of Korea	797	438	1 235	20 858 866	25 764 360	46 623 226	55.26	4.22	3.63	0.59
United States	867	915	1 782	20 606 970	19 358 913	39 965 883	48.44	3.62	3.84	-0.22
Hong Kong, China	307	373	680	18 296 677	15 427 149	33 723 826	45.75	3.05	3.22	-0.17
Denmark	347	567	914	11 958 945	19 636 578	31 595 523	62.15	2.86	2.64	0.22
United Kingdom	398	520	918	11 175 470	19 741 031	30 916 501	63.85	2.80	2.50	0.30
Taiwan Province of China	91	540	631	4 068 416	25 735 230	29 803 646	86.35	2.70	2.52	0.18
Singapore	545	331	876	16 482 632	11 747 265	28 229 897	41.61	2.55	2.76	-0.21
Italy	582	238	820	12 853 503	6 896 850	19 750 353	34.92	1.79	1.71	0.08
Russian Federation	1 516	557	2 073	5 944 226	12 343 679	18 287 905	67.50	1.66	1.74	-0.08
India	495	69	564	14 389 937	2 822 923	17 212 860	16.40	1.56	1.55	0.01
Canada	212	201	413	2 454 402	14 716 391	17 170 793	85.71	1.55	1.81	-0.26
Turkey	533	630	1 163	6 803 806	8 647 114	15 450 920	55.97	1.40	1.27	0.13
Saudi Arabia	73	99	172	1 234 653	13 676 703	14 911 356	91.72	1.35	1.25	0.10
Iran (Islamic Republic of)	83	128	211	1 357 901	13 202 731	14 560 632	90.67	1.32	0.99	0.33
Belgium	93	147	240	6 283 078	7 164 128	13 447 206	53.28	1.22	1.17	0.05
Malaysia	338	97	435	7 717 055	3 842 005	11 559 060	33.24	1.05	1.08	-0.03
United Arab Emirates	58	347	405	701 714	8 331 052	9 032 766	92.23	0.82	0.86	-0.04
Netherlands	491	267	758	4 217 884	4 186 617	8 404 501	49.81	0.76	0.83	-0.07
Cyprus	126	234	360	3 196 071	5 162 708	8 358 779	61.76	0.76	0.70	0.06
Sweden	143	224	367	1 740 141	5 697 891	7 438 032	76.60	0.67	0.67	0.00
Indonesia	715	106	821	4 956 797	2 064 867	7 021 664	29.41	0.64	0.70	-0.06
France	180	188	368	2 988 629	3 576 784	6 565 413	54.48	0.59	0.63	-0.04
Kuwait	38	44	82	3 846 063	2 602 518	6 448 581	40.36	0.58	0.51	0.07
Viet Nam	389	67	456	3 629 175	1 938 996	5 568 171	34.82	0.50	0.44	0.06
Brazil	129	15	144	2 444 762	2 266 253	4 711 015	48.11	0.43	0.43	-0.00
Spain	187	204	391	1 562 315	2 885 611	4 447 926	64.88	0.40	0.43	-0.03
Thailand	300	44	344	3 506 972	620 161	4 127 133	15.03	0.37	0.39	-0.02
Switzerland	35	114	149	1 012 164	2 816 788	3 828 952	73.57	0.35	0.34	0.01
Croatia	78	39	117	2 311 784	985 103	3 296 887	29.88	0.30	0.30	-0.00
Bermuda	0	65	65	0	3 227 658	3 227 658	100.00	0.29	0.31	-0.02
Total (35 countries or territories)	14 805	18 981	33 786	329 810 159	726 557 999	1 056 368 158	68.78	95.60	95.37	0.23
World total	16 996	20 840	37 836	347 007 002	757 952 026	1 104 959 028	68.60	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 the Isle of Man (United Kingdom), and also second registries such as DIS (Denmark), NIS (Norway) or FIS (France). For the United Kingdom, British-flag vessels are included under the national flag, except for Bermuda.

their share among the shipowning companies is smaller; many of the non-operating container ship owners are based in Europe, notably in Germany. By way of example, only 13 of the 82 CSAV-operated ships (Chile) are also owned by CSAV, while most of the remainder are owned by German non-operating companies such as Doehle, NRS or Oskar Wehr. Hanjin (Republic of Korea) operates 80 ships, of which it owns 29; IRSL (Islamic Republic of Iran) owns 18 of the 22 vessels it operates; Maruba (Argentina) owns one of the 18 ships it operates; OOCL (Hong Kong, China) operates 82 ships of which it owns 39; and MISC (Malaysia) operates 45 ships of which it owns 14. This distinction between ownership and operation of vessels is yet another example of how the globalization of the maritime business leads to a division of labour: capital costs and tax systems may benefit the ownership of vessels in some countries, while logistics know-how and the costs of management skills may be more favourable in others, including many middle-income developing countries.

C. REGISTRATION OF SHIPS

1. Flags of registration

The 35 countries and territories with the largest fleets registered under their flag account for 92.87 per cent of the world fleet – a further increase of 0.45 per cent compared to their 92.42 per cent share in January 2008 (table 13).[6] The top 5 registries together account for 49.95 per cent of the world's dwt, and the top 10 registries account for 70.49 per cent – both figures showing increases over previous years.

The top 5 registries together account for 49.95 per cent of the world's dwt, and the top 10 registries account for 70.49 per cent – both figures showing increases over previous years.

The largest flag of registration continues to be Panama, with 274 million dwt (23 per cent of the world fleet), followed by Liberia (124 million dwt; 10.6 per cent). These two leading registries are followed by five flags with between 61 and 68 million dwt (between 5 and 6 per cent of the world fleet) each: the Marshall Islands, Hong Kong (China), Greece, the Bahamas and Singapore. As regards the number of ships, the largest fleets are flagged in Panama (8,065), the United States (6,435), Japan (6,316), Indonesia (4,464), China (3,916) and the Russian Federation (3,444). Except for Panama, these fleets include a large number of general cargo and other smaller vessels that are employed in coastal shipping.

Several registries recorded double-digit growth in 2008, notably Viet Nam (+19.8 per cent), Germany (+19.4 per cent), the United Kingdom (+15.3 per cent), the Marshall Islands (+14.9 per cent), the Danish International Registry (+14.5 per cent), Malta (+12.1 per cent) and Antigua and Barbuda (+11.4 per cent). Malta gained additional tonnage controlled by the Islamic Republic of Iran, whose national flag no longer appears among the top 35 (it was still ranked 32 in January 2008). The growth in Viet Nam, Germany and the Danish International Registry was mostly due to nationally controlled tonnage, while the growth in the United Kingdom, the Marshall Islands, Malta, and Antigua and Barbuda was predominantly due to new registrations of foreign-owned vessels.

As regards the percentage distribution of the world fleet, the 10 major open and international registries increased their combined market share between 2008 and 2009 by a further 0.77 percentage points to reach 55.11 per cent. The 10 major open and international registries had their highest shares among dry bulk carriers (60.6 per cent) and oil tankers (55.6 per cent).

Excluding the 10 major open and international registries, 18.2 per cent of the world fleet is registered in developed countries, with a particularly high share (27.1 per cent) in the container ship fleet (table 14). Countries with economies in transition accounted for 1.1 per cent of the total world fleet, with 4.7 per cent of general cargo vessels. Only 1 per cent of the world's tonnage is registered in developing countries in Africa and Oceania, including the open registries of Tuvalu and Vanuatu. Two per cent of the world fleet is registered in developing countries in the Americas, including several open registries such as Barbados, Belize, the Plurinational State of Bolivia, Dominica, Honduras, Jamaica, the Netherlands Antilles, and Saint Kitts and Nevis. With 22.3 per cent of the world fleet, developing countries in Asia account for a higher market share in vessel registration than developed countries, holding a particularly high share in the general cargo fleet (28.3 per cent) and dry bulk carriers (25.0 per cent).

The following section will examine in more detail the links between vessel ownership and registration, for the 10 major open and international registries and the 35 major countries of ownership.

Table 13

The 35 flags of registration with the largest registered deadweight tonnage, as of 1 January 2009 [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	Dwt growth 2009/2008, per cent
Panama	8 065	8.09	273 961	22.98	22.98	33 969	8.47
Liberia	2 306	2.31	125 993	10.57	33.54	54 637	7.21
Marshall Islands	1 265	1.27	68 451	5.74	39.28	54 111	14.85
Hong Kong, China	1 371	1.37	64 183	5.38	44.67	46 814	8.40
Greece	1 498	1.50	63 036	5.29	49.95	42 080	2.69
Bahamas	1 446	1.45	62 013	5.20	55.15	42 886	3.80
Singapore	2 451	2.46	60 798	5.10	60.25	24 805	9.45
Malta	1 532	1.54	50 666	4.25	64.50	33 072	12.05
China	3 916	3.93	39 998	3.35	67.86	10 214	7.74
Cyprus	1 016	1.02	31 388	2.63	70.49	30 893	6.65
Republic of Korea	3 001	3.01	22 600	1.90	72.38	7 531	6.90
Norway (NIS)	601	0.60	20 322	1.70	74.09	33 813	-0.88
Germany	961	0.96	17 949	1.51	75.59	18 677	19.41
United Kingdom	1 676	1.68	15 950	1.34	76.93	9 517	15.25
Japan	6 316	6.33	15 417	1.29	78.23	2 441	4.09
India	1 460	1.46	15 300	1.28	79.51	10 480	1.72
Isle of Man	345	0.35	14 516	1.22	80.73	42 075	4.81
Italy	1 588	1.59	14 415	1.21	81.93	9 078	8.66
Denmark (DIS)	470	0.47	12 479	1.05	82.98	26 551	14.45
Antigua and Barbuda	1 195	1.20	12 455	1.04	84.03	10 423	11.38
United States	6 435	6.45	11 910	1.00	85.02	1 851	-1.88
Bermuda	153	0.15	10 298	0.86	85.89	67 310	4.34
Malaysia	1 238	1.24	9 391	0.79	86.68	7 586	-0.61
Turkey	1 301	1.30	7 476	0.63	87.30	5 747	2.41
Saint Vincent and the Grenadines	1 009	1.01	7 400	0.62	87.92	7 334	-12.97
France (FIS)	168	0.17	7 144	0.60	88.52	42 524	-3.63
Russian Federation	3 444	3.45	7 140	0.60	89.12	2 073	0.07
Indonesia	4 464	4.48	7 025	0.59	89.71	1 574	2.42
Netherlands	1 296	1.30	6 815	0.57	90.28	5 258	9.61
Philippines	1 808	1.81	6 750	0.57	90.85	3 733	1.37
Belgium	243	0.24	6 631	0.56	91.40	27 289	2.54
Viet Nam	1 312	1.32	4 663	0.39	91.80	3 554	19.77
Cayman Islands	153	0.15	4 314	0.36	92.16	28 196	-1.01
Taiwan Province of China	637	0.64	4 246	0.36	92.51	6 665	-1.43
Thailand	879	0.88	4 218	0.35	92.87	4 799	-0.12
Total Top 35 flags of registration	67 019	67.19	1 107 312	92.87		16 522	7.19
World Total	99 741	100.00	1 192 317	100.00		11 954	6.67

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

[a] Ships of 100 GT and above; ranked by deadweight tonnage.

Table 14

Distribution of dwt capacity of vessel types, by country group or registration, 2009[a]

(percentage change 2009/2008 in italics)

	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 countries	18.23	20.05	11.50	17.28	27.09	26.73
	-0.31	*-0.26*	*-0.16*	*0.24*	*-0.80*	*-3.12*
Countries with economies in transition	1.06	0.82	0.50	4.68	0.11	2.13
	-0.09	*0.01*	*-0.12*	*-0.25*	*0.01*	*-0.49*
Developing countries	25.21	23.33	27.19	35.01	18.85	24.30
	-0.30	*-0.85*	*-0.21*	*-0.06*	*0.82*	*0.62*
of which:						
Africa	0.59	0.46	0.30	1.76	0.13	2.03
	0.02	*0.03*	*0.00*	*0.04*	*0.00*	*-0.10*
Americas	1.91	2.05	1.40	4.29	0.29	3.85
	-0.07	*-0.14*	*-0.05*	*0.20*	*0.01*	*-0.22*
Asia	22.29	20.47	25.01	28.27	18.40	17.52
	-0.29	*-0.76*	*-0.25*	*-0.30*	*0.80*	*1.02*
Oceania	0.42	0.35	0.49	0.69	0.03	0.91
	0.03	*0.02*	*0.09*	*0.00*	*0.00*	*-0.08*
Other, unallocated	0.39	0.24	0.19	1.73	0.03	1.01
	-0.07	*-0.09*	*-0.04*	*-0.07*	*-0.01*	*-0.23*
10 major open and international registries[b]	55.11	55.56	60.62	41.31	53.91	45.83
	0.77	*1.18*	*0.53*	*0.14*	*-0.01*	*3.22*

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

[c] Including passenger/cargo.

2. Nationality of controlling interests

Most open and international registries specialize in certain countries of ownership (table 15).[7] For instance, 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 (128.4 million dwt of ships of 1,000 GT and above), followed by owners from China (22.8 million dwt), Greece (19.4 million dwt) and the Republic of Korea (19.2 million dwt). From Japan's perspective, the Panamanian registry is even more important: 74.1 per cent of Japanese-owned tonnage uses the flag of Panama; this is the highest percentage among all the top 35 vessel-owning economies for any one of the top 10 registries. Other economies that make heavy use of the flag of Panama for their vessels are Taiwan Province of China (42.8 per cent of the tonnage controlled by owners from Taiwan Province of China is registered in Panama), the Republic of Korea (41.2 per cent), the United Arab Emirates (30.9 per cent) and China (26.6 per cent).

… 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 …

The world's second largest registry, Liberia, is predominantly used by owners from Germany (39.5 million dwt) and Greece (23.2 million dwt). Saudi Arabia relies on Liberia to provide the flag for 49.3 per cent of its nationally controlled fleet. Forty-four per cent of the tonnage

controlled by owners from the Russian Federation flies the flag of Liberia, as does 37.7 per cent of German-owned tonnage. Liberia supplies the flag to 11 per cent of the tonnage of the top 35 shipowning countries, albeit only to 6.1 per cent of the number of ships, which is due to the large average vessel size of Liberian-registered ships.

By January 2009, the Marshall Islands had become the third largest registry, catering above all for tonnage owned by interests from Greece (16.1 million dwt), the United States (11.8 million dwt) and Germany (10.4 million dwt). This registry is of particular importance for the United States, as 29.5 per cent of United States–controlled tonnage flies the flag of the Marshall Islands. Turkish owners rely on the Marshall Islands registry for 15.2 per cent of their nationally controlled tonnage.

In Europe, the flag of Malta is used above all by ships from Greece (19.5 million dwt) and the Islamic Republic of Iran (9.7 million dwt). Of the fleet owned by the Islamic Republic of Iran, 66.4 per cent is registered in Malta. The registry of Cyprus depends heavily on owners from Greece (13.1 million dwt) and Germany (4.2 million dwt), and also on owners from Cyprus itself (3.2 million dwt). Only 38.2 per cent of the Cypriot-owned fleet uses the national flag of Cyprus. The flag of the Isle of Man is used predominantly by owners from the United Kingdom (5.9 million dwt), Greece (4.6 million dwt) and Norway (2.1 million dwt). From the perspective of the country of ownership, this registry is relatively important for the United Kingdom, as 19.1 per cent of the tonnage owned by the United Kingdom flies the flag of the Isle of Man.

In the Caribbean, the registry of the Bahamas caters predominantly for tonnage owned by Greece (12.6 million dwt), Canada (8.5 million dwt) and Norway (6.7 million dwt). Of Canadian-controlled tonnage, 49.4 per cent is registered in the Bahamas, as is 27.1 per cent of the fleet owned by Saudi Arabia, 22.9 per cent of Dutch-controlled tonnage, and 22.4 per cent of tonnage from Spain. Antigua and Barbuda depends almost exclusively on German-owned tonnage (10.5 million dwt), which accounts for an 89.9 per cent share among the top 35 shipowning countries. This is the highest dependency among the top 10 registries. From the German perspective, 10.0 per cent of its tonnage uses the flag of Antigua and Barbuda, as does 8.0 per cent of the tonnage owned by Swiss nationals. Bermuda is mostly the registry of tonnage from China (2.2 million dwt) and Sweden (1.5 million dwt). Of the Swedish-owned fleet, 19.7 per cent flies the flag of Bermuda. The Saint Vincent and the Grenadines–flagged fleet includes 2.0 million dwt owned by Chinese interests, and 1.7 million dwt owned by interests from Greece. This registry caters for a relatively wide range of owners, and no country depends on it for a particularly high percentage of its nationally owned tonnage.

The motivations for choosing a foreign flag vary for different countries, vessel types and vessel characteristics. Empirical research suggests that older vessels are more likely to be nationally flagged than foreign flagged.[8] Another determining factor for a vessel owner to choose a foreign flag appears to be the likelihood that it trades internationally, as do most cargo and larger vessels, as compared to passenger or smaller units. Furthermore, if a vessel is built in the country of ownership, this increases the likelihood of remaining in the national flag registry. Owners from high-income countries are more likely to choose a foreign flag than owners from countries with a lower GDP per capita or with low human development indicators, such as a low literacy rate or life expectancy. These indicators are correlated with higher wages, and using a foreign flag often allows the employment of seafarers from developing countries with lower wages.

Owners from high-income countries are more likely to choose a foreign flag than owners from countries with a lower GDP per capita …

D. SHIPBUILDING, DEMOLITION AND THE SECOND-HAND MARKET

1. Delivery of newbuildings

In spite of the global economic crisis, the world's shipyards continued to deliver new ships throughout 2008. Although new orders for most vessel types practically came to a standstill, vessels continued to be constructed in line with orders placed prior to the economic crisis, especially in the dry bulk segment. In fact, newbuilding activities reached the highest level ever recorded in terms of deadweight tons, with deliveries totalling 82.3 million dwt (see table 16 and fig. 15) – a

Although new orders for most vessel types practically came to a standstill, vessels continued to be constructed in line with orders placed prior to the economic crisis …

Table 15

True nationality of 10 major open and international registry fleets, as of 1 January 2009[a]

Country or territory of ownership	Panama			Liberia			Marshall Islands		
	Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%
Japan	2 292	128 423	53.3	115	6 996	6.0	23	2 234	3.7
Greece	503	19 429	8.1	387	23 155	19.9	282	16 051	26.7
Germany	95	7 501	3.1	857	39 527	34.0	233	10 449	17.4
China	558	22 818	9.5	12	364	0.3	10	789	1.3
Norway	134	4 540	1.9	49	2 164	1.9	86	6 185	10.3
Republic of Korea	324	19 209	8.0	5	124	0.1	13	1 059	1.8
United States	172	3 065	1.3	105	3 698	3.2	170	11 788	19.6
Hong Kong, China	127	4 864	2.0	60	3 672	3.2	7	283	0.5
Denmark	40	1 063	0.4	9	275	0.2	9	521	0.9
United Kingdom	56	1 305	0.5	30	1 345	1.2	16	798	1.3
Taiwan Province of China	332	12 753	5.3	92	7 186	6.2	1	276	0.5
Singapore	92	2 668	1.1	36	4 420	3.8	20	952	1.6
Italy	31	788	0.3	48	2 953	2.5	3	127	0.2
Russian Federation	24	238	0.1	95	8 049	6.9	9	163	0.3
India	25	859	0.4	1	150	0.1	2	310	0.5
Canada	11	975	0.4	5	215	0.2		0	-
Turkey	96	782	0.3	12	228	0.2	57	2 344	3.9
Saudi Arabia	8	191	0.1	28	7 353	6.3	4	1 242	2.1
Iran (Islamic Republic of)	8	68	0.0		0	-		0	-
Belgium	3	192	0.1	1	14	0.0	1	442	0.7
Malaysia	17	296	0.1		0	-	8	47	0.1
United Arab Emirates	118	2 788	1.2	27	1 556	1.3	16	511	0.9
Netherlands	29	242	0.1	6	74	0.1	10	164	0.3
Cyprus	14	781	0.3	38	764	0.7	42	1 113	1.9
Sweden	7	72	0.0	10	421	0.4	6	57	0.1
Indonesia	26	498	0.2	2	234	0.2		0	-
France	7	188	0.1	4	159	0.1		0	-
Kuwait	9	565	0.2		0	-		0	-
Viet Nam	35	1 126	0.5	4	204	0.2		0	-
Brazil	8	1 367	0.6	3	456	0.4	1	280	0.5
Spain	51	336	0.1		0	-	1	94	0.2
Thailand	11	63	0.0		0	-		0	-
Switzerland	32	828	0.3	11	318	0.3	11	374	0.6
Croatia	3	35	0.0	2	31	0.0	8	213	0.4
Bermuda		0	-		0	-	11	1 255	2.1
Total of the 35 countries	5 298	240 917	100.0	2 054	116 104	100.0	1 060	60 122	100.0
Percentage share among the 35 countries	15.7	22.8		6.1	11.0		3.1	5.7	

Table 15 (continued)

Bahamas			Malta			Cyprus			Country or territory of ownership
Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%	
87	4 900	8.8	6	227	0.5	20	562	1.9	**Japan**
217	12 573	22.5	408	19 457	41.8	249	13 069	44.3	**Greece**
43	2 817	5.0	95	3 148	6.8	174	4 236	14.3	**Germany**
9	760	1.4	12	207	0.4	8	191	0.6	**China**
231	6 702	12.0	100	919	2.0	31	819	2.8	**Norway**
	0	-	28	3 797	8.2	1	9	0.0	**Republic of Korea**
111	4 090	7.3	29	358	0.8	6	25	0.1	**United States**
25	349	0.6	2	19	0.0	2	36	0.1	**Hong Kong, China**
60	753	1.3	44	527	1.1	4	57	0.2	**Denmark**
73	2 008	3.6	21	440	0.9	23	1 221	4.1	**United Kingdom**
	0	-		0	-		0	-	**Taiwan Province of China**
19	417	0.7		0	-	2	95	0.3	**Singapore**
12	516	0.9	53	1 041	2.2	7	54	0.2	**Italy**
3	18	0.0	57	508	1.1	52	1 801	6.1	**Russian Federation**
2	12	0.0	2	162	0.3	3	284	1.0	**India**
85	8 478	15.2	1	24	0.1	2	64	0.2	**Canada**
7	349	0.6	188	3 800	8.2		0	-	**Turkey**
18	4 036	7.2		0	-		0	-	**Saudi Arabia**
	0	-	86	9 662	20.7	10	2 636	8.9	**Iran (Islamic Republic of)**
13	163	0.3	16	345	0.7	2	12	0.0	**Belgium**
14	109	0.2		0	-		0	-	**Malaysia**
22	1 042	1.9	3	81	0.2	10	440	1.5	**United Arab Emirates**
32	1 928	3.5	4	95	0.2	49	405	1.4	**Netherlands**
28	864	1.5	30	751	1.6	126	3 196	10.8	**Cyprus**
8	168	0.3	3	43	0.1	2	8	0.0	**Sweden**
2	82	0.1		0	-		0	-	**Indonesia**
23	594	1.1	5	56	0.1		0	-	**France**
2	85	0.2	1	73	0.2		0	-	**Kuwait**
	0	-		0	-		0	-	**Viet Nam**
1	105	0.2		0	-		0	-	**Brazil**
9	997	1.8	6	75	0.2	8	303	1.0	**Spain**
5	132	0.2		0	-		0	-	**Thailand**
1	9	0.0	16	301	0.6		0	-	**Switzerland**
1	54	0.1	10	451	1.0		0	-	**Croatia**
11	693	1.2		0	-		0	-	**Bermuda**
1 174	55 804	100.0	1 226	46 566	100.0	791	29 524	100.0	**Total of the 35 countries**
3.5	5.3		3.6	4.4		2.3	2.8		**Percentage share among the 35 countries**

Table 15 (continued)

Country or territory of ownership	Isle of Man			Antigua and Barbuda			Bermuda			Saint Vincent & the Grenadines		
	Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%	Number of vessels	1 000 dwt	%
Japan	7	129	0.9		0	-	2	164	2.6	3	10	0.2
Greece	52	4 557	31.9	4	57	0.5	2	152	2.4	64	1 738	31.3
Germany	52	804	5.6	952	10 499	89.9	21	768	12.2	2	3	0.1
China		0	-		0	-	16	2 232	35.4	87	1 988	35.7
Norway	52	2 098	14.7	10	80	0.7	5	58	0.9	15	54	1.0
Republic of Korea		0	-	1	51	0.4		0	-		0	-
United States	4	203	1.4	8	28	0.2	26	346	5.5	21	84	1.5
Hong Kong, China		0	-		0	-	5	640	10.1	5	65	1.2
Denmark	46	479	3.4	21	103	0.9		0	-	17	48	0.9
United Kingdom	95	5 912	41.4	10	157	1.3	7	478	7.6	14	170	3.1
Taiwan Province of China		0	-		0	-		0	-	4	5	0.1
Singapore	1	50	0.4		0	-		0	-	2	19	0.3
Italy		0	-		0	-		0	-	16	212	3.8
Russian Federation		0	-	4	11	0.1		0	-	25	317	5.7
India		0	-		0	-		0	-	6	25	0.5
Canada		0	-		0	-		0	-	1	3	0.1
Turkey	2	7	0.0	8	41	0.3		0	-	17	68	1.2
Saudi Arabia		0	-		0	-		0	-		0	-
Iran (Islamic Republic of)		0	-		0	-		0	-	2	2	0.0
Belgium		0	-		0	-		0	-	13	41	0.7
Malaysia		0	-		0	-		0	-		0	-
United Arab Emirates		0	-		0	-		0	-	13	299	5.4
Netherlands	3	4	0.0	16	64	0.5		0	-	6	20	0.4
Cyprus		0	-	17	273	2.3		0	-	1	6	0.1
Sweden	1	23	0.2	1	5	0.0	19	1 464	23.2	2	8	0.1
Indonesia		0	-		0	-		0	-		0	-
France	1	4	0.0		0	-	1	7	0.1	23	66	1.2
Kuwait		0	-		0	-		0	-		0	-
Viet Nam		0	-		0	-		0	-		0	-
Brazil		0	-		0	-		0	-		0	-
Spain		0	-		0	-		0	-		0	-
Thailand		0	-		0	-		0	-		0	-
Switzerland		0	-	7	305	2.6		0	-	10	125	2.3
Croatia		0	-		0	-		0	-	11	185	3.3
Bermuda		0	-		0	-		0	-		0	-
Total of the 35 countries	316	14 270	100.0	1 059	11 673	100.0	104	6 309	100.0	380	5 561	100.0
Percentage share among the 35 countries	0.9	1.4		3.1	1.1		0.3	0.6		1.1	0.5	

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 ownership
Number of vessels	% of vessels	1 000 dwt	% of dwt	Average vessel size			
2 555	19.0	143 646	24.5	56 221	173 285	82.9	**Japan**
2 168	16.1	110 239	18.8	50 848	169 427	65.1	**Greece**
2 524	18.7	79 751	13.6	31 597	104 954	76.0	**Germany**
712	5.3	29 349	5.0	41 221	92 799	31.6	**China**
713	5.3	23 618	4.0	33 124	50 216	47.0	**Norway**
372	2.8	24 248	4.1	65 183	46 623	52.0	**Republic of Korea**
652	4.8	23 684	4.0	36 325	39 966	59.3	**United States**
233	1.7	9 930	1.7	42 617	33 724	29.4	**Hong Kong, China**
250	1.9	3 825	0.7	15 301	31 596	12.1	**Denmark**
345	2.6	13 835	2.4	40 101	30 917	44.7	**United Kingdom**
429	3.2	20 220	3.4	47 132	29 804	67.8	**Taiwan Province of China**
172	1.3	8 622	1.5	50 126	28 230	30.5	**Singapore**
170	1.3	5 692	1.0	33 482	19 750	28.8	**Italy**
269	2.0	11 105	1.9	41 284	18 288	60.7	**Russian Federation**
41	0.3	1 803	0.3	43 977	17 213	10.5	**India**
105	0.8	9 759	1.7	92 942	17 171	56.8	**Canada**
387	2.9	7 618	1.3	19 685	15 451	49.3	**Turkey**
58	0.4	12 823	2.2	221 087	14 911	86.0	**Saudi Arabia**
106	0.8	12 368	2.1	116 676	14 561	84.9	**Iran (Islamic Republic of)**
49	0.4	1 208	0.2	24 659	13 447	9.0	**Belgium**
39	0.3	453	0.1	11 608	11 559	3.9	**Malaysia**
209	1.6	6 718	1.1	32 142	9 033	74.4	**United Arab Emirates**
155	1.2	2 996	0.5	19 330	8 405	35.7	**Netherlands**
296	2.2	7 748	1.3	26 175	8 359	92.7	**Cyprus**
59	0.4	2 267	0.4	38 421	7 438	30.5	**Sweden**
30	0.2	814	0.1	27 133	7 022	11.6	**Indonesia**
64	0.5	1 073	0.2	16 767	6 565	16.3	**France**
12	0.1	724	0.1	60 316	6 449	11.2	**Kuwait**
39	0.3	1 330	0.2	34 102	5 568	23.9	**Viet Nam**
13	0.1	2 209	0.4	169 923	4 711	46.9	**Brazil**
75	0.6	1 805	0.3	24 069	4 448	40.6	**Spain**
16	0.1	195	0.0	12 158	4 127	4.7	**Thailand**
88	0.7	2 260	0.4	25 677	3 829	59.0	**Switzerland**
35	0.3	969	0.2	27 693	3 297	29.4	**Croatia**
22	0.2	1 948	0.3	88 557	3 228	60.4	**Bermuda**
13 462	100.0	586 850	100.0	43 593	1 056 368	55.6	**Total of the 35 countries**
39.8		55.6					**Percentage share among the 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*		*66*	*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	372	29.6	79 570	312	24.5	78 526	2 098	27.8	13 231	2 782	81.9	29 424
	13	*36*		*11*	*30*		*75*	*34*		*100*	*100*	
2008[d]	437	33.7	77 117	355	28.9	81 408	2 207	19.7	8 930	2 999	82.3	27 445
	15	*41*		*12*	*35*		*74*	*24*		*100*	*100*	

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

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

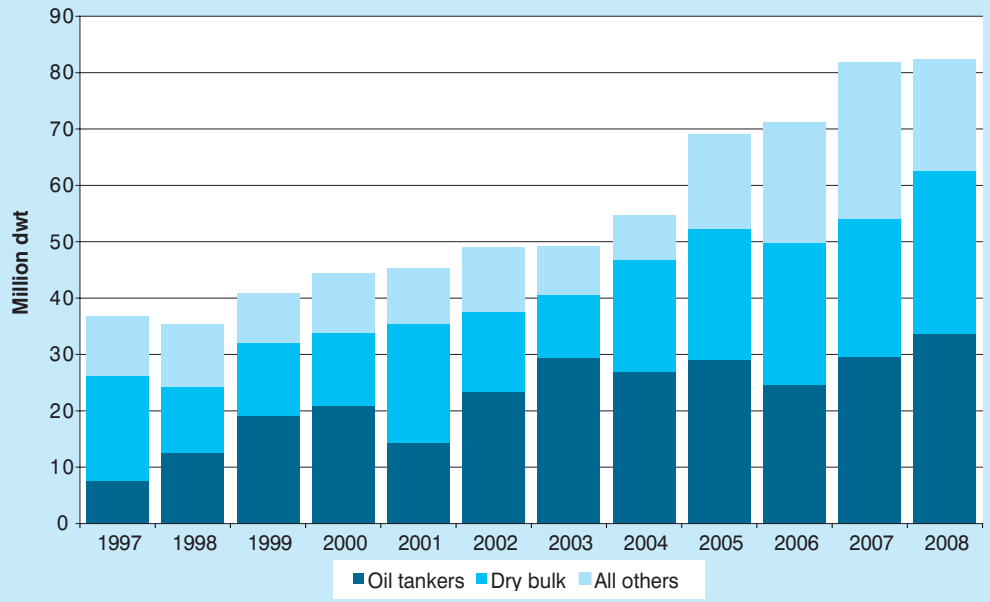
[b] Vessels over 10,000 dwt.

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

[d] Provisional.

Figure 15

Deliveries of newbuildings, 1997–2008



Source: Compiled by the UNCTAD secretariat, on the basis of data from Fearnleys *Review*, various issues, and from Lloyd's Register – Fairplay. See also the notes to table 16.

further increase over the previous year's historical record of 81.9 million dwt. During 2008, 2,999 cargo-carrying commercial vessels of 100 GT and above were delivered, a historical record too, and an increase of 7.8 per cent over 2007.

As regards the tonnage and vessel types, in 2008, deliveries of oil tankers of 10,000 dwt and above accounted for 41 per cent of delivered dwt, dry bulk carriers of 10,000 dwt and above accounted for 35 per cent, and other vessels accounted for 24 per cent; the latter category included all kinds of commercial vessels of 100 GT and above. As regards the number of vessels, 74 per cent of the vessels delivered in 2007 belonged to the category of "other vessels", as compared to 15 per cent for large oil tankers and 12 per cent for large dry bulk carriers. In 2008, deliveries of oil tankers reached a historical record in terms of vessel numbers (437 units of 10,000 dwt and above), and also in terms of delivered dead weight tonnage (33.7 million dwt). There were 355 dry bulk carriers delivered in 2007, with a combined tonnage of 28.9 million dwt. The number of other vessel types delivered – including car carriers, container ships, LNG tankers and general cargo ships – reached 2,207 units in 2008, with a combined tonnage of 19.7 million dwt.

2. Demolition of ships

Although the economic crisis led to a plummeting of demand for steel, and therefore also a slump in prices for old ships, the sale of tonnage for demolition still increased dramatically. The oversupply of vessel capacity was such that shipowners were willing to sell their older tonnage even at very low prices.

During the last three months of 2008, 181 vessels were reported to have left the market to be demolished; the cumulative total of the demolitions will permit the recycling of more than 1.7 million tons of metal.

During this period, ship-breaking yards in India with 80 vessels (44 per cent) to be demolished were ahead of Bangladesh which had 70 vessels (39 per cent), followed by China with 20 vessels (11 per cent) and Pakistan with 11 vessels (6 per cent). Bangladeshi ship-breaking yards prefer to buy high-tonnage vessels; in this sense Bangladesh was ahead in 2008, with a total of 810,000 tons of metal to be recycled, compared to India with 570,000 tons.[9]

During the first four months of 2009, 339 ships were reported sold for demolition. This compares with a total of 487 during the whole of 2008. In deadweight terms, more was scrapped in the four months to April 2009 than in any of the three years between 2005 and 2007. The total amount scrapped in the period from January to April 2009 was some 2.9m light displacement tons (ldt). At an average price of $250 per ldt, that would equate to an aggregate value of nearly $750 million.[10] In October 2009, it was forecasted that 1,200 ships would be demolished during 2009.[11]

Looking at vessels of 10,000 dwt and above, the year 2008 saw a surge in the demolition of dry bulk carriers (3.1 million dwt) – the highest level since 2003. Demolition of large oil tankers increased too, from 2.2 million dwt in 2007 to 3.6 million dwt in 2008 (table 17).

As the world fleet gets older and newbuildings are built to last longer, the average age of broken-up ships increases too, in the longer term. Between 1998 and 2008, the average age of broken-up oil tankers increased from 28.2 years to 31.1 years, the average age of broken-up dry bulk carriers increased from 25.1 to 30.6 years, the average age of broken-up container ships increased from 25.5 to 29.1 years, and the average age of broken-up general cargo ships increased from 26.7 to 33.6 years (see table 18). In times of economic downturn, however, the likelihood of older tonnage being demolished increases, and the average age of oil tankers, container ships and general cargo ships decreased slightly between 2007 and 2008.

3. Tonnage on order

With historically high demand for shipping capacity until mid-2008, especially for key commodities such as iron ore, grains and coal, the shipping industry responded by ordering new tonnage. Until September 2008, the total tonnage on order was still increasing, with more than half of the tonnage on order in the dry bulk sector. Since the end of 2008, however, new orders have practically come to a standstill, especially in container shipping.

Table 17

Tonnage reported sold for breaking, by vessel type, 2000–2008

(millions of dwt and percentage shares)

Years	Million dwt					Total as perentage of world fleet	Percentage share				
	Tankers[a]	Combined carriers[a]	Bulk carriers[a]	Others	Total		Tankers[a]	Combined carriers[a]	Bulk carriers[a]	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	2.2	-	0.1	1.9	4.0	0.4	50.0	-	2.5	47.5	100.0
2008	3.6	-	3.1	1.3	8.0	0.7	45.0	-	38.8	16.3	100.0

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

[a] Vessels over 10,000 dwt.

Table 18

Average age of broken-up ships, by type, 1998 to 2008[a]

Year	Tankers	Dry bulk carriers	Container ships	General cargo ships
1998	28.2	25.2	25.5	26.7
1999	26.2	25.0	24.8	26.7
2000	26.9	25.9	25.7	27.3
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
2008	31.1	30.6	29.1	33.6

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

[a] Ships of 300 GT and over.

Tonnage on order as per 31 March 2009 consisted of 289.8 million dwt of dry bulk carriers (52.5 per cent of the world total dwt on order), 130.8 million dwt of oil tankers (23.7 per cent), 13.4 million dwt of general cargo vessels (2.4 per cent), 65.6 million dwt of container ships (11.9 per cent) and 48.1 million dwt of other vessel types (8.7 per cent). The total tonnage on order stood at 10,992 vessels with a combined capacity of 551.7 million dwt (see table 19). Figure 16 illustrates the development of the main vessel types over the last eight years.

All vessel types reached a peak in demand between the middle of 2007 and the end of 2008. In terms of vessel numbers, container ships reached their peak first (at the end of 2007), followed by other ships (in the first quarter of 2008), tankers (in the third quarter of 2008), and, most recently, bulk carriers and general cargo ships (at the end of 2008). Between December 2008 and March 2009, the order book declined for all vessel types. The total tonnage on order in March 2009 stood at 551.7 million dwt, which was still 5.5 per cent higher than a year earlier, but was down 6.1 per cent from the peak of 587.8 million dwt in September 2008.

4. Prices of newbuildings and second-hand tonnage

Newbuilding prices for all vessel types plummeted during the first quarter of 2009. Comparing end-of-year figures, prices for newbuildings of dry bulk carriers, LPG tankers and container ships were highest in 2007, while most new tankers and general cargo ships were more expensive in 2008. The strongest declines between the peak prices and the prices in April 2009 were recorded for dry bulk carriers and container ships, while prices for LNG and LPG tankers have been relatively more stable (table 20). LNG tankers had already experienced a price decline in previous years due to an oversupply of tonnage, as demand grew more slowly than had initially been planned when the opening of several new gas fields was delayed.

The most expensive new ships continue to be LNG carriers, which in April 2009 cost $325 million – equivalent to $1,567 per cubic metre. Prices per dwt depend heavily on ship sizes, implying significant economies of scale. At $433, the price per dwt on a 300,000 dwt tanker is only 46 per cent of the price per dwt on a 45,000 dwt tanker. In the case of dry bulk carriers, the price per dwt on a 170,000 dwt vessel is $424, which represents two thirds of the price per dwt on a 45,000 dwt vessel and is the lowest price per dwt of all ship types in the table. In the case of container ships, it is interesting to note that the price per TEU on the largest 12,500 TEU ships is not lower than on the smaller 4,000 TEU ships. As most recent new orders have been for the largest container ships, which compete with large dry and liquid bulk carriers for space at the shipyards, their price per TEU has remained relatively higher.

Prices for second-hand tonnage fluctuate more than prices for newbuildings. The latter have a higher floor price, which is determined by the variable production costs, while the floor price for second-hand tonnage is given by scrap prices. Between 2001 and 2007, prices for five-year-old dry bulk carriers had surged more than sixfold, reaching levels that were in fact significantly higher than the corresponding newbuilding prices (see tables 20 and 21). In the economic downturn, second-hand prices have plummeted even more than the newbuilding prices. At the end of 2008, a five-year-old dry bulk carrier of 170,000 dwt was 47 per cent cheaper than a newbuilding, and a five-year-old 300,000 dwt tanker cost 27 per cent less than the corresponding newbuilding. Between the end of 2007 and the end of 2008, second-hand prices for tankers went down by between 15 and 20 per cent, and

Table 19

World tonnage on order, 2000–2009[a]

Beginning of month	Tankers			Bulk carriers			General cargo ships		
	1000 dwt	Ships	Average vessel size, dwt	1000 dwt	Ships	Average vessel size, dwt	1000 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	988	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
March 2008	128 128	1 139	112 492	243 600	2 804	86 876	15 097	1 195	12 633
June 2008	142 333	1 202	118 413	262 452	3 009	87 222	15 911	1 255	12 678
September 2008	151 423	1 245	121 625	288 959	3 316	87 141	16 787	1 332	12 603
December 2008	140 504	1 154	121 754	292 837	3 347	87 492	17 849	1 374	12 991
March 2009	130 777	1 088	120 200	289 763	3 303	87 727	17 439	1 363	12 795
Percentage of total, March 2009	23.7	9.9		52.5	30.0		3.2	12.4	

Table 19 (continued)

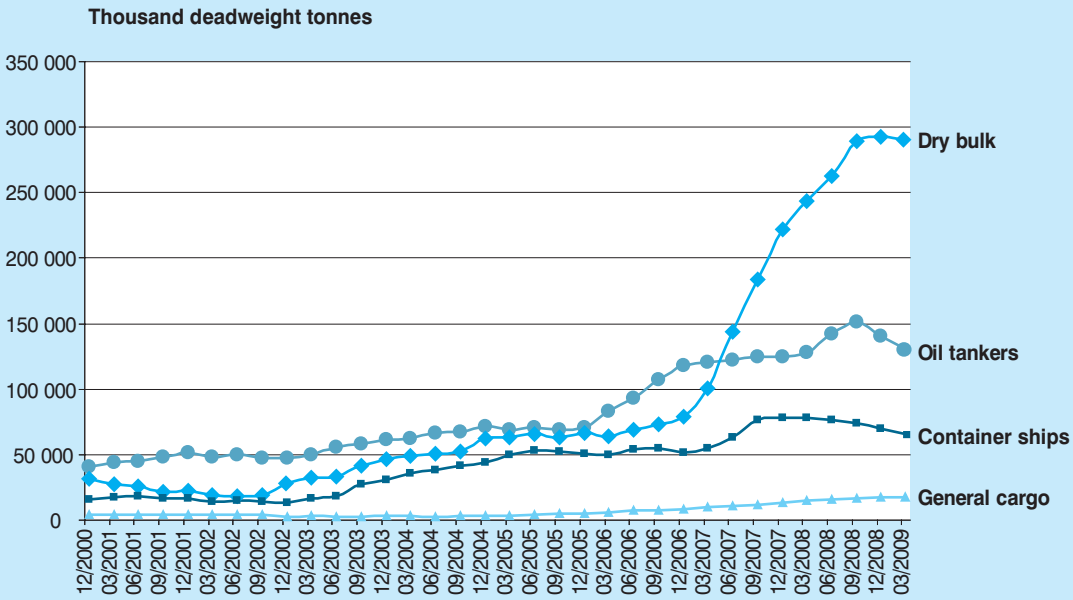
Container vessels			Other ships			Total			Beginning of month
1000 dwt	Ships	Average vessel size, dwt	1000 dwt	Ships	Average vessel size, dwt	1000 dwt	Ships	Average vessel size, dwt	
16 140	394	40 964	8 870	1 087	8 160	100 513	2 697	37 268	**December 2000**
17 350	435	39 884	10 154	1 132	8 970	103 048	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**
78 042	1 419	54 998	58 304	4 174	13 968	523 171	10 731	48 753	**March 2008**
76 388	1 352	56 500	57 574	4 302	13 383	554 657	11 120	49 879	**June 2008**
74 090	1 322	56 044	56 563	4 442	12 734	587 823	11 657	50 427	**September 2008**
69 593	1 209	57 563	52 088	4 256	12 239	572 871	11 340	50 518	**December 2008**
65 610	1 121	58 528	48 131	4 117	11 691	551 720	10 992	50 193	**March 2009**
11.9	10.2		8.7	37.5		100.0	100.0		**Percentage of total, March 2009**

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

[a] Ships of 100 GT and above.

Figure 16

World tonnage on order, 2000–2009[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.

second-hand prices for dry bulk carriers went down by between 67 and 71 per cent.

5. Adjusting to the economic crisis

Several developing and transition economies will be severely impacted by the downturn in demand for shipping services. Shipbuilding countries such as the Republic of Korea, China and Viet Nam will be abruptly affected by cancellations of existing orders and the drying up of new orders. The strongest impacts will probably be on those economies that also have control over large fleets. The top five shipowning developing economies are China, Hong Kong (China), Taiwan Province of China, the Republic of Korea, and Singapore (see also table 12). Taking into account containerized, dry bulk and tanker tonnage, these three economies control around 17 per cent of the world's merchant fleet. The Republic of Korea in particular, with its large fleet of dry bulk carriers, container ships and oil tankers, as well as substantial container traffic volumes and shipbuilding yards, is set to be among the countries most severely affected by the economic crisis.[12]

The supply of maritime transport capacity can only slowly adjust to changes in demand. Between the ordering of a new vessel and its delivery, two to three years may pass. As long as demand is high, shipowners tend to order new vessels, in spite of early warnings that even if demand continues to grow, the surge in new tonnage will invariably lead to an oversupply of tonnage. Even without the current economic crisis, the tonnage that entered the market in 2007 and 2008 plus the tonnage scheduled to be delivered in 2009 and 2010 by the world's shipyards would in any case have led to an oversupply of tonnage and a corresponding decline in vessel prices.

In the case of container ships, for example, the delivery of previously ordered tonnage is forecast to lead to an

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	2008	April 2009	Percentage change 2008/ 2007	Percentage change April 09/ Dec. 08
45,000 dwt dry bulk carrier	11	24	25	20	28	31	39	36	29	-7.7	-19.4
72,000 dwt dry bulk carrier	14	32	29	23	35	40	54	42	37	-22.2	-11.9
170,000 dwt dry bulk carrier	27	45	40	40	59	70	97	89	72	-8.2	-19.1
45,000 dwt tanker	18	29	34	29	43	47	52	48	42	-7.7	-12.5
110,000 dwt tanker	22	42	43	41	58	81	72	76	65	5.6	-14.5
300,000 dwt tanker	47	90	85	76	120	130	145	151	130	4.1	-13.9
150,000 m^3 LNG	200	225	245	165	205	220	220	245	235	11.4	-4.1
78,000 m^3 LPG	44	78	68	60	89	92	93	90	85	-3.2	-5.6
20,000 dwt general cargo	12	24	21	19	18	24	25	40	30	60.0	-25.0
2,500 TEU full container ship	26	52	50	35	42	46	66	n.a.	n.a.	n.a.	n.a.
4,000 TEU full container ship	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	130	70	48	-46.2	-31.4
8,000 TEU full container ship	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	160	130	110	-18.8	-15.4
12,500 TEU full container ship	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	165	150	n.a.	-9.1

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

[a] Note: Vessel sizes refer to the years 2005–2009 and do not always coincide completely in the case of earlier years.

Table 21

Second-hand prices for five-year-old ships, 2000–2008

(millions of dollars, end-of-year figures)

Type and size of vessel	2000	2001	2002	2003	2004	2005	2006	2007	2008	Percentage change 2008/2007
40,000 dwt tankers	27.00	25.50	24.00	28.00	40.00	45.00	47.50	50.00	42.50	-15.0
95,000 dwt tankers	39.00	33.00	30.00	38.00	57.00	59.50	66.00	68.00	57.40	-15.6
150,000 dwt tankers	50.00	43.00	42.00	48.00	74.00	76.00	85.00	95.00	76.00	-20.0
300,000 dwt tankers	71.00	60.00	53.00	75.00	107.00	108.00	121.00	130.00	110.00	-15.4
52,000 dwt dry bulk carrier	15.00	12.00	15.00	20.50	30.00	26.50	40.50	75.50	25.00	-66.9
70,000 dwt dry bulk carrier	16.00	13.50	17.00	28.00	41.00	30.00	46.00	91.50	27.00	-70.5
170,000 dwt dry bulk carrier	25.00	25.00	29.00	46.00	65.00	58.00	81.00	152.00	47.00	-69.1

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

annual fleet growth of 9.3 per cent over the next five years. Most of the growth is on account of ships larger than 8,000 TEU; if all orders are confirmed (see also the discussion on adjustment to the economic crisis), this vessel size range would grow by a staggering 25 per cent per year until the end of 2013.[13] In spite of the plunge in demand, deliveries for the next five years are thus expected to equal or outpace deliveries in the record year of 2008; the TEU capacity of the new container ships to be delivered during the next five years corresponds to around 75 per cent of the current fleet. Utilization of the fleet of LNG tankers is estimated at 60 to 65 per cent, as many ships were delivered ahead of the projects for which they had been intended; the oversupply is forecast to decline during the next years up to 2012, as delayed liquefaction projects come on stream.[14] The current order book of dry bulk vessels stands at 70 per cent of the existing fleet.[15] Charter and freight rates (see chapter 4) and vessel prices (see tables 20 and 21) react immediately to a change in the demand/supply balance. The supply of capacity, however, reacts much more slowly. Given the still-growing transport capacity, as new ships continue to be delivered by the world's shipyards, the industry has five ways to adjust the supply to a decline in demand. Firstly, it may stop ordering new tonnage. Secondly, it may demolish vessels. Thirdly, it may, to some extent, terminate orders at the shipyards. Fourthly, vessels may slow steam, thus reducing the effective capacity supplied by the existing fleet. And finally, the industry may temporarily withdraw existing tonnage from service.

Withholding of new orders

Orders of new ships have practically come to a standstill. In March 2009, only 13 new orders for ships larger than 1,000 GT were recorded – a further reduction from the already low figure of 37 new contracts in January 2009. The annualized average was estimated at 252 contracts, which was 96 per cent below the peak of new orders in July 2007. The global order book itself contained 10,341 ships larger than 1,000 GT as of 7 April 2009 – down 177 on the previous month – following the virtual absence of any contracting activity.[16] Looking at different vessel types, new orders for dry bulk carriers in March 2009 were at their lowest level since 2000, and new orders for general cargo ships were at their lowest recorded level since the 1960s. There have been no new orders for vehicle carriers since February 2009, for LPG carriers since December 2008, for ro-ro vessels since November 2008, and for container ships since October 2008. In March 2009, one new order for a crude oil tanker was reported.[17]

Looking at shipbuilding in developing countries, the first half of 2009 yielded hardly any newbuilding contracts in the Republic of Korea. In particular, Hyundai Heavy Industries – the world's biggest shipbuilder – did not secure a single order. Meanwhile, Samsung Heavy Industries had just a single order for an LNG tanker. In China, the shipbuilding sector attracted orders at a level 96 per cent lower than during the same period in 2008.[18]

Demolitions

Some analysts expect ship-scrapping to be one of the few shipping-related businesses that may benefit from the economic crisis: "The ship-recycling industry is now experiencing its largest growth period in history, after the financial crisis saw rates for many vessel types collapse. With a threefold increase in ship-scrapping expected globally this year, and more than 1,000 ships destined for the breakers' yards, there are now fears that existing yards cannot handle the workload."[19] However, the demolition of existing tonnage will not be enough to compensate for the downturn in demand and for the new tonnage that is still leaving the world's shipyards. Prices for scrap metal are currently very low, and many vessel owners prefer to hold on and lay off their ships, hoping for better times to come. Demolition during the first five months of 2009 amounted to only 1.2 per cent of the world fleet, still below the demolition levels of the 1999–2003 period.[20]

… the demolition of existing tonnage will not be enough to compensate for the downturn in demand and for the new tonnage that is still leaving the world's shipyards.

Termination and rescheduling of orders

Since the beginning of the economic crisis, numerous orders at the world's shipyards have been cancelled. The specialized press reports a "dearth of new orders (…), with the renegotiation of existing contracts now taking up more time for shipbuilders than new enquiries."[21] Activity in the container ship newbuilding market focuses "primarily on the restructuring of the existing order book, as possible cancellations and renegotiations of existing deals become an increasing issue, and yards are yet to fully address their pricing ideas. (…) One change that is becoming apparent

since the beginning of the year is that yards seem to be becoming more sympathetic to owners' problems, as they begin to realize that a proactive approach to solving these issues could prevent them from becoming problems for the yard."[22]

One example of the renegotiation of a newbuilding contract involves a four-vessel order by a European-based shipowner at a Chinese facility; the amended order reduces the contract to three vessels and calls for a delay in the delivery of two of the remaining units by around three months. An Athens-based company has disclosed details of the six-month delay in the delivery of 15 new container ships that it has on order in China and the Republic of Korea. A Canadian company has confirmed that it has entered into an option agreement to delay the delivery of 15 ships in its newbuilding backlog. A dry cargo company from the Republic of Korea is reported to have cancelled an order for eight bulk carriers of 37,000 dwt in China.[23] Table 22 describes in the detail the situation of newbuilding contract terminations towards the middle of 2009. In total, between January 2008 and the middle of 2009, there were 440 deductions recorded from the current order book, including failed orders, contractual cancellations, and delays and terminations by mutual agreement.

Since early 2008, there have been 289 failed contracts. These refer to signed contracts that have failed to become effective. They also include terminated orders between

Table 22

Newbuilding contract terminations[a]

(compensated gross tons (CGT), and numbers of vessels)[b c]

Year of delivery	Failed contracts	Effective contracts				Total deduction	Total order book prior to deductions	Deduction as a percentage of order book
		Cancelled contracts		Terminated by mutual agreement				
		Remained	Removed	Remained	Removed			
2009	1 094 445	14 377	387 605	23 454	635 211	2 117 261	41 147 183	5.15%
	(71)	(1)	(40)	(1)	(31)	(142)	(2 235)	*6.35%*
2010	2 317 092	-	48 026	-	722 994	3 088 112	55 406 702	5.57%
	(113)	-	(-7)		(34)	(154)	(2 628)	*5.86%*
2011	2 079 747	-	48 026	-	362 348	2 490 121	42 452 134	5.87%
	(91)		(7)		(21)	(119)	(1 827)	*6.51%*
2012	313,336	-	18 621	-	144 359	476 316	14 085 154	3.38%
	(14)	-	(2)	-	(8)	(24)	(554)	*4.33%*
2013	-	-	-	-	23 615	23 615	2 572 057	0.92%
					(1)	(1)	(105)	*0.95%*
2014	-	-	-	-	-	-	464,153	0%
	-	-	-	-	-	-	(15)	0%
Total	5 804 620	14 377	502 278	23 454	1 888 527	8 195 425	156 127 383	5.25%
	(289)	(1)	(56)	(1)	(95)	(440)	(7 364)	*5.98%*

Source: Worldyards.com, available at http://www.worldyards.com. 16 June 2009.

[a] Recorded between 1 January 2008 and 12 June 2009.

[b] Compensated gross tons are a measurement of shipbuilding volumes. The gross tons (GT) are adjusted for different vessel types and ship sizes. For detailed calculations, see OECD (2007): "Compensated gross ton (CGT) system", available at http://www.oecd.org/dataoecd/59/49/37655301.pdf

[c] Number of vessels in brackets.

shipbuilders and shipowning companies which are controlled by the same ultimate interests. During the same period, there were 56 cancelled orders, i.e. effective contracts that were cancelled legitimately or abandoned by way of defaults. In one case, the shipyard decided to continue with construction in spite of the cancellation from the shipowner. Ninety-five orders were terminated by mutual agreement. These resulted from an agreement between buyer and shipyard to negate an effective shipbuilding contract, especially contracts for delivery in the distant future. The buyers would normally agree to pay the shipbuilders some compensation. Among the contracts terminated by mutual agreement, there was one case where the shipyard decided to continue with construction in spite of the cancellation by the buyer.

While shipowners' lawyers try to find clauses that allow for the termination of orders without penalty, shipyards' lawyers work hard to make sure that companies that have ordered new vessels stick to their commitments. In the long term, there is a common interest between both parties to reduce the volatility of the shipbuilding cycle; both sides should aim, above all, at postponing existing orders. So far, during the 12 months to mid-2009, a total of 279 orders have been delayed or postponed by mutual agreement, including 59 orders for tankers (corresponding to 3.0 million dwt), 72 orders for dry bulk carriers (9.5 million dwt), 94 orders for container ships (422,000 TEU), and 54 orders for other vessel types. In total, this corresponds to 4.3 per cent of the existing order book.[24]

Slow steaming and other forms of reducing the effective supply

Reducing the service speed of vessels has two positive impacts. Firstly, it helps to reduce emissions of greenhouse gases, and secondly, it absorbs some of the existing shipping overcapacity. It has been estimated that "owners could cope with up to 10–15 per cent overcapacity through slow steaming".[25] However, slow steaming has obvious negative side-effects – above all on the speed of service, but also on the shipboard machinery and other components, which are designed for higher speeds and suffer from higher wear and tear if not utilized optimally. In the case of some vessel types, ships can be utilized for storage, e.g. car carriers or tankers, but this, too, is only a temporary solution to oversupply.

Withdrawal from service

As regards the idle container ship fleet, 506 vessels were reported as idle by the end of April 2009. The idle fleet stands at 1.34 million TEU, representing 10.6 per cent of the capacity. In particular, non-operating owners find themselves obliged to lay up ships. Unlike operating owners, they have no way to employ their ships if no charterers are found.[26] Laid-up dry bulk tonnage increased by 73 per cent between March 2008 and March 2009.[27]

The following chapter will examine the supply and demand balance of the world fleet in greater detail.

ENDNOTES

1 Compiled by the UNCTAD secretariat, on the basis of data on the existing container ship fleet, from *Containerisation International Online,* May 2008 (2007 data) May 2009 (2008 data) and October 2009 (2009 data).

2 The average age calculated for January 2009 is not fully comparable with the figures published in previous issues of the *Review of Maritime Transport.* The UNCTAD secretariat is now in a position to publish the exact average age, both per dwt and also per ship, based on more detailed available information.

3 The average ages are calculated on the basis of information about vessels of 1,000 GT and above only. For information about the white lists and black lists of port state control regimes, such as the Paris and Tokyo memorandums of understanding, see http://www.parismou.org and http://www.tokyo-mou.org.

4 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 92.3 per cent (1,105 million dwt) of the world total of 1,192 million dwt for all ships of 100 GT of above (see annex IIIb).

5 Calculated by the UNCTAD secretariat, on the basis of data on the existing container ship fleet in *Containerisation International Online*, May 2009. Note: Although owner and operator may be different companies, on occasion financial and other linkages will exist between the two, and the separation between "owner" and "operator" is not always as clear-cut as it appears when two different company names are reported.

6 Information in this chapter is based on data on vessels of 100 GT and above (see also annex IIIb), except where the vessel owner's country of domicile is considered. In the latter case, the data is for vessels of 1,000 GT and above.

7 The figures for the ownership – i.e. the nationality of the ships' controlling interests – are not always precise. Stock holding companies, for example, may be owned by a large number of nationals from different countries. Nevertheless, for most ships it is possible to identify the country under whose flag it is registered, as well as the nationality of its owner.

8 *Source*: Hoffmann J, Sánchez R and Talley W (2005). Determinants of vessel flag. In: Cullinane K, ed. *Shipping Economics*, *(Research in Transportation Economics, vol. 12)*. Elsevier. ISBN 0-7623-1177-0.

9 http://www.ship-breaking.com, no. 14, January 2009; and no. 15, April 2009.

10 *Source*: *Lloyd's List.* 8 May 2009. Note that the number of vessels reported as demolished by different sources does not always coincide, as some sources include smaller ships, whereas others only include vessels of 10,000 dwt and above. Also, some ships may be sold in one period and then be demolished in a later month.

11 *Lloyd's List*. 30 October 2009.

12 UNCTAD Transport Newsletter no. 42, first quarter 2009.

13 *Fairplay Shipping Weekly*. 7 May 2009.

14 *Lloyd's List*. 30 April 2009.

15 *Clarkson Dry Bulk Trade Outlook*. April 2009.

16 *Fairplay Shipping Weekly*. 23 April 2009.

17 *Fairplay Shipping Weekly*. 2 July 2009.

18 *Fairplay Shipping Weekly*. 30 April 2009.

19 *Lloyd's List*. 11 November 2008.

20 Worldyards.com, available at http://www.worldyards.com. 9 June 2009

21 *Fairplay Shipping Weekly*. 7 May 2009.

22 *Container Intelligence Monthly*. March 2009.

23 *Fairplay Shipping Weekly*. 7 May 2009.

24 Worldyards.com, available at http://www.worldyards.com. 16 June 2009.

25 *Lloyd's List*. 3 June 2009. The specific example refers to oil tankers.

26 Data from Alphaliner, as reported by *Containerisation International Online*. 5 May 2009.

27 *Clarkson Dry Bulk Trade Outlook*. April 2009.

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, the tons of cargo carried and ton-miles performed per deadweight ton, and the analysis of tonnage oversupply in the main shipping market sectors.

A. OPERATIONAL PRODUCTIVITY

As the positive growth in the supply of the fleet (+7.3 per cent in 2008 compared to 2007) was double the growth in total seaborne trade (which is estimated at +3.6 per cent), productivity in 2008 measured in tons of cargo carried per deadweight ton (dwt) decreased further compared to the 2007 figures (see tables 23, 24 and 25, and figures 17, 18 and 19).[1] The global average volume of cargo per carrying capacity decreased, and the average ship was fully loaded 7.3 times in 2008 compared to 7.6 times in 2007. During the same year, the ton-miles performed per deadweight ton decreased too: the average dwt of cargo-carrying capacity transported one ton of cargo over a distance of 29,300 nautical miles (54,264 km) in 2008, or 149 km per day.

Productivity in terms of tons carried per dwt of oil tankers decreased 4.7 per cent …

Based on the data for the world fleet for January 2009 and the forecasted ton-miles for the year, the productivity of the world fleet is expected to further decline to values below 28,000 ton-miles in 2009 (fig. 17). The fundamental reason for the decline in average productivity in recent years is the oversupply of tonnage available (see also chapter 2), which contrasts with the reduced growth in world seaborne trade. Some ships are being laid off, and even the active fleet may slow steam or take longer but less costly routes, thus reducing the tons carried per dwt. The negative productivity growth rates are thus the consequence of a fleet growth that resulted from vessel orders placed when trade was expected to grow at faster rates than it effectively did in 2008.

Productivity in terms of tons carried per dwt of oil tankers decreased 4.7 per cent from 7.06 in 2007 to 6.74 in 2008; for dry bulk it decreased 1.8 per cent from 5.48 to 5.38 tons, and the cargo volumes carried by the residual fleet decreased 4.2 per cent from 10.84 to 10.40 tons per dwt (table 23). The productivity of the residual fleet, which includes container ships and general cargo carriers, is in practice higher than that of liquid and dry bulk carriers, as the latter often have empty return voyages after the oil or iron ore is delivered at destination. Liner shipping companies, however, will usually carry at least some cargo in both directions of their route.

Indicative data on ton-miles performed by oil tankers, dry bulk carriers, and the residual fleet are provided

Table 23

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

Year	World fleet (millions of dwt, beginning of year)	Total cargo (millions of tons)	Total ton-miles performed (thousands of millions 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	16 440	6.1	25.0
2000	799	5 983	22 927	7.5	28.7
2006	960	7 545	30 058	8.0	31.3
2007	1 042	7 882	31 425	7.6	30.1
2008	1 118	8 168	32 746	7.3	29.3

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 24

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

(tons carried per dwt)

Year	Oil cargo (millions of tons)	Tanker fleet (millions of dwt, beginning of year)	Tons carried per dwt of tankers	Main dry bulks (millions of tons)	Dry bulk fleet (millions of dwt, beginning of year)	Tons carried per dwt of bulk carriers	All other dry cargoes (millions of tons)	Residual fleet[a] (millions of 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	2 648	354	7.48	1 888	346	5.46	3 009	260	11.58
2007	2 705	383	7.06	2 013	368	5.48	3 164	292	10.84
2008	2 749	408	6.74	2 104	391	5.38	3 315	319	10.40

Source: Calculated by the UNCTAD secretariat, based on UNCTAD data on seaborne trade (tons), and Lloyd's Register – Fairplay (world fleet).

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

Table 25

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 (thousands of millions)	Tanker fleet (beginning of year) [b]	Ton-miles per dwt of tankers	Ton-miles of dry bulk cargo (thousands of millions)	Dry bulk fleet (beginning of year) [b]	Ton-miles per dwt of bulk carriers	Ton-miles of other dry cargo (thousands of millions)	Residual fleet (beginning of year) [b]	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	7 290	246	29.64	5 259	235	22.41	3 891	178	21.89
2000	9 499	282	33.63	6 638	276	24.04	6 790	240	28.24
2006	10 741	354	30.32	9 976	346	28.84	9 341	260	35.95
2007	11 084	383	28.94	10 676	368	29.05	9 665	292	33.12
2008	11 292	408	27.68	11 209	391	28.66	10 245	319	32.14

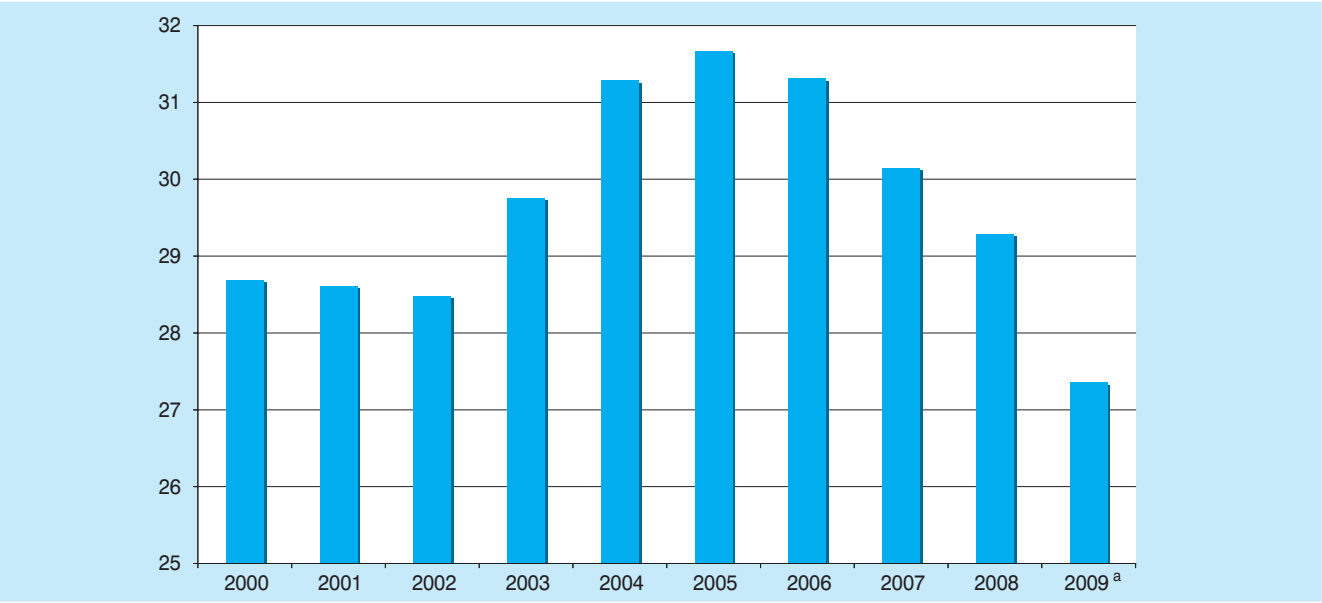
Source: Calculated by the UNCTAD secretariat, on the basis of data from Fearnleys *Review,* various issues; *World Bulk Trades* and *World Bulk Fleet*, various issues (ton-miles); and Lloyd's Register – Fairplay (world fleet).

[a] The residual fleet refers to general cargo, container ships and other vessels included in annex IIIb.

[b] Million dwt.

Figure 17

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

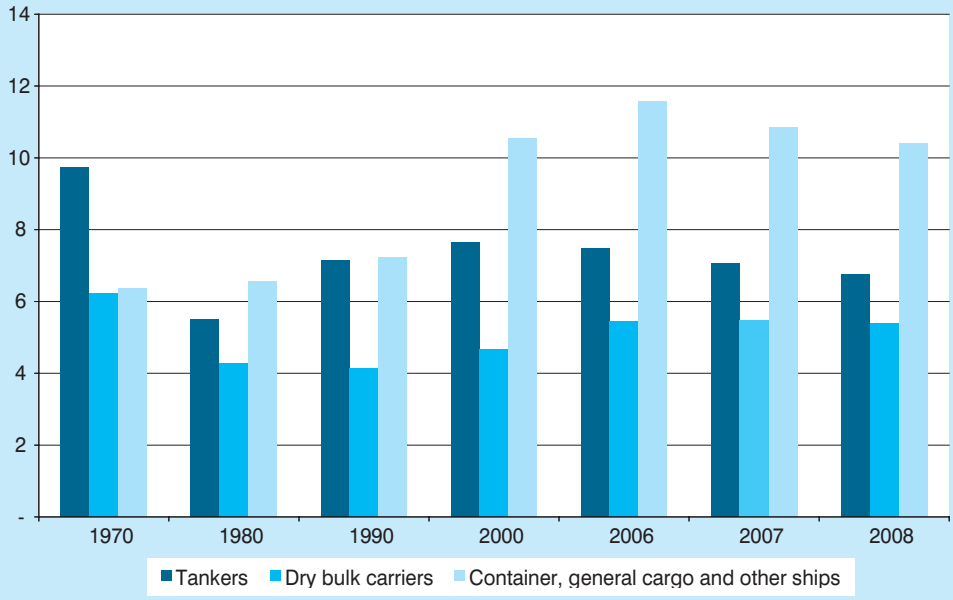


Source: UNCTAD calculations.

[a] Estimate based on forecast of ton-miles for 2009 and fleet as per 1 January 2009.

Figure 18

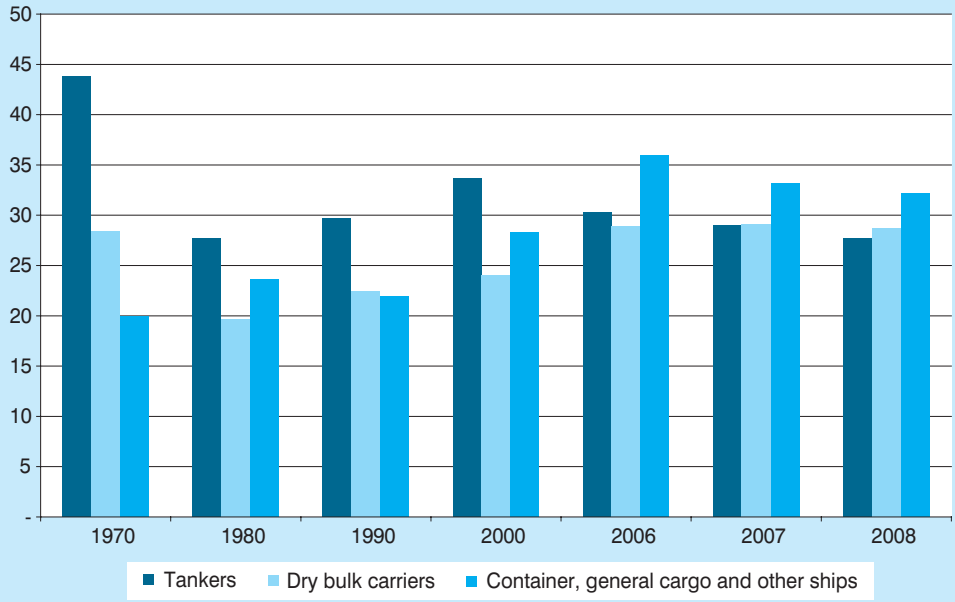
Tons carried per deadweight ton (dwt) of the world fleet, selected years



Source: UNCTAD calculations.

Figure 19

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



Source: UNCTAD calculations.

in table 26. The thousands of ton-miles per dwt of oil tankers decreased by 4.3 per cent from 28.9 in 2007 to 27.7 in 2008, while the corresponding figure for dry bulk carriers decreased by 1.3 per cent from 29.1 to 28.7. The productivity of the residual fleet measured in ton-miles per dwt decreased 3 per cent from 33.1 to 32.1.

Whereas in 2007 ship operators tended to reduce service speeds in order to lessen fuel costs, towards the end of 2008 and in early 2009 fuel prices had gone down, and the oversupply of tonnage made several liner companies take longer routes, e.g. around the Cape of Good Hope instead of through the Suez Canal. This helped reduce expenditures on canal dues while at the same time avoiding the risks of piracy in the surroundings of the Gulf of Aden.

B. SUPPLY AND DEMAND IN WORLD SHIPPING

The combined surplus tonnage of oil tankers, dry bulk carriers and general cargo ships at the end of 2008 … stood at 19.0 million dwt … corresponding to a 57 per cent increase over the previous year.

The combined surplus tonnage of oil tankers, dry bulk carriers and general cargo ships at the end of 2008 (data is for 1 December 2008) stood at 19.0 million dwt, 2.2 per cent of the total world merchant fleet, corresponding to a 57 per cent increase over the previous year (table 26). During the first months of 2009 the situation continued to worsen, reaching 25.9 million dwt on 1 April 2009, corresponding to a 2.9 per cent surplus.

The tonnage supply of large oil tankers (10,000 dwt and above) increased in 2008 by 30 million dwt to 414 million dwt, as newbuildings delivered outweighed tonnage scrapped, laid up or lost (see table 27 and fig. 20).

Table 26

Tonnage oversupply in the world merchant fleet, selected years

(end-of-year figures)

	1990	2000	2004	2005	2006	2007	2008	1 Apr. 09
					Million dwt			
Merchant fleet, three main vessel types[a]	558.5	586.4	667.0	697.9	773.9	830.7	876.2	896.2
Surplus tonnage[b]	62.4	18.4	6.2	7.2	10.1	12.1	19.0	25.9
Active fleet	496.1	568.0	660.8	690.7	763.7	818.6	857.2	870.4
					Percentages			
Surplus tonnage as percentage of merchant fleet	11.2	3.1	0.9	1.0	1.3	1.5	2.2	2.9

Source: Compiled by the UNCTAD secretariat, on the basis of data supplied by *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.

[b] 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.

Table 27

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

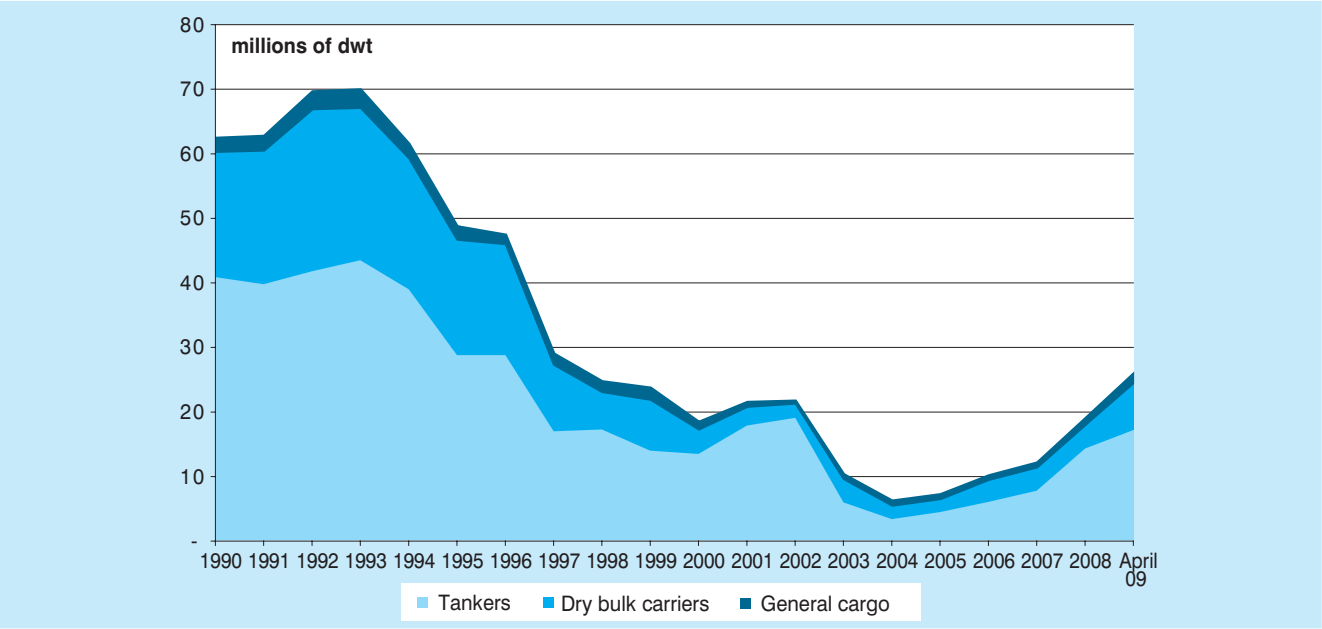
(In millions of dwt or m^3)	1990	2000	2004	2005	2006	2007	2008	1 April 2009
World tanker fleet (dwt)	**266.2**	**279.4**	**298.3**	**312.9**	**367.4**	**393.5**	**414.0**	**426.4**
Tanker fleet surplus (dwt)	40.9	13.5	3.4	4.5	6.1	7.8	14.4	17.2
Share of surplus fleet in tanker fleet (%)	15.4	4.8	1.1	1.4	1.7	2.0	3.5	4.0
World dry bulk fleet (dwt)	**228.7**	**247.7**	**325.1**	**340.0**	**361.8**	**393.5**	**417.6**	**425.8**
Dry bulk fleet surplus (dwt)	19.4	3.8	2.1	2.0	3.4	3.6	3.7	7.4
Share of surplus fleet in dry bulk fleet (%)	8.5	1.5	0.6	0.6	0.9	0.9	0.9	1.7
World conventional general cargo fleet (dwt)	**63.6**	**59.3**	**43.6**	**45.0**	**44.7**	**43.8**	**44.5**	**44.0**
Conventional general cargo fleet surplus (dwt)	2.1	1.1	0.7	0.7	0.6	0.7	1.0	1.3
Share of surplus fleet in general cargo fleet (%)	3.3	1.9	1.6	1.6	1.4	1.6	2.2	2.8
World reefer fleet (dwt)	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**5.6**	**5.6**
Reefer fleet surplus (dwt)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.1	0.1
Share of surplus fleet in reefer fleet (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9	1.1
World ro-ro fleet (dwt)	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**11.4**	**11.5**
Ro-ro fleet surplus (dwt)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9	1.0
Share of surplus fleet in ro-ro fleet (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7.8	8.7
World vehicle carrier fleet (dwt)	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**11.3**	**11.4**
Vehicle carrier fleet surplus (dwt)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.2	0.4
Share of surplus fleet in vehicle carrier fleet (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.1	3.5
World LNG carrier fleet (m^3)	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**44.4**	**48.0**
LNG carrier fleet surplus (m^3)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.9	5.2
Share of surplus fleet in LNG fleet (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	13.2	10.8
World LPG carrier fleet (m^3)	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**11.6**	**11.8**
LPG carrier fleet surplus (m^3)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9	0.5
Share of surplus fleet in LNG fleet (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8.1	3.8

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.

Figure 20

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.

Overcapacity in this sector increased significantly, to 14.4 million dwt or 3.5 per cent of the total world tanker fleet in December 2008, and to 4.0 per cent in April 2009. Older single-hulled tankers are particularly difficult to employ, as environmental regulations increasingly require the use of double-hulled tankers.

In 2008, the supply of large dry bulk vessels increased by 34 million dwt to 418 million dwt in December, reaching 426 million dwt in April 2009. Overtonnage for this type of vessel was 7.4 million dwt in April 2009, equivalent to 1.7 per cent of the dry bulk fleet.

For the conventional general cargo fleet of vessels of 5,000 dwt and above, overcapacity also increased over the previous year, reaching 2.8 per cent of the world fleet of this sector in April 2009. The surplus fleet of ro-ro vessels stood at 8.7 per cent, and that of vehicle carriers at 3.5 per cent. Gas carriers (of LNG and LPG) have seen the surplus fleet situation improve over the last months, albeit starting from a relatively high basis; as per 1 April 2009, the share of the LNG surplus fleet stood at 10.8 per cent.

As regards the growth of supply and demand in container shipping, based on the scheduled vessel deliveries, the fleet is expected to grow in 2009 by 9.6 per cent – the second-highest growth rate over a 10-year period. This contrasts with an expected downturn of demand by 9.1 per cent. Figure 21 illustrates how supply seems to follow demand – albeit with a delay of two to three years. The recent boom – especially in container shipping (see also the age profile of the container ship fleet in fig. 10 of chapter 2) – is now bound to be followed by a historical bust.

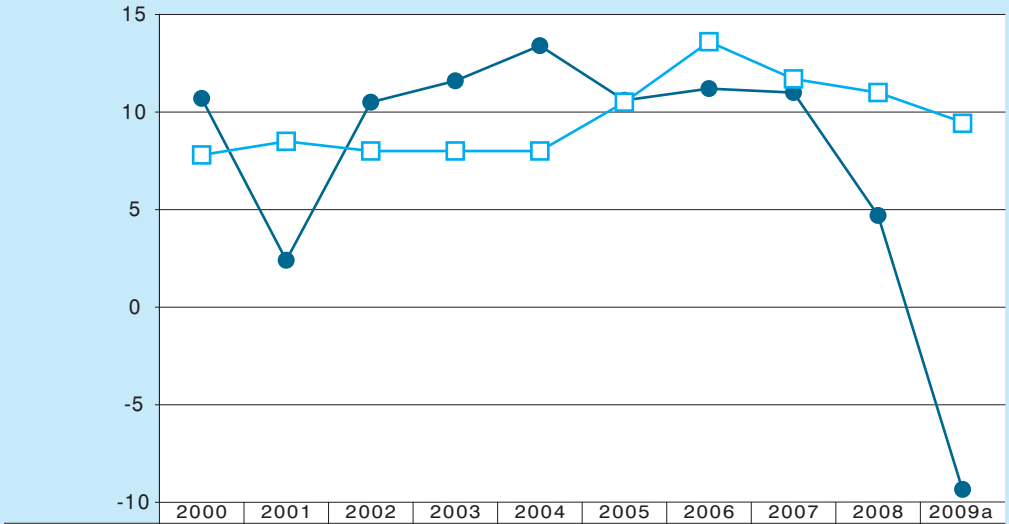
C. COMPARISON OF CARGO TURNOVER AND FLEETS

In 2008, the United States generated 10.68 per cent of world trade (in United States dollars, imports plus exports) while owning 3.62 per cent of world tonnage; 1.0 per cent of the world's cargo-carrying tonnage used the flag of the United States. Germany,

Figure 21

Growth of demand and supply in container shipping, 2000–2009[a]

(annual growth rates)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009a
Demand	10.7	2.4	10.5	11.6	13.4	10.6	11.2	11.0	4.7	-9.1
Supply	7.8	8.5	8.0	8.0	8.0	10.5	13.6	11.7	11.0	9.6

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. Data for 2009: forecast.

China and Japan are among the top four trading nations, accounting for 8.22, 7.91 and 4.78 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, the Netherlands, Italy and the United Kingdom each account for a similar share of world trade (between 3.4 and 4 per cent each, approximately), however their shares in the control or registration of ships vary widely: 1.52 per cent of the world's tonnage is registered in the United Kingdom, compared to only 0.57 per cent registered in the Netherlands; owners from the United Kingdom control 2.8 per cent of the world's tonnage, compared to only 0.59 per cent controlled by owners from France (table 28).

… China, the Asian developing economies with the highest share in world trade include the Republic of Korea, Hong Kong (China), and Singapore …

Along with China, the Asian developing economies with the highest share in world trade include the Republic of Korea, Hong Kong (China) and Singapore, accounting for 2.6, 2.3 and 2.0 per cent respectively. The Republic of Korea controls 4.2 per cent of the fleet as regards ownership, Hong Kong (China) controls 3.1 per cent, and Singapore controls 2.6 per cent. Two Latin American countries are among the major trading nations, namely Mexico and Brazil, with a 1.8 and 1.1 per cent share of world trade respectively. Out of these two countries, Brazil has a far higher share in vessel registration (0.3 per cent) and ownership (0.4 per cent) than Mexico, which registers only 0.1 per cent of the world's tonnage.

Table 28

Maritime engagement of 25 major trading nations

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

Country/territory	Percentage share of world merchandise 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		
	2007	2008	Change, in percentage points	1.1.2008	1.1.2009	Change, in percentage points	1.1.2008	1.1.2009	Change, in percentage points
United States	11.38	10.68	-0.70	1.09	1.00	-0.08	3.84	3.62	-0.22
Germany	8.51	8.22	-0.28	1.34	1.51	0.16	9.07	9.50	0.42
China	7.81	7.91	0.10	3.32	3.35	0.03	8.18	8.40	0.22
Japan	4.77	4.78	0.01	1.32	1.29	-0.03	15.58	15.68	0.10
France	4.16	4.04	-0.12	0.71	0.66	-0.04	0.63	0.59	-0.03
Netherlands	3.72	3.72	0.01	0.56	0.57	0.02	0.83	0.76	-0.07
Italy	3.55	3.37	-0.18	1.19	1.21	0.02	1.71	1.79	0.08
United Kingdom	3.76	3.36	-0.40	1.42	1.52	0.10	2.50	2.80	0.29
Belgium	3.01	2.91	-0.09	0.58	0.56	-0.02	1.17	1.22	0.05
Canada	2.88	2.70	-0.18	0.28	0.29	0.00	1.81	1.55	-0.25
Republic of Korea	2.62	2.64	0.03	1.89	1.90	0.00	3.63	4.22	0.59
Russian Federation	2.16	2.61	0.45	0.64	0.60	-0.04	1.74	1.66	-0.08
Hong Kong (China)	2.56	2.32	-0.24	5.30	5.38	0.09	3.22	3.05	-0.17
Spain	2.18	2.06	-0.12	0.25	0.23	-0.02	0.43	0.40	-0.03
Singapore	2.02	2.03	0.02	4.97	5.10	0.13	2.76	2.55	-0.20
Mexico	2.04	1.85	-0.19	0.14	0.14	0.00	0.00	0.00	0.00
Taiwan Province of China	1.67	1.53	-0.14	0.39	0.36	-0.03	2.52	2.70	0.18
India	1.29	1.45	0.16	1.35	1.28	-0.06	1.55	1.56	0.01
Saudi Arabia	1.15	1.27	0.12	0.10	0.14	0.04	1.25	1.35	0.10
Australia	1.10	1.19	0.09	0.19	0.18	-0.01	0.00	0.00	0.00
Switzerland	1.19	1.19	0.00	0.08	0.08	0.01	0.34	0.35	0.00
Malaysia	1.16	1.15	0.00	0.85	0.79	-0.06	1.08	1.05	-0.03
Poland	1.08	1.15	0.07	0.01	0.01	0.00	0.00	0.00	0.00
Brazil	1.03	1.14	0.11	0.29	0.29	-0.01	0.43	0.43	0.00
Austria	1.16	1.12	-0.04	0.00	0.00	0.00	0.00	0.00	0.00
Total	77.91	76.41	-1.49	28.24	28.43	0.19	64.25	65.21	0.97

Source: Compiled by the UNCTAD secretariat, on the basis of data supplied by the *UNCTAD Handbook of Statistics* (trade) and *Lloyd's Register – Fairplay* (fleet registration and ownership).

ENDNOTES

[1] Note: The figures on the operational productivity of the world fleet are indicative estimates only. While the data on the world fleet includes ships that are employed in cabotage trades, the UNCTAD estimates of seaborne trade do not include cabotage, and not all vessels of 100 GT and above are included in the calculation of the ton-miles.

Chapter 4

TRADE AND FREIGHT MARKETS

This chapter looks at the demand side of international seaborne trade by describing conditions and trends in trade and freight markets, covering the major tanker, bulk cargo and liner sectors. This chapter expands upon the general overview of international maritime trade as described in chapter 1. The start of 2008 continued the buoyant trend experienced in the preceding year in all sectors. However, by the middle of the year, things took a turn for the worse, as the global financial crisis began to affect demand. Trade volumes in the bulk cargo and liner sectors sustained dramatic declines, which continued for the remainder of the year and well into 2009. The tanker market fared slightly better during 2008 compared to other sectors, although by the middle of 2009 all sectors were experiencing similar declines. Initially, the record oil price reached in July 2008 had been pushing tanker rates up for the first half of 2008, and tankers being used for storage helped to maintain rates high until the global economic crisis took effect.

A. CRUDE OIL AND PETROLEUM PRODUCTS SHIPPING MARKET[1]

Introduction

Crude oil and petroleum products are major transport commodities, representing approximately one third of the total world seaborne trade. In addition, crude oil is still the main source of fuel that propels the world's merchant fleet. Shipping remains, on a per ton basis, the most efficient and environmentally friendly form of transportation over long distances. Understanding tanker freight rates, and thus the underlying demand for tankers, gives the reader a clear indication of how world trade is evolving. Crude oil production and consumption trends are discussed in more detail in chapter 1. During 2008, there were 903 new tankers delivered, totalling 43.5 million dwt; while 202 vessels, totalling 5.5 million dwt, were demolished. Orders received by yards for newbuildings amounted to 907 vessels of 60 million dwt, pushing the total order book to 2,812 vessels of 190 million dwt.

Freight rates for all types of tanker vessels in the first quarter of 2009 were down on the same period for the previous year.

1. Tanker freight rates

Freight rates for all types of tanker vessels in the first quarter of 2009 were down on the same period for the previous year (see table 29). This followed a fluctuating 2008, in which average freight rates peaked in the middle of the year, before embarking on a sector-wide downward trend. Although average tanker freight rates for 2008 were up in all vessel sectors compared to the previous year's averages, a comparison between December 2008 and December 2007 shows that all rates were substantially down. A sharp drop in freight rates for all vessels was observed in January 2008, as a result of surplus tonnage following the New Year holiday period, reduced weather delays in crossing the Turkish Straits, and lower demand for

crude oil across the Atlantic basin as refineries stopped production and carried out maintenance. The months of May, June and July 2008 represented the yearly highs for all sectors. The record oil price reached in July 2008 had been a main driving factor pushing tanker rates up for the first half of 2008, and tankers being used for storage helped to maintain rates at high levels. Another factor that fuelled the fire was the halving of Nigeria's 2.5 million barrel-per-day output due to strikes. Freight rates for Capesize vessels took a severe nosedive in August, with rates falling by more than half, from 196 to 88 points. The smaller Panamax vessels ranging from 25,000 to 75,000 dwt maintained their resilience until October, before dropping from 263 to 175 points. They continued to slide almost unabated, to 120 points at the end of the first quarter of 2009. Declining oil

Table 29

Tanker freight indices, 2007–2009

(monthly figures)

	Lloyd's Shipping Economist				Baltic Tanker		
2007	**>200**	**120–200**	**70–120**	**25–70**	**Clean**	**Dirty Index**	**Clean Index**
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	**110**	**154**	**165**	**221**	**202**	**1 175**	**921**
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
July	196	248	250	291	305	1 883	1 454
August	88	174	196	282	316	1 801	1 331
September	103	156	197	282	316	1 451	1 476
October	99	149	165	263	239	1 508	1 367
November	67	121	124	175	198	1 246	1 039
December	71	139	191	206	182	1 124	880
Average	**118**	**169**	**193**	**244**	**250**	**1 531**	**1 164**
2009							
January	54	84	100	125	130	849	623
February	44	65	84	95	126	597	600
March	33	90	82	120	105	626	543
April	29	52	67	105	72	524	371
May	30	58	66	90	103	476	424
June	43	63	102	112	98	482	479

Source: UNCTAD secretariat, based upon the 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.

demand brought about by the deepening economic crisis, combined with high stock levels, contributed to the declining rates. Reductions in OPEC production also affected rates for cargo from the Arabian Gulf to the United States and Eastern Asia. The slight rally that took place towards the end of 2008 proved to be very short-lived, as rates for the first quarter of 2009 continued their downward trajectory. The Baltic Exchange Dirty Tanker Index showed more of a rollercoaster ride, from highs of 1,914 in January 2008 to lows of less than 1,200 in the following two months. It then embarked on an upward trend, which culminated in June at 1,921 before embarking on a year of almost continuous falls, hitting 476 points in May 2009. The Baltic Exchange Clean Tanker Index also fell from 1,476 points in September 2008 to 371 in April 2009.

Table 30 illustrates average freight rates, measured in Worldscale (WS), a unified measure for establishing spot rates in the tanker market, on specific major routes by various vessel sizes. 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 Eastern Asia, Southern 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.

When comparing freight indices for December 2007 with December 2008, it can be seen that rates on all routes declined, with the sole exception of those relating to vessels operating in the Mediterranean. One of the largest month-on-month increases in freight rates during 2008 occurred on routes within the Mediterranean, when rates nearly doubled from WS113 in February to WS224 in March. This was largely attributable to a light maintenance season in Europe and an increase stock intake by refineries ahead of proposed tax increases, particularly in the United Kingdom. During the same period, rates increased by over 40 per cent on the Caribbean–Caribbean/East Coast of North America route. In May, rates increased by over 60 per cent on the West Africa–Caribbean/East Coast of North America route. December also proved to be a good month for shipowners on the Caribbean–Caribbean/East Coast of North America route, where rates almost doubled, and on routes within the Mediterranean and on the Caribbean–East Coast of North America/Gulf of Mexico route, where rates increased by over two thirds.

The most dramatic declines in freight rates during 2008 involved very large crude carrier (VLCC) and ultra-large crude carrier (ULCC) servicing routes from the Persian Gulf to Europe, the Americas and Eastern Asia. Freight rates on these routes declined by around two thirds from December 2007 to December 2008. In general, rates departed from their established pattern – which is to decrease during the first two quarters and to stabilize and climb during the last quarter of the year – to a pattern where rates climbed towards the middle of the year, before falling back and ending the year lower. This departure from the traditional pattern that follows the seasons of the markets in the northern hemisphere, where more fuel is required in the winter, occurred because high oil prices fuelled higher demand as traders sought speculative positions. Ultimately, this bubble collapsed when the market saw that oil prices had reached a peak, and consequently freight rates collapsed too. The start of 2009 did not bode well for the tanker market, when, in January, freight rates for all routes declined. By comparing rates for the northern-hemisphere summer of 2008 with those of the second quarter of 2009, it can be seen that freight rates on some routes declined by as much as 90 per cent. Even rates on the best-performing North-West Europe–Caribbean/East Coast of North America route declined by around two thirds, from WS258 in May 2008 to WS82 in April 2009.

The biggest decreases on a month-by-month basis occurred in August, when freight rates for VLCCs on the Persian Gulf to Japan and on the Persian Gulf to the Republic of Korea routes decreased by over 60 per cent, from WS238 to WS84 and WS211 to WS83 respectively. This was largely attributable to a cut in oil production by OPEC members, which meant less cargo was available in the Persian Gulf to transport elsewhere.

… freight rates for VLCCs on the Persian Gulf toJapan and on the Persian Gulf to the Republic of Korea routes decreased by over 60 per cent …

More detailed information is provided in the following sections about developments in 2008 in relation to the various categories of tankers.

Table 30

Tanker market summary: clean and dirty spot rates, 2007–2009

(Worldscale (WS))

Vessel type	Routes	2007	2008											% change 2007/2008	2009					
		Dec	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	195	122	96	97	109	212	204	238	84	105	81	57	66	-66.2%	51	44	41	27	27	46
	Persian Gulf–Republic of Korea	189	127	99	88	102	167	190	211	83	115	104	63	61	-67.7%	53	42	36	27	27	41
	Persian Gulf–Europe	163	135	88	84	69	160	145	141	70	80	62	61	..	-62.6%	..	35	30	..		28
	Persian Gulf–Caribbean/East Coast of North America	159	85	86	84	95	132	142	144	82	95	91	54	54	-66.0%	44	34	30	21	20	32
	Persian Gulf–South Africa	220	..	..	..	160	..	..	..	..	99	..	67	..	-69.5%	..	55	..	35	..	38
Suezmax (100,000–160,000 dwt)																					
	West Africa–North West Europe	237	149	124	173	200	237	199	252	159	166	158	118	140	-40.9%	84	68	68	53	52	64
	West Africa–Caribbean/East Coast of North America	251	135	125	157	175	249	190	241	162	166	144	122	139	-44.6%	86	71	77	53	50	61
	Mediterranean–Mediterranean	223	165	113	224	226	273	214	345	158	167	151	135	121	-45.7%	90	70	73	58	62	78
Aframax (70,000–100,000 dwt)																					
	North West Europe–North West Europe	190	163	128	159	196	240	206	229	194	178	149	126	165	-13.2%	99	80	81	72	66	80
	North West Europe–Caribbean/ East Coast of North America	190	170	138	173	194	258	246	222	230	220	165	133	185	-2.6%	105	92	97	82	85	79
	Caribbean–Caribbean/East Coast of North America	299	204	168	240	226	288	309	233	226	264	206	130	258	-13.7%	105	78	112	59	73	77
	Mediterranean–Mediterranean	205	183	146	192	251	263	222	272	182	186	157	126	212	3.4%	107	86	74	62	68	103
	Mediterranean–North West Europe	193	187	137	174	240	265	218	268	166	187	160	118	173	-10.4%	106	90	71	59	69	90
	Indonesia–Far East	237	180	143	140	164	210	226	283	216	175	164	153	153	-35.4%	81	69	67	58	54	54
Handy size (less than 50,000 dwt)																					
	Mediterranean–Mediterranean	260	198	180	191	211	235	300	314	270	..	..	250	200	-23.1%	118	100	109	87	80	109
	Mediterranean–Caribbean/East Coast of North America	262	200	174	187	212	279	290	297	275	265	258	153	175	-33.2%	110	96	112	72	80	101
	Caribbean–East Coast of North America/Gulf of Mexico	334	194	159	221	236	275	344	299	282	291	258	142	243	-27.2%	131	80	108	70	83	106
All clean tankers																					
70,000–80,000 dwt	Persian Gulf–Japan	195	198	150	135	141	172	260	276	339	327	..	..	145	-25.6%	84	106	62	55	56	78
50,000–60,000 dwt	Persian Gulf–Japan	236	224	171	182	166	207	288	309	371	354	336	240	156	-33.9%	85	118	79	52	63	85
35,000–50,000 dwt	Caribbean–East Coast of North America/Gulf of Mexico	203	216	190	189	227	298	302	303	299	260	187	165	166	-18.2%	130	116	93	72	106	96
25,000–35,000 dwt	Singapore–East Asia	322	287	224	260	221	220	306	326	303	403	328	330	236	-26.7%	105	131	98	82	77	..

Source: UNCTAD secretariat, based upon *Shipping Insight* from Drewry Publishing, 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.

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 the transportation of oil where pipelines are non-existent. Overall, the VLCC market in 2008 was not favourable for shipowners; rates on all routes declined between 60 and 70 per cent when comparing December 2007 with December 2008. While the (northern hemisphere) spring and summer months saw some strong growth, rates plummeted starting from August 2008 and continued to fall well into the spring of 2009. The biggest gains for shipowners were seen in May 2008, when rates climbed by 132 per cent on the Persian Gulf to Europe route, from WS69 to WS160. This was attributable to a combination of factors, ranging from a decrease in the supply of available carrying capacity brought about by high oil prices which forced many shipowners to reduce vessels' speeds, to strikes by port workers and the increased use of tonnage to store crude. Earnings for shipowners during this period reached $160,800 per day. By August 2008, however, the good times for shipowners were over and rates halved, from WS141 to WS70 on the Persian Gulf to Europe route. This downturn also affected the value of ships. The price of a five-year-old VLCC in April 2009 declined to around $87 million, compared to annual average prices of $144.7 million in 2008 and $123.8 million in 2007. The cost of demolishing ships declined sharply too, as the price of steel plummeted from more than $700 a ton in 2008 to around $200 in 2009 (see chapter 2). One of the highest prices paid by breakers was in the first quarter of 2008 for the 1987-built *C Elephant* at 240,634 dwt; the Bangladeshi breakers reportedly paid $770 per light displacement ton (ldt).

Suezmax tanker tonnage

As the name suggests, Suezmax ships are the largest tankers able to transit the Suez Canal. Capable of operating on other routes, 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. These routes saw significant declines in freight rates at the start of 2008, ranging from 25 to 45 per cent. Although a turnaround was seen in March 2008, which lasted for the most part until the end of the year, shipowners could not withstand the global economic downturn, and the start of 2009 marked a bleak era. Freight rates on West African routes slumped to a 10-year low of WS53 in April 2009, down approximately 80 per cent from the highs of mid-2008, as a dearth of cargoes limited activity. In March 2009, ConocoPhillips took a 149,999-dwt Suezmax built in the year 2000 from West Africa to the US Gulf at WS62.5. This was a significant fall from WS249 in May 2008. As far as income was concerned, revenues received by shipowners on the West Africa to the Caribbean/East Coast of North America route declined from $49,000 per day (at WS95) in February 2009 to $24,350 per day (at WS60) in the following month. A corresponding decline was noted in vessel prices. A five-year-old Suezmax in April 2009 cost $61.5 million, compared with annual averages of $95.3 million in 2008 and $86.6 million in 2007.

Aframax tanker tonnage

Aframax tankers of around 80,000 to 125,000 dwt offer a large carrying capacity and flexibility. They are often deployed for trading within and between the following regions: North-West Europe, the Caribbean, the East Coast of North America, the Mediterranean, Indonesia and Eastern Asia.

In general, freight rates for all Aframax vessels declined at the start of 2008 and then peaked in the middle of the year. The Aframax market generally fared better than the market for other types of tankers in 2008. Indeed, the only type of vessel to show positive gains for the year was on the Aframax Mediterranean–Mediterranean route, with a 3.4 per cent growth rate. Freight rates for other routes decreased by between 10 and 35 per cent. The most profitable route, in terms of the most earned in a single month, was the Caribbean–Caribbean/East Coast of North America route, which peaked in June 2008 at WS309, pushing the daily time charter earnings to a yearly high of $54,600 per day. Freight rates for vessels on the Mediterranean–North West Europe, Mediterranean–Mediterranean and Indonesia–Far East routes all peaked the following month, at WS268, WS272 and WS283 respectively. November 2008 proved to be a particularly difficult month for freight earnings, as four of the six routes shown in table 29 experienced a yearly low. The Caribbean–Caribbean/East Coast of North America route, mentioned above, declined to earnings of $19,300 per day. Despite a rally in freight rates at the end of 2008, rates continued their downward path well into 2009, pushing rates on the Caribbean–Caribbean/East Coast of North America route down to $5,000 per

The Aframax market generally fared better than the market for other types of tankers in 2008.

day by April 2009. The price of a five-year-old Aframax in April 2009 was $43 million, compared with annual averages of $71.4 million in 2008 and $66.4 million in 2007.

Handysize tanker tonnage

At less than 50,000 dwt, handysize tankers are capable of calling at destinations with limited draft and with length restrictions, making them very versatile. 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 on the East Coast of North America, and for trades from the Caribbean to the Gulf of Mexico and the East Coast of North America.

Freight rates on all three routes shown in table 29 declined by between 23 and 33 per cent, with the Mediterranean–Caribbean/East Coast of North America route declining the most. The low point in the year occurred in November, on routes between the Mediterranean and the Caribbean and the East Coast of North America, and also on the Caribbean to the Gulf of Mexico and the East Coast of North America route.

All clean tankers

Freight rates on all four routes shown in table 29 declined by between 25 and 33 per cent, with the Persian Gulf to Japan route declining the most. The low point in the year occurred in December on the Persian Gulf to Japan route and on the Caribbean to the East Coast of North America route. Rates continued to fall in 2009, by as much as two thirds on the Persian Gulf to Japan route due to ample supplies and weak demand in refined fuels.

The chemical tanker fleet consists of around 2,500 vessels with a carrying capacity of 39.3 million dwt. Two thirds of these vessels have IMO 2 specifications to trade primarily in pure chemical cargoes such as styrene, xylene and easychems. Around 400 of these vessels trade in deep sea trades, with another 560 based in the European regional market, and 540 in Pacific Rim regional trades. Around one third of chemical tankers are classified as IMO 3, or double-hull product tankers, trading only in chemicals and vegetable oils. Less than 3 per cent of vessels possess the IMO 1 specification to trade in the most hazardous cargoes such as chlorosulphonic acid and trichlorobenzene. Most of these vessels are deployed in deep sea trades.[2]

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 $17,567 per day in 2008, compared with $18,575 per day in 2007 and $20,425 per day in 2006. The average for April 2008 for this route was $15,200, compared to just $6,600 in April 2009.

Tanker-period charter market

In 2008, total chartering activity dropped by a million dwt to 26.951 million dwt, from the figure of 28.04 million dwt recorded the previous year. March and April both recorded less than 1 million dwt, while February and October saw the most chartering activity, with 4.197 million dwt and 4.394 million dwt respectively.

About 36 per cent of total chartering activity in 2008 was made up of long-term charters of 24 months or more, down from 46 per cent in 2007 and 58 per cent in 2006. The next most active sector of time chartering was for the period of less than 6 months (27 per cent), and then those with a duration of one to two years (26 per cent). Very large tankers (ULCCs and VLCCs) accounted for about 26 per cent of total chartering activity, down from 54 per cent in 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, down 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. LIQUEFIED NATURAL GAS

Introduction

Liquefying natural gas reduces its volume by around 600 per cent when it is cooled to –162°C, making it possible to transport large volumes by vessel. The typical liquefied natural gas (LNG) tanker carries 145,000–155,000 cubic metres of natural gas on a single voyage. When vaporized, this becomes 89 million–95 million cubic metres.[3] However, liquefaction plant costs

represent the highest portion of the costs for any LNG project. The other major transport mode for international shipment of gas is via pipeline. This, however, involves increased costs per kilometre (e.g. of steel pipes, anti-corrosion protective coatings, stanchions etc.) and is therefore preferable over shorter distances or where there is no direct sea alternative. LNG shipments work best over long distances, where either the use of a pipeline would render the project uneconomic, or the crossing of many territories would pose too many potential risks of a hiatus in supply. Liquefaction and regasification costs rise less rapidly as a function of distance than pipeline costs do, as once the vessel and plants are built, the major transportation cost is the operational cost of the vessel itself. Should there be a problem in supply, such as one party not honouring their contract, in theory the vessels can be moved to service another client, whereas in the case of pipelines, the assets are fixed. As reported in chapter 1, no growth was recorded in the LNG trade in 2008, with the total volume of LNG shipped amounting to 226.5 billion cubic metres (bcm). In common with other sectors, trade in LNG in 2008 suffered from the economic downturn, and from weak demand – especially for electricity. The main LNG importers included both developed and developing countries, namely Japan, the Republic of Korea, the United States, Spain, France and India – although imports by the United States have declined in recent years, dropping in 2008 alone by around 50 per cent, to 7 million tons.[4] The main LNG exporters were located in developing regions, with Qatar being the largest (17.5 per cent). Other exporters included Algeria, Indonesia, Malaysia and Nigeria. Malaysia's MISC Berhad is the world's largest single owner-operator, with an LNG fleet of 27 vessels. In the first two months of 2009, world LNG trade declined by around 5.5 per cent. The decline in global LNG trade in 2009 was driven by reduced exports – in the face of a weak global gas market – from Algeria, Nigeria, Qatar, Indonesia, Egypt and Equatorial Guinea.[5]

1. Developments in LNG trade[6]

Whereas gas was once burnt off as a waste product in the oil extraction process, methods have developed over the last few decades to bring this product to market. In particular, the number of LNG projects has increased as transportation technology has improved. The development of the Q-Max LNG carrier has allowed a decrease in transport costs by between 20 and 30 per cent. As of June 2008, there were 80 LNG liquefaction trains at 19 sites worldwide.[7] However, global liquefaction capacity in the first half of 2008 increased by a mere 1.9 per cent to 87.8 million metric tons per year (MMT/Y), as major projects were delayed, including Tangguh (Indonesia), Sakhalin-2 (Russian Federation), Yemen LNG (Yemen), Qatargas 2's train 2, and RasGas 3's train 1 (Qatar).[8] These and other projects should come in 2009 and provide about 40 MMT/Y of new capacity. The Hammerfest LNG plant at Melkøya in northern Norway resumed operation in 2008 after a few start-up problems, while in the Russian Federation, the first-ever commercial LNG export cargo left the Prigorodnoye facility on Sakhalin Island in March 2009. The plant is expected to be producing at its full capacity of 9.6 million tons per annum by 2010. Also in the Russian Federation is the giant Shtokman development in the Barents Sea, which is expected to begin exports in 2014; and the Yamal Peninsula site in the north-west of the country, which is still in the initial stages of developing LNG facilities. The first shipments of LNG cargo left Tangguh in the State of Papua Barat, Indonesia, bound for Gwangyang, Republic of Korea, in June 2009. Tangguh is Indonesia's third LNG export centre; the others are Bontang in East Kalimantan and Arun in Sumatra. The $5 billion project will produce LNG from the first of two processing trains, which can produce up to 3.8 million tons per annum each.

2. LNG freight rates

Most LNG vessels are in stable long-term contracts and thus do not suffer from the widely varying spot market prices that affect other sectors. Daily charter rates in 2008 were, on average, in the $40,000 to $50,000 per day range for most of 2008. However, such rates for LNG tankers on short-term hauls declined by 17 per cent in 2008, to around $46,600 a day for steam turbine vessels with a capacity of 138,000 to 150,000 cubic metres, due primarily to an increase in the supply of new vessels.

Trends in LNG newbuildings

The world fleet of LNG vessels numbers around 280. In 2008, 58 vessels were added to the fleet by shipyards located mainly in the Republic of Korea, and to a lesser extent in Japan and China. A further 42 vessels are planned for delivery in 2009, and another 36 in 2010. The capacity of the LNG-carrying fleet grew in 2008 by 28 per cent to 41 million cubic metres, up from 32 million cubic metres the previous year. In January 2009, the order book for new vessels stood at between 78 and 82, and at around 14.2 million cubic metres (cbm) (34.8 per

cent of the existing fleet). This was down from the peak years of 2004 and 2005, when 67 and 49 vessels of over 100,000 cbm were delivered, respectively. The price of LNG carriers has remained stable over the last few years, ranging from $222 to $237 million between 2006 and the first part of 2009. The largest LNG carriers, which are called Q-Max vessels and have a capacity of 266,000 cbm, operate mainly from Qatar. The scheduled new delivery of LNG vessels is expected to dampen freight rates in the medium term, as production capacity at new facilities lags behind.

C. DRY BULK SHIPPING MARKET[9]

Introduction

The dry bulk shipping market principally consists of the five main bulk cargoes: iron ore, grain, coal, bauxite/alumina and phosphate, processed as inputs for products which in turn form the backbone of merchandise trade. The dry bulk sector accounts for around 66 per cent of the total volume of cargo transported by sea. As reported in chapter 1, the total volume of dry bulk cargoes loaded in 2008 stood at 5.4 billion tons. Trade in the major dry bulks, which are considered in the following sections, was estimated at 2.1 billion tons in 2008. With a carrying capacity of around 418 million dwt, and an order book of 292 million dwt as of March 2009, the world fleet of dry bulk carriers is set to grow by around 70 per cent over the next few years. During 2008, 333 newbuildings were delivered, totalling some 23.7 million tons, whereas 76 vessels totalling 3.3 million tons were demolished. The average size of a newly delivered bulk carrier is thus around 71,000 dwt, compared to an average size of 43,000 dwt for scrapped vessels: shipowners are clearly getting rid of older, smaller tonnage in favour of new, larger ships.

The dry bulk market – which had been riding high since 2003 – collapsed in 2008, despite a promising start.

In general, as a way of securing essential supplies, countries tend to have a merchant fleet that reflects their import needs. For example, China has a large fleet of bulk carriers, which supply it with raw materials for the production of goods. However, this can also be the case when one product dominates exports: countries may have a merchant fleet that reflects carriage of that good. For example, Indonesia – a major oil exporter – has a large oil tanker fleet. Thus, developing countries tend either to specialize in bulk shipping that carries the raw material they need in order to produce manufactured goods, or to be exporters of one particular cargo type (see chapter 2 for more details on the ownership of the world's fleet). The control of the world fleet of dry bulk carriers by shipowners from developing economies includes China, with a fleet of 43 million dwt or approximately 10 per cent, followed by the Republic of Korea, Hong Kong (China), Taiwan Province of China, Turkey, India and Singapore.

1. Developments in dry bulk trade

The dry bulk market – which had been riding high since 2003 – collapsed in 2008, despite a promising start. The Baltic Exchange Dry Index, which measures freight rates for dry bulk transported by sea, saw a significant decline as a result of decreased trade activity in this sector. The following sections describe some of the recent developments in each of the five main bulk trades.

Iron ore

Iron ore is an important commodity as it forms the basic ingredient for the production of steel, which in itself is a major component of heavy industrial production. Around 98 per cent of iron ore goes into iron and steel production, with the remainder used in applications such as coal washeries and cement manufacturing. Iron itself is the most commonly used metal, making up 95 per cent in tonnage of global metal production. Iron is also alloyed with a number of elements such as carbon, manganese and nickel to produce stronger and harder steels which are indispensable in construction, and for motor vehicles, ships, trains and railroad tracks.[10]

Australia and Brazil account for two thirds of the world's exports of iron ore. China accounts for almost half of the world's imports, and Japan remains the second-largest importer with 18 per cent. The two biggest iron ore companies are Brazil's Vale, and the British/Australian Rio Tinto, which each export around 800 million tons of iron ore annually. A roundtrip voyage between Brazil and China takes about 74 days on average, compared with a roundtrip voyage from Australia to China which takes about 30 days. This means that a typical Capesize vessel plying this trade can make either 5 return trips from Brazil to China in the space of a year, or 12 return trips from Australia to China. Considering that these vessels usually return in ballast, valuable sailing time is consumed on longer voyages when no revenue is being earned.

Despite declining general trade volumes in other sectors, China's imports of iron ore increased in 2008 to 444 million tons, up from 383 million tons in 2007. The second and third quarters of 2008 saw the highest import levels. The average monthly import was around 37 million tons, varying from a high of 42.8 million tons in April 2008 to a low of 30.6 million tons in October 2008. In April 2009, China reached a new import high for iron ore, at 57 million tons. The first few months of 2009 showed an increase in iron ore imports by China of 22 per cent over the same period in 2008, bringing stock levels in ports to around 70 million tons (up from an average of 54 million tons in 2007) and in steel mills to around 20 million tons.[11] According to data released by the China Iron and Steel Association, dealers have increased the amount of their imports, hoping to benefit from any turnaround in the world economy. The second half of 2009 looks very volatile for the iron ore sector, as the Chinese Government has set a limit on steel production for 2009 at 460 million tons, which is down 15 per cent on 2008's output of 540 million tons. This may cause some mills to reduce their demand for iron ore imports as the year closes. If we assume that it takes, on average, 2.5 tons of iron ore to make one ton of steel, this means that 1,150 tons of iron ore are needed per year; this compares with the 1,350 tons of iron ore consumed in 2008. China produced approximately 906 million tons of domestic iron ore during 2008. If domestic production stays the same, then imported iron ore after August 2009 will either fall – leading to lower freight rates – or it will contribute to the stockpile and help maintain rates. In 2009, China also announced the discovery of new iron ore reserves of around 3 billion tons in Liaoning province. How this will affect world markets is not yet clear, as it will depend on the quality and the ease of extraction.

In first half of 2009, Rio Tinto sold around 50 per cent of its ore on the spot market; the remainder is sold at contract prices negotiated yearly. In comparison, BHP Billiton sold around 20 per cent on the spot market. During 2008, BHP Billiton and Rio Tinto were locked in negotiations with Chinese steelmakers over the 2008 contract price for iron ore. BHP Billiton and Rio Tinto were holding out for a freight premium because of their geographical advantage over Brazil, their main competitor. Brazil's Vale had previously won an increase of 65 per cent, but as Australia is closer to China than Brazil is, Australian commodity miners wanted a larger increase to reflect the freight savings; they eventually achieved this in June 2008, with an increase of 96 per cent. However, in 2009, Rio Tinto agreed to a 33 to 44 per cent iron ore price cut with Japan's Nippon Steel, the world's second-largest steelmaker.[12] [13] This has signalled the way for further price cuts as the global financial crisis deepens. In June 2009, Vale slashed its benchmark iron ore prices by as much as 48.3 per cent for steelmakers from Japan and the Republic of Korea.

Towards the end of 2008, the Indian Government announced a series of financial measures aimed at boosting its dry bulk trade. These included abolishing the country's 8 per cent export duty on iron ore, and a reduction in value added tax from 15 per cent to 5 per cent. One of the immediate effects was a fivefold increase in Indian iron ore imports by China, pushing the country's total exports to 13.9 million tons for the month of January 2009. Subsequent months saw a decline in exports as the increasing cost of rail freight from Karnataka and eastern India took effect. Draft restrictions at Indian ports also been a contributing factor in limiting exports, as only the smaller Supramax vessels – rather than Capesize vessels – can serve this trade, and this may lead to higher levels of port congestion.

Coal

In addition to being an important ingredient in steel production, coal (coking) is used to make many products, and is also used to create energy (thermal coal) to fuel industry. The demand for coal imports in Europe[14] decreased to 141.1 million tons in 2008, from 158.8 million tons in 2007. Likewise, in Taiwan Province of China, coal imports decreased from 60.3 million tons in 2007 to 50.9 million tons in 2008. On the other hand, coal imports into Japan increased from 180.6 million tons in 2007 to 185.8 million tons in 2008. The Republic of Korea increased its level of coal imports, too, from 84.8 million tons to 93.5 million tons.

In other parts of the world, coal exports from Ukraine were affected by a number of incidents, including a methane explosion at the Karl Marx mine in the Donetsk region. In March 2009, the Ukrainian Government introduced a 13 per cent import duty on all coal, in order to protect domestic producers. India received the first in a series of shipments amounting to 2.5 million tons of coal from Australian mines in Wollongong. This came at a good time for India, which is facing increased costs for its coal imports from China after the Government there raised export tariffs from 10 to 40 per cent.[15] In Viet Nam, the Government introduced a series of tax increases on coal exports, bringing the duty up to 20 per cent. In South Africa, exports of coking coal decreased during March and April 2008 as domestic steel production rose.

Grain

Grains form the key ingredients that go into the manufacture of food stock for humans and animal feed. The single largest exporter of grains is the United States, followed by Argentina, Canada, the European Union and Australia. Grain exports from the United States decreased in 2008 to 90.4 million tons, down from 98.2 million tons in 2007. Grain exports from Canada also declined, from 22.2 million tons in 2007 to 20.9 million tons in 2009. The European Union[16] increased its exports from 16.9 million tons in 2007 to 24.9 million tons in 2008 following a recovery in the harvest, after a particularly bad 2007. Australia increased its exports from 9.2 million tons in 2007 to 13.1 million tons in 2008, while Argentina's exports of grain remained relatively unchanged at 26 million tons, despite months of protests and a 16-day farmers' strike against the Government's increase in agricultural export tax. In the Russian Federation, government proposals were made regarding the creation of a state grain company to control grain exports.

Bauxite/Alumina

Bauxite and alumina are primarily used to make aluminium metal. On average, it takes 4 tons of dried bauxite to produce 2 tons of alumina, which, in turn, provides 1 ton of primary aluminium metal. Aluminium metal itself is used mainly in the transportation (14 per cent of demand), construction (11 per cent) and packaging (6 per cent) industries.[17] The total use of aluminium, including all forms of secondary metal, amounts to about 51 million tons annually. World mine production of bauxite increased by an estimated 1.5 per cent to reach 205 million tons in 2008. The expansion of bauxite mines in Australia, Brazil, China and India accounted for most of the slight increase in the worldwide production of bauxite in 2008. Meanwhile, world alumina production increased by an estimated 4 per cent in 2008. China dominates the global aluminium industry, accounting for one third of both world production and world consumption of primary aluminium. After China, the most important producing countries are the Russian Federation, Canada, the United States, Australia, Brazil, Norway and India, accounting for about three quarters of the world output of primary aluminium. Globally, there are some 200 smelters that produce primary aluminium, half of which are in China; 14 companies operating about 100 plants control over 60 per cent of Chinese production. In 2009, there were almost 50 new aluminium smelter projects on the drawing board at various stages of development, with a total capacity of 20 million tons per year. However, construction had begun at only 10 of these, with a total capacity of 2.8 million tons per year. A new 300,000-ton-per-year smelter factory began operations in Oman.

World mine production of bauxite increased by an estimated 1.5 per cent to reach 205 million tons in 2008.

The world's largest aluminium and alumina producer, UC Rusal,[18] restarted output at the Alscon plant in Nigeria, which has a capacity of 197,000 tons annually. Located not far away from Nigeria is Guinea, which has the highest reservoir of bauxite in the world, and where UC Rusal owns the Friguia bauxite and alumina complex, which has the capacity to produce 640,000 tons of alumina and 1.9 million tons of bauxite a year. The Alscon plant, which is owned by UC Rusal (77.5 per cent), the Nigerian Government (15 per cent) and Ferrostaal AG (7.5 per cent) was built in Nigeria because a smelter consumes an enormous amount of energy, which Nigeria has in the form of hydrocarbons. Electrical power and alumina remain the two costliest inputs in the production of primary aluminium. However, a secure and low-cost supply of power is a more important factor than either nearby raw materials or markets, when deciding on a location for an aluminium smelter. Examples of this are the large smelters in Bahrain, Dubai, Oman, South Africa, Mozambique and Iceland. Some countries such as Canada and Norway take advantage of both plentiful hydroelectricity and nearby consumption markets.

Global bauxite resources are estimated at 55 to 75 billion tons. In terms of regions, 33 per cent are located in South America and the Caribbean, 27 per cent in Africa, 17 per cent in Asia, 13 per cent in Oceania and 10 per cent elsewhere. The leading bauxite-producing countries, which together account for three quarters of total world production, in decreasing order of tonnage mined, are: Australia, Brazil, China, Guinea and Jamaica.

The London Metal Exchange (LME) monthly average cash price for high-grade aluminium fell from a record high of $3,070 per ton in July 2008 to $1,329 per ton in February 2009 as LME stocks increased from 1.1 million tons to 3.2 million tons.

Phosphates

Phosphates are used for a variety of purposes, but most commonly in the agricultural industry, which accounts for more than 90 per cent of world phosphate rock consumption. Phosphate rock minerals are the only significant global resources of phosphorus, which is an essential element for plant nutrition (e.g. liquid and solid fertilizers) and for animal nutrition (e.g. livestock and poultry feed). Industrial applications for rock phosphates include anti-corrosion agents, cosmetics, fungicides, ceramics, water treatment and metallurgy. Phosphate rock resources occur principally as sedimentary marine phosphorites. The largest sedimentary deposits are found in northern Africa, China, the Middle East and the United States. Significant igneous occurrences are found in Brazil, Canada, the Russian Federation and South Africa. The world's large complexes for phosphate rock are located in the Khibiny Complex (Russian Federation) and the Kara Tau Complex (Kazakhstan), although Morocco remains the world's major exporter, and the United States the world's major importer. Morocco's exports accounted for nearly half of world shipments, totalling 32 million tons, the bulk of which was exported to Europe and the Americas. Shipments by lesser exporters in other African countries and the Middle East accounted for 40 per cent of world exports. Large phosphate resources have been identified on the continental shelves and on seamounts in the Atlantic Ocean and the Pacific Ocean.

In 2008, world mine production of phosphates increased by an estimated 6.5 per cent to reach 167 million tons. Estimated known world reserves of rock phosphate have been put at around 18,000 million tons. China and Morocco hold approximately 36 per cent and 32 per cent respectively, followed by South Africa with 8 per cent and the United States with 6 per cent. The leading producers of rock phosphates are OCP Group (Morocco), the Mosaic Company (United States), la Compagnie des phosphates de Gafsa (Tunisia), and PCS Phosphate (United States), accounting for about 15 per cent, 11 per cent, 5 per cent and 5 per cent respectively of world capacity in 2005.

In 2008 world mine production of phosphates increased by an estimated 6.5 per cent to reach 167 million tons.

The price of phosphate rock in recent years has increased significantly, owing to rising agricultural demand (for food use, animal feed and biofuels) and tight supplies. In 2008, average spot prices from North Africa and other exporting regions approached $500 per ton, which was more than five times the average for the previous year. This has had a knock-on effect on the price of other forms of fertilizer, such as nitrogen, potash and sulphur.

Trends in bulk carrier newbuildings

In total, there were 355 dry bulk carriers delivered in 2008, up from 315 the previous year. Their combined tonnage was 28.9 million dwt, up from 24.7 million dwt in 2007. As reported in chapter 2, the tonnage of dry bulk ships on order in 2009 outstripped that of any other vessel type. The dry bulk tonnage order book represents 69 per cent of the existing dry bulk fleet. In 2009, Brazilian ore miner Companhia Vale do Rio Doce (VALE) cancelled an order placed in May 2008 for delivery in 2011 of 12 very large ore carriers (VLOCs) with China's third-largest shipbuilder, Jiangsu Rongsheng Heavy Industries. The vessels, bigger than the *Berge Stahl*, were to be 400,000 dwt, 360 metres length overall (LOA) and 65 metres wide, with a draft of 23 metres and a carbon footprint 34 per cent lower than that of traditional Capesize vessels. The 2008 order for 12 VLOCs would have made Vale the largest global operator of VLOCs, and was reported to be worth $1.6 billion to the Chinese shipyard. As of 2009, there were over 100 ore carriers of over 200,000 dwt on order for delivery in 2011 and 2012. How many of these will actually be delivered remains to be seen. The venture into shipowning started for Vale in 2006, as dry bulk rates began to creep higher. The reason for the move into shipowning can be seen in the rising freight costs, which meant that by mid-2008 it cost nearly $108 per ton to ship iron ore from Brazil to China, eroding Vale's competitiveness against the Australian iron ore producers who are closer to the Asian market and have cheaper freight costs. By the end of 2008, the collapse in dry bulk freight rates saw rates for shipping iron ore from Brazil to China drop to $8.35 per ton for the first time in nearly seven years, undermining the prospects for viable operation of a VLOC fleet with 12 new and costly vessels.

… the tonnage of dry bulk ships on order in 2009 outstripped that of any other vessel type.

2. Dry bulk freight rates

A turning point in the fortunes of dry bulk shipowners was reached in 2008 after four years of strong growth. The demand for pre-Olympic deliveries led to reports of congestion problems in China. Brazil and Australia helped tighten supply and lift freight rates at the start of the year. In northern China, high stockpiles of iron ore interrupted schedules and resulted in an average delay of 10 days for vessels to berth, while in Brazil queues of up to 50 vessels were reported. At the Australian port of Newcastle, there were 40 vessels in the queue waiting to enter the port during June 2008, as a result of delays caused by major flooding. In early 2009, flooding in the region again caused delays at the port.

A turning point in the fortunes of dry bulk shipowners was reached in 2008 after four years of strong growth.

The Baltic Exchange Dry Index (BDI) performed spectacularly during the first half of 2008, reaching an all-time high of 11,793 in May. However, by the end of the year, the BDI had fallen more than seventeenfold to 663 points. In June 2008, the average earnings for a modern Capesize stood at $176,200 per day.[19] However, by December 2008, rates had dropped tenfold to $17,500 per day. One analyst put the earning rates of Capesize, Panamax and Supramax vessels at $2,425, $5,021 and $6,500 respectively for a BDI rate in the low 700s. Thus, the over 90 per cent decrease in the BDI most affects the owners of large vessels, such as Capesize ships. Information provided at first hand to UNCTAD reveals that owners of small vessels, such as a 4,000 dwt dry bulker used in coastal shipping, experienced freight rate declines of around 30 per cent in 2008. However, at these rates, shipowners are finding it difficult to meet their marginal costs (i.e. their daily running costs), let alone pay their capital costs. Capital costs vary considerably, and a shipowner who bought a vessel at the height of the market will undoubtedly find current rates difficult and exit strategies limited. Some companies, such as Britannia Bulk, Atlas Shipping and Armada Singapore Pte Ltd. have filed bankruptcy proceedings. The derivatives market, which was riding high for some time, just kept falling in December 2008, and the speculative positions that these shipping companies took worked against them. Not only were they struggling to meet their capital repayments having generated barely enough money to cover their running costs on the physical side, but they also had to meet heavy margin calls to collateralize their positions with banks and other shipping companies. This, of course, had a knock-on effect, and bad debts added further to the misery of those companies still standing. When Armada Singapore Pte Ltd. filed for bankruptcy, it was owed more than $100 million by Fortescue Metals, Ashapura Minechem, Pioneer Freight Futures, Atlas Shipping, Britannia Bulk and Glory Wealth.[20]

The declining earnings market naturally affected the prices of vessels. A five-year-old Capesize vessel cost $128 million at the start of 2008, then rose to $156.5 million in August, before closing the year at $47.5 million. This rapid decline in vessel prices followed the decline in the Baltic Exchange Dry Index, which peaked in May 2008 and rapidly fell to record lows in December 2008. Prices of second-hand Capesize vessels levelled off during the first quarter of 2009 to reach $44.5 million in April, and the daily hire rate rose slightly to $21,300. Historically, these figures compare favourably with the average earnings of below $16,000 per day for a Capesize vessel in the 1990s – a decade when the highest daily rate could not top $25,000.

The dry bulk market continues to remain volatile in 2009. In February 2009, the Baltic Exchange Capesize Index (BCI) doubled its value over the preceding month to reach 3,822 points, from an all-time low of 830 points in December 2008. This was attributable to increased iron ore exports from Australia and Brazil. Spot earning form Brazil approached $50,000 per day, up from around $10,000 in December. In February 2009, Panamax and Supramax earnings were around $10,000 per day – twice the level of the previous month. By June 2009, rates for Capesize vessels even surpassed the $100,000 per day mark, although the sustainability of these rates seems unlikely, given the increasing supply factor which averages one new vessel per day.

The price of bulk carriers has also fallen significantly: a five-year-old Panamax vessel costing $90 million in December 2007 was valued at $30 million in November 2008. Shipowners unable to sell their vessels face operational losses and possible capital squeezes, brought on by the financial crisis. Consequently, shipowners are faced with the stark choice of either withdrawing services or laying up ships in an effort to restore rates.[21]

In 2008, the tramp market for dry cargo, both time and trip charters, continued to rise over the course of the first half of the year (see table 31). However,

Table 31

Dry cargo freight indices, 2006–2009

Period	Dry cargo tramp time charter (1972 = 100)				Dry cargo tramp trip charter (1985 = 100)			
	2006	2007	2008	2009	2006	2007	2008	2009
January	302	491	812	193	294	632	1 018	154
February	298	480	657	259	292	577	908	227
March	327	550	810	305	321	644	1 221	296
April	326	576	795	254	325	707	1 080	277
May	323	671	1 055	306	304	712	1 544	358
June	331	626	1 009	410	359	759	1 250	
July	360	673	868		421	875	1 036	
August	417	718	716		475	920	976	
September	447	828	550		518	1 078	657	
October	450	985	313		522	1 044	267	
November	447	1 013	192		463	1 280	117	
December	484	926	181		594	1 251	121	
Annual average	376	711	663	263	407	873	850	239

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

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

the second half of the year saw a decline from 1,009 points in June to 181 points by December. Similarly, the dry cargo tramp time charter declined from 1,250 points in June to just 121 by December. The peak month for both indices was May, with 1,055 points and 1,544 points respectively. The first quarter of 2009 showed some small gains, although levels were still around two thirds below their peak.

Dry bulk time charter (trips)

In 2008, freight rates for Capesize tonnage chartered for transatlantic round trips experienced a rollercoaster ride. Rates were at $111,835 per day in January, rising to a high of $220,385 in May, before plummeting to end the year over 97 per cent lower at a mere $5,055 per day. Rates on the Singapore–Japan to Australia route showed a similar trend to that observed on the transatlantic route. For Capesize tonnage deployed on the Singapore–Japan to Australia route, freight rates rose significantly in the first half of 2008, with owners of the relevant ships receiving $112,765 per day at the start of the year, compared to $66,630 for the same period in 2007, and $192,845 by May 2008. November 2008, however, marked a low point, with rates down over 98 per cent, standing at a mere $2,640 per day.

In 2008 freight rates for Capesize tonnage chartered for transatlantic round trips experienced a rollercoaster ride.

Dry bulk time charter (periods)

Estimates of rates for 12-month period charters (prompt delivery) indicate that rates for the first half of 2008 rose to reach a peak in June, before declining significantly. Capesize ships of 200,000 dwt aged five years fetched $125,000 per day at the start of 2008 – against $63,000 for the same period in 2007 – and peaked at $176,200 in June. The period from January 2008 to January 2009 saw an 82 per cent decline in rates for a one- to five-year-old Capesize of 170,000 dwt. Freight rates for Panamax ships of 75,000 dwt aged

five years started at $57,000 per day in January, up from $31,000 in January 2007, but ended the year down, at $10,000 per day. Freight rates for Handymax ships of 28,000 dwt aged 10 years saw a decline from $26,000 per day in January 2008 to $6,600 per day by December 2008.

Dry bulk trip charter

Iron ore freight rates from Brazil to China started 2008 at $64.05 per ton, up from $35.50 per ton the previous year. By May 2008, this figure had reached $101.80 per ton, but it ended the year at a mere $8.35 per ton. The freight rates for January 2008 over January 2007 showed an 80 per cent rise, however January 2009 showed a decline of around 86 per cent when compared to January 2008. A similar picture emerges for all other routes, as the effects of the global economic downturn curtailed the demand for raw materials.

D. THE LINER SHIPPING MARKET[22]

Introduction

The liner shipping market is mainly served by container ships and represents around 16 per cent of world goods loaded in volume terms (tons). While most items can be transported in containers, including cargoes previously transported in bulk, and components of products, containers mainly carry finished products ready for consumption. In 2008, the total world containerized trade was estimated at 1.3 billion tons, an increase of 4.6 per cent over the previous year.[23] Full container trade is estimated at 134.5 million TEUs in 2008. The share of containerized trade, as part of the world's total dry cargo, increased from 5.1 per cent in 1980 to 25.4 per cent in 2008. The rapid growth in containerization over the last 20 years is the result of a combination of factors that includes dedicated purpose-built container vessels, larger vessels capable of achieving increased economies of scale, improved handling facilities in ports, and also the increasing amount of raw materials being carried in containers, for example base metals such as copper cathodes and copper concentrates.[24] The fleet of container ships increased by 17.3 million dwt, or 11.9 per cent, to reach 162 million dwt, which is approximately 13.6 per cent of the total world fleet. At the beginning of 2009 there were 4,638 container ships, with a total capacity of 12.14 million TEUs.

… container volumes on the Asia–Europe trade fell by around 15 per cent in 2008.

1. Developments in the liner trade

General developments

The most notable development in the liner trade in 2008 was the repeal of the block exemption that liner conferences had received in the European Union with regard to price and capacity setting. As of 18 October 2008, former members of the Far East Freight Conference have had to establish their own tariffs and surcharges, resulting in different rates and amounts applied across the board. The multiplicity and variety of rates applied by shipping companies are putting an extra burden on shippers, who have to make additional efforts to keep track of them all. To date, no other countries or regions are reported to have pursued the European Union approach.

Figures published by the European Liner Affairs Association (ELAA) show that container volumes on the Asia–Europe trade fell by around 15 per cent in 2008. By the start of 2009, container rates on this route were at around $300 per TEU – a fall of around 80 per cent compared to the boom of 2007. In an effort to shore up rates after the abolishment of European liner conferences, APL, Hapag-Lloyd and MOL all announced increases in their rates to levels higher than the spot price from 1 April 2009. As an additional measure to absorb capacity, some operators re-routed their operations from Europe to Asia to transit the longer Cape of Good Hope route. While this increased average sailing times on that route by seven days and bunkers consumption by around 30 per cent, the route eliminates transit fees for the Suez Canal. In some cases, this re-routing brought about savings of over $300,000 for the largest ships, even after allowing for extra fuel and crew costs. With rising fuel costs, however, the long-term viability of longer routes will come into question.

As a consequence of re-routing, revenues for the Suez Canal fell by over 22 per cent in April 2009 compared to the same period in 2008. During April 2009, 1,482 vessels transited the canal, incurring fees of $448.9 million. This translates into an average rate of around $300,000 per vessel, although the largest container ships can expect to pay twice that amount for a single transit. Interestingly, in May 2009, MSC, which had re-routed its eastbound traffic around the Cape of Good Hope, reversed its decision, with some analysts believing it had negotiated a discount with the Suez Canal Authority.

In addition to saving fuel and absorbing spare capacity, re-routing ships around the Cape of Good Hope avoids the piracy hot spot off Somalia and the need to purchase additional insurance.[25] It has been reported that insurance costs for piracy attacks rose more than tenfold in 2008. There were 141 reported attacks of piracy off Somalia in 2008, a figure which early analysis of 2009 data suggests will double.

Following a decline in traffic volumes, the liner shipping company Evergreen announced service and personnel reductions in early 2009 relating to trade on the route from Asia to the Pacific. The liner shipping industry in 2008 followed a trend similar to the tanker and dry bulk sectors mentioned earlier – with a strong first half followed by a weak second half, as the global financial crisis spread. Overall, though, 2008 was not a bad year for owners of liner ships, with average rates for smaller vessels above their 2007 levels.

As reported in chapter 2, the total seaborne container-carrying fleet capacity, including fully cellular capacity, stood at 14.4 million TEUs in 2009. A large number of newbuildings were ordered in 2008, whereas up to the first half of 2009 no orders for new container ships were placed. Very little tonnage was reported broken up in 2008: around 728,000 dwt from January to October. The last in a series of eight behemoth container ships from Maersk Line – the 12,508 TEU *Eugen Maersk* – entered service in 2008, as well as the 13,800 TEU *MSC Daniela,* which is owned and operated by the Swiss-based Mediterranean Shipping Company (MSC).

Major liner shipping operators

Over the course of 2008, the carrying capacity of the top 10 global container ship operators increased by 11 per cent – down from the previous year's growth rate of 15.7 per cent – to reach 7.4 million TEUs (table 32). This is somewhat lower than the exceptionally high gains of 26.5 per cent achieved in 2006. Overall, the share of the top 20 liner operators in 2008 increased by 11.6 per cent to reach 9.9 million TEUs. In the previous year, the fleet of the top 20 liner companies had grown by 15.5 per cent, helping to concentrate the liner market. On 1 January 2009, the 20 leading operators accounted for about 69 per cent of the total container capacity deployed, down by around 1 per cent on 2008. Within the top 20 liner companies, 11 were from developing economies, 9 were from developed economies, and none were from countries with economies in transition. Asian economies dominated the list – there were 14 companies from that region, 5 from Europe and 1 from Latin America. There was one new member on the list of the top 20 liner shippers, which entered at position 18 – namely the United Arab Shipping Company, headquartered in Kuwait and operating from Dubai, with 43 vessels and a carrying capacity of 155,462 TEUs. The United Arab Shipping Company caused a stir in 2008 when it revealed a $1.5 billion newbuilding contract for nine container vessels of 13,100 TEUs. MOL, Hanjin and HMM all moved up two places during 2008, to positions 9, 10 and 15 respectively. APL and Yang Ming both moved up one place, to positions 7 and 13 respectively. China Shipping Container Lines (CSCL), K Line and Pacific International Lines (PIL) each lost ground by one place, to occupy positions 8, 14 and 19 respectively. Wan Hai from Taiwan Province of China – which was formerly ranked in position 19 – moved out of the top 20 as a result of a retrenchment programme to reduce the number of ships it operates. Despite this, Wan Hai increased its container-carrying capacity in 2008, and agreed with Pacific International Lines to enter into a long-term strategic partnership.

On 1 January 2009, the 20 leading operators accounted for about 69 per cent of the total container capacity deployed, down by around 1 per cent on 2008.

Maersk Line maintained its lead position, closely followed by MSC and CMA-CGM. However, the gap between first and second position continued to narrow, from 437,000 TEU to just 230,000 TEU. During 2008, MSC grew by 20.5 per cent and CMA-CGM grew by 18.9 per cent, while the market leader – Maersk Line – grew by just 5.9 per cent over the previous year. Maersk Line's market share in terms of fleet capacity reportedly fell from 16.1 per cent to 14.1 per cent between January 2008 and April 2009, whereas MSC's share went from 10.4 to 11.5 per cent. In 2005, when Maersk acquired P&O Nedlloyd, its market share in terms of fleet capacity exceeded 18 per cent. The only major change in ownership with the top 20 liner companies was with Hapag-Lloyd, which was sold by its parent company TUI to a Hamburg consortium in late 2008.

Financial performance of the major shipping lines

The financial performance of the major liner shipping companies in 2008 was significantly lower than in previous years, as the global financial crisis began to impact on world trade in the last quarter. Maersk Line

Table 32

The 20 leading service operators of container ships at the beginning of 2009

(number of ships and total shipboard capacity deployed (TEUs))

Ranking	Operator	Country/territory	Number of ships in 2009	TEU capacity in 2009
1	Maersk Line	Denmark	426	1 740 936
2	MSC	Switzerland	431	1 510 720
3	CMA-CGM Group	France	280	864 893
4	Evergreen	Taiwan Province of China	181	629 615
5	Hapag-Lloyd	Germany	132	496 724
6	COSCON	China	141	491 580
7	APL	Singapore	128	470 901
8	CSCL	China	121	431 582
9	MOL	Japan	109	387 107
10	Hanjin	Republic of Korea	83	365 605
Subtotal			**2 032**	**7 389 663**
11	OOCL	Hong Kong (China)	90	364 384
12	NYK	Japan	82	358 094
13	Yang Ming	Taiwan Province of China	85	317 473
14	K Line	Japan	99	309 496
15	HMM	Republic of Korea	58	258 648
16	Hamburg Sud	Germany	81	256 513
17	Zim	Israel	82	251 717
18	UASC	Kuwait	43	155 462
19	PIL	Singapore	76	147 985
20	CSAV	Chile	56	141 957
Total 1–20			**2 784**	**9 951 392**
World container cellular fleet at 1 January 2009			**9 447**	**14 429 080**

Source: UNCTAD secretariat, based on *Containerisation International Online,* Fleet Statistics. Available at http://www.ci-online.co.uk.

and related business reportedly made $205 million in 2008 on a turnover of around $26 billion. This compares very unfavourably to the golden year of 2005, when Maersk Line made a profit in excess of $1.2 billion.[26] In 2009, with around 5 per cent of its ships lying idle, the prospects for the world's number one liner company were looking very challenging. CMA-CGM's profits dropped in 2008 by around 87 per cent, from $966 million in 2007 to $124 million, as freight rates plummeted on all of its major trade lanes. However, with some three quarters of its fleet chartered in, and with around 180 of its fleet of 280 due for renewal in 2009, there is plenty of scope for CMA-CGM to reduce operating costs.[27] Evergreen Line reported reduced profits in 2008 of $639 million new Taiwan dollars (NT$) ($19 million), down seventeenfold from NT$10.4 billion ($319 million) a year earlier. Hapag-Lloyd appears as an exception to the top 20 rule, with revenues increasing by 4.3 per cent to $8.4 billion in 2008, and profits by 19 per cent to $285 million, as cargo volumes rose by 2 per cent to reach 5.54 million TEUs. COSCO's revenue in 2008 increased by 16.6 per cent to 130.87 billion yuan ($19.17 billion), while profits declined by 40 per cent to 11.62 billion yuan ($1.7 billion). Revenue from container operations slipped by 4.3 per cent to 43.8 billion yuan ($6.42 billion) in 2008, when the company moved 5.8 million TEUs, about 1.5 per cent more than in 2007. Neptune Orient Lines reported a net profit for 2008 of

$83 million, which was 84 per cent lower than in 2007, despite increasing total revenue by 14 per cent to $9.29 billion. MOL's revenue decreased by 4 per cent in 2008 over the previous year to ¥1,865 billion ($19.3 billion), while operating income plunged by 32 per cent to ¥197.2 billion ($2.03 billion) and net income by 33 per cent to ¥126.9 billion ($1.31 billion). China Shipping Container Lines (CSCL) saw revenue drop by 11 per cent to 34.75 billion yuan ($5.1 billion) and net profit collapse by 98 per cent in 2008 to 42 million yuan. Hanjin made a 3.35 trillion won ($2.4 billion) operating profit, up by 34.9 per cent, from all its divisions in 2008, based upon total revenues of 9.36 trillion won. Its container division achieved revenues of 7.17 trillion won, up by 26.7 per cent, owing to the increased transpacific freight rates. However, operating profits declined by 19 per cent to 89 billion won ($64 million).

The pressure for lower freight rates is being fuelled by the global economic downturn combined with dire forecasts for world trade. The reports of vessels lying idle and a large supply of new vessels on the order books are exacerbated by the rising cost of fuel.

2. Container freight rates

Chartering of container ships

German shipowners dominate the global liner shipping market, with Hamburg brokers controlling about 75 per cent of the container ship charter tonnage available. Since 1998, the Hamburg Shipbrokers' Association (VHSS) has published the Hamburg Index, which provides a market analysis of container ship time charter rates of a minimum duration of three months. Table 33 presents the average yearly rates since the year 2000, and monthly charter rates for container ships for 2008, as published by VHSS.

By April 2009, freight rates for most vessels were below their year 2000 levels.

Average yearly charter rates for 8 of the 10 types of vessels shown in table 32 fell in 2008; freight rates for vessels between 1,600 and 1,999 TEUs declined the most – by 15.8 per cent. Earnings for geared/gearless vessels between 200 and 299 TEUs actually grew by almost 8 per cent, and those for geared/gearless vessels of 300–500 TEUs only improved marginally. This is remarkable considering the decline experienced across the shipping market as a whole. While average rates were higher in 2008 than the peak registered in 2004, the declines at the end of the year continued well into 2009. By April 2009, freight rates for most vessels were below their year 2000 levels.

Freight rates on main routes

Table 34 shows the freight rates on the three main containerized routes (Pacific, Asia–Europe and transatlantic). Freight rates showed mixed results for the three major routes during 2008. A comparison of the fourth quarter results from 2007 and from 2008 suggest that the routes from Europe to Asia, from the United States to Europe, and in both directions on the transpacific route experienced growth. Freight rates decreased on the Asia to Europe and the Europe to United States routes during the same period. Freight rates on the Asia–Europe route had dropped to an all-time low of zero by early 2009. The so-called "zero" rates were only possible because other inescapable costs involved in handling cargo were billed as extras. The figures shown in table 34, however, include these extra costs, e.g. currency adjustment factors, bunker adjustment factors and terminal charges, to give a more accurate figure of freight rates along selected routes.

As mentioned earlier, as of 18 October 2008, liner conferences to and from the European Union were prohibited, and as a consequence, the main source of freight rates on these routes – the Far East Freight Conference – no longer exists. Liner companies are cautious of revealing rates, for fear of this being interpreted as price fixing. The European Liner Affairs Association, a trade association set up in the wake of the closure of the Far East Freight Conference, reported a decrease in trade volumes in the first quarter of 2009 on the Europe to Asia route of 22 per cent on the westbound route from Asia and of 17 per cent on the eastbound route to Europe. Trade volumes on the transatlantic westbound route to North America in the first quarter of 2009 also decreased by 17 per cent, while on the eastbound route to Europe volumes were down by 30 per cent.

Table 35 indicates the development of liner freight rates on cargoes loaded or discharged by liners at ports of the German coastal range for the period 2006–2008. The average overall index for 2008 decreased by 4 points from the 2007 level, to reach 90 points (the base year of 1995 is equal to 100 points). The average homebound index increased by

Table 33

Container ship time charter rates

($ per 14-ton slot/day)

Ship type	Yearly averages								
(TEUs)	2000	2001	2002	2003	2004	2005	2006	2007	2008
Gearless									
200–299	15.71	15.74	16.88	19.57	25.02	31.71	26.67	27.22	26.00
300–500	14.52	14.72	15.14	17.48	21.73	28.26	21.67	22.27	19.95
Geared/Gearless									
2,000–2,299	10.65	7.97	4.90	9.75	13.82	16.35	10.51	11.68	9.96
2,300–3,400[a]			5.96	9.29	13.16	13.04	10.18	10.74	10.66
Geared/Gearless									
200–299	17.77	17.81	17.01	18.93	27.00	35.35	28.04	29.78	32.12
300–500	14.60	14.90	13.35	15.55	22.24	28.82	22.04	21.34	21.39
600–799[b]			9.26	12.25	19.61	23.70	16.62	16.05	15.64
700–999[c]			9.11	12.07	18.37	21.96	16.73	16.9	15.43
1,000–1,299	11.87	8.78	6.93	11.62	19.14	22.58	14.28	13.69	12.24
1,600–1,999	10.35	7.97	5.67	10.04	16.08	15.81	11.77	12.79	10.77

Ship type	Monthly averages for 2008											
(TEUs)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gearless												
200–299	29.23	28.49	30.16	27.96	28.77	29.10	29.87	28.25	23.89	19.55	20.31	16.45
300–500	22.37	23.77	24.49	23.34	21.88	23.04	23.82	20.53	20.68	16.32	13.91	9.78
Geared/Gearless												
2,000–2,299	13.18	13.10	12.59	12.78	11.98	10.15	10.15	9.20	8.54	6.62	6.62	4.63
2 300–3,400[a]	12.53	12.53	10.97	11.31	10.82	10.82	10.48	10.53	9.47	9.47	9.47	9.47
Geared/Gearless												
200–299	32.39	33.61	33.35	35.78	35.78	35.85	35.85	30.70	30.05	30.74	25.65	25.65
300–500	23.66	27.60	24.03	22.51	23.37	18.75	21.52	22.22	21.33	20.94	16.35	14.44
600–799[b]	16.47	17.59	17.94	18.27	17.43	17.43	15.77	15.37	14.94	12.14	12.14	12.14
700–999[c]	18.42	18.74	17.39	18.18	17.63	17.21	17.63	16.01	14.39	12.55	9.57	7.40
1,000–1,299	14.58	15.04	15.49	15.80	15.29	15.04	13.48	10.89	10.19	9.37	6.35	5.39
1,600–1,999	13.68	13.84	13.75	13.09	12.48	11.36	10.51	11.30	9.75	7.62	7.13	4.69

Table 33 (continued)

Ship type (TEUs)	Monthly averages for 2009					
	Jan	Feb	Mar	Apr	May	Jun
Gearless						
200–299	15.49	12.49	13.22	11.75	10.61	13.48
300–500	10.94	9.59	9.13	8.46	8.94	8.79
Geared/Gearless						
2,000–2,299	4.63	3.22	3.22	2.40	2.40	2.51
2 300–3,400[a]	9.47	9.47	2.79	2.60	2.46	2.31
Geared/Gearless						
200–299	20.84	18.21	17.17	17.17	15.70	15.33
300–500	12.54	10.67	9.37	9.51	8.69	10.99
600–799[b]	12.14	7.19	6.21	6.31	6.18	6.35
700–999[c]	7.52	6.89	5.86	5.98	6.00	5.93
1,000–1,299	5.03	4.89	4.53	4.10	3.79	3.82
1,600–1,999	4.65	3.71	3.45	3.22	2.84	2.84

Source: Compiled by the UNCTAD secretariat, from the Hamburg Index produced by the Hamburg Shipbrokers' Association, available at http://www.vhss.de/hax2006_001.pdf; and from *Shipping Statistics and Market Review*, volume 52, number 1/2 2009: 54–55, produced by the Institute of Shipping Economics and Logistics.

[a] This category was created in 2002. The 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.

3 points to 106 over the year. The monthly figures indicate a gradual strengthening of rates, with a sharp decline in December 2008. In the outbound trade, the average level in 2008 declined to 77 points, a reduction of 4 points, with a low of 65 in December 2008 signifying a sharp drop in trade from Europe to Asia.

E. CONTAINER PRODUCTION[28]

Introduction

For the first three quarters of 2008, container production output continued much the same as in 2007. However, during the last quarter of 2008, production was severely curtailed so that by the end of the year, the total number of new boxes produced – 3.45 million TEUs – was almost 19 per cent less than in the previous year. Prior to this, container production had been increasing significantly, with 37 per cent growth in 2007 and 18 per cent growth in 2006.

The average price of new containers in 2008 was still higher than in 2007, however prices were expected to drop in 2009 as the market reacted to the lower demand for new boxes. The growth of trade and the expansion of the world's container ship fleet (chapter 2) continued to drive the price of containers upwards during the first three quarters of 2008 (table 36). As the rate of deliveries of new vessels increased, the demand for new containers increased exponentially. The ratio of container ship carrying capacity to the world fleet of containers is approximately 1 to 2.4. A 1,000-TEU ship requires approximately 2,400 TEU to serve its needs, as some containers are needed for loading, some for discharge and others carried onboard.

Increases in the costs of raw materials, especially Corten steel, were also a factor in the high price of new boxes. The price was pushed upwards to adjust for the high demand while container-producing factories were operating at

Table 34

Freight rates (market averages) per TEU on the three major liner trade routes

($ per TEU and percentage change)

	Trans-Pacific		Europe–Asia		Transatlantic	
	Asia–US	US–Asia	Europe–Asia	Asia–Europe	US–Europe	Europe–US
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	1 709	780	792	2 014	114	1 667
Change (%)	2	2	6	21	- 89	1
Fourth quarter	1 707	794	959	2 109	1 175	1 707
Change (%)	0	2	21	5	931	2
2008						
First quarter	1 757	845	1 064	2 030	1 261	1 637
Change (%)	3	6	11	- 4	7	- 4
Second quarter	1 844	987	1 104	1 937	1 381	1 610
Change (%)	5	17	4	- 5	10	- 2
Third quarter	1 934	1 170	1 141	1 837	1 644	1 600
Change (%)	5	19	3	- 5	19	- 1
Fourth quarter	1 890	1 196	1 109	1 619	1 731	1 600
Change (%)	- 2	2	- 3	- 12	5	0
2009						
First quarter	1 670	913	853	1 023	1 481	1 325
Change (%)	- 12	- 24	- 23	- 37	- 14	- 17
Second quarter	1 383	802	742	897	1 431	1 168
Change (%)	- 21	- 12	- 13	- 12	- 3	- 12

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

Notes: The freight rates shown are "all in", that is to say, 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.

utilization rate averaging 80 per cent. New standard TEU prices went up by more than 9 per cent between the first and second quarters of 2008, and by 6 per cent between the second and third quarters. Container prices fell by almost 14 per cent to $2,200 during the last quarter of 2008, when demand for containers suddenly dropped and the fleet expansion of container ships levelled off. Besides having to lower prices to attract customers in a weak market, producers were forced to cut costs, and the utilization level of factories declined to 40 per cent. At the beginning of 2009, the utilization level of factories stood at approximately 6 million TEUs per annum – less than half of their total productive capacity. Although in 2008 China remained the major producer of new boxes, the impact of the crisis led to immediate and drastic cost-cutting measures, such as the closure of many box factories and the layoff of workers. The subsequent fall in the cost of raw materials helped somewhat in bringing down the price of new boxes. Figure 22 shows the yearly trend of new boxes for the 2001–2008 period.

Table 35

Liner freight indices, 2006–2009

(monthly figures: 1995 = 100)

Month	Overall index			Homebound index			Outbound index		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
January	104	89	98	95	98	116	113	81	83
February	105	88	95	95	98	114	113	80	80
March	106	86	92	97	96	110	114	78	77
April	105	87	88	96	100	106	113	77	74
May	101	88	89	92	101	107	110	76	75
June	104	92	89	94	105	106	113	81	75
July	105	94	89	96	114	104	113	80	76
August	98	95	93	92	118	107	103	81	81
September	96	98	97	92	121	113	100	84	85
October	95	97	90	93	119	105	97	84	77
November	91	97	86	89	115	101	93	86	74
December	87	100	73	86	118	83	88	88	65
Annual average	100	94	90	97	109	106	110	81	77

Source: Compiled by the UNCTAD secretariat, on the basis of information in *Shipping Statistics and Market Review,* volume 53, number 3, March 2009: 61–62, published by the Institute of Shipping Economics and Logistics.

Table 36

World container fleet

(thousands of TEUs)

	Global	Lessor	Sea carrier fleet
2005	21 415	9 380	12 035
2006	23 335	9 850	13 485
2007	26 235	10 680	15 555
2008	28 685	11 525	17 160

Source: UNCTAD secretariat, based upon "A new lease of life", in *Containerisation International Online*. 1 August 2008.

Container leasing

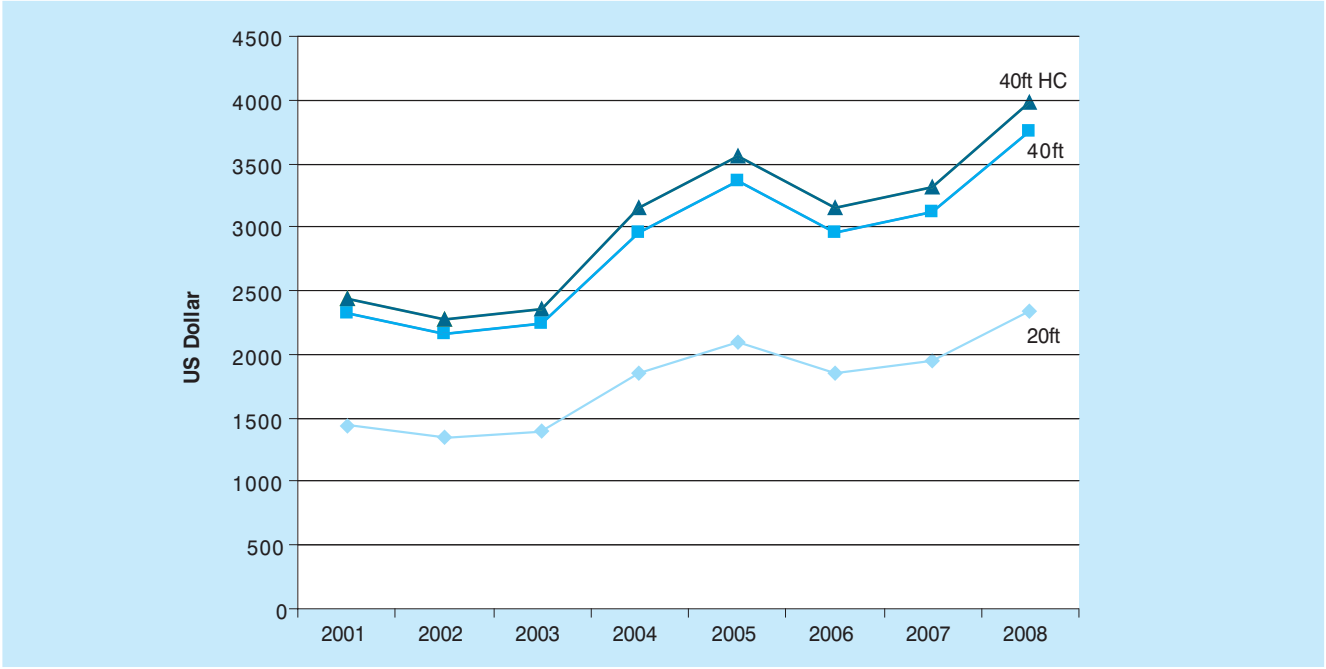
At the end of 2008, alongside the fall in the price of new boxes, the leasing rate also fell, to less than $0.70 per day on a five-year-term option for standard TEU, and to less than $1.20 for FEU (forty-foot equivalent unit) high-cube boxes. Figure 23 shows the quarterly leasing rates during 2007 and 2008.

The average initial cash investment return in 2008 for the standard TEU was 11.5 per cent, and 12.5 per cent for FEU high-cube. The leasing sector witnessed a high level of utilization for its equipment and a considerable level of investment during 2008. Lessors acquired about 1.5 million TEUs for 2008, while ocean carriers and other operators purchased less than 2 million TEUs. Consequently, the rental market for containers formed about 45 per cent of the global fleet. According to the June 2009 report of the Institute of International Container Lessors, at the end of 2008 more than 450,000 TEUs of container rentals were disposed of, putting the operating leasing fleet of global containers at about 10.7 million TEUs.

Figure 22

Evolution of prices of new containers

($ per box)

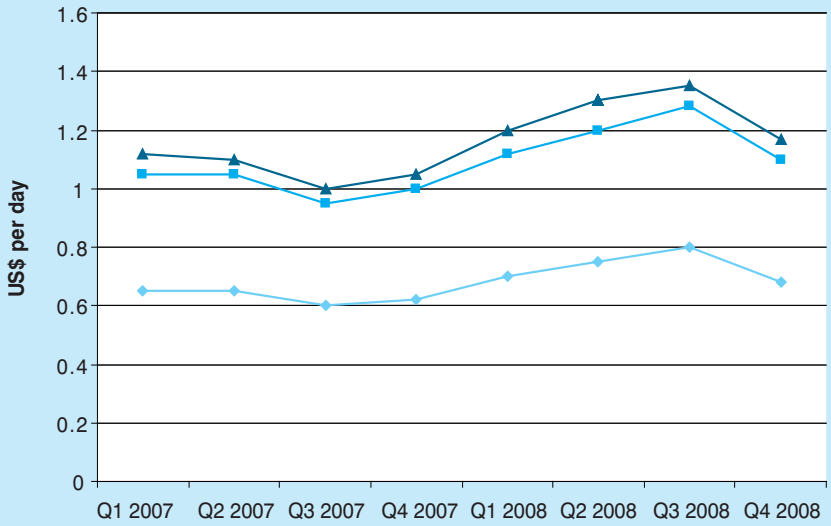


Source: UNCTAD secretariat, based upon *Containerisation International* (various issues).

Figure 23

Evolution of leasing rates

($ per day)



Source: UNCTAD secretariat, based upon *Containerisation International* (various issues).

ENDNOTES

1 UNCTAD secretariat, based on *Shipping Insight* by Drewry Shipping Consultants, various issues; Fearnleys *Review*, 2006; and *Shipping Review and Outlook* by Clarkson Research Services, 2006 and 2007.

2 *Lloyd's List.* About the fleet. 1 April 2009.

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10 http://www.australianminesatlas.gov.au/aimr/commodity/iron_ore.jsp.

11 http://www.menafn.com/qn_news_story.asp?StoryId=%7B0B8E63AA-E14B-45D8-B30A-50C651F53280%7D.

12 http://english.caijing.com.cn/2009-05-26/110171723.html.

13 *Lloyd's List.* 27 May 2009.

14 Europe's old 15 member countries.

15 Clarkson Research Services. *Dry Bulk Trade Outlook*. August 2008: 7.

16 These figures refer to the 25 member States of the European Union prior to the 2007 enlargement.

17 http://us-cdn.creamermedia.co.za/assets/articles/attachments/21659_roskill.pdf.

18 Formed after the consolidation of the Russian companies Rusal and Sual with Glencore in 2006.

19 In the previous month, one vessel – the 203,512 dwt, 2006-built carrier *China Steel Team* – had reportedly been chartered at the unprecedented rate of just over $303,000 per day, for a voyage to carry iron ore from Brazil to China.

20 http://www.tradewinds.no/crisis_watch/article527611.ece.

21 http://www.lloydslist.com/ll/news/viewArticle.htm?articleId=20017583457&src=rss.

22 UNCTAD secretariat, based on *Drewry Shipping Insight*, various issues; *Containerisation International*, various issues; *Containerisation International Online* (http://www.ci-online.co.uk); Clarkson Research Services, *Container Intelligence Monthly*, various issues, and *Shipping Review and Outlook*, 2008 and 2009; *Dynaliners Trades Review*, 2008; *Lloyds Shipping Economist*, various issues; and *Fairplay*, various issues.

23 Clarkson Research Services. *Shipping Review and Outlook*. May 2009.

24 This fact was highlighted in 2007 with the grounding of the container ship *MSC Napoli*, when it was revealed that it had on board 20 per cent of the world's inventory of nickel – a vital ingredient for stainless steel production.

25 http://www.businessdailyafrica.com/-/539444/617370/-/rvrw6d/-/.

26 *Lloyd's Lis*t. 2 June 2009. The new prescription to cure Maersk Line's blues.

27 *Lloyd's List.* 7 April 2009. CMA CGM to cut $600m from costs as profits fall.

28 UNCTAD secretariat, on the basis of information published in *Containerisation International Yearbook*, 2008 and 2009 issues.

Chapter 5

PORT AND MULTIMODAL TRANSPORT DEVELOPMENTS

This chapter covers container port throughput improvements in port performance, institutional change, port development and inland transportation. World container port throughput grew by an estimated 4 per cent to reach 506.9 million TEUs in 2008. Chinese mainland ports accounted for approximately 22.3 per cent of the total world container port throughput. In China, the Russian Federation and India, rail freight traffic measured in ton-kilometres showed growth rates of 3.5 per cent, 5 per cent and 8.4 per cent respectively for 2008. However, rail freight traffic declined in Europe by 5 per cent. In both Europe and the United States, rail freight declined significantly in the early months of 2009 when compared to the same period in the previous year.

A. CONTAINER PORT TRAFFIC

World container port throughput (measured in 20-foot equivalent units (TEUs)) increased by 12.1 per cent in 2007. The preliminary figures for world container port throughput in 2008 show that this growth continued, albeit at a lower rate of approximately 4 per cent. In most cases, the port throughput statistics for 2008 are unconfirmed or not reported until the end of the fiscal year, hence the 2007 figures give a more reliable picture.

World container port throughput … increased by 12.1 per cent in 2007.

During 2008, the world's fleet of container ships increased by 17.3 million dwt or 11.9 per cent (see chapter 2), while freight rates on most routes dived sharply towards the end of the year (see chapter 4). The situation now facing some ports is a glut of container ships laying idle outside the port waiting for cargo. The deepening of the global financial crisis towards the end of 2008 had an effect upon port volumes and therefore on revenue. The high price/earning ratios that some ports and terminal operators were experiencing in the years preceding 2008 have since decreased. For instance, DP World, one of the largest international terminal operators, saw its share price drop to $0.18 in March 2009 from its initial public offering price of $1.30 in December 2007. This effectively meant the valuation of the company had declined from just over $21 billion to less than $3 billion. Other port/terminal owners/operators suffered a similar fate as stock markets declined globally. However, one other important factor in the valuation of ports was that port throughput – and thus revenue – had been growing faster than international trade. With international trade now set to level off or decline, so too will the revenue of those companies dependent on it. Port revenue consists not only of charges made from cargo handling, but also of charges for services such as towage, mooring, waste removal etc., which will all decrease with the reduced number of vessel calls. There is also likely to be a knock-on effect

on port project investments, as ports either cut back on spending or banks insist on stricter loan conditions.

As indicated by the latest figures available on world container port traffic in 63 developing economies with an annual national throughput of over 100,000 TEUs (table 37), 2007 registered 487.1 million TEU moves – an annual increase of 52.7 million TEUs over 2006. In 2007, the container throughput growth rate for developing economies was 14 per cent, with a throughput of 311 million TEUs; this accounted for approximately 64 per cent of total world throughput.

In 2007, out of all the 63 developing economies listed, 29 countries experienced double-digit growth in port throughput compared to the preceding year. The 10 countries registering the highest growth were the Libyan Arab Jamahiriya (81.7 per cent), Namibia (74.1 per cent), Panama (64.5 per cent), Lebanon (59.4 per cent), Viet Nam (43.6 per cent), Yemen (34.4 per cent), Colombia (29 per cent), Chile (26.8 per cent), the Dominican Republic (25.5 per cent) and China (23.2 per cent). China, the Dominican Republic, Lebanon and Panama also figured in this list in 2006. China continues to top the list as the country with the highest container throughput.

Chinese ports (excluding Hong Kong, China) grew on average by 6.2 per cent in 2007 over the previous year to reach 103 million TEUs. Preliminary figures for 2008 show that Chinese port throughput continued to grow, to around 113 million TEUs. Since then, however, port throughput has fallen significantly, with ports in the Bohai Bay area faring better than those in the south of the country. The main factors for this are: (a) the large number of factories that are located in north-east China, where labour and land costs are cheaper than in the south; (b) the development of intermodal links with internal provinces; and (c) the fast expansion of intraregional trade in the region. Despite this, Dalian recorded its biggest fall in container throughput – a 10 per cent drop – in February 2009. In southern China, in particular around Shenzhen, exports are more concentrated on the transpacific trade route, and are thus more affected by the global economic crisis. Shenzhen, China's second largest container port, saw box volumes fall by 21 per cent in the first two months of 2009.[1] During the same period, Shanghai port handled 1.5 million TEUs in February compared with 1.9 million TEUs in January, representing year-on-year declines of 19 per cent and 17 per cent. In neighbouring Ningbo, port throughput declined to 1.4 million TEUs in the first two months, down 14 per cent from the same period in 2008. The decline in monthly container volumes widened from 5 per cent in January 2009 to 23 per cent in February 2009.

Table 38 shows the world's 20 leading container ports for 2008. The list includes 13 ports from developing economies – all in Asia – with the remainder from developed countries located in Europe (4) and the United States (3). Of the 13 ports in developing economies, 7 are located in China (including Hong Kong, China). The other ports are located in the Republic of Korea, Malaysia (2), Singapore, Taiwan Province of China, and the United Arab Emirates. Container throughput in these ports reached 247.4 million TEUs in 2008, a rise of 4.9 per cent over the previous year. The ports listed remained the same for the second consecutive year, with a slight shifting of fortunes and jostling for position for those further down the league. The top 5 ports all retained their respective positions in 2008.

Singapore retained its lead as the world's busiest port in terms of the total number of TEU moves, growing at just over 7 per cent compared to the previous year. Shanghai matched this growth rate and maintained its position in second place. This was a much lower growth rate than the 20 per cent experienced over the last few years. The gap between Singapore and Shanghai widened slightly in 2008 to 1.9 million TEUs, from 1.7 million in the previous year, despite extra capacity with the completion of the third-phase expansion of Yangshan port (located off Shanghai).

Singapore retained its lead as the world's busiest port in terms of the total number of TEU moves, growing at just over 7 per cent compared to the previous year.

Hong Kong (China) remained in third place, despite a weak growth rate of just 1 per cent over the previous year. The neighbouring port of Shenzhen achieved a 1.5 per cent growth rate in 2008, compared to 14 per cent in 2007, to remain in fourth place. Busan remained in fifth place, with a similar growth rate of just 1.2 per cent in 2008. Dubai continued its steady upward climb, rising one place after growing by 11 per cent. Ningbo and Guangzhou both moved up an impressive four places after increasing their throughput by around 20 per cent. Rotterdam fell by three places to ninth place, as a result of static throughput. Qingdao held on to its tenth place, with a 9 per cent growth rate. Hamburg dropped by two places to end in eleventh place. Kaohsiung continued its

Table 37

Container port traffic for 63 developing economies: 2006, 2007 and 2008

(TEUs)

Name of country or territory	2006	2007	Preliminary figures for 2008	Percentage change 2007–2006	Percentage change 2008–2007
China	84 017 014	103 546 099	113 296 469	23.24	9.42
Singapore[a]	25 608 400	28 767 500	30 891 200	12.34	7.38
Hong Kong, China	23 538 580	23 998 449	24 248 000	1.95	1.04
Republic of Korea	15 522 935	16 986 583	17 297 457	9.43	1.83
Malaysia	13 419 053	15 092 899	16 043 669	12.47	6.30
United Arab Emirates	10 967 048	12 708 903	13 903 735	15.88	9.40
Taiwan Province of China	13 102 016	13 722 313	12 994 312	4.73	-5.31
India	6 141 148	7 354 688	7 269 437	19.76	-1.16
Brazil	6 290 532	6 448 520	6 679 542	2.51	3.58
Thailand	5 574 490	6 200 425	6 585 881	11.23	6.22
Egypt	4 532 202	4 877 488	5 558 991	7.62	13.97
Turkey	3 683 497	4 488 403	4 917 309	21.85	9.56
Indonesia	4 117 701	4 410 798	4 715 380	7.12	6.91
Saudi Arabia	3 863 202	4 208 854	4 652 022	8.95	10.53
Panama	3 027 562	4 074 480	4 649 944	34.58	14.12
Philippines	4 156 967	4 338 993	4 102 950	4.38	-5.44
Sri Lanka	3 079 132	3 381 693	3 687 465	9.83	9.04
South Africa	3 552 198	3 734 165	3 485 626	5.12	-6.66
Oman	2 620 363	2 876 969	3 347 739	9.79	16.36
Mexico	2 680 374	3 069 268	3 310 192	14.51	7.85
Chile	2 122 529	2 692 249	2 865 636	26.84	6.44
Iran (Islamic Republic of)	1 528 518	1 844 169	2 122 872	20.65	15.11
Dominican Republic	1 849 775	2 320 845	2 102 058	25.47	-9.43
Colombia	1 610 298	2 076 760	1 996 622	28.97	-3.86
Argentina	2 481 649	2 496 332	1 980 590	0.59	-20.66
Pakistan	1 776 939	1 935 882	1 918 815	8.94	-0.88
Jamaica	2 150 408	2 016 792	1 915 951	-6.21	-5.00
Cuba	1 628 138	1 729 471	1 732 838	6.22	0.19
Puerto Rico	1 749 565	1 695 258	1 685 009	-3.10	-0.60
Bahamas	1 463 000	1 634 000	1 580 000	11.69	-3.30
Peru	1 084 773	1 175 112	1 392 665	8.33	18.51
Venezuela (Bolivarian Rep. of)	1 266 817	1 331 711	1 305 720	5.12	-1.95
Bangladesh	901 528	978 007	1 091 093	8.48	11.56
Costa Rica	765 672	842 903	1 004 971	10.09	19.23
Lebanon	594 603	947 625	945 105	59.37	-0.27
Guatemala	800 245	852 837	905 705	6.57	6.20
Viet Nam	522 347	750 071	884 598	43.60	17.94
Kuwait	750 000	758 409	765 993	1.12	1.00
Yemen	575 394	773 016	764 701	34.35	-1.08
Uruguay	519 218	596 487	675 273	14.88	13.21
Honduras	593 766	636 542	669 910	7.20	5.24

Table 37 (continued)

Name of country or territory	2006	2007	Preliminary figures for 2008	Percentage change 2007–2006	Percentage change 2008–2007
Ecuador	684 618	682 212	651 631	-0.35	-4.48
Kenya	479 355	585 367	615 733	22.12	5.19
Côte d'Ivoire	507 119	469 277	594 199	-7.46	26.62
Syrian Arab Republic	471 970	538 525	588 275	14.10	9.24
Jordan	406 000	414 000	582 515	1.97	40.70
Trinidad and Tobago	472 075	514 557	560 000	9.00	8.83
Ghana	476 451	513 204	518 336	7.71	1.00
Angola	407 609	412 594	416 720	1.22	1.00
United Republic of Tanzania	317 334	348 686	371 706	9.88	6.60
Senegal	375 876	424 457	347 483	12.92	-18.13
Sudan	328 690	342 152	345 574	4.10	1.00
Mauritius	359 265	303 583	334 924	-15.50	10.32
Bahrain	215 487	238 624	269 331	10.74	12.87
Djibouti	221 330	223 543	225 779	1.00	1.00
Cameroon	200 254	217 681	219 858	8.70	1.00
Algeria	189 848	200 050	202 051	5.37	1.00
Cambodia	221 490	253 271	183 367	14.35	-27.60
Guam	147 972	165 427	167 784	11.80	1.42
El Salvador	123 329	144 458	156 323	17.13	8.21
Namibia	83 263	144 993	146 443	74.14	1.00
Libyan Arab Jamahiriya	67 187	122 122	123 343	81.76	1.00
Madagascar	92 496	112 427	102 423	21.55	-8.90
Subtotal	273 078 614	311 743 178	329 667 243	14.16	5.75
Other reported[b]	686 737	755 630	760 483	10.03	0.64
Total reported[c]	273 765 351	312 498 808	330 427 726	14.15	5.74
World total[d]	434 360 625	487 132 209	506 921 348	12.15	4.06

Source: UNCTAD secretariat, derived from information contained in *Containerisation International Online* as of June 2009, from various Dynamar B.V. publications, and from information obtained by the UNCTAD secretariat directly from terminal and port authorities.

[a] Singapore, in this table, includes the port of Jurong.

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

[c] 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.

[d] While every effort is made to obtain up-to-date data, the figures for 2008 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 2007 are generally regarded as more reliable and are therefore more often quoted in the accompanying text.

Table 38

Top 20 container terminals and their throughput for 2006, 2007 and 2008

(TEUs and percentage change)

Port name	2006	2007	2008	Percentage change 2007–2006	Percentage change 2008–2007
Singapore[a]	24 792 400	27 935 500	29 918 200	12.68	7.10
Shanghai	21 710 000	26 150 000	27 980 000	20.45	7.00
Hong Kong, China	23 538 580	23 998 449	24 248 000	1.95	1.04
Shenzhen	18 468 900	21 099 169	21 413 888	14.24	1.49
Busan	12 039 000	13 261 000	13 425 000	10.15	1.24
Dubai	8 923 465	10 653 026	11 827 299	19.38	11.02
Ningbo	7 068 000	9 360 000	11 226 000	32.43	19.94
Guangzhou	6 600 000	9 200 000	11 001 300	39.39	19.58
Rotterdam	9 654 508	10 790 604	10 800 000	11.77	0.09
Qingdao	7 702 000	9 462 000	10 320 000	22.85	9.07
Hamburg	8 861 545	9 900 000	9 700 000	11.72	-2.02
Kaohsiung	9 774 670	10 256 829	9 676 554	4.93	-5.66
Antwerp	7 018 911	8 175 952	8 663 736	16.48	5.97
Tianjin	5 950 000	7 103 000	8 500 000	19.38	19.67
Port Klang	6 326 294	7 118 714	7 970 000	12.53	11.96
Los Angeles	8 469 853	8 355 039	7 849 985	-1.36	-6.04
Long Beach	7 290 365	7 312 465	6 487 816	0.30	-11.28
Tanjung Pelepas	4 770 000	5 500 000	5 600 000	15.30	1.82
Bremen/Bremerhaven	4 428 203	4 892 239	5 500 709	10.48	12.44
New York/New Jersey	5 092 806	5 299 105	5 265 053	4.05	-0.64
Total top 20	208 479 500	235 823 091	247 373 540	13.12	4.90

Source: UNCTAD secretariat and *Containerisation International Online*, June 2009.

[a] Singapore, in this table, does not include the port of Jurong.

downward trend, falling by four places to position 12. Antwerp gained one place, ending in thirteenth position. Tianjin was the biggest mover, moving up an impressive five places – no doubt helped by its closeness to Beijing, the main site of the 2008 Olympic Games. Port Klang moved up one position to fifteenth place, while Los Angeles slipped three positions for a second consecutive year to finish in sixteenth place. Long Beach declined by two places to seventeenth position, after sustaining the largest fall of any port in the top 20, with an 11 per cent reduction in throughput as imports from Asia were cut back. Tanjung Pelepas remained in eighteenth place, while Bremen/Bremerhaven and New York/New Jersey traded places to finish at positions 19 and 20 respectively. Together, these top 20 ports accounted for around 49 per cent of world container port traffic in 2008.

The world port throughput outlook for 2009 remained depressed.

The world port throughput outlook for 2009 remained depressed. Early indications for China in 2009 did not bode well for the rest of the world, since, as mentioned earlier, China's ports account for almost a quarter of global port throughput. The total throughput of China's

main container ports for the first quarter of 2009 fell by 11 per cent to 21.8 million TEUs compared to the previous year. Guangzhou registered the greatest decline in throughput, losing 24.3 per cent; Shanghai and Shenzhen declined by 15.1 per cent and 21.2 per cent respectively.

B. IMPROVEMENTS IN PORT PERFORMANCE

The most notable improvements to port performance in 2008 occurred in the number of ports achieving greater crane productivity. In recent years, larger vessels have created more pressure on ports to load and discharge cargo, and some of the technology that is used to cater for this need has now spread to a greater number of ports. Developing economies can benefit from greater connectivity to world markets, improve trade and lower their transport costs by improving port facilities. In some cases this may involve infrastructure investments, such as providing better access to the port by dredging, extending and supporting existing quays, or providing breakwaters. In terms of superstructure, better cargo handling equipment and storage facilities may be needed. To make the most use of the port infrastructure and superstructure, these need to be woven together by an effective operational system. By operating an integrated system in the United Arab Emirates, the Khor Fakkan Container Terminal (KCT), for instance, achieved 220 container moves per hour when servicing the United Arab Shipping Company (UASC) vessel *Mayssan* in April 2009. Although this did not beat the terminal's previous record of 237 moves per hour (for the CMA-CGM vessel *La Traviata* in 2007), it was a prelude of things to come. Several weeks later, KCT surpassed its 2007 terminal record by achieving 279 moves per hour (for the CMA-CGM vessel *Pelleas*). While this is not a world record, it is nevertheless impressive, and does highlight the fact that incremental improvements can be made to increase port efficiency through technological advances. The Apapa Container Terminal in Nigeria, operated by APM Terminals, broke its own productivity record when it performed 2,249 moves in 47.3 hours while unloading the *Maersk Pembroke*, achieving 47.26 moves per hour. The improvement in productivity was due to new training programmes, yard improvements, and the deployment of new equipment. Even though some ports have achieved individual crane productivity of greater than 70 moves per hour, most cranes operating at less than half that rate are considered efficient. Vessel productivity, using multiple cranes to discharge a single ship as in the KCT example above, surpassed the 400 mark several years ago. While the arrival over recent years of tandem-lift, triple-lift and even quad-lifts cranes has helped improve port performance on an incremental scale, these new cranes have not revolutionized the industry. These multiple-lifting cranes are not a panacea, and as such, they are not in use everywhere. To get the most out of multiple-lifting cranes, cargo needs to be loaded onboard in the right position, to be headed for the same destination, and to weigh a similar amount. Cargo handling within ports remains a critical point in the transport chain where improvements in efficiency could greatly benefit the flow of goods internationally.

C. RECENT PORT DEVELOPMENTS

This section gives a brief overview of some of the port developments that are happening around the world. It is intended to be informative rather than exhaustive, and pertains to developing economies and countries with economies in transition. In general, port developments continue unabated, despite the global economic crisis. Some port projects have been put on hold pending further analysis of the current economic climate, while other projects have gone ahead.

In China, the port of Dalian had announced plans to cut its capital expenditure by 36 per cent, to ¥800 million (yuan), as a result of the global financial crisis. However, subsequent to this, it announced investments of ¥1.5 billion for 2010 and ¥799 million for 2011, signalling that the effects of the financial crisis on the port may not have been as bad as originally perceived. The Ningbo-Zhoushan port expansion plans, which include the building of nine container terminals, have reportedly been put on hold by Singapore's PSA International and Hong Kong's Modern Terminals, as a consequence of the global trade distortions. PSA had also expressed an interest in building seven additional terminals, bringing the total investment as high as $1.9 billion. Both parties have now put their projects on hold until the global economic downturn eases. Ningbo-Zhoushan port, located near Shanghai, plans to increase its container throughput to 30 million TEUs by 2020, up from 10.93 million TEUs in 2008. Total cargo volume is set to rise to 890 million metric tons, up from 520 million metric tons. Elsewhere in China, plans were announced to build three multi-functional ports on the border with the Russian Federation, at Tuntszyan, Jiamusi and Big Ussuri. In China, a 51 per cent stake in Yichang Port, the largest feeder port for phosphate in the country, was sold to Hong Kong–listed port and infrastructure investor PYI Corporation Ltd.

In India, the Port of Jawaharlal Nehru completed the bidding process for its 330-metre berth extension project. Expected to be ready in 2010, the additional facility would have an annual capacity of 600,000 TEUs, taking total capacity at the state-owned terminal to 1.2 million TEUs. In addition, the port also extended the deadline for bids to operate its fourth container terminal project, which could cost $1.3 billion. The 30-year design–build–finance–operate–transfer agreement is expected to have a 1,000-metre-long terminal with a backup area and an annual capacity of 4 million TEUs. At present, private operators DP World run the Nhava Sheva Container Terminal, and APM Terminals run the gateway terminal within the port, while the trust operates its own terminal.

In Colombo, the South Container Terminal port expansion ran into delays following a downturn in traffic volumes. Domestic volumes at the Colombo port fell by 24 per cent, while transshipment volumes fell by 19 per cent in February 2009 over the same period in the previous year.

In the Republic of Korea, Hanjin Shipping celebrated the opening of its new terminal at Busan New Port in February 2009. It also has operations at the Gamcheon and Gamman terminals elsewhere in Busan, plus terminals at the ports of Kyangyang and Pyongtaek in the Republic of Korea. Internationally, Hanjin has operations in Long Beach, Oakland, Seattle, Rotterdam, Antwerp, Osaka, Tokyo and Kaohsiung. New projects scheduled to come online include those in Algeciras (Spain), Tan Can-Cai Mep (Viet Nam) and Jacksonville (United States), for completion in 2010, 2011 and 2012 respectively.

In Brunei, the Government has signed an agreement with International Container Terminal Services Inc. to operate the Muara Container Terminal for a period of four years, with two one-year options to extend.

In the Middle East, Saudi Arabia has allocated 12 billion riyals ($3.2 billion) in its budget for infrastructure projects including road and ports. A 450-km high-speed railway designed to link the Red Sea port city of Jeddah to Mecca and Medina is expected to be finished in 2012. In addition, a 2,400-km rail link between Jordan and Riyadh is due to be completed in 2010. The line will link Saudi Arabia's Al-Jalamid phosphate mine and its Al-Zabirah bauxite mine in the north with planned aluminium and fertilizer complexes at Ras al-Zour on the Gulf coast. Also in Jordan, the Aqaba Development Corporation has signed a 30-year build-operate transfer agreement worth in excess of $100 million with the Jordan Phosphate Mines Company and the Arab Potash Company to rehabilitate, develop and operate the current industrial terminal, and to establish and operate a new terminal. In Africa, Nigeria is to build five new ports at Onitsha, Idah, Dekina, Lokoja and Baro, in Niger State, to ease the pressure of congestion at existing terminals in Lagos. In addition, the River Niger is to be dredged some 570 kilometres from Baro in Niger State to Bayelsa State. APM Terminals are involved in port projects in Apapa (Nigeria) and Luanda (Angola), and also in Pointe-Noire (Congo).[2]

In Latin America, plans are progressing for further concessioning in the ports of San Antonio and Valparaíso. At present DP World, which operates the northern port of Callao, is reported to be interested in the upcoming concessioning, along with Hutchison Port Holdings and local operator Puerto de Lirquén. At the Colombian port of Buenaventura, despite a fall in throughput of more than 5 per cent during the first quarter of 2009, the $17.7 million planned investment programme will continue. In April, the port saw a significant rise in the number of bulk carriers visiting. In Brazil, the National Department of Transport Infrastructure revealed plans to turn a landfill site in Guanabara Bay, Rio de Janeiro, into the country's newest container terminal. Several international terminal operators are reportedly interested in developing the new project, which has received wide local support. In Mexico, the Punta Colonet port development was reportedly put on hold as the global financial crisis curtailed the number of private companies interested in or able to carry out the required investments under the terms stipulated by the Federal Government. The building of a mineral bulk cargo facility at Guaymas port also suffered a similar fate after it failed to attract interest from investors. The building of the first automobile-specialized terminal at Lázaro Cárdenas port was halted, given the difficult financial situation faced by the car industry. The multi-purpose terminal concession at Mazatlán port was declared void because the two bidders failed to meet the tender's economic requisites.

Table 39 shows the equity market share of the leading global terminal operators. The equity share proportions the terminal throughput by the stake that the global terminal operator has in a particular project. Thus, a port operating as a 50/50 joint venture between a global terminal operator and a local partner would allocate each operator half the port throughput. It is, however,

Table 39

The global terminal operators equity share of world container throughput

(percentages)

Global terminal operators	2006	2007	2008	HHI
PSA International	8.0	9.8	9.9	98.9
HPH	8.9	6.9	6.8	46.1
APM Terminals	6.5	6.4	6.7	45.0
DP World	6.0	4.9	5.5	29.9
Cosco Pacific		2.0	2.2	
Eurogate		1.5	1.5	
SSA Marine		1.0	0.9	
Total	29	33	33	219.8
World throughput (in millions of TEUs)	434.3	487.1	506.9	

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

Note: The Herfindahl Hirschmann Index is an indicator of market concentration. If the sum of the top four market leaders equals 1,000, then that indicates a concentrated marketplace. A score above 1,800 is highly concentrated. This calculation is based on the terminal operator's equity market share.

not uncommon for several global terminal operators to be involved in one terminal. In such a case, the port throughput equity share would also be proportioned to the stake held by each party. Table 39 clearly shows that in 2008, PSA International was the market leader, with a 9.9 per cent market share of world cargo throughput.

The global port industry remains highly fragmented. The Herfindahl Hirschmann Index, an indicator of market concentration shown in table 39, equates to a figure of 219,[3] where 1,000 indicates concentrated and 1,800 highly concentrated. This could be a sign that further consolidation within the port terminal operating industry may be expected. The recent devaluation in the share price of ports, brought about by the decline in global stock markets and international trade, could herald another round of mergers or acquisitions by financial institutions, as ports will surely benefit from a rebounding global economy. The main problem facing potential bidders is where to obtain the finance as credit lines become tighter.

Financial results of the leading international terminal operators

An evaluation of the financial results of some of the largest terminal operators reveals that their results for 2008 were very mixed. Ports that experienced a growth in profits above 20 per cent in 2008 include, in descending order, APM Terminals, DP World, the Shanghai International Port Group (SIPG), and Hamburger Hafen und Logistik AG (HHLA), while those at the other end of the spectrum, with losses of more than 20 per cent, include PSA and Cosco Pacific. Listed in this section is a general overview of how port operators performed in 2008. Although it is not an exhaustive list, it does include most of the global terminal operators mentioned in table 39, plus a few other companies which are growing internationally.[4]

Hutchison Port Holdings' revenue increased by 4 per cent to $5.1 billion in 2008. Total throughput at the 49 ports operated by Hutchison Port Holdings increased by 2 per cent to 67.6 million TEUs in 2008. The fastest-growing ports operated by Hutchison Port Holdings in 2008 were the Panama Ports container terminal, where volumes increased by 21 per cent; Westports in Klang, Malaysia, up by 16 per cent; and International Ports Services in Saudi Arabia, also up 16 per cent. Ports where volumes declined included Xiamen (China), down 17 per cent; Busan and Gwangyang (Republic of Korea), down 5 per cent; Yantian (China), down 3 per cent; and Shanghai (China), down 2 per cent.

PSA International increased its revenue to almost S$4.4 billion (Singapore dollars) ($3 billion), up from S$4.1 billion in 2007, and then saw its net profit slump 46 per cent to S$1.04 billion in 2008. The contributing factors included lower yields, higher operating costs, impairment provisions and lower divestment gains. The total throughput at its terminals in Singapore and abroad climbed 7.3 per cent to 63.2 million TEUs. The firm's Singapore terminals posted a 7 per cent rise in volumes to 29 million TEUs, while its foreign facilities recorded a 7.7 per cent rise in throughput to 34.2 million TEUs. Profit from port operations dropped 21.7 per cent to S$1.4 billion, down from S$1.8 billion.[5]

DP World reported that its turnover increased by 20 per cent during 2008 to reach $3.23 billion. Its profits for 2008 equalled $621 million – an increase of 48 per cent for the year ending 2008. This follows an impressive rise in profits of 52 per cent for 2007.

Cosco Pacific increased its turnover in 2008 to $338 million, up 13 per cent on 2007. Operating profit declined, however, by 21 per cent, to $165 million as a result of the global economic crisis affecting demand for Chinese goods. Cosco Pacific operates 19 ports in China and 3 internationally.

APM Terminals increased profits to $161 million from $106 million as revenues rose by 24 per cent to $3.1 billion in 2008. Traffic rose 8 per cent to 34 million TEUs. The share of third-party carriers rose to 38 per cent, from 34 per cent in 2007, with sister company Maersk Line providing the remainder.

Eurogate increased its revenue by 8.4 per cent in 2008 to €715 million, and posted a record profit for the year of €116.5 million – a rise of 3.5 per cent on 2007. This was the company's best operating result in its 10-year history.

HHLA achieved a 23.4 per cent increase in operating profits to €355million ($472 million) in 2008. Sales were up by 12.4 per cent to €1.3 billion. HHLA's full-year 2008 container turnover was still slightly up, by 1.2 per cent to 7.3 million TEUs, including HHLA's container terminal in the Ukrainian Black Sea port of Odessa. However, in the fourth quarter of 2008, box handling figures declined by 9.7 per cent as the global financial crisis took hold.

By the end of 2008, the effects of the global economic crisis could be seen in all major transport modes ...

Shanghai International Port Group increased net profits by 27 per cent in 2008 to ¥4.6 billion, and turnover rose by 11 per cent to ¥18.1 billion. In 2007, the company reported a net profit of ¥3.6 billion, on revenue of ¥16.3 billion. However, fourth-quarter net profits for 2008 show a decline of 17.5 per cent compared to the previous year. Shanghai International Port Group handled 369 million metric tons in 2008, including 28 million TEUs, up 7 per cent, of which the Waigaoqiao container terminal handled 15.4 million TEUs and the Yangshan deep water port processed 8.2 million TEUs.[6]

China Merchants Holdings International increased its profits by 4.5 per cent to approximately HK$3,706 million (Hong Kong dollars) for 2008. China Merchants Holdings International's portfolio of ports are mainly located in China, with the exception of a small stake in a terminal in Zeebrugge and in a forthcoming project in Viet Nam. The group handled an aggregate container throughput of 50.48 million TEUs – an increase of approximately 7.1 per cent over 2007. Throughput of 43.58 million TEUs was handled in the mainland, an increase of 8.6 over 2007. Terminals invested and managed by the group in the western Shenzhen port recorded a total container throughput of 11.58 million TEUs – an increase of 5 per cent, which was higher than the overall growth rate of Shenzhen Port. Its market share in Shenzhen also grew to 54 per cent.

International Container Terminal Services Inc. reported a decline in profits of 13 per cent to 2.86 billion Philippine pesos, from 3.29 billion in the previous year. A change in accounting practices was cited as the main cause of the decline.

D. INLAND TRANSPORT DEVELOPMENTS

By the end of 2008, the effects of the global economic crisis could be seen in all major transport modes: sea, road and rail. The most notable movements in volumes occurred principally in the first half of 2009, with severe declines for railway traffic in particular, across many regions. The following sections briefly state some of the main developments that have occurred in the inland waterway, railway and road sectors.

Inland waterway transport

Whereas inland waterway transport perhaps used to be the only efficient form of transport to move goods from inland to coastal areas, today it is looked upon more as an alternative means of transport to help relieve congestion on other transport networks. Inland waterway transport is an increasingly popular mode of transportation for goods in many parts of the world, as is evident from the increasing number of projects attracting investment. However, inland waterways only account for a small portion of goods transported internationally, especially in regions with very well-developed alternative modes of transport. For example, in Europe, inland waterway transport represents only 5.6 per cent of total inland transport, whereas railways account for 17.9 per cent and road transport accounts for 76.5 per cent. (These figures, for 2007, are based on Eurostat.) However, in comparison to other regions, European waterways transport a higher percentage of goods, suggesting that perhaps it is not alternative modes of transport that are a key factor, but rather intermodal

connectivity. Currently, only 2 per cent of the Russian Federation's freight transport is carried on waterways, and in Brazil, inland waterways account for less than 1 per cent of the total freight volume. China, with the world's largest network of inland waterways, transported around 1.3 billion tons of cargo in 2007. The Russian Federation, with the second-largest network of inland waterways, transported around 152 million tons in 2007, representing a year-on-year increase of 9.5 per cent. The third-largest inland waterway network is in Europe, where 20 of the European Union's 27 member States have direct access. In Europe, around 500 million tons of cargo were transported using its 37,000 kilometres of inland waterways in 2007. Table 40 illustrates the total goods shipped via some of the world's largest inland waterway networks.

Recognizing the potential of inland waterways, some countries have increased their infrastructure investment in such areas. For instance, the Government of Viet Nam has proposed a future inland waterway that would connect Ho Chi Minh City with neighbouring areas, with an estimated cost of $88.1 million to develop the waterway system. The plan includes connecting Ho Chi Minh City with 88 inland waterway routes totalling 574 km in length, of which 138 km will be new routes.

Table 40

Total length of navigable waters and tons of goods transported by inland waterways

Rank	Country/region	km	Date of info.	km 2007
1	China	110 000	2008	1.3 bn
2	Russian Federation	102 000	2007	152 m[a]
3	European Union	52 332	2006	500 m[b]
4	Brazil	50 000	2008	n/a
5	United States of America	41 009	2008	800 m
6	Indonesia	21 579	2008	n/a
7	Colombia	18 000	2008	3.8 m

Source: Compiled by UNCTAD from various sources.

Note: Data refer to 2008, except where indicated.

[a] 2007 data.

[b] 2006 data.

Railway transport

In some countries, railways are a major transport mode for goods destined for international markets. For example, in the United States, rail traffic accounts for around 40 per cent of transport share by volume. For other countries such as Brazil, railroads account for only 26 per cent of the freight volume; nonetheless, this represents an increase of almost 80 per cent since privatization took place in 1996. This share is expected soon to reach 28 per cent, and a further 2 per cent has been estimated if the Government invests what is necessary to expand the railroad network. With a 30 per cent share, the Brazilian railroad system would be closer to the international parameter of 40 per cent, which is considered by many to be the ideal share of railroads in the transport matrix of countries with similar industrial and regional features.

The International Union of Railways has reported that the ton-kilometres of European railways declined by 5 per cent in 2008, when compared to 2007. The end of 2008 was particularly dramatic for some countries, when in the last quarter rail freight volumes declined on average by 14 per cent over the previous quarter (see table 41). This trend continued into 2009, with a 34 per cent decline in January 2009 compared to the same period in 2008. In Western Europe, similar data indicate decreases of 18 per cent in December 2008 and 36 per cent in January 2009. In the United States, rail volumes were reported to have fallen by 25 per cent in May 2009, compared to May 2008.

In Asia, however, railway growth (in ton-kilometres) was positive in 2008, though less significant than the year before. China's growth in 2008, for instance, was about half the growth rate registered in 2007 (3.5 per cent compared to 7.6 per cent). India's freight traffic growth rate declined slightly, from 9.4 per cent in 2007 to 8.4 per cent in 2008. In contrast, rail freight in the Russian Federation experienced yet another good year, growing by 5 per cent in 2008 from a 7.2 per cent growth rate registered in 2007.

Reports for the first few months of 2009 indicate that railroad carload volumes in the United States were down 19.2 per cent from 2008, down 16.6 per cent for trailers or containers, and down 18.1 per cent in the total volume estimated at 534.6 billion ton-miles. Similarly, Canadian railroads reported a 22.9 per cent decrease in carloads and a 14.3 per cent decline in volume of trailers or containers since 2008.

Table 41

Rail: International transport of goods for selected countries
(millions of ton-kilometres)

	Q1	Q2	Q3	Q4	Annual-2008
Austria	3 627	3 882	3 577	3 656	14 742
Azerbaijan	1 986	2 266	2 046	1 996	8 294
Belgium	1 381	1 410	1 568	1 278	5 637
Bulgaria	340	377	365	275	1 357
Croatia	685	729	651	668	2 733
Czech Republic	2 242	2 210	2 302	2 170	8 925
Denmark	450	474	422	399	1 745
Estonia	1 493	1 158	1 164	1 421	5 236
Finland	729	836	884	740	3 189
France	4 217	3 925	3 367	2 932	14 441
Germany	15 921	16 296	16 507	13 666	62 390
Hungary	1 912	2 258	2 272	2 055	8 497
Italy	2 142	2 173	1 886	1 790	7 991
Latvia	4 593	4 259	3 942	4 576	17 370
Lithuania	3 195	2 790	2 569	2 539	11 093
Luxembourg	54	67	59	35	215
Norway	219	235	229	222	905
Poland	4 148	4 140	4 199	3 189	15 676
Portugal	65	58	51	34	208
Republic of Moldova	742	718	632	419	2 511
Romania	908	926	891	688	3 413
Serbia	973	1 072	1 008	837	3 890
Slovakia	2 137	2 154	2 072	1 836	8 199
Slovenia	685	708	709	678	2 780
Sweden	1 879	1 880	1 832	1 550	7 141
Switzerland	2 602	2 649	2 376	2 139	9 766
Turkey	370	359	316	324	1 367
The FYR Macedonia	193	196	172	167	728
Ukraine	42 678	43 616	43 182	34 549	164 025
TOTAL	102 567	103 822	101 250	86 827	394 464

Source: The International Transport Forum.

Not surprisingly, the economic downturn is impacting rail freight businesses. Recent reports indicate, for instance, that plans to enhance the "Beijing–Hamburg Container Express" may be revised in light of the current global economic crisis and declining trade volumes.[7]

The European Union, the United States, the Russian Federation, China and India account for around 50 per cent of the total existing world rail network (table 42).

Cooperation among developing economies on rail projects is increasing. For instance, a company from the Republic of Korea is seeking to invest in a new double-track rail project in Viet Nam. This project would link Ho Chi Ming City with the central coastal city of Nha Trang. The new line is expect to cost $7.8 billion and is part of a larger plan to replace the current track and develop a cross-country express railway. The new line, stretching 369 kilometres, would allow trains to travel at

Table 42

Countries and regions with total rail networks of 20,000 km and above

(2006 figures, unless otherwise indicated)

	kms	Percentage of world total
European Union	236 436	17.25%
United States	226 612	16.53%
Russian Federation[a]	87 157	6.36%
China	75 438	5.50%
India	63 221	4.61%
Germany	48 215	3.52%
Canada	48 068	3.51%
Australia	38 550	2.81%
Argentina	31 902	2.33%
France	29 370	2.14%
Brazil	29 295	2.14%
Japan	23 474	1.71%
Poland	23 072	1.68%
Ukraine	21 852	1.59%
South Africa	20 872	1.52%
World	1 370 782	100.00%

Source: UNCTAD table, based on CIA World Factbook figures.

Note: All figures are from 2006, unless stated otherwise.

[a] 2005 figure (Russian Federation).

a speed of 200 km per hour, compared to the current aging line which only allows speeds of 60 km per hour. A project to improve Kenya's aging rail network has been unveiled. The plan, which could take up to 16 years, allows for faster trains travelling at speeds of between 80 and 120 km per hour. The project will also expand the network beyond Kenya's borders, into the neighbouring countries of Burundi, the Democratic Republic of the Congo, and Rwanda, bringing the entire Eastern African region into a seamless connectivity. Transportation charges – which in some cases amount to 40 per cent of all costs incurred by local businesses in moving goods by road – can be reduced if an efficient rail service becomes operational. The project comes at a time when threats of diverting cargo from the port of Mombasa to other neighbouring ports have threatened Kenya's strategic position in the region. Kenya's rail network is over a century old, having been constructed between 1895 and 1901; few improvements have been made since. In 2008, the rail network moved just over 2 million tons of cargo, compared to around double this capacity in the 1980s.

Road transport

Road transport is an essential link from the factory door to the main mode of transportation and for onward delivery to the consumer. In examining the modern movement of goods along the so-called ancient "Silk Road", a study conducted by the United States Chamber of Commerce found that it was still a practical and competitive option compared to options that require additional infrastructure investment. For many developing economies in other regions, road transport is still the only viable mode for transporting goods.

Total freight transport by road in the European Union in 2006 represented about 1,894 billion ton-km, 73 per cent of the inland freight transport market. International road freight transport accounted for about one third (or 612 billion ton-km) of total road freight transport in the European Union in the year 2006. National road freight transport represented the other two thirds (1,200 billion ton-km). Haulers registered in five countries (Germany, Poland, Spain, the Netherlands and Italy) accounted for over 50 per cent of the total international road freight market within the European Union.

Road transport and the economic crisis

Various surveys conducted in October 2008 indicated that trucking companies in the United States were highly concerned about fuel costs and the economic uncertainties. Third-party logistics companies were seen to be relying heavily on the retail, automobile, and electronics industries for their freight business, all three of which were suffering a recession, with automobile sales reportedly at their lowest mark in 15 years, and consumer spending flat. Reports also indicate that as trade growth decelerates, the road transport industry is facing slower growth. Estimates indicate that over the 2009–2013 forecast period, United States road haulage traffic will grow at a subdued average annual rate of slightly above 1.2 per cent measured in millions of ton-km.[8]

Figures from the European Union Road Federation (ERF) and various road freight associations indicate an average decrease in road freight transport activity of up to 50 per cent for the last quarter of 2008, and a rise in costs by at least 3–4 per cent.[9] In 2009, road companies, associations and unions in Europe called for financial support to implement stimulus plans focused on road infrastructure to help mitigate the effects of the slowdown.

Road haulage companies are not immune to the global financial and economic crisis. According to the International Road Transport Union (IRU), the number of bankruptcies of road haulage companies has increased substantially since the end of 2007. The French road transport organization Fédération Nationale des Transports Routiers (FNTR) reports that out of 210 insolvency cases recorded in the road goods transport sector in France in January 2009, 82 per cent took place in small or very small enterprises. Also, according to FNTR, cases of insolvency had increased threefold in French businesses of more than 50 employees between 2007 and the end of 2008. The sector, in which around 50 per cent of workers are self-employed, is likely to be impacted severely by the crisis. As of January 2009, an estimated 10,000 jobs have been lost in France as a result of the financial crisis. An additional 16,000 jobs in Spain and 4,000 in Belgium have been lost through cases of bankruptcy in the road transport sector. It is also estimated that a total of 140,000 jobs in EU road freight transport are currently at risk or have already been lost since the end of 2007.[10] The number of jobs lost is only one indicator of the effects of the crisis on employment (employment conditions in existing jobs are affected by the crisis too).

Road haulage companies are not immune to the global financial and economic crisis.

Between July 2008 and July 2009, the number of ships, … the number of services and the number of companies have all decreased.

Prospects for the rest of 2009 are not favourable. In January 2009, the IRU published its yearly road transport indices, according to which growth in the transport sector in Western Europe is set to stagnate at a low level over the first half of 2009. The European Association of Automobile Manufacturers confirms this view: over the year 2008, registrations of new trucks (> 3.5 t.) fell by 4.0 per cent in the EU-27 and EFTA (without Cyprus and Malta), mainly because of the 21.1 per cent decrease in the EU-12.

E. UNCTAD LINER SHIPPING CONNECTIVITY INDEX 2009

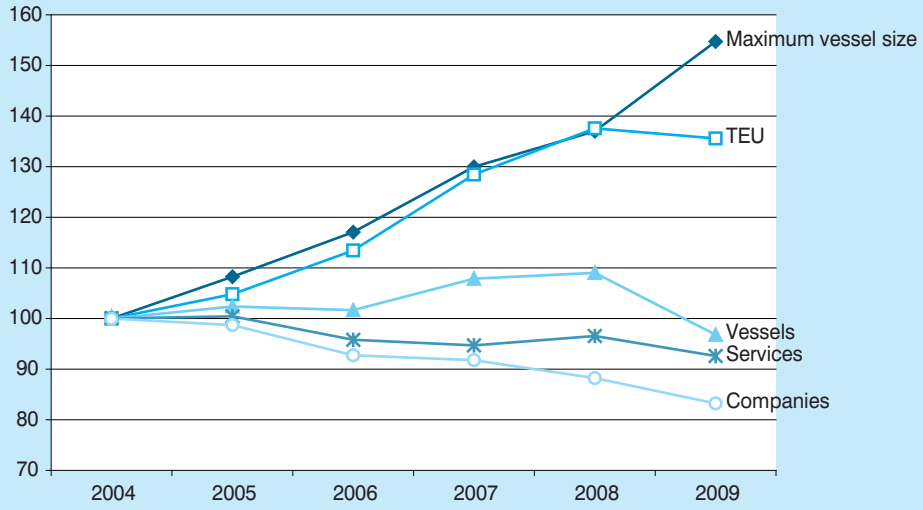
Countries' access to world markets depends largely on their transport connectivity, especially as regards regular shipping services for the import and export of manufactured goods. UNCTAD's Liner Shipping Connectivity Index (LSCI) aims at capturing a country's level of integration into global liner shipping networks.[11] In 2009, China continued to be the country with the highest LSCI, followed by Hong Kong (China), Singapore, the Netherlands and the Republic of Korea (annex IV).

Between 2008 and early 2009, the container-carrying capacity of the largest container vessels increased further. With 13,800 TEUs, the new MSC *Daniela* is larger than the 12,508-TEU vessels of Maersk, which were the largest ships in mid-2008. As regards the other components of the LSCI, however, the global economic crisis has already had a measurable impact: the average number of ships, the TEU capacity deployed and the number of services per country have all gone down for the first time since 2004, when UNCTAD started monitoring these figures. Already since 2005 we have observed a reduction in the number of carriers, as the mergers and acquisitions among shipping companies have an impact on the level of competition on numerous trade routes. The data on the routing and deployment of container ships provide some further insights into the impacts of the global economic crisis on different regions. Although the global container ship fleet continues to grow in line with new deliveries, ships are increasingly being withdrawn from service and others have been redeployed on different routes. Between July 2008 and July 2009, the number of ships, their total TEU carrying capacity, the number of services and the number of companies have all decreased. Only the maximum vessel size has continued to increase: in spite of the economic crisis, new and larger vessels are being delivered by the world's shipyards. Many of these larger ships then replace smaller vessels, leading to a significant reduction in the average number of vessels per country. For the first time since UNCTAD began recording the data, the average container-carrying capacity TEU assigned per country has discontinued its rise. Following the continued trend of mergers and acquisitions, the average number of companies offering services per country has decreased by 17 per cent since 2004 (fig. 24).

Figure 24

Trends in connectivity indicators

Index of country averages 2004 = 100



Source: UNCTAD secretariat, based on data from *Containerisation International Online*.

ENDNOTES

1 http://www.lloydslist.com/ll/news/chinese-box-port-volumes-collapse/1236269165316.htm.

2 More details on Africa are included in chapter 7, including port developments on the continent.

3 This calculation is based upon the equity share where a port operator has an interest. This is against a total market calculation which would give a higher index figure.

4 SSA Marine is a private company whose accounts are not publicly available.

5 *Lloyd's List* (2009). PSA International net profit slumps 46 per cent. 30 March 2009.

6 http://www.lloydslist.com/ll/news/viewArticle.htm?articleId=20017635789.

7 The trip from Tianjin to Hamburg usually takes up to 30 days by sea, however by using rail, the journey time can be reduced to about 17 days.

8 Business Monitor International. United States Freight Transport Report, fourth quarter 2009. 6 August 2009.

9 ERF. Facing the crisis. 18 March 2009.

10 International Road Transport Union. http://www.iru.org.

11 The first version of the 2004 LSCI was introduced in UNCTAD's Transport Newsletter No. 27, first quarter, 2005. The current version of the LSCI is generated from five components: (a) the number of ships; (b) the total container-carrying capacity of those ships; (c) the maximum vessel size; (d) the number of services; and (e) the number of companies that deploy container ships on services from and to a country's ports. The data are derived from *Containerisation International Online*. The index is generated as follows: For each of the five components, a country's value is divided by the maximum value of that component in 2004, and for each country, the average of the five components is calculated. This average is then divided by the maximum average for 2004 and multiplied by 100. In this way, the index generates the value 100 for the country with the highest average index of the five components in 2004.

Chapter 6

LEGAL ISSUES AND REGULATORY DEVELOPMENTS

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

A. IMPORTANT DEVELOPMENTS IN TRANSPORT LAW

Adoption of a new United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea: the Rotterdam Rules

In 2008, after years of deliberation, work on the text of a draft Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea was completed, and a final draft text, as approved by the United Nations Commission on International Trade Law (UNCITRAL) was adopted by the United Nations General Assembly on 11 December 2008. This new United Nations convention, to be known as the "Rotterdam Rules"[1] (hereinafter referred to as "the Convention" or "the Rotterdam Rules") was open for signing at a special conference held in Rotterdam in September 2009. Thereafter, states will consider whether to become parties to the new Convention; 20 ratifications are required for the Convention to enter into force.[2] In this context it is important to note that ratification of the Convention is conditional upon denunciation of any other international convention in the field of carriage of goods by sea. That is to say, for Contracting States to any other international sea-carriage convention, ratification of the Rotterdam Rules becomes effective only if and when denunciation of the Hague Rules,[3] the Hague-Visby Rules[4] or the Hamburg Rules,[5] as the case may be, has become effective.[6] Thus, adherence to the Rotterdam Rules requires an unequivocal decision that, on balance, national interests are better served by the new Convention, rather than by any of the established international maritime cargo-liability regimes.[7]

This new United Nations convention, to be known as the "Rotterdam Rules"was open for signing at a special conference held in Rotterdam in September 2009. Thereafter, States will consider whether to become parties to the new Convention; 20 ratifications are required for the Convention to enter into force.

Background

By way of background, it should be noted that the regulation of liability arising in connection with the international carriage of goods

by sea has, over the past decades, become increasingly diverse. Many states are Contracting States to the Hague Rules or the Hague-Visby Rules. The 1978 United Nations Convention on the Carriage of Goods by Sea (the Hamburg Rules), which entered into force in 1992, was designed to provide a modern successor to the Hague-Visby Rules, but failed to attract widespread acceptance; although the Hamburg Rules are now in force in 34 states, none of the major shipping nations has ratified the Convention. As a result, three mandatory liability regimes, namely the Hague Rules, the Hague-Visby Rules and the Hamburg Rules, have come to coexist internationally. At the same time, the exponential growth of containerization and the consequent change of international transport patterns and requirements have increased the need for appropriate modern regulation. In relation to multimodal transportation, no uniform international liability regime is in force, and the international legal framework is particularly complex, as liability continues to be governed by existing unimodal conventions, and by increasingly diverse national, regional and subregional laws and contractual agreements.[8]

It is against this background that the new Rotterdam Rules were prepared, with the aim of establishing a modern set of internationally uniform rules that provide commercial parties with much-needed legal certainty. States will now have to carefully consider the merits of the new Convention and decide whether the Rotterdam Rules comply with their expectations, both in terms of its substantive provisions and in terms of its potential to provide international uniformity of laws in the field.

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The substantive work was carried out by an UNCITRAL working group, established by the UNCITRAL Commission.[9] Together with a number of other interested intergovernmental and non-governmental organizations, the UNCTAD secretariat has been participating in the relevant UNCITRAL working group meetings as an observer and has provided substantive analytical comments for consideration by the working group throughout the drafting process.[10] While proper consideration of the Convention's individual provisions or a comprehensive summary of its content is not possible here,[11] an analytical overview of some of its central features is provided, with a view to assisting policymakers in their assessment of the potential merits of ratification of the new Convention. As will be seen, many aspects of the new Convention appear potentially problematic, in particular from the perspective of small- and medium-scale shippers in developing countries.[12]

Substantive scope of coverage

The Rotterdam Rules consist of 96 articles which are contained in 18 chapters. Many of the provisions are lengthy and highly complex, which, unfortunately, makes national differences in their interpretation and application likely and may give rise to significant litigation.[13] To a large extent, the Convention covers matters that are dealt with in the existing maritime liability regimes, namely the Hague-Visby Rules and the Hamburg Rules, albeit with significant changes in terms of structure, wording and substance. In addition, several chapters are devoted to matters currently not subject to international uniform law such as delivery of the goods[14] and the transfer of the right of control and of rights of suit.[15] The new Convention also provides for electronic communication and the issue of electronic substitutes for traditional paper documents, largely by recognizing contractual agreements in this respect and by according electronic records a similar status to paper-based documents.[16] Two separate chapters provide complex rules on jurisdiction and arbitration.[17] These chapters are, however, optional, and will only be binding on Contracting States that have declared their intention to be bound – a state of affairs which may give rise to parallel legal proceedings in different Contracting States, and ultimately, conflicting judgments.

Scope of application[18]

The Rotterdam Rules apply to contracts of carriage[19] in which the places of receipt and delivery are in different States, provided the contract involves an international sea leg and the contractual place of receipt, loading, discharge or delivery is located in a Contracting State (article 5). The Rules do not apply to charter parties or to "other contracts for the use of a ship or for any space thereon" and to contracts of carriage in non-liner transportation, except where "there is no charter party or other contract for the use of a ship or of any space thereon and a transport document or an electronic

transport record is issued" (article 6). However, in these cases, the Rotterdam Rules would apply as between the carrier and consignee, controlling party or holder that is not an original party to a contract excluded under article 6 (article 7).

Multimodal transport[20]

Importantly, and in contrast to the existing international maritime regimes, the Rotterdam Rules have a broad scope of application and also cover contracts for multimodal transportation that involve an international sea leg, irrespective of which mode of transport is dominant.[21] While at present there is no international convention in force to govern multimodal transportation, the extension of the Convention's scope of coverage to multimodal transport involving a maritime leg was subject to considerable controversy throughout the negotiations, as was the text of the relevant provisions in the Rotterdam Rules.[22] This was due, in particular, to: (a) concerns about the potential for conflict with unimodal conventions in the field of road, rail, air and inland waterway carriage, which in many instances also apply to loss arising during a particular stage of a multimodal transport; (b) the desire by some states to ensure the continued application of existing national law on multimodal transportation; (c) concerns about further fragmentation of the law applicable to international multimodal transportation; and (d) the fact that the substantive content of the liability regime is based exclusively on considerations and principles applicable to sea carriage, rather than multimodal transportation.[23]

Importantly, and in contrast to the existing international maritime regimes, the Rotterdam Rules have a broad scope of application and also cover contracts for multimodal transportation that involve an international sea-leg, irrespective of which mode of transport is dominant.

The issue of potential overlap/conflict with existing international conventions applicable to road, rail, air and inland waterway carriage[24] has, to some extent, been addressed in a separate provision (article 82), which gives precedence to these conventions to the extent that they apply beyond pure unimodal transportation by road, rail, air and inland waterway, respectively.[25] However, otherwise, substantive rules pertaining to other modes of transport come into play only in relation to losses "arising solely before or after sea carriage", and only in the form of "mandatory provisions on the carrier's liability, limitation of liability and time for suit" contained in any "international convention that would have applied mandatorily" to the stage of carriage where the loss occurs, had a separate unimodal transport contract been made (article 26). Such mandatory provisions would, in a cargo claim, need to be applied in context with the remainder of the provisions of the Rotterdam Rules – a difficult task for courts in different jurisdictions, which may be expected to result in internationally diverging judgments. In all other cases, that is to say where no international unimodal convention would have been applicable to the claim in question, or where a loss could not be (sufficiently) attributed to any particular modal stage of a multimodal transport, the provisions of the Rotterdam Rules, i.e. of a substantively maritime liability regime, would apply to determine the parties' rights and the extent of any liability. Existing national laws on multimodal transportation will play no role in relation to contracts falling within the scope of the new Convention.

Existing national laws on multimodal transportation will play no role in relation to contracts falling within the scope of the new Convention

Liability of the carrier[26]

The carrier (as well as any maritime performing party, such as a terminal operator)[27] is under a number of obligations, breach of which gives rise to liability for damage to, loss of or delay in delivery[28] of the goods. The liability of the carrier under the Rotterdam Rules is subject to financial limitation (article 59),[29] with limitation amounts higher than in the Hague-Visby Rules or Hamburg Rules[30] and subject to a two-year time bar (article 62), which may be extended by declaration (article 63). The carrier may lose the right to financial limitation of liability in case of recklessness or intention (article 61).

The carrier's main obligations include the duty to carry the cargo and deliver the goods to the consignee (article 11), a duty of care during the carrier's period of responsibility, i.e. from receipt to delivery of the goods (articles 13 (1) and 12), and a duty to exercise due diligence to make and maintain the vessel seaworthy (article 14);[31] this includes (a) the physical seaworthiness of the vessel; as well as (b) manning, supply and equipment; and (c) the cargoworthiness of the vessel. In contrast to the Hague-Visby Rules, the seaworthiness

obligation is a continuous one, applying throughout the carriage, and there is no general reversal of the burden of proof regarding the exercise of due diligence (cf. article IV, r.1 of the Hague-Visby Rules). Instead, the central provision dealing with liability of the carrier for loss, damage or delay in the context of a cargo claim, article 17, which sets out a list of exceptions to liability, including some that differ from the list in article r. 2 of the Hague-Visby Rules,[32] also contains detailed and complex rules on burden of proof.

The shipper's obligations and liability are more extensive than in the Hague-Visby Rules and are set out in some detail in a separate chapter (chapter 7).

Worth noting in this respect are a number of points which are of particular relevance in the context of contracts conducted on the carrier's standard terms, i.e. contracts of adhesion. First, the carrier's period of responsibility (from receipt to delivery) may be contractually defined (i.e. restricted), to cover only the period from initial loading to final unloading under the contract (article 12 (3)). Secondly, the carrier's responsibility for certain functions, such as loading, handling, stowing and unloading may be contractually transferred to the shipper, documentary shipper[33] or consignee (article 13 (2)). Thirdly, the carrier's liability for special cargo and for live animals may be contractually limited or excluded (article 81). Therefore, a carrier may only be liable from loading to discharge and for only some of a carrier's functions set out in the Convention.

Moreover, the rules on burden of proof[34] within the scheme of the Convention appear to differ significantly from those in the established maritime liability conventions, favouring the carrier, in particular in cases where unseaworthiness of the vessel has contributed to a loss.[35] The Rotterdam Rules envisage proportional allocation of liability in these cases, whereas under the Hague-Visby Rules a carrier would be liable in full, unless it could prove the proportion of loss not due to breach of its seaworthiness obligation. This reflects an important shift in commercial risk allocation to the detriment of shippers.

Liability of the shipper[36]

The shipper's obligations and liability are more extensive than in the Hague-Visby Rules and are set out in some detail in a separate chapter (chapter 7). They include fault-based liability relating to the preparation and delivery for carriage of the goods (article 27) and in respect of wide-ranging information and documentation requirements (article 29), which may become particularly relevant in the context of new maritime security requirements.[37] They also include strict liability (see article 30 (2)) for loss arising from the shipment of dangerous cargo (article 32) and the failure to provide timely and accurate contract particulars (article 31 (2)).

Importantly, the relevant rules on burden of proof[38] are more onerous than under existing maritime liability regimes, which could have important practical implications for the outcome of claims by the carrier against the shipper, in particular in cases where unseaworthiness of the vessel may have contributed to a loss arising from the carriage of dangerous cargo. Thus, whereas under the Hague-Visby Rules, in cases where unseaworthiness can be identified as a contributory cause, a shipper would in most instances be free from liability. Under the Rotterdam Rules, a shipper could become liable in full for any of the potentially extensive losses sustained by the carrier (e.g. loss of a vessel, third-party liability). In this context, it is worth highlighting that the potentially very extensive liability of the shipper is not subject to any monetary limitation.[39]

A final consignee who makes a claim under the contract may also become liable for breach of any of the shipper's obligations.[40] Moreover, a so-called "documentary shipper", i.e. a party who is not the contracting shipper but who "accepts to be named as "shipper" in the transport document"(article 1(9)), such as an FOB seller, is also liable for any breach of a shipper's obligations, in addition to the shipper himself (article 33).

Delivery of the goods

It should also be noted that there is a separate chapter dealing with delivery of the goods (chapter 10), providing for a new obligation on the part of the consignee to accept delivery of the goods from the carrier (article 43) and including detailed rules on delivery of the goods under different types of transport documents/electronic records. Importantly, the chapter also includes complex new rules to effectively shift the risk of delayed bills of lading from carrier to consignee: in cases where the final consignee/endorsee of goods shipped under a negotiable transport document (i.e. a bill of

There is a separate chapter dealing with delivery of the goods (chapter 10).

lading), typically a CIF[41] buyer in a chain of contracts, is notified of the arrival of the goods at destination, but (a) is late in requesting delivery of the goods from the carrier, for whatever reason, or (b) is not yet in possession of the bill of lading, the carrier may, in certain circumstances, deliver the goods without the need for surrender of the bill of lading (article 47), or invoke wide-ranging rights to dispose of the goods (article 48). Thus, a final consignee/endorsee, having paid his seller, under a CIF contract, against tender of a negotiable transport document, may be left empty-handed and unable to sue the carrier for misdelivery. The provisions, apparently intended to provide a solution to the practical problem of negotiable bills of lading being delayed in a chain of international transactions involving different buyers and banks, may seriously undermine the document of title function of the negotiable bill of lading, which is key to its use in international trade.[42]

Mandatory nature of liability

Article 79 sets out the general rule on mandatory application of the liability regime. Accordingly, unless otherwise provided in the Convention, a contractual term is void (a) if it excludes or limits the obligations or liability of the carrier or maritime performing party; and (b) if it excludes, limits or increases the obligations or liability of shipper, consignee, controlling party, holder or documentary shipper (e.g. FOB seller). Thus, in contrast to the Hague-Visby Rules, it is not only the carrier who is subject to mandatory minimum liability standards under the Convention, but also the shipper (and potentially anyone liable for breach of the shipper's obligations, such as the consignee and documentary shipper). While the carrier's liability, which is subject to a financial cap, may be increased contractually, the shipper's liability may not. However, it should again be noted that the shipper's mandatory liability under the Rotterdam Rules is, in any event, not subject to any monetary limitation.

By establishing minimum levels of carrier liability, which apply mandatorily and may not be contractually modified, existing liability regimes seek to ensure the protection of cargo interests with little bargaining power, i.e. small shippers and third-party consignees, against unfair contract terms unilaterally introduced by the carrier in his standard terms of contract.

Volume contracts[43]

So-called "volume contracts", which for the first time are regulated in an international convention, are subject to special rules providing for extensive freedom of contract. This represents an important novel feature, distinguishing the new Rotterdam Rules from existing conventions in the field and, therefore is of particular interest.

Although in general minimum standards of liability apply to contracts covered by the Rotterdam, this is subject to an important exception. So-called "volume contracts", which for the first time are regulated in an international convention, are subject to special rules providing for extensive freedom of contract. This represents an important novel feature, distinguishing the new Rotterdam Rules from existing conventions in the field, and therefore it is of particular interest. By way of background, it seems appropriate to briefly recall the rationale for mandatory regulation of liability in a field where commercial parties contract with one another, and therefore, normally freedom of contract reigns.

All international liability regimes for the carriage of goods by sea currently in force (i.e. the Hague, Hague-Visby and Hamburg Rules) establish minimum levels of carrier liability, which apply mandatorily, that is to say the relevant substantive rules on liability of the carrier may not be contractually modified to the detriment of the shipper or consignee.[44] Contractual increase of the carrier's liability is, however, permitted.[45] The mandatory scope of application of the relevant regimes extends to contracts of carriage which are not individually negotiated between the parties, but are conducted on the carrier's standard terms, as typically contained in or evidenced by a bill of lading or other transport document issued by the carrier.[46]

The main purpose of this approach, common to all established international liability regimes, is to reduce the potential for abuse in the context of contracts of adhesion, used where parties with unequal bargaining power contract with one another. In liner carriage, where few large liner companies dominate the global market[47] and goods are typically shipped under bills of lading or other standard form documents – issued and signed by the carrier and usually drafted in terms favourable to the carrier, with no scope for negotiation

– the potential for abuse arising from the unequal bargaining power of the parties is particularly obvious. By establishing minimum levels of carrier liability, which apply mandatorily and may not be contractually modified, existing liability regimes seek to ensure the protection of cargo interests with little bargaining power, i.e. small shippers and third-party consignees, against unfair contract terms unilaterally introduced by the carrier in his standard terms of contract. Thus, a central feature of the established international legal framework is a restriction of freedom of contract with the legislative intent of ensuring the protection of small shippers and consignees against unfair standard contract terms.

Against this background, the regulation on volume contracts in the Rotterdam Rules, providing contracting parties with extensive freedom of contract, proved to be highly controversial throughout the drafting process.[48]

A volume contract is very broadly defined as "a contract of carriage that provides for the carriage of a specified quantity of goods in a series of shipments during an agreed period of time. The specification of quantity may include a minimum, a maximum or a certain range" (article 1(2)). Parties to a volume contract may derogate from the provisions of the Convention (article 80), subject to certain conditions[49] and subject to some relevant statutory limits on the right to derogate.[50]

Parties to a volume contract may derogate from the provisions of the Convention (Art. 80), subject to certain conditions and subject to some relevant statutory limits on the right to derogate.

These include – on the carrier side – the loss of the right to financial limitation of liability in case of recklessness or intention (article 61); and the obligation, under articles 14(a) and (b) to make and keep the ship seaworthy and to properly crew, equip and supply the ship. Not mentioned in this context is the third aspect of the carrier's seaworthiness obligation, i.e. the obligation to make and keep the vessel cargoworthy (see article 14(c)); therefore, contractual derogation in this respect would, quite surprisingly, be permitted. As far as the shipper's obligations and liabilities are concerned, no derogations are permitted regarding (a) the duty to provide documentation, instructions and information under article 29; and (b) the obligations and (strict) liability arising in the context of dangerous goods, under article 32.

It is important to note that a shipper's liability arising from breach of articles 29 and 32 – which may be extensive, such as in the case of loss of or delay of a vessel, and is not subject to monetary limitation – may not be contractually excluded, limited or modified. This means that a shipper would always be exposed to potentially extensive (and unlimited) liability under the Rotterdam Rules for losses arising from the carriage of dangerous cargo or breach of the obligation to provide certain documentation, information and instruction.[51]

Volume contracts are exempt from the mandatory scope of application of the liability regime, based on the proposition that these types of contract are concluded between parties of potentially equal bargaining power.[52] However, the definition of "volume contract" is extremely wide and no minimum quantity of cargo is prescribed. As a result, almost any type of contract in the liner trade might be devised as a volume contract, subject to almost complete freedom of contract. Given that liner carriage is dominated by a small number of global liner-carriage operators, concerns arise about the position of small shippers, who might face contractual terms unilaterally set by the carrier. Against this background, a central question is whether the statutory safeguards included in the Rotterdam Rules are effective to protect small parties against the use of volume contracts as contractual devices to circumvent the mandatory liability regime.

As between carrier and shipper, derogations from the Convention set out in a volume contract[53] are binding, even if the contract has not been individually negotiated.[54] Although the shipper must be given the opportunity to contract on terms of the Convention, without derogation,[55] in practice, a shipper may find itself under commercial pressure to agree to a volume contract, such as a much higher freight rate that would apply unless consent was given. Similarly, while third parties are only bound by volume contracts if they expressly consent to be bound,[56] it is not clear whether this will ensure the effective protection of small third-party consignees, who in practice may find that their only commercially viable choice is to give their consent. Thus, depending on the approach taken by courts in the application of the relevant provisions, it remains to be seen whether the statutory safeguards are adequate to ensure that notional agreement of a volume contract may not be used as a contractual device to circumvent otherwise applicable mandatory liability rules to the detriment of a small shipper or consignee.

The provisions on volume contracts may, if and when the Convention enters into force, have important repercussions, both for commercial contracting practice and, more generally, for the prospects of international legal uniformity in the field of carriage of goods. If, in future practice, the use of volume contracts with contractual modification of the provisions of the Convention becomes the norm, the potential benefits associated with a predictable internationally uniform liability regime may, in the longer run, fail to materialize.

The provisions on volume contracts may, if and when the Convention enters into force, have important repercussions, both for commercial contracting practice and, more generally, for the prospects of international legal uniformity in the field of carriage of goods.

Concluding remarks

As is true in respect of any new international convention, much will depend on what courts in different jurisdictions make of the complex provisions of the new Convention and how they interpret and apply them in practice. However, as the above analysis shows, there are a number of areas of potential concern, in particular from the perspective of small and medium-sized shippers and consignees in developing countries.

Overall, it appears that the Rotterdam Rules are in substance more favourable to carriers than any of the existing international conventions in the field. Thus, the rules on burden of proof, for instance, seem to be more advantageous to carriers than those in the Hague-Visby or Hamburg Rules, with potentially important consequences for the outcome of legal disputes between carrier and cargo interests. Moreover, the obligations and liability of the shipper, which are much more extensive and detailed than under existing maritime liability regimes, are mandatory, and the shipper's liability is – in contrast to the liability of the carrier – not subject to any monetary limitation. As a matter of policy, this important shift in commercial risk allocation to the detriment of shippers may be of concern to those representing the interests of transport users.[57]

The provisions in chapter 10 which, under certain circumstances, permit the carrier to deliver the goods without surrender of a negotiable transport document are new and potentially problematic, as they may undermine the document of title function of the negotiable bill of lading, which is key to its use in international trade.

The regulation of volume contracts in the Rotterdam Rules, also new and untested, may lead to a state of affairs in which freedom of contract becomes the norm and in which strength of bargaining power matters more than it has since the advent of the Hague Rules in 1924. This would be of particular concern from the perspective of small shippers and consignees, who as a result of commercial pressure might find themselves bound by contractual terms effectively set unilaterally by one of a small number of large global liner-carrying companies. Larger shippers too should be aware that their potentially extensive liability under the Rotterdam Rules for loss arising (at least in part) from the carriage of dangerous goods would be non-negotiable, even in the context of a volume contract. More generally, extensive use of volume contracts in future commercial contracting practice could mean effectively less rather than more uniformity of liability rules at the international level.

In relation to regulation of liability arising from multimodal transport involving an international sea leg, the new Convention adopts an approach which is complex and may give rise to difficulties in its practical application. Substantive liability rules vary, depending on whether a loss may be attributed to a particular non-sea leg of the multimodal transport and on whether existing international conventions governing carriage of goods by land or air would have applied had a separate contract been made for that particular leg of the transport. In summary, the position appears to be as follows:

(a) in cases where a loss was not clearly attributable to a particular modal stage of transport, as will often be the case in containerized transport, the substantively maritime liability regime set out in the Rotterdam Rules would determine the rights and liabilities of the contracting parties, even if the transport was carried out mainly by land;

(b) the position would be the same in cases where a loss arose during land transport, but none of the existing unimodal international conventions would have been applicable, had a separate contract been made for the relevant land leg of transportation;

(c) in cases where a loss could be attributed to a mode of transport other than sea carriage and one of the existing unimodal transport conventions would have applied (had a separate contract

been made), the mandatory provisions on carrier liability, limitation of liability and time for suit contained in the relevant unimodal convention would apply, together with the remainder of the Rotterdam Rules. The mixture of substantive rules from different international conventions which courts in different jurisdictions would, in these cases, need to apply in context is highly complex and clearly likely to lead to nationally differing results.

More generally, the complexity and considerable scope for interpretation inherent in the Convention means that extensive litigation may be required to gain a clear understanding of the new rules, with courts in different jurisdictions adopting potentially differing approaches to interpretation and application of the provisions.[58] The likelihood of conflicting legal proceedings, and ultimately, conflicting judgments at the international level is further compounded by the fact that, as already noted,[59] chapters in the Convention setting out rules on jurisdiction and arbitration are optional for Contracting States, and as a result, contractual jurisdiction and arbitration clauses may be valid under the same conditions in only some but not all Contracting States. Thus, much costly litigation may be required, before a desirable degree of legal certainty may be achieved. This prospect appears to be particularly unfortunate in respect of a new international Convention which aims to establish internationally uniform rules in a variety of jurisdictions; it may also be of concern to commercial parties whose rights and liabilities may in future be regulated by the Rotterdam Rules.

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B. NEGOTIATIONS ON TRADE FACILITATION AT WTO

1. Facilitating trade and transport: How can WTO disciplines help?

Negotiations on trade facilitation have been ongoing since 2004 as part of the World Trade Organization (WTO) Doha Development Round of trade negotiations. With these negotiations, members aim at expediting the release, clearance and movement of goods. Other objectives of the negotiations are to enhance technical assistance and support for capacity-building, and to draft provisions for effective cooperation between customs or any other appropriate authorities on trade facilitation. Trade-supporting service providers and importers and exporters alike stand to gain from these negotiations, mainly through the simplification and harmonization of procedures and formalities in the cross-border movement of goods and enhanced transparency.

The WTO system is based on legal disciplines which ensure trade openness and liberalization. Since 1947, the General Agreement on Tariffs and Trade (GATT) (originally drafted in 1947 and incorporated without any changes in the WTO agreement in 1994) in its articles X, VIII, and V contains disciplines pertaining to the administration and publication of trade regulations (article X), the fees and formalities connected with importation and exportation (article VIII), and the freedom of transit (article V). Against the background of the wide-ranging tariff reductions achieved in the Uruguay Round, efforts to address non-tariff barriers to trade have become more pressing in recent years. The increased use of information technologies and electronic information transmission, together with globalized production networks with reduced inventories, have led countries to seek the review, clarification, and improvement of the relevant GATT disciplines so as to include trade facilitation disciplines as another cornerstone of the multilateral trading system.

2. 2009: Trade facilitation negotiations pick up momentum

The negotiations on trade facilitation are an integral part of the Doha trade negotiations. This means that negotiations on trade facilitation are dependent on progress made in the other areas of the Doha Round. The failure to reach an agreement on the main areas of the Doha Round in July 2008 also affected the meetings of the WTO Negotiating Group on Trade Facilitation (NGTF). In particular at the end of 2008 and the beginning of 2009 the overall pace of negotiations in the NGTF slowed down, with less time being devoted to the review of the textual proposals, and comments made by delegations limited to oral interventions. This

situation changed in the second half of 2009, when signs of a possible comprise on contentious issues of the Doha Round emerged, and the delegates adopted an ambitious work plan for the period up until the ministerial conference scheduled for early December 2009. Delegations are now aiming at finalizing a first draft text for a new WTO agreement on trade facilitation by that date.

By the end of 2006, delegations had put forward more than 70 trade facilitation measures for consideration in the negotiations. These measures were grouped into 14 categories, ranging from the publication of trade-related regulations to the clearance and movement of goods and the cross-border exchange of customs information. During 2007 and 2008, these provisions were further consolidated, where possible, so that in early 2009 the core set of proposed measures was narrowed down to 42 measures in 12 categories. Furthermore, the proposed measures have now been drafted using legal language, so that the proposals reflect concrete legal obligations. Negotiations in 2009 concentrated on reviewing and further refining the proposed text of these legal provisions. For this purpose the NGTF meets in informal drafting sessions, during which the text of each of the proposed provisions is examined, and comments or alternative drafting suggestions by delegations are incorporated.

3. Measures proposed: Improvements to transparency, delays and international transit

When time matters

A major part of the trade facilitation measures proposed focuses on the time needed for the release and clearance of goods, taking into account not only the loss of time, but also its consequences in terms of possible damages, missed trading opportunities and increased costs, affecting the competitiveness of the products.

To address this issue, members propose, for example, that average release and clearance times at border posts should be recorded and published; this would allow traders to make informed decisions and weigh possible delays. Further proposals include:

(a) The review and simplification of existing procedures, formalities, fees, and the payment of those fees;

(b) The introduction of risk management, and in combination with it, the introduction of post-clearance audit procedures to reduce incidences of physical inspection;

(c) The possibility for advance processing and the release of goods with final determination of customs value and duty payment still pending, in order to enable faster release at arrival;

(d) The setting up of a single window, and the acceptance by authorities of commercially available documents and copies to reduce both the number of documents and of submission points;

(e) The possibility of awarding special simplified procedures to economic operators with a good track record of compliance, so-called Authorized Economic Operators or traders, or to those with special needs, such as, for example, express shipment carriers;

(f) Elimination of pre-shipment inspections and the mandatory use of customs brokers.

When transparency matters

Another very important area of the proposals focuses on strengthening transparency. Transparency provisions are at the heart of WTO, as they are crucial for improving governance and confidence in the trading system. In addition to the current non-selective manner of the transparency provisions contained in GATT, proposals submitted in the NGTF attempt to determine a list of selective documents which countries should publish. This list should also include new information requirements, such as descriptive outlines of import and export procedures, and the required forms. Furthermore, members are also concerned with access to published information. Current proposals prescribe the means of publication; they newly include the internet, and dissemination through enquiry points. This would allow information to be provided in a more user-friendly and accessible way.

Similar to provisions in the WTO agreement on rules of origin, members seek to introduce legally binding advance rulings applying to customs areas such as the classification and the objective criteria of valuation. Advance rulings enhance predictability and certainty for traders.

When governance matters

Finally, members also proposed strengthening good governance in trade. In this respect, countries should hold regular consultations with private sector stakeholders, coordinate the responsibilities and operations of the various public agencies present at the borders, and strengthen the appeal systems.

When transit is essential

Landlocked countries have attached high priority to the review of GATT article V, which deals with freedom of transit. In the negotiation process, proposals in this area are, therefore, often submitted jointly by several landlocked countries. Transit countries regularly continue to debate and question them, in particular when it comes to the issue of restrictions on the freedom of transit, whether these are legitimate or are perceived as illegitimate. The limited amount of legal interpretation of the principle of freedom of transit weighs heavily over these discussions. Transit fees and charges are under discussion, as is the administration of transit-related guarantee systems.

Furthermore, members have been debating the extent to which the current and the newly proposed disciplines extend to goods moved via fixed infrastructure, such as electricity grids and pipelines. More than 6 per cent of trade by volume is actually moved in pipelines across borders. Some delegations have proposed including dedicated disciplines related to fixed infrastructures in a new agreement.

4. Flexibility versus uniformity – the implementation debate

While negotiating the legal text of the measures, members do not leave out considerations and discussions related to the implementation of the disciplines.

In general, WTO negotiations aim at establishing a set of rules that are applied and can be enforced globally. This requires a uniform set of rules, and at the same time, implementation capacity in all countries. But implementation capacity is what distinguishes members most, and WTO agreements already in existence have suffered considerably from a lack of implementation. The challenge for delegations in these negotiations is, therefore, to draft a set of rules that can be applied uniformly by all members, while allowing flexibilities for developing countries in their application of the commitments. To achieve this objective, delegations work along two main assumptions: First, the level of ambition of the negotiations should take into account the development context and needs of developing countries; and second, the special and differential treatment (SDT) provisions for developing countries should guarantee them flexibility in implementation, and link the application of the commitments to the acquisition of implementation capacity, through technical assistance and capacity-building provided by the donor community. While SDT provisions in earlier WTO agreements simply allowed full exemptions of application, or transitional periods, in the negotiations on trade facilitation, delegations have been seeking to ensure that implementation capacity is built up.

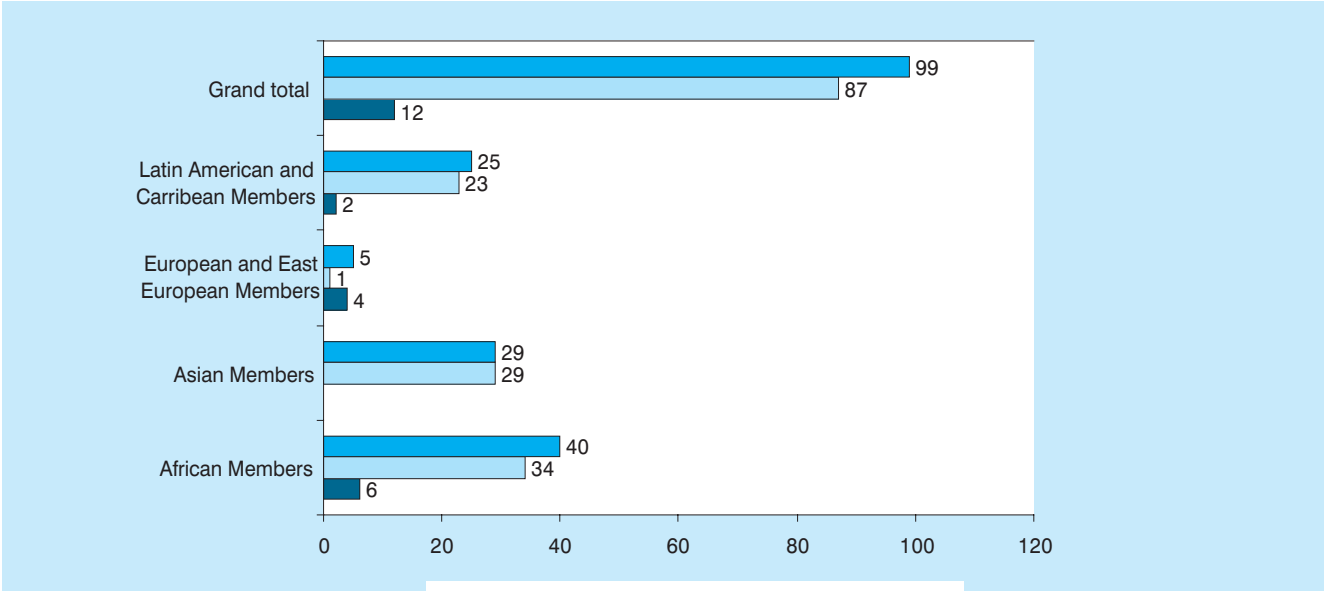
Level of ambition: countries' trade facilitation needs and priorities

Countries' levels of ambition in the negotiations and their targeted outcomes vary depending on each country's individual context (economic, financial, development or trading), which determines its trade facilitation priorities and needs. The assessment of countries' needs and priorities has therefore been inscribed as a distinct objective in the negotiation mandate. Only a few countries, however, conducted such priority assessments at an early stage of the negotiations – the most active being landlocked developing countries (LLDCs). Later on in the negotiations, other countries followed suit, but with a core set of measures already on the table, they limited the assessments to implementation, and in particular, to technical assistance needs and priorities.

For the purposes of assessing their trade facilitation technical assistance needs and priorities, countries mostly use the WTO Trade Facilitation Self-Assessment Guide, which is based on a gap analysis methodology and was developed by the World Bank in collaboration with other Annex D organizations. The technical assistance support programme was set up by donors at the WTO secretariat to provide support for national trade facilitation self-assessments and was implemented over a two-year period. By September 2009, 96 developing countries had requested assistance, including 31 LDCs, and assistance was provided to date to 69 countries (fig. 25).

Figure 25

WTO trade facilitation needs and priorities: self-assessment status



Source: UNCTAD secretariat.

Flexibilities and capacity acquisition: the discussions on the SDT mechanism

The discussions on the special and differential treatment provisions have brought to light the different expectations of countries with regard to flexibilities for the application of the newly negotiated commitments. In 2009, delegations designated a "Friend of the Chair" to undertake informal discussions on the SDT mechanism and to facilitate consensus-building among members on this issue.

The discussions so far hint at main of areas of convergence. Developing countries would have the possibility to differentiate among the negotiated disciplines with regard to the timing and conditions of application. Measures that cannot be implemented at entry into force in a sustainable manner can be notified to the other WTO members and will be considered for different types of flexibilities. The types of flexibilities currently being discussed are: (a) deferred application times; and (b) deferred application times and technical assistance for capacity acquisition. Each developing country would thus submit a schedule of commitments reflecting the categorization of measures by flexibility. Details of the SDT mechanism, such as the modalities and timing of the scheduling of the measures, the monitoring of delivery of technical assistance, and the application of the dispute settlement provisions are still under discussion.

With the negotiations entering a more technical phase and expected to lead to a provisional text of the agreement, a successful conclusion of the negotiations rests on the ability of delegations to reach consensus on the SDT mechanism.

C. OTHER LEGAL AND REGULATORY DEVELOPMENTS AFFECTING TRANSPORTATION

1. Piracy and armed robbery against ships

The great number of disturbing incidents of piracy and armed robbery against ships, particularly off the Somali coast and in the Gulf of Aden, have become an increasing concern not only for the maritime industry that is heavily affected by these incidents, but also for international organizations including the International Maritime Organization (IMO) and the United Nations. Joint efforts are being made in various forums to find adequate responses to piracy, and to ensure that alleged pirates, once caught, are successfully prosecuted and brought to justice. Joint efforts are being made to find adequate responses to piracy.

It should be noted that the 1988 IMO Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (SUA Convention) provides a

basis for its States parties to prosecute pirates. Although the Convention does not contain an express definition of piracy and armed robbery against ships, its article 3 (1)(a) stipulates that any person commits an offence if that person unlawfully and intentionally "seizes or exercises control over a ship by force or threat thereof or any other form of intimidation". Under the Convention, appropriate measures need to be taken by states to make this and other offences punishable by penalties, to establish jurisdiction over those, and to accept delivery of persons responsible for or suspected of committing such offences.[60]

In addition, the 2005 amendments to the SUA Convention introduced provisions covering cooperation and procedures to be followed if a State party desires to board on the high seas a ship flying the flag of another State party, when the requesting party has reasonable grounds to suspect that the ship or a person on board the ship has been or is about to be involved in the commission of an offence under the 1998 SUA Convention (article 8 bis). The authorization of the flag state is required before such boarding.[61]

The sharp increase in both the number and severity of attacks in waters off the coast of Somalia was noted with concern by the IMO's Maritime Safety Committee (MSC) at its 85th session in November 2008.

Recent statistics on piracy

Instances of piracy are monitored both by IMO, which circulates monthly and quarterly reports on piracy and armed robbery against ships,[62] and by the ICC International Maritime Bureau (IMB) – a specialized division of the International Chamber of Commerce (ICC) – which acts as a focal point in the fight against all types of maritime crime and malpractice.[63] It should be noted that different definitions of piracy and armed robbery against ships are used by the IMO and the IMB, which explains some differences in the number of recorded instances.[64] According to the annual 2008 ICC–IMB "Piracy and armed robbery against ships" report, incidents of piracy and armed attacks against shipping increased at an unprecedented rate. A total of 293 incidents were recorded by the IMB for 2008, constituting an 11 per cent increase over 2007 figures. Attacks off Somalia and in the Gulf of Aden, however, rocketed by 200 per cent last year, according to the report. Worldwide, in 2008, a total of 49 vessels were hijacked, 889 crew were taken hostage, and a further 46 vessels were reported as having been fired upon. These figures represented the highest rise in reported hostage-taking and hijackings ever recorded by the IMB's Piracy Reporting Centre. Thirty-two crew members were injured, 11 were killed, and 21 were missing or presumed dead. The total number of incidents in which guns were used was 139, compared to 72 in 2007.[65]

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The sharp increase in both the number and severity of attacks in waters off the coast of Somalia was noted with concern by IMO's Maritime Safety Committee (MSC) at its eighty-fifth session in November 2008. It was also noted that most of the attacks worldwide had occurred or had been attempted in territorial waters while the ships were at anchor or berthed. In many of the reports received, the crews had been violently attacked by groups of 5 to 10 people carrying knives or guns.[66] During the eighty-fourth session of the MSC, a correspondence group had been established, in order to review and update the IMO guidance for preventing and suppressing piracy and armed robbery against ships.[67] After considering the final report of the correspondence group,[68] and after deliberating on a number of key issues, the MSC at its eighty-sixth session, held from 27 May to 5 June 2009,[69] agreed on revised guidance, and in this context approved circulars entitled "Recommendations to Governments for preventing and suppressing piracy and armed robbery against ships"[70] and "Guidance to shipowners and ship operators, shipmasters and crews on preventing and suppressing acts of piracy and armed robbery against ships."[71] The guidance to shipmasters and crew includes a new annex aimed at those who may be kidnapped or held hostage for ransom, based on the current United Nations Department of Safety and Security guidelines entitled "Surviving as a hostage", which underwent appropriate modification to be applicable in the maritime context.

It was also agreed that a specific "Guidance on piracy and armed robbery against ships in waters off the coast of Somalia"[72] should include "Best management practices to deter piracy in the Gulf of Aden and off the coast of Somalia"; these had been developed by industry organizations including the International Association of Independent Tanker Owners (INTERTANKO), the International Chamber of Shipping (ICS), the Baltic and International Maritime Council (BIMCO), the

International Association of Dry Cargo Shipowners (INTERCARGO) and IMB, and were issued by the ICS in February 2009. In addition, the MSC, at its eighty-sixth session, approved a draft resolution containing amendments to the "Code of practice for the investigation of crimes of piracy and armed robbery against ships",[73] for consideration by the IMO Assembly later in 2009.

Multilateral cooperation to combat piracy

The increase in acts of piracy in recent years has led to enhanced cooperation at the international and regional level. For instance, IMO, which has maintained a leading role in the coordination of international efforts to tackle piracy, has taken action to increase awareness of the problem, and in cooperation with the shipping industry advises on measures that ships can take in the event of an attack. Moreover, as part of its technical cooperation programme, IMO is assisting countries in various regions to build capacity, so that they can effectively contribute to overall efforts to combat piracy, including through relevant national legislation.

The increase in acts of piracy in recent years has led to enhanced cooperation at the international and regional level.

In response to the unprecedented escalation in the number of acts and attempted acts of piracy and armed robbery off the coast of Somalia and the hijacking of ships and seafarers for ransom in the past few years, the IMO Assembly adopted resolution A.1002(25)[74] in November 2007. The resolution, inter alia, sets out a number of measures that Governments and the shipping industry should adopt with a view to minimizing the risks of falling victim to such incidents. The resolution requested the Transitional Federal Government of Somalia to take specific actions; called upon the countries in the region to conclude, in cooperation with IMO, a regional agreement to prevent, deter and suppress piracy and armed robbery against ships, and to implement it as soon as possible; and requested the Secretary-General of IMO to consult with Governments and organizations interested in providing technical assistance to Somalia and nearby coastal states, and to enhance the capacity of these states to give effect to the resolution, as appropriate.

The United Nations has also been actively engaged in the process of formulating adequate responses to the challenge of piracy.

In January 2009, a high-level meeting of 17 states from the Western Indian Ocean, Gulf of Aden and Red Sea areas, which was convened by IMO in Djibouti, adopted a "Code of conduct concerning the repression of piracy and armed robbery against ships in the Western Indian Ocean and the Gulf of Aden". Signatories to the code of conduct undertake wide-ranging commitments to cooperate in seizing, investigating and prosecuting pirates in the region, and to review their relevant national laws. The code of conduct also allows authorized officials to board the patrol ships or aircraft of another signatory. By the end of the first quarter of 2009, nine countries had signed the code of conduct, namely Djibouti, Ethiopia, Kenya, Madagascar, the Maldives, the Seychelles, Somalia, the United Republic of Tanzania, and Yemen.[75]

The United Nations has also been actively engaged in the process of formulating adequate responses to the challenge of piracy, mainly through the Security Council, but also through other forums.[76] The matter of piracy off Somalia was first brought to the attention of the Security Council by IMO in 2005. During 2008, initially at the request of the Transitional Federal Government of Somalia, and later as a result of the escalation of the number of incidents which led to a further deterioration of the situation, the Security Council adopted, under Chapter VII of the Charter of the United Nations, resolutions 1814 (2008), 1816 (2008), 1838 (2008), 1844 (2008), 1846 (2008) and 1851 (2008). These resolutions were intended to address the issue of piracy, including the delivery of humanitarian aid to Somalia and the protection and escorting of ships employed by the World Food Programme. They also envisaged a number of measures to be put in place by states, with a view to bringing the situation under control.[77] With the consent of the Transitional Federal Government of Somalia, military personnel from patrolling forces will be allowed to enter the territorial waters of Somalia for the purpose of suppressing acts of piracy and armed robbery at sea, and to use all necessary means to repress such acts. This will be done "in a manner consistent with such action permitted on the high seas with respect to piracy under relevant international law."[78]

Pursuant to Security Council resolution 1851, the Contact Group on Piracy off the Coast of Somalia was established on 14 January 2009, at a meeting held at the United Nations Headquarters in New York. Its aim is "to facilitate discussion and coordination of actions

among states and organizations to suppress piracy off the coast of Somalia", and it will report periodically to the Security Council on the progress of its work. The contact group established four working groups to address different piracy-related issues. Working Group 1 will deal with activities related to military and operational coordination and information-sharing, and to the establishment of the regional coordination centre. It will be convened by the United Kingdom, with the support of IMO. Working Group 2 will be convened by Denmark to address judicial aspects of piracy, with the support of the United Nations Office on Drugs and Crime (UNODC). The United States will convene Working Group 3 to strengthen shipping self-awareness and other capabilities, with the support of IMO. Egypt will convene Working Group 4 to improve diplomatic efforts on all aspects of piracy.[79]

Also in response to Security Council resolution 1851 (2008), which had noted with concern the lack of capacity, domestic legislation and clarity about how to deal with pirates following their capture, the IMO Legal Committee, at its ninety-fifth session held from 30 March to 3 April 2009, informed states that the IMO secretariat intended to review existing national legislation to prevent and punish the crimes of piracy and armed robbery at sea as part of IMO's anti-piracy strategy. In this context, member States were urged to submit information and the texts of their national legislation on piracy.[80]

The Secretary-General of the United Nations has called for a multifaceted approach to combating piracy.

Other international efforts to coordinate counter-piracy operations include the establishment of the Maritime Security Centre (Horn of Africa), set up by the European Union (EU) as part of the European Security and Defence Policy Initiative, which aims to provide a service to mariners in the region in support of the resolutions of the United Nations Security Council, and the EU–NAVFOR Somalia (Operation Atalanta) naval mission, set up in November 2008 by the Council of the European Union to improve maritime security off the Somali coast by preventing and deterring pirate attacks and helping safeguard merchant shipping in the region.[81] Another multinational task force, namely Combined Task Force 151, comprised of naval forces of the United States, the United Kingdom, Denmark and Turkey, was established to counter piracy operations in and around the Gulf of Aden, the Arabian Sea, the Indian Ocean and the Red Sea. In addition, Chinese and Japanese warships have joined the anti-piracy patrols in the Gulf of Aden recently. South Africa was also contemplating escorting merchant ships between South Africa and Somalia.[82] Other individual states, and regional and international organizations such as NATO, have also contributed with their naval forces to efforts at preventing and deterring piracy attacks off the coast of Somalia.[83]

Recognizing the broader context, the Secretary-General of the United Nations has called for a multifaceted approach to combating piracy "to ensure that the political process and the peacekeeping efforts of the African Union and the strengthening of institutions work in tandem."[84]

2. Overview of recent developments relating to maritime and supply-chain security

(a) World Customs Organization – SAFE Framework of Standards

The World Customs Organization (WCO), the only intergovernmental organization with worldwide membership exclusively focused on customs matters, is particularly noted for its work on the development of global standards, including in the field of simplification and harmonization of customs procedures, trade supply-chain security, facilitation of international trade, and global customs capacity building programmes, many of which focus on developing countries. In 2005, the Council of the WCO adopted the Framework of Standards to Secure and Facilitate Global Trade (the SAFE Framework), which has fast gained widespread international acceptance as the main global supply-chain security framework. As of May 2009, 156 countries had expressed their intention to implement the SAFE Framework.[85] The core features of the SAFE Framework have been 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 a "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. AEOs include, inter alia, manufacturers, importers, exporters, brokers, carriers, consolidators, intermediaries, ports, airports, terminal operators, integrated operators, warehouses and distributors."[86] Detailed AEO guidelines were integrated into a revised

version of the SAFE Framework, in June 2007. The requirements for AEO recognition, applicable to AEOs and/or to customs administrations, were presented in the *Review of Maritime Transport 2008,* but are restated 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, to customs, or to both.[87] These elements include:

(a) Demonstrated compliance with customs requirements;

(b) A 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.

It is worth noting that both the national implementation of the AEO system and mutual recognition agreements are, in many cases, still at an initial stage of their development, and remain a challenge, particularly from the perspective of developing economies. For instance, countries around the Pacific Ocean – many of which are developing countries – are grouped under Asia-Pacific Economic Cooperation (APEC),[88] a forum for discussing matters that concern the regional economy, cooperation, trade and investments. APEC has been organizing the so-called "STAR" (Secure Trade in the APEC Region) conferences since 2003, to discuss issues of security for transport and travel. An action plan has been adopted by APEC member States in the context of STAR, recommending that companies, in accordance with their own needs, comply with security measures, and with the international standards and requirements laid down by the WCO, IMO, the International Organization for Standardization (ISO) and so on. Several individual APEC countries, mostly developed ones, have already established their own business partner programmes (AEOs and similar), in conformity with the SAFE Framework.[89] However, unlike the European Union, for instance, which already issues certificates for its AEOs, it appears that no similar certification process is yet under way within the framework of APEC or any other regional organization so far.

According to information provided by the WCO, as of 30 September 2009, in addition to the 27 member States of the European Union,[90] 11 additional countries had operational AEO programmes,[91] and in another 6 states, such programmes were soon to be launched.[92] So far, 7 mutual recognition agreements (MRAs) of AEO programmes have been concluded globally;[93] with another 12 being negotiated, and 11 studies or consultations being under way. For two more countries, AEO programmes were to become operational, and the conclusion of relevant MRAs with the European Union was scheduled for winter 2010.[94]

To assist countries, the WCO is developing a compendium of existing AEO programmes and implementation guidelines for AEO standards.[95]

In view of the global character of the SAFE Framework of Standards, the question arises whether all WCO member customs administrations will be able to implement it in its entirety. There is a risk that developing countries lacking the infrastructure and the administrative capacity might not be able to meet all the requirements in respect of security measures, and that their access to global markets could be negatively affected as a result. In this context, and as reported in previous editions of the *Review of Maritime Transport*, the WCO has launched a number of capacity-building programmes, notably the Columbus Programme: Aid for SAFE trade.[96] This programme is continuing to help the modernization

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of member customs administrations and to assist in the implementation of the SAFE Framework of Standards, and to prepare countries for the possible outcome of the WTO negotiations on trade facilitation. Within the Columbus Programme, a three-year Technical Cooperation Agreement on Capacity-Building (2009–2011), was signed by the Customs Administration of Mongolia, the Dutch Tax and Customs Administration, and the WCO, on 4 December 2008. The agreed cooperation covers a number of seminars on a range of topics. As part of the ongoing implementation of its capacity-building strategy, the WCO also organizes regional training workshops for the private sector, which among other things, aim at strengthening the links among customs officials from neighbouring countries and ensuring more effective follow-up. To date, 16 memorandums of understanding establishing regional training centres have been concluded by the WCO and the customs administrations of member countries, mainly developing countries.[97] Moreover, a number of seminars on AEOs were recently organized in various regions, including East Africa, Southern Africa and Central America.[98]

A new WCO report entitled "Customs in the twenty-first century: Enhancing growth and development through trade facilitation and border security"[99] was issued in June 2008, emphasizing the importance of mutual recognition of both customs controls and AEO programmes. As part of a new strategic direction for customs, "Networked Customs", including the creation of an international "e-Customs" network, are considered critical for the twenty-first century model of managing end-to-end international supply chains. This relies on the secure, real-time exchange of information between business and customs, and between customs administrations in a supply chain. According to the report, achieving this will require:

"Networked Customs", including the creation of an international "e-Customs" network, are considered critical for the 21st century model of managing end-to-end international supply chains.

(a) Internationally standardized data requirements for export, transit and import, and the implementation of the WCO Unique Consignment Reference number as part of a cross-border data reference model;

(b) Interconnected systems and aligned customs databases to enable the electronic exchange of data between customs administrations as early as possible in the international movement of goods;

(c) Mutual recognition and coordination protocols between exporting, transit and importing administrations to eliminate unnecessary duplication of controls in international supply chains;

(d) Standards to enable the development of a system of mutual recognition for AEOs; and

(e) A set of rules governing the exchange of information between customs administrations, including rules on data protection.[100]

The simplification, harmonization and standardization of procedures and practices are indispensable for achieving mutual recognition, and for avoiding conflicting and redundant national approaches in relation to AEOs.

Attention should also be drawn to the sixtieth session of the WCO Policy Commission, which was held in Buenos Aires in December 2008. In the context of discussions on the global financial crisis, the Policy Commission emphasized the need to focus on trade facilitation in the current climate, taking care not to introduce new barriers to trade or generate additional delays. It also considered it important that the work on AEOs and mutual recognition arrangements continue, and that as far as possible, these arrangements be implemented with broadly similar standards worldwide. Another important factor was the need to adapt the costs and benefits of such arrangements to reflect the current climate, and also to recognize the importance of budget security, in particular for developing countries.[101]

(b) European Union

As reported in the *Review of Maritime Transport 2008,* at EU level, regulation (EC) No. 1875/2006[102] was 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.[103] 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".[104] This would cover, for instance, a manufacturer producing goods for export, but not a supplier 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.[105]

Companies seeking AEO status must comply with certain criteria, including an automated trade and transport data management system, proven financial solvency, and adequate safety/security standards (including physical security, access control, screening of personnel etc.) There are three types of certificate that may be applied for:

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

(b) Security and Safety (AEO-S) – 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 (AEO-F) – AEOs will be entitled to benefit from both.

A database of economic operators who hold a valid AEO certificate of any type, and who have given their agreement to the publication of their details, has recently become available on the European Commission website.[106] Also available on the website is a list of competent customs authorities for the issuing of AEO certificates. According to EU statistics, as of 14 October 2009, a total of 3,433 applications had been submitted, and a total of 1,643 certificates had been issued; the number of applications processed between 15 October 2008 and 15 October 2009 was 1,972. The reported breakdown by certificate type was: AEO-F 78 per cent; AEO-C 19 per cent; and AEO-S 3 per cent.[107]

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Additionally, as laid down in regulation (EC) 312/2009,[108] and in order to establish a unique system of registration and identification for economic operators in the European Union, any economic operator established in the European Union, as from 1 July 2009, is required to have a valid registration and identification (EORI) number, used by one of the member States.[109] Economic operators established outside the EU will have to be assigned an EORI number if they lodge a customs declaration, an entry or an exit summary declaration, or a summary declaration. Many member States will use their current identification systems. Thus, only new operators should register, and the application should be sent to the relevant authorities of the member States in which the economic operator is established.[110]

The EU is in the process of negotiating agreements on mutual recognition of the business partner programmes (AEO and similar) with some neighbouring states and with its major trading partners.

The EU is in the process of negotiating agreements on mutual recognition of the business partner programmes (AEO and similar) with some neighbouring states and with its major trading partners,[111] including in particular the United States. To this end, in 2007, the European Union and the United States started negotiations towards mutual recognition of the United States' C-TPAT and the European Union's AEO supply-chain programmes. The agreement would cover about 40 per cent of global trade, and may set a precedent that could help to provide both improved supply-chain security and global trade facilitation.[112] While there are significant differences between the two customs–business partnership schemes, in March 2008, United States Customs and Border Protection (CBP) and the European Commission adopted the "Joint roadmap towards mutual recognition of trade partnership programmes."[113] The roadmap focuses on six areas in which to achieve mutual recognition: political, administrative, legal, policy, technical/operational, and evaluation. It was envisaged that the following tasks would be accomplished by the United States and the European Union, in an effort to achieve mutual recognition by 2009:

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

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

(c) Exploring and testing an export component for C-TPAT;

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

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

(f) Endorsing and signing a mutual recognition arrangement; and

(g) Evaluating mutual recognition benefits for AEO/C-TPAT members.[114]

In order to gather feedback from the business community and incorporate it within the roadmap as appropriate, an abridged external partner version of the roadmap was made available in January 2009,[115] providing a short description, and a summary of status and accomplishments for each of the tasks in three areas, namely operational/technical, legal, and evaluation.

The International Chamber of Commerce (ICC), one of the key international representatives of the world business community,… raises a number of concerns regarding mutual recognition of the United States and European Union programmes, and provides a number of recommendations.

The International Chamber of Commerce (ICC), one of the key international representatives of the world business community, has issued a discussion paper that raises a number of concerns regarding mutual recognition of the United States and European Union programmes, and provides a number of recommendations.[116] Among other things, the ICC discussion paper expresses concern about the absence of a meaningful dialogue between the designers of the Mutual Recognition programme and the business community, and notes that the benefits for companies participating in the European Union's AEO programme and the United States' C-TPAT have not yet been accurately quantified and tracked, thus making any assumptions regarding the cost-benefit impact on the industry speculative. The ICC discussion paper expresses great concerns about the potential impact of these programmes on small and medium-sized enterprises (SMEs), and emphasizes the need to assure the suitability of these programmes for all supply-chain entities, highlighting that "the costs of implementation and compliance may be such that many SMEs will be unable to participate, which could impact their competitiveness". Certainly, this applies particularly to SMEs from developing countries. Another concern expressed is that both the AEO programme and C-TPAT lack substantial benefits for participating companies. A lower risk score, resulting in fewer controls and inspections, as provided under both programmes, was not considered a sufficient benefit corresponding to the high level of security that companies had demonstrated during the application/validation procedure. More generally, the ICC emphasizes that harmonization, standardization and simplification of procedures and practices are indispensable for achieving mutual recognition, stating that "failure to achieve reasonable uniformity would also create counterproductive, costly and inefficient effects, by subjecting AEO traders to many different and conflicting or redundant national approaches."

The ICC policy paper also identifies a number of specific issues, which may impede the attainment of Mutual Recognition between the European Union and the United States, and which should be addressed and adjusted over a reasonable period of time. In this context, structural asymmetries between the European Union's AEO programme and C-TPAT are noted, as is the need for interoperability in terms of software and electronic messaging between the United States and the European Union and among EU members coupled with single window facilitation so that electronic data elements only need to be submitted once. Emphasis is also placed on the need to adhere to WCO guidelines in order to "ensure the confidentiality of commercial and security-sensitive information, and that information provided be used solely for the purposes for which it was provided".[117]

Advance electronic cargo notification requirements

Another measure stipulated in regulation (EC) No. 1875/2006 is the requirement of mandatory advance customs notification relating to goods brought into or

out of the customs territory of the European Union. Also known as the "advance cargo declaration scheme", the system, which in parts corresponds to the United States "24-hour rule"[118] adopted in October 2002 with the aim of enabling United States customs authorities to evaluate the terrorist risk of cargo containers loaded at foreign ports, would require economic operators to send manifest information to national authorities 24 hours prior to loading. This requirement was set to become mandatory on 1 July 2009, but in April 2009, the European Commission's regulation (EC) No. 273/2009 was adopted, introducing a temporary derogation for 18 months, until 31 December 2010, from this requirement to provide advance electronic information for security and safety purposes. The preamble to the regulation states that: "Due to the complexity of the processes for introducing of electronic entry and exit summary declarations, unanticipated delays have occurred in the implementation process so that not all economic operators will be in a position to use information technology and computer networks for these purposes by 1 July 2009. Though information technology and computer networks facilitate international trade, they also require investments in automatic data transmission systems which may cause problems for economic operators in the short term. It is therefore appropriate to take such situations into account by providing that during a transitional period economic operators will be able, but will not be obliged, to lodge electronic entry and exit summary declarations in order to allow them to adjust their systems to the new legal requirements."[119] Understandably, due to the complexity of these processes, the level of computer technology and networks required, as well as the costs involved, many exporters in developing countries face challenges in meeting these requirements.[120]

Additional advance cargo notification requirements were also established in the United States, in late 2008, when an interim Importer Security Filing Rule was issued.

It should be noted that additional advance cargo notification requirements were also established in the United States in late 2008, when an interim Importer Security Filing rule[121] was issued, known as the "10 + 2" rule. The new interim rule requires importers to notify United States Customs and Border Protection, at least 24 hours before cargo is loaded onto a vessel bound for the United States, of the following information: (a) the name and address of the manufacturer or supplier; (b) the name and address of the seller; (c) the name and address of the buyer; (d) the "ship to" name and address; (e) the container stuffing location; (f) the stuffer's name and address; (g) the importer of record number; (h) the consignee number(s); (i) the country of origin; and (j) the commodity's Harmonized Tariff Schedule of the United States number. Moreover, within 48 hours of the vessel's departure for the United States, carriers need to provide: (a) the vessel stowage plan; and (b) container status messages. This interim rule was envisaged to come into effect on 26 January 2009, but its compliance date was postponed for 12 months, taking into account difficulties that importers may face in upgrading their systems.[122]

It appears that China has also informally relaxed the implementation of its 24-hour advance cargo notification requirements, which were supposed to come into effect on 1 January 2009. According to press reports, an 'informal' grace period of three to six months without penalties was offered, which was also designed to allow the testing of the systems for reliable eventual compliance.[123]

(c) International Maritime Organization

IMO has been actively involved in the field of maritime security, as a key component in the global fight against terrorism, and in maintaining the security of maritime transport and the global supply chain in general.

The Maritime Safety Committee (MSC) held its eighty-fifth session from 26 November to 5 December 2008. Following the outcome of the fifth special meeting of the Counter-Terrorism Committee held in Nairobi from 29 to 31 October 2007,[124] and in the context of measures to further enhance port facility security measures, several needs assessments missions on maritime security were carried out under the IMO Integrated Technical Cooperation Programme. In addition, several on-site visits were conducted by the Counter-Terrorism Committee of the United Nations Security Council, pursuant to Security Council resolution 1373 (2001). It was noted that these had revealed that in a significant number of cases, the required national legislation implementing the provisions of the International Convention for the Safety of Life at Sea (SOLAS Convention) chapter XI-2 and of the International Ship and Port Facility Security Code (the ISPS Code) were either absent or inadequate, or were based on or dependent on national laws which, in some cases, had been enacted

at the beginning of the 1900s. Thus, with a view to assisting SOLAS Contracting Governments to improve the situation, the development of model legislation would be very useful. Under SOLAS article III(c), SOLAS Contracting Governments have an obligation to communicate to and deposit with the Secretary-General of IMO, inter alia, the text of laws, decrees, orders and regulations which have been promulgated on various matters within the scope of SOLAS. Therefore, they were urged to do so, in order to enable the development of model legislation.[125]

The MSC, having received and approved, in general, the report of the Ad Hoc Working Group on Maritime Security[126] (MSC 85/WP.6), also approved MSC.1/Circ.1283 entitled "Guidelines on security aspects of the operation of vessels which do not fall within the scope of SOLAS chapter XI-2 and the ISPS Code". The guidelines are recommendatory only, and they are not intended to form the basis for a mandatory instrument. They should, therefore, in no way be interpreted as the basis for regulation of non-SOLAS vessels and related facilities.

During 2008, work continued on the development of the ISO/PAS 28000 series standards, whose aim is to facilitate and improve controls on flows of transport, to fight smuggling, to deal with the threats of piracy and terrorism, and to enable secure management of supply chains.

The MSC, at its eighty-fifth session, also considered matters relating to the implementation of the so-called LRIT system. As was reported in the *Review of Maritime Transport 2008*, SOLAS regulation V/19-1 on a Long-Range Identification and Tracking (LRIT) system, which had been adopted in 2006, entered into force on 1 January 2008. The regulation applies to ships of over 500 gross tons constructed on or after 31 December 2008, with a phased-in implementation schedule for ships constructed before 31 December 2008. The LRIT system was intended to be operational from 31 December 2008,[127] but delays in the establishment of a number of national data centres were reported by the ad hoc LRIT working group. Therefore, the establishment of the entire LRIT system would continue after 31 December 2008, and it was possible that it could take several months during 2009 before it could be completed. Industry representatives noted that some flag states had been diligent in complying with the requirements of the LRIT system. With regard to equipment conformance tests, identical equipment had worked on some ships but not on others. Overall, there was a 25 per cent failure rate. Secondly, there was concern that the EU Contracting Governments would not be ready until the middle of 2009.[128] However, a letter from the United States, making clear that for the time being there would be only carriage requirement enforcement for ships until a reasonable level of operational capability had been achieved, was noted with appreciation.[129]

While it was clear that the system would not be fully operational and that there was a need for a pragmatic approach, the MSC emphasized the importance of compliance with the requirements of regulation V/19-1 and of ensuring that the necessary equipment, especially for ships constructed before 31 December 2008, was installed and able to meet the requirements. The MSC agreed that the date of compliance of ships with the requirements to transmit LRIT information was not subject to extension, and that regulation V/19-1 did not include any provisions on the basis of which extensions may be granted.

Having considered the various issues relating to LRIT, the eighty-fifth session of the MSC established a working group on LRIT-related matters, adopted its terms of reference, and provided detailed instructions for work to be conducted, including the future development of a draft resolution on the appointment of the International Mobile Satellite Organization (IMSO)[130] as LRIT coordinator within the framework of regulation V/19-1.14.[131] At its eighty-sixth session held from 27 May to 5 June 2009, after considering the report of the LRIT working group, the MSC adopted the documents entitled "Guidance on the survey and certification of compliance of ships with the requirement to transmit LRIT information";[132] "Guidance to search and rescue services in relation to requesting and receiving LRIT information";[133] and the "Circular on information communicated to the IMO in relation to the establishment of LRIT data centres and their position in relation to developmental testing in the production of the LRIT system."[134]

(d) International Organization for Standardization

The ISO/PAS 28000 series of international standards specifies the requirements for security management systems to ensure security in the supply chain. These standards are intended for application by organizations involved in manufacturing, service, storage or transportation, by all modes of transport and at any stage of the production or supply process.

During 2008, work continued on the development of the ISO/PAS 28000 series of standards, whose aim is to facilitate and improve controls on flows of transport, to fight smuggling, to deal with the threats of piracy and terrorism, and to enable secure management of supply chains.

The *Review of Maritime Transport 2008* provided a short description on each of the five latest-published maritime and supply-chain standards, namely ISO 28000, ISO 28001, ISO 28003, ISO 28004 and ISO 20858, and on one standard under development – ISO 28005.

Work has continued on ISO 28005, which in order to expedite development, has been divided into two parts, namely ISO 28005-1: Electronic Port Clearance (EPC) – Single Window Concept; and ISO 28005-2: Electronic Port Clearance (EPC) – Technology and Data Dictionary.

In addition, work is in progress on amendment of ISO 28004, with the aim of:

(a) providing specific supplemental guidance to small and medium-sized ports that are implementing ISO 28000, so that they develop processes that comply both with its requirements and with the general guidance contained in the existing ISO 28004 standard;

(b) providing specific supplemental guidance for small and medium-sized businesses (other than marine ports) that are implementing ISO 28000, so that they develop processes that comply both with its requirements and with the general guidance contained in the existing ISO 28004 standard;

(c) providing specific supplemental guidance for organizations seeking to incorporate security requirements contained in ISO 28001 (for Authorized Economic Operators) into their implementation of ISO 28000. The security best practices contained in ISO 28001 were carefully developed in liaison with WCO, and were designed to be incorporated into existing management systems.

Another standard under development is ISO/AWI 28002: Specification for Security Management for the Supply Chain – Resilience in Security in the Supply Chain. This standard is aimed at ensuring that the suppliers and the extended supply chain have planned steps to prevent and mitigate the threats and hazards to which they are exposed.

ISO, through technical assistance and training activities derived from the ISO Action Plan for Developing Countries, helps those countries to participate in international standardization activities. It responds to a wide variety of needs and requests received from ISO members in developing countries and their stakeholders, by organizing seminars, workshops, training courses, e-learning, sponsorships etc.[135]

(e) United Nations

It should also be noted that pursuant to General Assembly resolutions 61/222 and 62/215, the ninth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, held in New York in June 2008, focused its discussions on the area of maritime security and safety.

The meeting participants agreed that maritime security and safety were essential to the role of oceans and seas in promoting the economic, social and environmental pillars of sustainable development, as provided in chapter 17 of agenda 21, adopted by the United Nations Conference on Environment and Development, through, inter alia, international trade, economic development, poverty alleviation and environmental protection. They further agreed that the global nature of the threats and challenges to the security and safety of oceans could only be tackled effectively through international cooperation and coordination.

A number of agreed consensual elements from the meeting were suggested to the United Nations General Assembly for consideration under the agenda item "Oceans and the law of the sea". With reference to maritime security, it was proposed that the General Assembly:

(a) "recall that all actions taken to combat threats to maritime security must be in accordance with international law, including the Convention and other relevant international legal instruments while respecting maritime jurisdiction, and reaffirm that the sovereignty and territorial integrity and political independence of states, as well as the principles of non-use or threat of use of force, sovereign equality of states and freedom of navigation, should be respected"; and

(b) "recognize the crucial role of international cooperation at the global, regional, subregional and bilateral level in combating threats to maritime security in accordance with international law, including through enhanced sharing of information among states relevant to the detection, prevention and suppression of such threats, and the prosecution of offenders with due regard to national legislation, and the need for sustained capacity-building to support such objectives."[136]

The International Convention for the Safe and Environmentally Sound Recycling of Ships was adopted, under the auspices of IMO.

3. Legal instruments and other developments relating to the environment

IMO continues to implement its ambitious action plan to address emissions of greenhouse gases from international shipping, and to establish a regime regulating the issue at the global level, in order to slow down climate change. IMO's Marine Environment Protection Committee (MEPC), at its fifty-eighth session, adopted the revised MARPOL[137] annex VI regulations and the NOx Technical Code 2008, aimed at reducing air pollution from ships. It agreed to establish a working group on greenhouse gas (GHG) emissions from ships, which was instructed to work on a whole package of technical and operational measures. The MEPC also finalized the text of the Convention for the Safe and Environmentally Sound Recycling of Ships, which was adopted at a diplomatic conference on 11 May 2009, and it pursued its work related to the Ballast Water Management Convention. In addition, a draft protocol to the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea was adopted by the IMO Legal Committee during its ninety-fifth session and the IMO Council, at its 102nd session approved the holding of a diplomatic conference in April 2010, at which the draft protocol will be considered for adoption.

IMO continues to implement its ambitious action plan to address emissions of greenhouse gases from international shipping, and to establish a regime regulating the issue at the global level, in order to slow down climate change.

In recognition of the focus that climate change is receiving at IMO, the organization has adopted "Climate change – a challenge for IMO too" as the theme for the 2009 World Maritime Day, which was celebrated on 24 September 2009.

(a) Ship recycling

The International Convention for the Safe and Environmentally Sound Recycling of Ships was adopted, under the auspices of IMO, at a diplomatic conference held in Hong Kong, China, from 11 to 15 May 2009, which was attended by delegates from 63 countries.[138]

As explained in previous editions of the *Review of Maritime Transport*, the development of a convention on ship recycling had been in progress for several years at IMO, in cooperation with the International Labour Organization (ILO) and the relevant bodies of the Basel Convention. The convention on ship recycling is designed to provide globally applicable ship recycling regulations for international shipping and for recycling activities. It aims to ensure that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment.

The new Convention provides regulations for 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; for the operation of ship recycling facilities in a safe and environmentally sound manner; and for the establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.

Ships to be sent for recycling will be required to carry an inventory of hazardous materials, which will be specific to each ship. An appendix to the Convention will provide a list of hazardous materials, the installation or use of which is prohibited or restricted in shipyards, ship repair yards, and ships of parties to the Convention. Ships will be required to undergo an initial survey to verify the inventory of hazardous materials, additional surveys during the life of the ship, and a final survey prior to recycling. Ship recycling yards will be required to provide a "ship recycling plan" to specify the manner in which each ship will be recycled, depending on its particulars and its inventory. Parties will be required to take effective measures to ensure that ship recycling

facilities under their jurisdiction comply with the Convention. A series of guidelines are being developed to assist in the Convention's implementation.[139]

The Convention shall be open for signature from 1 September 2009 until 31 August 2010. Thereafter, it shall remain open for accession by any state. It will enter into force 24 months after the date on which 15 states – representing 40 per cent of world merchant shipping by gross tonnage – have either signed it without reservation as to ratification, acceptance or approval, or have deposited instruments of ratification, acceptance, approval or accession with the IMO Secretary-General. Furthermore, the combined maximum annual ship recycling volume of those states must, during the preceding 10 years, constitute not less than 3 per cent of their combined merchant shipping tonnage.[140]

The Convention shall be open for signature from 1 September 2009 until 31 August 2010.

(b) Air pollution from ships

While maritime transport represents the most fuel-efficient way to carry cargo, international shipping is also heavily dependent on 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 outcomes,[141] 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.[142]

In a second phase, the study covers GHG emissions other than CO_2 and relevant substances emitted from ships engaged in international transport.

MARPOL 1973/1978, the main international convention dealing with pollution from ships and covering different types of pollution (by oil, chemicals, pollutants in packaged form, sewage and garbage) did not cover air pollution until 1997, when the new annex VI entitled "Regulations for the prevention of air pollution from ships" was adopted at a special conference. MARPOL's annex VI came into force in May 2005, and as at 2 October 2009 it had been ratified by 56 countries, representing approximately 83.46 per cent of the gross tonnage of the world's merchant fleet.[143] Annex VI deals with SO_x and NO_x emissions and particulate matter, but it does not cover CO_2 emissions, which are subject to separate discussions within IMO.

A revised MARPOL annex VI and the NOx Technical Code 2008 were adopted unanimously by the MEPC at its fifty-eighth session in October 2008 (resolutions MEPC 176(58) and MEPC 177(58)).[144] Both legal instruments will come into force on 1 July 2010, rather than on 1 March 2010 as had previously been indicated. This is to allow states sufficient time to update existing guidelines and develop new guidelines as required by the revision. The MEPC also agreed that a definition of sulphur was not needed in the revised annex VI, as this had been described in the test method in ISO 8754: 2003. As regards NOx emissions from ships, the MEPC agreed that the definition of marine diesel engine in regulation 2(14) of MARPOL's annex VI and in paragraph 1.3.10 of the NOx Technical Code should not include engines that under normal service conditions operate on gas fuel only.[145]

In addition, the fifty-eighth session of the MEPC noted with appreciation the main findings of phase 1 of an updated 2000 IMO study on GHG emissions from ships,[146] covering a CO_2 emission inventory from international shipping and future emission scenarios. In a second phase, the study covers 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,[147] covering both phases of the study, and an executive summary[148] were made available for consideration by the fifty-ninth session of the MEPC in July 2009. The main conclusions of the report are set out in the executive summary, as follows:

(a) Shipping is estimated to have emitted 1,046 million tons of CO_2 in 2007, which corresponds to 3.3 per cent of the global emissions during 2007. International shipping is estimated to have emitted 870 million tons of CO_2 in 2007, or about 2.7 per cent of the global emissions.

(b) Exhaust gases are the primary source of emissions from ships. Carbon dioxide is the most important GHG emitted by ships. Both in terms of quantity and of global warming potential, other GHG emissions from ships are less important.

(c) Mid-range emissions scenarios show that, by 2050, in the absence of policies, ship emissions may grow by 150 to 250 per cent (compared to the emissions in 2007) as a result of the growth in shipping.

(d) Significant potential has been identified for the reduction of greenhouse gases through technical and operational measures. Together, if implemented, these measures could increase efficiency and reduce the emissions rate by 25 to 75 per cent below current levels. Many of these measures appear to be cost-effective, although non-financial barriers may discourage their implementation, as discussed in chapter 5.

(e) A number of policies to reduce GHG emissions from ships are conceivable. This report analyses options that are relevant to the current IMO debate. The report finds that market-based instruments are cost-effective policy instruments with a high environmental effectiveness. These instruments capture the largest amount of emissions under the scope, allow both technical and operational measures in the shipping sector to be used, and can offset emissions in other sectors. A mandatory limit on the Energy Efficiency Design Index for new ships is a cost-effective solution that can provide an incentive to improve the design efficiency of new ships. However, its environmental effect is limited because it only applies to new ships, and because it only incentivizes design improvements and not improvements in operations.

A number of policies to reduce GHG emissions from ships are conceivable.

(f) Shipping has been shown, in general, to be an energy-efficient means of transportation compared to other modes. However, not all forms of shipping are more efficient than all other forms of transport.

(g) The emissions of CO_2 from shipping lead to positive "radiative forcing" (a metric of climate change) and to long-lasting global warming. In the shorter term, the global mean radiative forcing from shipping is negative and implies cooling; however, regional temperature responses and other manifestations of climate change may nevertheless occur. In the longer term, emissions from shipping will result in a warming response, as the long-lasting effect of CO_2 will overwhelm any shorter-term cooling effects.

(h) If the climate is to be stabilized at no more than a 2°C warming over pre-industrial levels by 2100 and emissions from shipping continue as projected in the scenarios that are given in this report, then they would constitute between 12 and 18 per cent of the global total CO_2 emissions in 2050 that would be required to achieve stabilization (by 2100) with a 50 per cent probability of success.

It should also be noted that the MEPC at its fifty-eighth session agreed to re-establish the Working Group on GHG Emissions from Ships, to work on a whole package of technical and operational measures , aimed at reducing GHG emissions from international shipping. These reductions would be achieved, for new ships through improved design and propulsion technologies, and for all ships, both new and existing, mainly through improved operational practices. The package of measures, focusing on energy efficiency, was finalized at the fifty-ninth session of the MEPC in July 2009 and was intended to be used for trial purposes only, until the sixtieth session of MEPC in March 2010, with a view to further refinement and improvement, taking also into account the relevant outcomes of the United Nations Climate Change Conference to be held in Copenhagen in December 2009.[149] The measures include:

(a) Interim Guidelines on the method of calculation of the Energy Efficiency Design Index;

(b) Interim Guidelines for voluntary verification of the Energy Efficiency Design Index;

(c) Guidance for the development of a ship energy efficiency management plan (SEEMP);

(d) Guidelines for voluntary use of the Energy Efficiency Operational Indicator. [150]

However, MEPC recognized that in view of growth expectations of the world trade technical and operational measures alone would not be sufficient to satisfactorily reduce GHG emissions from international shipping. Therefore, it was considered necessary to also have in place marked-based reduction mechanisms that could serve two main purposes: the offsetting of growing ship emissions in other sectors, and the provision of

incentives for the maritime industry to invest in more fuel efficient ships and to operate ships in a more energy-efficient way.

It was also considered that proposed market-based mechanisms, such as a global contribution scheme (levy) and a global emission trading scheme for ships, could generate considerable funds, which could be used for different climate-related purposes, such as mitigation and adaptation activities in developing countries. Several delegations recalled that the principle of "common but differentiated responsibility" needed to be carefully considered and included in any regulatory scheme, in order to make it comprehensive and globally applicable. Some delegations expressed the concern that market-based measures would disadvantage developing countries, by increasing transportation costs, and cautioned that an extensive bureaucracy would be needed to assure compliance and prevent potential fraud. [151]

The IMO Legal Committee, during its 95th session held from 30 March-to 3 April 2009, approved a draft protocol to the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention).

After in-depth discussion, the MEPC approved a Work Plan for further consideration of market-based measures.[152]In addition, MEPC agreed that any regulatory scheme on GHG emissions applied to international shipping should be developed and enacted by IMO as the most competent relevant international body.[153]

It is also worth noting that as part of the work of the MEPC, a document was issued in advance of its fifty-ninth session containing excerpts of the first draft negotiating text to be considered by parties at the UNFCCC "climate talks" in June 2009, in the lead-up to the United Nations Climate Change Conference in December 2009, as they refer to international maritime transport.[154] The document contains submissions by IMO parties on long-term cooperative action under the Convention, including proposals and views on possible sources of funding, and on emissions from specific sectors.[155]

(c) Other IMO conventions in the field of environment

The IMO Legal Committee, during its ninety-fifth session held from 30 March to 3 April 2009, approved a draft protocol to the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention). The draft protocol is designed to address practical problems that have prevented many states from ratifying the original Convention. The Convention seeks to establish a two-tier system for compensation to be paid in the event of pollution incidents involving hazardous and noxious substances, such as chemicals. While such a system of compensation has been successfully in operation for many years in respect of oil pollution from tankers, the HNS Convention has not yet entered into force. One of the main obstacles so far to ratification of the Convention appears to have been difficulties associated with the requirement for states to report the quantities they receive of a diverse range of hazardous and noxious substances governed by the Convention.

The IMO Council, at its 102nd session held from 29 June to 3 July 2009, approved the holding of a diplomatic conference in April 2010, for the purpose of considering and adopting the draft protocol.[156]

The MEPC at its fifty-eighth session recalled that from 31 May 2005, the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), which deals with harmful aquatic organisms in ballast water, had been open for accession. It noted that three more states had acceded to the Convention since the last session, and urged the other member States to become a Party to this Convention at the earliest possible opportunity. The BWM Convention will enter into force 12 months after ratification by 30 states representing 35 per cent of the world merchant tonnage.[157]

The MEPC at its fifty-sixth session had reached the conclusion that only a limited number of ballast water treatment technologies would be available to meet the first implementation date of the BWM Convention, and there were concerns regarding the capability of all ships subject to regulation B-3.3 to meet the D-2 standard in 2009 due to procedural and logistical problems. Following an initiative by the IMO Secretary-General to address these concerns, the IMO Assembly, at its twenty-fifth session, adopted resolution A.1005(25) on the Application of the BWM Convention, which calls on states that have not yet done so to ratify the Convention as soon as possible. In the meantime, the resolution

recommends that ships subject to regulation B-3.3 constructed in 2009 should not be required to comply with regulation D-2 until their second annual survey, but no later than 31 December 2011. The IMO Assembly in this resolution, also requested MEPC to review, not later than at its fifty-eighth session, the immediate availability of type-approved technology for such ships to meet the required standards.

At its fifty-eighth and fifty-ninth sessions, the MEPC granted "basic approval" to six and "final approval" to another six ballast-water management systems. At its fifty-ninth session, MEPC noted that the number of ballast water treatment technologies available had increased significantly to a total of ten systems that had been granted "final approval". It also recognized that it was not easy to install the ballast water management systems without extensive design consideration, such as physical and technical feasibility, modification of ships designs and the necessary lead time for these modifications. While acknowledging the difficulties, MEPC agreed that ballast water treatment technologies were available and were being fitted on board ships, and confirmed that a number of ballast water management systems would be available to ships constructed in 2010.

MEPC, noting that postponing the dates stipulated in resolution A.1005(25) would not be beneficial to the implementation process, would send the wrong message to the world and would not stimulate the installation of new ballast water technologies on board ships, concluded that no changes to Assembly resolution A.1005(25) were needed with respect to ships constructed in 2010. Recognizing that a proactive approach would best serve the interests of the industry at this stage, MEPC agreed to instruct the Secretariat to prepare a draft MEPC resolution requesting administrations to encourage the installation of ballast water management systems during new ship construction in accordance with the application dates contained in the Ballast Water Management Convention, to be presented to the sixtieth session of MEPC for consideration and adoption.[158]

D. STATUS OF CONVENTIONS

There are a number of international conventions affecting the commercial and technical activities of maritime transport, prepared or adopted under the auspices of UNCTAD. Box 3 provides information on the status of each of these conventions, as at 23 October 2009.[159]

Box 3

Contracting States parties to selected conventions on maritime transport, as at 23 October 2009

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, 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, Egypt, Ethiopia, Finland, France, Gabon, Gambia, 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, Turkey, United Republic of Tanzania, Uruguay, Venezuela (Bolivarian Republic of), Zambia. **(78)**
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 http://www.un.org/law.

ENDNOTES

1 The United Nations General Assembly adopted the United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea on 11 December 2008. The General Assembly authorized the opening for signature of the Convention at a signing ceremony to be held on 23 September 2009 in Rotterdam, the Netherlands, and recommended that the rules embodied in the Convention be known as the "Rotterdam Rules". The text of the Convention, as adopted, is set out in the annex to the General Assembly Resolution A/RES/62/122. It is also contained in annex I of UNCITRAL's report on its forty-first session, document A/63/17, which is available at http://www.uncitral.org. The report itself provides a useful overview of the final discussions, prior to the finalization of the text. All other working documents of Working Group III (Transport) are also available on the UNCITRAL website. Unless otherwise provided, references hereinafter to "articles" relate to provisions in the new Rotterdam Rules.

2 Article 94. The Convention enters into force on the first day of the month following the expiration of one year after the date of deposit of the twentieth instrument of ratification, acceptance, approval or accession.

3 International Convention for the Unification of Certain Rules of Law Relating to Bills of Lading, 1924.

4 International Convention for the Unification of Certain Rules of Law Relating to Bills of Lading, 1924 (Hague Rules), as amended by the Visby and SDR protocols of 1968 and 1979.

5 United Nations Convention on Contracts for the Carriage of Goods by Sea, 1978.

6 See article 89(3).

7 Once the Rotterdam Rules have attracted the required number of 20 Contracting States and enter into force, carriage of goods by sea from or to any of the Contracting States may be governed by the Rotterdam Rules or by national law, depending on whether a contract falls within the scope of application of the Rotterdam Rules and on the substantive law which, according to the conflict of law rules of the forum, is held to apply to the dispute. In general, it may be expected that courts in Contracting States to the Hague-Visby Rules would apply neither the Rotterdam Rules nor the Hague-Visby Rules to outward shipments from a Contracting State to the Rotterdam Rules.

8 The United Nations Convention on International Multimodal Transport 1980 has not attracted the required number of 30 ratifications to enter into force. Several states have, however, adopted national laws on multimodal transportation which are based on the 1980 Convention. See: UNCTAD, "Implementation of multimodal transport rules", UNCTAD/SDTE/TLB/2 and Add.1. See also: UNCTAD, "Multimodal transport: the feasibility of an international legal instrument", UNCTAD/SDTE/TLB/2003/1 (available at http://www.unctad.org/ttl/legal).

9 The UNCITRAL Commission, at its thirty-fourth session, created a working group to consider possible uniform regulation in the field of maritime transport. In view of UNCTAD's involvement with the subject, the Commission specifically provided that the work should be carried out in close cooperation with interested intergovernmental organizations, such as UNCTAD. See also the São Paulo Consensus at paras. 93 and 107 for an express mandate of the UNCTAD secretariat to assist developing countries in the ongoing negotiations.

10 Relevant documentation highlighting potential areas of concern, in particular from the perspective of developing countries, is available on the UNCTAD website at http://www.unctad.org/ttl/legal. For an article-by-article commentary on the original draft legal instrument published in 2002, see UNCTAD/SDTE/TLB/4. Much of the analysis remains relevant, even in respect of the final draft text of the Convention. See also: UNCTAD, Carrier liability and freedom of contract under the UNCITRAL draft instrument on the carriage of goods [wholly or partly] [by sea], UNCTAD/SDTE/TLB/2004/2. The documentation is also available on the UNCITRAL website as working documents A/CN.9/WG.III/WP.21/Add.1, A/CN.9/WG.III/WP.41 and A/CN.9/WG.III/WP.46.

11 A bibliography of academic writing on the Rotterdam Rules is available on the UNCITRAL website (http://www.uncitral.org). For an analytical overview of the Convention, see, for instance: Diamond A (2008), The Next Sea Carriage Convention? Lloyd's Maritime and Commercial Law Quarterly (LMCLQ) 135; and Thomas D R (2008), An appraisal of the liability regime established under the new UN Convention, 14, Journal of International Maritime Law (JIML) 496. See also: Sturley M (2008), Transport law for the twenty-first century: an introduction to the preparation, philosophy, and potential impact of the Rotterdam Rules, 14, JIML 461. For earlier analysis of different aspects of the draft legal instrument, see the papers of a colloquium held in 2002 in Romsey, published in LMCLQ (2004) 304–417; and papers of an international symposium held in 2004 in Hamburg, published in Transportrecht (2004) 274–308.

12 On the industry side, strong opposition against ratification of the new Convention has been voiced by the European Shippers' Council (ESC), which represents the interests of 12 national transport user organizations/shippers' councils from 12 countries (see the ESC position paper of 24 March 2009 and press release of 29 June 2009, available at http://

www.europeanshippers.com), and by CLECAT (the European Association for Forwarding, Transport, Logistic and Customs Services), which represents European freight forwarders, logistics service providers and customs agents (see the CLECAT position paper of 29 May 2009, available at http://www.clecat.org). According to information in the ESC press release (above), the European Commission too has serious reservations about ratification and intends to release proposals for the development of a EU equivalent later in 2009. The press release refers to a statement made by the head of the European Commission's Directorate-General for Transport and Energy at an ESC seminar on 22 June 2009 in Antwerp, in which he is quoted as noting, inter alia, that the new Convention "was not conforming to the European multimodal expectations".

13 Note, for instance, the conclusions of Thomas D R (2008), An appraisal of the liability regime established under the new UN Convention, 14, JIML 496, at 511: "The Rules are a formidably comprehensive and complex code, as the survey of the liability regime undertaken in this article amply confirms. Their vulnerability ultimately is not necessarily to be attributed to the legal principles and framework that is propounded but to their suffocating wordiness, careless use of language and persistent refusal to abide by the basic rules of elegant and effective drafting. When the time comes to put the drafting to the test […] it is suspected that the Rules may be found to be wanting and productive of more disputes than might be considered healthy for the shipping industry." See also: Tetley W (2008), Some general criticisms of the Rotterdam Rules, 14, JIML 625, at 626.

14 On this aspect, see Diamond A (2008), The next sea carriage Convention? LMCLQ 135; van der Ziel G (2008), Delivery of the goods, rights of the controlling party and transfer of rights, 14, JIML 597; Asariotis R (2008), What future for the bill of lading as a document of title? 14, JIML 75. See also: Asariotis R (2004), Main obligations and liabilities of the shipper, Transportrecht 284.

15 On this aspect, see Williams R (2008), Transport documentation under the new Convention, 14, JIML 566. For some analysis of earlier drafts of the text, see also: Clarke M (2002), Transport documents: their transferability as documents of title; electronic documents. LMCLQ 356; and Schelin J (2004), Documents, Transportrecht 294.

16 On this aspect, see Goldby M (2008), Electronic alternatives to transport documents and the new Convention: a framework for future development? 14, JIML 586. For some comments regarding earlier drafts of the text, see also: van der Ziel G (2003), The legal underpinning of e-commerce in maritime transport by the UNCITRAL Draft Instrument on the Carriage of Goods by Sea, 9, JIML 461.

17 See articles 74 and 78. In general, the rules on jurisdiction and arbitration that are set out in chapters 14 and 15 only apply if a Contracting State declares that it will be bound by them. In the absence of such a declaration, national rules would apply to determine whether contractual choice of a forum is admissible. Both chapters envisage a list of places, at the claimant's choice, for the institution of legal/arbitral proceedings against the carrier. Contractual choice of forum is only permitted in the context of volume contracts, and under certain conditions, but the position of third parties is specially regulated. Whether third parties are bound by a contractual choice of forum depends on the "law of the court seized" (in the case of jurisdiction clauses) or the "applicable law" (in the case of arbitration clauses) and on whether the selected forum is situated in one of the listed places. There is considerable uncertainty associated with the practical application of these provisions in different jurisdictions, which may or may not have opted into the jurisdiction and arbitration chapters. For detailed analysis, see Baatz YM (2008), Jurisdiction and arbitration under the Rotterdam Rules, 14, JIML 608. On this issue, at an earlier stage of the negotiation process, see also: Berlingieri F (2004), Freedom of contract under the Rules, Forum and Arbitration Clauses, Transportrecht 303.

18 For some discussion of earlier drafts of the text, see, for instance: Sturley MF (2005), Solving the scope-of-application puzzle: contracts, trades and documents in the UNCITRAL transport law project, 11, JIML 22; and Rosaeg E (2002), The applicability of conventions for the carriage of goods and for multimodal transport, LMCLQ 316.

19 Contract of carriage is defined in article 1(1) as a "contract in which the carrier, against the payment of freight, undertakes to carry goods from one place to another. The contract shall provide for carriage of goods by sea and may provide for carriage by other modes of transport in addition to sea carriage."

20 For an analysis of relevant provisions, see Hancock C (2008), Multimodal transport and the new UN Convention on the carriage of goods, 14, JIML 484. In relation to earlier versions of the draft conventions, see Hoeks M (2008), Multimodal carriage with a pinch of sea salt: door-to-door under the UNCITRAL draft instrument, European Transport Law 257; Faghfouri M (2006), International regulation of liability for multimodal transport – in search of uniformity, World Maritime University (WMU) Journal of Maritime Affairs 61; Haak KF and Hoeks M (2004), Arrangements of intermodal transport in the field of conflicting conventions, 10, JIML 422; Clarke M (2003), A conflict of conventions: The UNCITRAL/CMI draft transport instrument on your doorstep, 9, JIML 28; Czerwenka B (2004), Scope of application and rules on multimodal transport contracts, Transportrecht 297; and Alcantara JM (2002), The new regime and multimodal transport, LMCLQ 399.

21 See the definition of contract of carriage set out in article 1(1): "Contract of carriage" means a contract in which a carrier, against the payment of freight, undertakes to carry goods from one place to another. The contract shall provide for carriage by sea and may provide for carriage by other modes of transport in addition to sea carriage". The definition has been criticized as lacking in precision, as different approaches to the interpretation of the second sentence of the provision appear possible. For some discussion of different approaches to interpretation, see Diamond A (2008), The next sea carriage Convention? LMCLQ 135 at 140.

22 The substantive scope of application and the provisions regulating the application of the Convention to multimodal transport remained controversial, even at the UNCITRAL Commission meeting at which the final text was agreed, with some States proposing to make the multimodal application of the new international regime optional, or proposing to provide for continued applicability of existing national law. Others expressed concern about the suitability of the substantive liability regime in the context of international multimodal transportation. See A/63/17 at paras. 23, 93–98 and 270–278.

23 Ibid.

24 In particular the Convention on the Contract for the International Carriage of Goods by Road (1956), as amended by the 1978 Protocol (the "CMR"), the Uniform Rules concerning the Contract for International Carriage of Goods by Rail (appendix B to the Convention concerning International Carriage by Rail, as amended by the Protocol of Modification of 1999 (the "CIM-COTIF"), the Convention for the Unification of Certain Rules for International Carriage by Air 1999 (the "Montreal Convention"), and the Budapest Convention on the Contract for the Carriage of Goods by Inland Waterways, 2000 (the "CMNI").

25 Only the application of existing international conventions (and any relevant future amendments thereto on carrier liability) has been preserved; see article 82. For relevant discussions at the 2008 UNCITRAL Commission session, see A/63/17 at paras. 249–254.

26 The term "carrier" is defined in article 1(5), as "a person that enters into a contract of carriage with a shipper". On carrier liability, see, for instance: Nikaki T (2008), The fundamental duties of the carrier under the Rotterdam Rules, 14, JIML 512; Honka H (2004), Main obligations and liabilities of the carrier, Transportrecht 278; and Berlingieri F (2002), Basis of liability and exclusions from liability, LMCLQ 336.

27 Defined in articles 1(7) and (6). Accordingly, a maritime performing party is a party that performs or undertakes to perform any of the carrier's obligations, at the carrier's request or under his supervision, "during the period between arrival of the goods at the port of loading and their departure from the port of discharge. An inland carrier is a maritime performing party only if it performs or undertakes to perform its services exclusively within a port area."

28 Liability for delay in delivery only arises in cases where a time for delivery has been agreed in the contract. Delay is defined in article 21: "Delay in delivery occurs when the goods are not delivered at the place of destination provided for in the contract of carriage within the time agreed."

29 See article 59, according to which "the carrier's liability for breaches of its obligations under this Convention is limited to 875 [SDR] per package or other shipping unit or 3 [SDR] per kg of the gross weight of the goods that are subject to the claim or dispute, whichever amount is higher," except where a higher value of the goods has been declared or a higher limit of liability has been agreed. Note that for potential liability from delay in delivery, a separate limit of 2.5 times the agreed freight applies (article 60). This is similar to the corresponding limit in the Hamburg Rules.

30 The relevant limitation amounts under the Hague-Visby Rules and Hamburg Rules are 666.7 SDR/pkg or 2 SDR/kg, and 825 SDR/pkg or 2.5 SDR/kg, respectively.

31 Note that while there is an express seaworthiness obligation, there is no corresponding obligation in respect of vehicles other than ships that may be used in the performance of the contract.

32 Note in particular articles 17(3) (f), (h), (i), (n) and (o). The so-called "nautical fault" exemption has been omitted (cf. article IV r. 2(a) HVR), as has the so-called "catch-all" exemption (article IV, r. 2(q) HVR). The fire exemption (cf. article IV r. 2(b) HVR) has been retained, but it no longer protects the carrier in cases of proven negligence (cf. article 17(4)). Exempting events/circumstances without express parallel in the Hague-Visby Rules include "loading, handling, stowage or unloading of the goods" performed pursuant to a "free in and out stowage" (FIOS)-type agreement which is now expressly permitted under article 13(2), as well as "reasonable measures to avoid or attempt to avoid damage to the environment." Moreover, the list of events or circumstances includes "acts of the carrier in pursuance of the powers conferred by articles 15 and 16". Article 15 deals with potentially dangerous cargo and gives the carrier broad rights, "notwithstanding" its obligations regarding delivery of the goods and care of cargo (articles 11 and 13), to dispose of goods. Article 16 gives the carrier a broad right to "sacrifice goods at sea", "notwithstanding" articles 11, 13 and 14, i.e. irrespective of the carrier's seaworthiness obligation.

33 A "documentary shipper" is defined in article 1(9) as "a person, other than the [contracting] shipper, that accepts to be named as "shipper" in the transport document or electronic transport record."

34 For detailed analysis, see Asariotis R (2008), Burden of proof and allocation of liability for loss due to a combination of causes under the Rotterdam Rules, 14, JIML 537. For earlier analysis, see also: UNCTAD (2004), Carrier liability and freedom of contract under the UNCITRAL draft instrument on the carriage of goods [wholly or partly] [by sea], UNCTAD/SDTE/TLB/2004/2; and Asariotis R (2002), Allocation of liability and burden of proof in the draft instrument on transport law, LMCLQ 382.

35 Ibid. See also: Sturley M (2009) Modernizing and Reforming US Maritime Law: The Impact of the Rotterdam Rules in the United States, 44, Texas International Law Journal 427 at 447-448 and Hooper C (a former president of the United States Maritime Law Association and member of the United States delegation to the UNCITRAL Working Group), The Rotterdam Rules – simpler than they appear, The Arbitrator 40 (2009) 5, available at http://www.smany.org/sma/pdf/Vol40_No3_Apr2009.pdf.

36 The term "shipper" is defined in article 1(8) as "a person that enters into a contract of carriage with a carrier". On the liability of the shipper, see Baughen S (2008), Obligations of the shipper to the carrier, 14, JIML 555 at 564. For analysis of the relevant provisions, as contained in an earlier text of the draft convention, see Asariotis R (2004), Main obligations and liabilities of the shipper, Transportrecht 284. See also: Zunarelli S (2002), The liability of the shipper, LMCLQ 350.

37 Information duties and any potential liability for failure to comply may, in future, become more relevant as a result of international and national regulation to enhance maritime and supply-chain security. Potential losses could arise, for instance, as a result of the delay of a vessel, or due to a failure on the part of the shipper to provide required documentation or information. For some information, see an UNCTAD report published in 2004 entitled "Container security: major initiatives and related international developments" (UNCTAD/SDTE/TLB/2004/1), which is available at http://www.unctad.org/ttl/legal.

38 See notes 34 and 35, above.

39 However, note that a two-year time bar applies to all claims under the Convention, article 62.

40 See article 58(2), which states that a "holder" who "exercises any rights under the contract of carriage" also "assumes any liabilities imposed on it under the contract of carriage". However, it has been argued, with reference to the wording of articles 58(2) and 79(2)(b) that the statutory obligations set out in chapter 7 may be personal to the shipper, and cannot be contractually transferred to a third-party consignee. See Baughen S (2008), Obligations of the shipper to the carrier, 14, JIML 555 at 564; and the discussion by Williams R (2008), Transport documentation under the new Convention, 14, JIML 566 at 583.

41 CIF stands for Cost, insurance and freight. See INCOTERMS 2000, published by the International Chamber of Commerce.

42 For an overview of the role and function of different types of transport documents, see UNCTAD: The use of transport documents in international trade, UNCTAD/SDTE/TLB/2003/3, paras. 9–42, available at http://www.unctad.org/ttl/legal. For a critical assessment of the approach adopted in the Rotterdam Rules, see the references in note 14, above.

43 For analysis of the regulation of volume contract under the Convention, see Asariotis R, UNCITRAL draft convention on contracts for the carriage of goods wholly or partly by sea: Mandatory rules and freedom of contract, in: Antapassis, Athanassiou and Rosaeg eds. (2009), Competition and regulation in shipping and shipping-related industries, Martinus Nijhoff 349. On this issue, at an earlier stage of the negotiation process, see also: Berlingieri F (2004), Freedom of contract under the Rules; Forum and Arbitration Clauses, Transportrecht 303.

44 See article III, r.8 of the Hague Rules and the Hague-Visby Rules and article 23 of the Hamburg Rules.

45 Article V of the Hague-Visby Rules and article 23(2) of the Hamburg Rules.

46 The mandatory application of the Hague Rules and the Hague-Visby Rules extends to "bills of lading or similar documents of title" (see article I(b) of the Hague-Visby Rules). Non-negotiable seawaybills are not expressly covered. However, as they are also standard form documents, issued by a carrier and operating as a receipt and as evidence of a contract of carriage, the national legislation of some States extends the protection of the Hague Rules and the Hague-Visby Rules to non-negotiable seawaybills. The Hamburg Rules apply to all contracts for the carriage of goods by sea, other than charter parties (articles 1(6), 2(1) and (3) of the Hamburg Rules) and thus include contracts covered by negotiable as well as non-negotiable transport documents. See the UNCTAD report entitled "The use of transport documents in international trade", UNCTAD/SDTE/TLB/2003/3.

47 See chapter 4, table 32.

48 For an overview of the genesis of the set of provisions dealing with volume contracts and the relevant debate within the UNCITRAL Working Group, see the final report of the Working Group, A/CN.9/645 at paras. 235–253. Relevant proposals submitted by delegations in the course of the UNCITRAL Working Group deliberations concerning volume contracts are contained in documents A/CN.9/WG.III/WP.34 and 42 (United States), and in document A/CN.9/WG.III/WP.88 (Australia and France). Relevant submissions by Governments to the UNCITRAL Commission at which the text was finalized are available on the UNCITRAL website (under Commission documents for the forty-first session). It should be noted that a number of delegations, including Australia, New Zealand and China, had expressed particular concerns in relation to the treatment of volume contracts. These, however, did not lead to a change in the final text as adopted by the Commission.

49 Article 80(2).

50 Article 80(4).

51 It should again be noted that information duties and any potential liability for failure to comply may, in future, become more relevant as a result of international and national regulation to enhance maritime and supply-chain security – see note 37, above.

52 See only the report of the UNCITRAL Working Group on the work of its final session in January 2008, A/CN.9/645, at para. 36.

53 While derogations must be set out in the volume contract, incorporation of (standard) terms by reference is permitted; see article 80(2) and (3).

54 Article 80(2)(b).

55 Article 80(2)(c).

56 Article 80(5).

57 It should be noted that at the time of writing, ratification of the Convention appears to enjoy the support of carrier representatives such as the European Community's Shopowners Associations (ECSA), the International Chamber of Shipping (ICS) and the World Shipping Council (WSC), whereas strong opposition has been expressed by the European Shippers' Council (ESC) and freight forwarders' organization CLECAT as well as the International Association of Freight Forwarders Associations (FIATA). Position papers by these and some other industry representatives are available on the UNCITRAL website at http://www.uncitral.org.

58 See also note 13, above.

59 See note 17, above, and the accompanying text.

60 The 1988 SUA Convention came into force on 1 March 1992. As at 2 October 2009, it had 154 parties, representing 93.45 per cent of world tonnage. Its text can be found at http://www.admiraltylawguide.com. For its latest updated status, check the IMO website at http://www.imo.org.

61 For a description of amendments to the 1988 SUA and its 1988 Protocol adopted in 2005 under the auspices of IMO, see the *Review of Maritime Transport 2006*. As at 2 October 2009, the 2005 amendment to the SUA Convention had not yet entered into force. Only nine Contracting States had become parties, representing 6.01 per cent of world tonnage.

62 Reports are issued under the MSC.4/Circ series. Their texts can be found at http://docs.imo.org.

63 http://www.icc-ccs.org

64 IMO, in its "Code of practice for the investigation of crimes of piracy and armed robbery against ships" distinguishes "piracy" from "armed robbery against ships", with "piracy" being restricted to unlawful acts as defined in article 101 of the 1982 United Nations Convention on the Law of the Sea. The code of practice was adopted in November 2001 during the twenty-second session of the IMO Assembly, by resolution A/922(22). For the text of the code, see MSC 74/24/Add.1 – Report of the MSC at its seventy-fourth session, annexes 1–22, annex 18, article 2.2; or MSC/Circ.984; available at http://www.docs.imo.org. The ICC International Maritime Bureau (IMB) defines "piracy and armed robbery" as: "an act of boarding or attempting to board any ship with the apparent intent to commit theft or any other crime and with the apparent intent or capability to use force in the furtherance of that act." This updated definition covers actual or attempted attacks whether the ship is berthed, at anchor or at sea (http://www.icc-ccs.org).

65 ICC–IMB Piracy and Armed Robbery Against Ships Report – Annual Report 2008.

66 See the *Report of the Maritime Safety Committee on its eighty-fifth session*. MSC 85/26, page 100.

67 MSC.1/Circ.622/Rev.1; MSC.1/Circ.623/Rev.3; and resolution A.922(22).

68 MSC 86/18/1.

69 For more information on the discussions held, see the *Report of the Maritime Safety Committee on its eighty-sixth session,* MSC 86/26. For specific changes and updates to the existing guidance, see ibid. page 98.

70 MSC.1/Circ.1333 (previously MSC.1/Circ.622/Rev.1).

71 MSC.1/Circ.1334 (previously MSC.1/Circ.623/Rev.3).

72 MSC.1/Circ.1302

73 Resolution A.922(22).

74 Resolution A.1002(25) on "Piracy and armed robbery against ships in waters off the coast of Somalia" (http://docs.imo.org).

75 See the ICC–IMB Piracy and Armed Robbery Against Ships Report – First Quarter 2009.

76 See, for example, information on the work of the United Nations Office on Drugs and Crime (UNODC) and the United Nations Commission on Crime Prevention and Criminal Justice (http://www.unodc.org). See also: "Piracy must be defeated in courts, ports and banks, not just at sea", editorial by Antonio Maria Costa, UNODC Executive Director, Lloyd's List, 5 February 2009.

77 The texts of the resolutions can be found at the United Nations Security Council website, http://www.un.org/docs/sc.

78 See S/RES/1846/2008, adopted on 2 December 2008, para. 19.

79 For the text of the establishing statement, see http://www.marad.dot.gov. Participating in the meeting were representatives from Australia, China, Denmark, Djibouti, Egypt, France, Germany, Greece, India, Italy, Japan, Kenya, the Netherlands, Oman, the Republic of Korea, the Russian Federation, Saudi Arabia, Somalia (Transitional Federal Government), Spain, Turkey, the United Arab Emirates, the United Kingdom, the United States and Yemen, as well as the African Union, the European Union, the North Atlantic Treaty Organization, the United Nations Secretariat and the International Maritime Organization. Additionally, Belgium, Djibouti, Norway, Portugal, Sweden and the Arab League, joined the Contact Group. See also the UNODC press release from 20 January 2009 entitled "Ship riders": tackling Somali pirates at sea.

80 IMO circular letter no. 2933, 23 December 2008. According to IMO document LEG 96/7/Corr.1, as at 23 September 2009 replies had been received from Argentina, Australia, Azerbaijan, the Bahamas, Belgium, Brazil, Chile, Colombia, Denmark, Ecuador, Estonia, Germany, Greece, Guatemala, Iran (Islamic Republic of), Italy, Jamaica, Japan, Mexico, Morocco, New Zealand, Peru, the Philippines, the Republic of Korea, the Russian Federation, Spain, Sri Lanka, Thailand, The United States and Uruguay. Hong Kong (China) also submitted its legislation. It was noted that some replies to the circular letter provided a summary of the national law rather than the text of current legislation.

81 For further information, see http://www.mschoa.org.

82 See the ICC–IMB Piracy and Armed Robbery Against Ships Report – First Quarter 2009, page 31. See also: New 'hunters' stalk pirates, Fairplay, 15 January 2009.

83 Security Council resolution 1846 of 2 December 2008 welcomes initiatives by Canada, Denmark, France, India, the Netherlands, the Russian Federation, Spain, the United Kingdom and the United States of America, pursuant to earlier Security Council resolutions.

84 ICC–IMB Piracy and Armed Robbery Against Ships Report – First Quarter 2009, page 31.

85 See http://www.wcoomd.org.

86 SAFE Framework of standards to secure and facilitate global trade, rev. June 2007: 6, footnote 1.

87 See SAFE Framework, rev. June 2007, subsection 5.2: 37.

88 APEC's member states are Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong (China), Indonesia, Japan, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, the Republic of Korea, the Russian Federation, Singapore, Thailand, the United States and Viet Nam.

89 For instance Australia, Canada, China, Japan, New Zealand, Singapore and the United States.

90 Among the member states of the European Union, Germany, the Netherlands, Sweden and the United Kingdom are

listed as the most advanced countries in issuing certificates.

91 Argentina, Canada, China, Japan, Jordan, New Zealand, Norway, the Republic of Korea, Singapore and the United States. In addition, an AEO programme will start in Morocco.

92 Australia, Botswana, Chile, Mexico, Serbia, and the former Yugoslav Republic of Macedonia.

93 The first bilateral mutual agreement relating to AEOs was the United States–New Zealand Mutual Recognition Agreement, announced in June 2007 (see the press release entitled U.S., New Zealand establish joint trade security arrangement, 29 June 2007 (http://www.cbp.gov). In June 2008, the United States signed an arrangement with Canada on mutual recognition of the Customs-Trade Partnership Against Terrorism (C-TPAT) and the Partners in Protection programme (PIP). The PIP is comparable to the C-TPAT and the EU's AEO programme; see the Canada Border Services Agency website at http://cbsa-asfc.gc.ca. The other five MRAs are United States–Jordan, Japan–New Zealand, United States–Japan, EU-Switzerland and EU-Norway.

94 Andorra and San Marino.

95 See the speech by the Secretary-General of the WCO at the International Transport Forum 2009, IRU workshop, Leipzig, 27 May 2009, available at http://www.wcoomd.org.

96 WCO Columbus Programme brochure – Enhancing the global dialogue on capacity-building. See also the Capacity-building development compendium, a Columbus Programme phase 2 implementation tool, which is available at http://www.wcoomd.org.

97 These countries are Azerbaijan, Brazil, Burkina Faso, China, the Dominican Republic, Egypt, Hong Kong (China), Hungary, India, Japan, Kenya, Lebanon, Malaysia, the Russian Federation, South Africa and Zimbabwe. See: http://www.wcoomd.org.

98 For more information, see: WCO News, No. 58, February 2009, http://www.wcoomd.org.

99 The text of the report can be found at the WCO website at http://www.wcoomd.org.

100 For more information, see the report "Customs in the twenty-first century: Enhancing growth and development through trade facilitation and border security", available at http://www.wcoomd.org.

101 Ibid.

102 Regulation No. 1875/2006 is contained in the *Official Journal* L 360, 19 December 2006: 64.

103 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 which was published in June 2006, an AEO self-assessment tool, and an AEO e-learning tool. The AEO guidelines (TAXUD/2006/1450) and the AEO compact model (TAXUD/2006/1452) are available at http://ec.europa.eu.

104 See article 1.12 of regulation (EEC) no. 2454/93, as amended by article 1 of regulation (EC) no. 1875/2006.

105 See AEO Guidelines (TAXUD/2006/1450): 8.

106 For updates, see http://ec.europa.eu/taxation_customs/dds/cgi-bin/aeoquery?Lang=EN.

107 Information provided by the EU Secretariat, DG Taxation and Customs Union.

108 OJ.L 98/3 of 17 April 2009 (http://eur-lex.europa.eu).

109 For further information, see http://ec.europa.eu.

110 See the Guidelines on EORI, TAXUD/2008/1633 rev. 1.9, issued on 14 May 2009. For information concerning the authorities in member states responsible for assigning EORI numbers, see information on the European Commission's website (http://ec.europa.eu). In addition, an e-learning tool on EORI will soon be available on the same website.

111 In particular, Andorra, China, Japan, and San Marino. Negotiations with Canada are also to begin. For more information see the European Commission website (http://ec.europa.eu). See also the *Review of Maritime Transport 2008*.

112 See the ICC discussion paper "ICC recommendations on mutual recognition of US–EU trade partner programmes for border security", fourth revision, 23 January 2009, available at http://www.iccwbo.org.

113 Press release, 27 March 2008. For further information, see the United States Customs and Border Protection website at http://www.cbp.gov.

114 European Commission, Taxation and Customs Union press release. "United States Customs and Border Protection and European Commission adopt the joint roadmap towards mutual recognition trade partnership programmes", 27 March 2008.

115 Abridged external partner version of the United States–European Union Joint Customs Cooperation Committee roadmap towards mutual recognition of trade partnership programmes. The text is available on the Customs and Border Protection website at http://www.cbp.gov.

116 ICC discussion paper "ICC recommendations on mutual recognition of US–EU trade partner programmes for border security", fourth revision, 23 January 2009, available at http://www.iccwbo.org.

117 WCO AEO Guidelines, Section F(a).

118 For further information on the United States 24-hour rule, see http://www.cbp.gov. See also the UNCTAD report entitled "Container security: Major initiatives and related international developments" (UNCTAD/SDTE/TLB/2004/1) at http://www.unctad.org/ttl/legal.

119 Commission regulation (EC) no. 273/2009 of 2 April 2009, laying down provisions for the implementation of Council Regulation (EEC) no. 2913/92 establishing the Community Customs Code, derogating from certain provisions of Commission Regulation (EEC) no. 2454/93. *Official Journal of the European Union.* L 91/14, http://eur-lex.europa.eu.

120 In this context, see, for instance, the UNCTAD report entitled "Maritime security: ISPS implementation, costs and related financing (UNCTAD/SDTE/TLB/2007/1), reflecting the results of a survey conducted by the secretariat which showed that the costs of compliance with the ISPS Code were proportionately higher for smaller ports.

121 For the text, see http://edocket.access.gpo.gov/2008/pdf/E8-27048.pdf, where earlier comments by stakeholders are also addressed.

122 For further information, see also the frequently asked questions document, last updated on 23 January 2009, which is available at http://www.cbp.gov.

123 See: "China 'amnesty' on 24-hour electronic manifest rule", Lloyd's List, 7 January 2009.

124 For further information, see the *Review of Maritime Transport 2008.*

125 See the *Report of the Maritime Safety Committee on its eighty-fifth session*, MSC 85/26, 18 December 2008, available at http://docs.imo.org.

126 The Ad Hoc Working Group on Maritime Security was re-established at the eighty-third session of the MSC. See the *Review of Maritime Transport 2008.*

127 For further information on the LRIT and relevant decisions at earlier sessions of the MSC, see the *Review of Maritime Transport 2008*.

128 According to a press release from the European Maritime Safety Agency (http://www.emsa.europa.eu), the EU LRIT Data Centre entered into production on 1 June 2009, following successful developmental testing. The participating countries/territories are: Aruba, Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Germany, Greece, Greenland, Finland, France, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, the Netherlands Antilles, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

129 See the Report of the Maritime Safety Committee on its eighty-fifth session, MSC 85/26, 18 December 2008, http://docs.imo.org.

130 The IMSO, which was created to launch and run services related to IMO's global maritime distress and safety system, has taken a lead role in the development of the LRIT system, becoming the official LRIT coordinator. MSC 84 had requested "IMSO acting as LRIT Coordinator to authorize, on behalf of and subject to consideration and approval, acceptance or endorsement of the action by the Committee, the integration, on an interim basis, of the data centres that have undergone and satisfactorily completed developmental testing into the production LRIT system". See the Report of the Maritime Safety Committee on its eighty-fifth session, MSC 85/26.

131 For detailed instructions given, see the Report of the Maritime Safety Committee on its eighty-fifth session, MSC 85/26: 58–59.

132 MSC.1/Circ.1307.

133 MSC.1/Circ.1308.

134 MSC.1/Circ.1309. For more information on the discussions held, see the Report of the Maritime Safety Committee on its eighty-sixth session, MSC 86/26: 33–49.

135 For more information, see the ISO website at http://www.iso.org/iso/developing_countries.

136 For further information see the "Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its ninth meeting", A/63/174, 28 July 2008 (http://ods.un.org).

137 International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL).

138 The conference also adopted six resolutions, including resolutions on future work pertaining to the Convention, on early implementation of the Convention and on the exploration and monitoring of the best practices for fulfilling the Convention requirements.

139 See resolution 4 adopted by the Conference.

140 Article 17 of the Convention.

141 Increased risk of premature death from pulmonary diseases and worsened respiratory diseases.

142 "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 at http://unfccc.int/methods_and_science/emissions_from_intl_transport/items/1057.php.

143 For updated status, see http://www.imo.org.

144 For the text of the resolutions, see MEPC 58/23/Add.1. For the content of the amendments endorsed earlier on SO_x and NO_x emissions and particulate matter, see the *Review of Maritime Transport 2008*.

145 See the Report of the Marine Environmental Protection Committee at its fifty-eighth session, MEPC 58/23 (http://docs.imo.org).

146 In this context, see documents MEPC 58/4/2 and MEPC 58/4/4.

147 MEPC 59/INF.10.

148 MEPC 59/4/7.

149 See the Report of the Marine Environmental Protection Committee at its fifty-ninth session, MEPC 59/24.

150 Ibid. Annexes 17-20.

151 Ibid., page 44-50.

152 Ibid., Annex 16.

153 MEPC 59/24 at para. 4.107.

154 MEPC 59/4/40. This complements the information on the ongoing process within the UNFCCC contained in documents MEPC 59/4 and MEPC 59/INF.29.

155 Further information on draft negotiating texts and other relevant submissions by Parties can be found in annexes 1, 2 and 3 of document MEPC 59/4/40.

156 See IMO Council document C.102/D, 9 July 2009, Summary of decisions. For the text of the draft protocol, see the Report of the Legal Committee on the work of its ninety-fifth session, LEG 95/10, annex 3.

157 According to information provided on the IMO website, as at 2 October 2009, 18 states had become members of the BWM Convention, representing 15.36 per cent of world tonnage.

158 See the Report of the Marine Environmental Protection Committee at its fifty-ninth session, MEPC 59/24, page16.

159 Up-to-date and authoritative information on the status of international conventions is available from the relevant depository. For United Nations conventions, see the United Nations website at http://www.un.org/law. This site also provides links to a number of websites of other organizations, such as IMO (http://www.imo.org), ILO (http://www.ilo.org) and the United Nations Commission on International Trade Law (http://www.uncitral.org), containing information on conventions adopted under the auspices of each of them. Since the last reporting period, four States, namely Bulgaria, Denmark, Germany and the United Kingdom, have given their notifications of denunciation of the United Nations Convention on a Code of Conduct for Liner Conferences, 1974.

Chapter 7

REVIEW OF REGIONAL DEVELOPMENTS: AFRICA

Every year, the Review of Maritime Transport gives attention to transport developments in a particular region. The 2008 edition of the Review of Maritime Transport focused on developments in Latin America and the Caribbean. The focus in 2009 is on developments in Africa since UNCTAD last reported on the region in 2006. Despite the global financial crisis, the region still experienced strong growth in 2008 (5.1 per cent), the top performers being the resource-rich countries. Africa's share of world trade remains at 2.7 per cent. Global port operating companies have sought to expand along the main international African shipping routes, however in some countries, physical, legal, social and economic constraints have prevented them from doing so effectively. A high number of cross-border documents, poor inland connections, security issues, excessive transaction costs and delays are common. This has serious consequences in the case of landlocked countries, whose dependence on transit countries complicates the export and import processes, with costs of imported freight estimated to be three to five times higher than the world average. In recent years, however, there has been a growing recognition of the need to improve port operations and inland connectivity in the region. Even when new investments are being considered in Africa, these could be affected by the global financial crisis.

A. ECONOMIC BACKGROUND

Despite the global financial crisis, Africa experienced strong GDP growth in 2008, estimated at 5.1 per cent (6 per cent in 2007). Growth was mainly driven by high commodity demand and prices, especially from oil, with oil-exporting countries contributing more than half (53.3 per cent) of the continent's total GDP.[1] Increased domestic investment, debt write-offs, increased non-fuel exports, and political and social stability also contributed to the continent's economic performance.

Overall, GDP growth rates were lower in 2008 than in 2007. However, for two out of five subregions of the continent, namely West Arica and Central Africa, growth rates increased from 5.2 % and 3.9 % respectively in 2007 to 5.4 % and 4.9 % in 2008. In contrast, GDP growth rates for North, East and Southern Africa decreased.

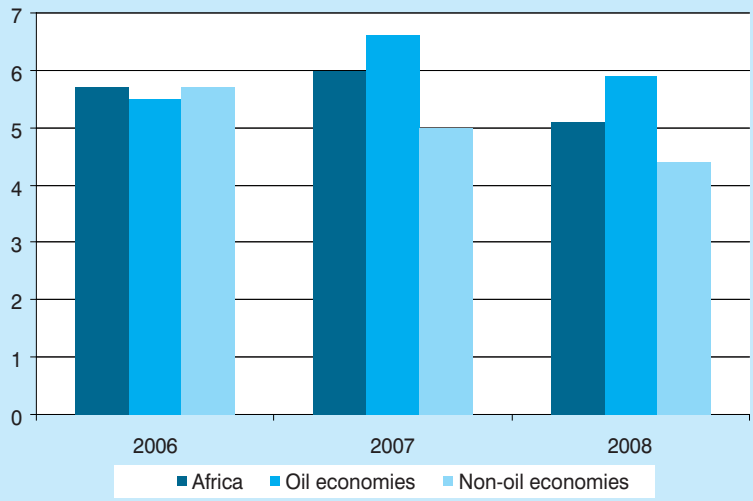
The GDP growth rate in 2008 for oil-exporting countries was 5.9 per cent, with oil-importing countries experiencing a slower average growth rate of 4.4 per cent (see fig. 26). Higher energy and food import costs, coupled with lower demand for exports, explain a decrease in the overall revenue of oil-importing countries. For the last three years, these countries have not been able to reach the 7 per cent growth rate that is the minimum growth rate required for achieving the United Nations Millennium Development Goals.[2]

Overall, GDP growth rates were lower in 2008 than in 2007. However, for two out of five subregions of the continent, namely West Africa and Central Africa, growth rates increased from 5.2 per cent and 3.9 per cent respectively in 2007, to 5.4 per cent and 4.9 per cent in 2008. In contrast, GDP growth rates for North, East and Southern Africa

Figure 26

Growth in Africa, oil vs. non-oil economies, 2006–2008

(in percentages)



Source: UNCTAD secretariat using figures from the United Nations Department of Economic and Social Affairs. Africa Database. United Nations, New York, November 2008.

decreased. Figure 27 depicts the economic performance of all subregions.

The best-performing African countries in terms of GDP growth (see fig. 28) were the resource-rich exporting countries. Almost all the higher performers – with the exception of Egypt – have relatively undiversified economies. The least-performing economies included Chad, the Comoros, Eritrea, Somalia and Zimbabwe, which have remained in the list of least-performing economies for more than three years. A poor business environment and a lack of political stability have been among the main reasons for their weak economic performance.

In 2007, the total value of trade in goods in Africa was $782 billion, which places the continent's share of global trade at 2.7 per cent. Exports increased by 15.6 per cent in 2006–2007, down from the average of 20 per cent registered in the period 2002–2005 (fig. 29).[3]

Africa's main trading partners are the European Union (accounting for approximately 40 per cent of exports) and North America (25 per cent of exports). The leading African exporting countries are Algeria, Nigeria and South Africa. Together, these three countries accounted for an export volume of $195.5 billion or 1.9 per cent of world merchandise trade in 2007.[4]

The major importing countries in the region are Algeria, Egypt, Morocco, Nigeria, South Africa and Tunisia. In total, they accounted for an import volume in merchandise trade of $225.9 billion or 2.3 per cent of world merchandise trade in 2007.[5]

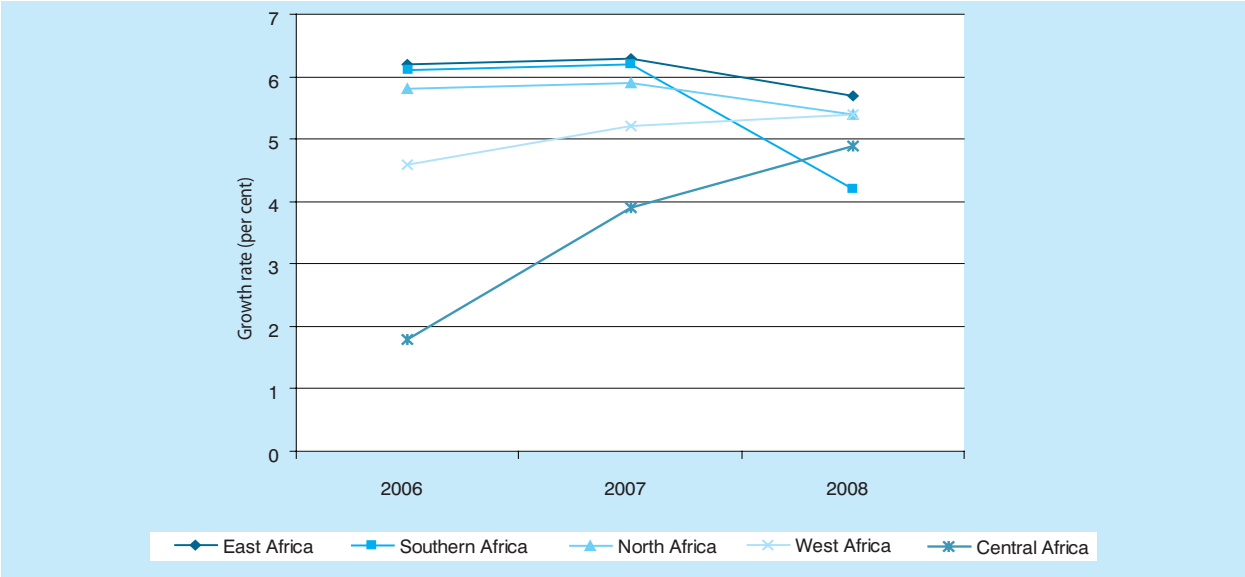
The trade structure of African countries has remained unchanged over the last few years, with most countries being primary product exporters. Some 79 per cent of total exports from African economies in the period 2003–2006 were primary commodity exports, including oil. Cocoa accounted for 90 per cent of the exports of Sao Tome and Principe, iron ore for 64 per cent of Mauritania's exports, and cotton for 64 per cent of Benin's exports, with only a few countries drawing a significant part of their export revenue from manufactured products. Hence, the African continent is highly exposed to demand and price volatility in commodity markets.

The few countries endowed with fuel resources accounted for as much as 61.3 per cent of the continent's total merchandise exports in 2007, while most African countries are non-fuel primary commodity exporters. Sub-Saharan Africa is the largest exporter of fuels among developing regions. From 2000 to 2007, the export of fuels from Africa grew by 19 per cent annually. The major fuel-exporting countries are Nigeria ($62.5 billion), Algeria ($59.1 billion) and the

Figure 27

Growth of GDP by African subregions 2006–2008

(percentages)

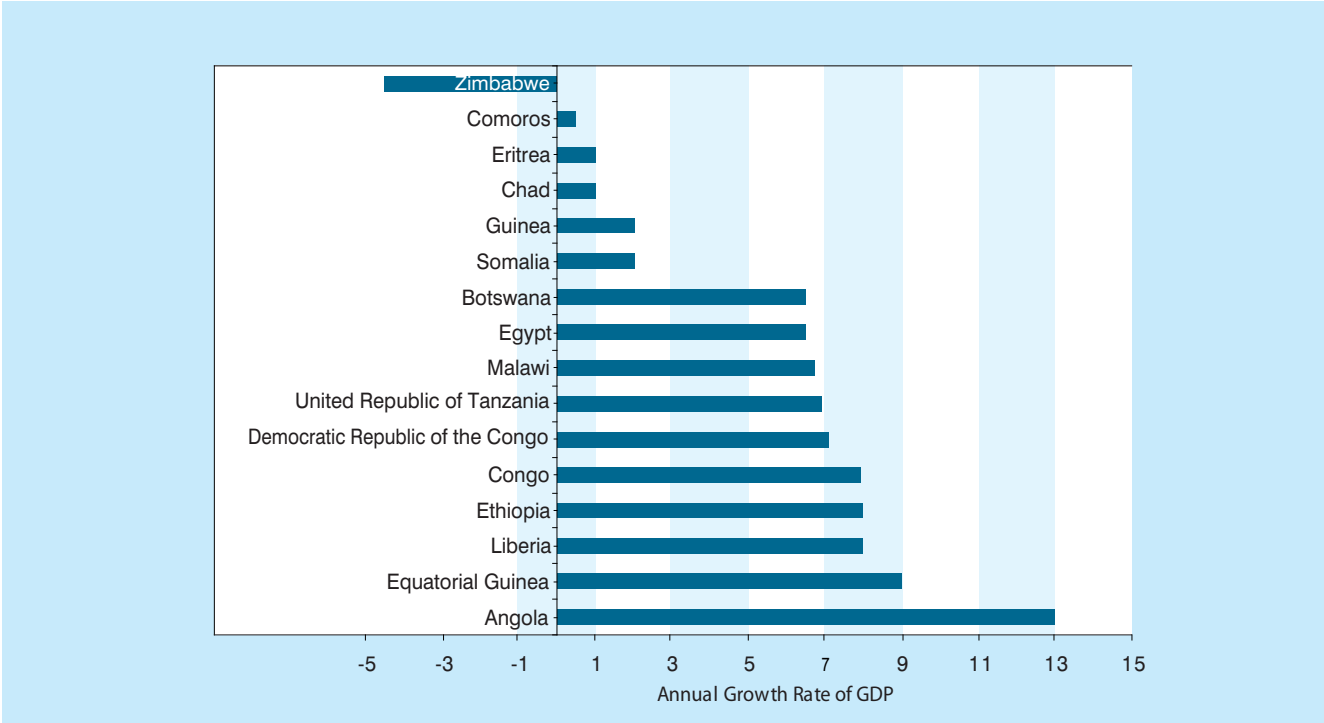


Source: UNCTAD secretariat using figures from the United Nations Department of Economic and Social Affairs. Africa Database. United Nations, New York, November 2008.

Figure 28

Top and bottom performers in Africa

(annual growth by percentage)

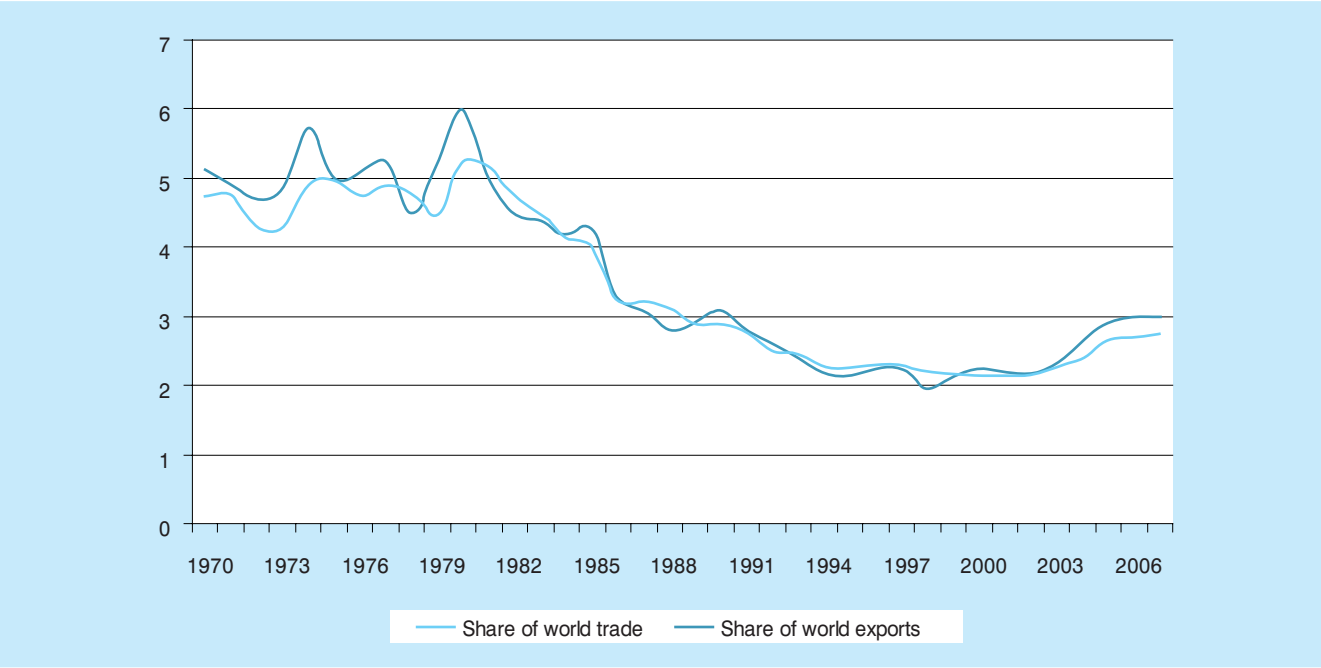


Source: UNCTAD secretariat using figures from the United Nations Department of Economic and Social Affairs. Africa Database. United Nations, New York, November 2008.

Figure 29

Africa's share of world trade, 1970–2007

(percentages)



Source: UNCTAD secretariat based on the World Economic Forum. *Africa Competitiveness Report 2009.*

Libyan Arab Jamahiriya ($44.1 billion). Since 1990, all three countries have increased their fuel exports by at least 400 per cent.[6]

The export of manufactured products in 2007 amounted to $79.8 billion; it was concentrated on Europe, which accounted for approximately 50 per cent of these exports, while Asia and North America accounted for 10 per cent and 9 per cent of exports respectively. The share of manufactured products accounted for 18.8 per cent of total merchandise exports and for 68 per cent of total merchandise imports. The export share of manufactured products for Africa is the lowest compared to any other region in the world. Imports into African countries from the European Union reached $108.4 billion, outperforming the United States with $15.4 billion and China with $34.4 billion. Remarkably, between 2000 and 2007, the share of China's exports of manufactured products to Africa increased by 35 per cent.[7] This reflected the increasing number of bilateral agreements and partnerships between African countries and China.

Africa's share in world imports of agricultural products was 14 per cent, making it the number one importing region.[8] Africa's share in agricultural exports was only 8.1 per cent, and 10.4 per cent in primary products exported.[9] The total value exported in agricultural products amounted to $34.3 billion in 2007.

The largest markets for African agricultural products were Europe ($16.5 billion), Asia ($5.7 billion), and the Middle East and North America ($1.7 billion and $1.6 billion). The largest exporters of agricultural products, measured by total value, were South Africa with $5.6 billion, Côte d'Ivoire with $3.9 billion, and Morocco with $2.8 billion. Many African economies increased their agricultural exports from 1990 to 2007 significantly. For instance, Kenya, Ethiopia and Tunisia's exports performed extremely well, with growth rates of 299 per cent, 297 per cent and 262 per cent respectively, whereas countries such as Cameroon and Côte d'Ivoire increased their exports by 58 per cent and 64 per cent respectively.[10]

The largest food-importing countries were Nigeria ($6.6 billion), Algeria ($5.5 billion) and Egypt ($5.2 billion), whereas countries such as Morocco, Kenya and South Africa experienced the fastest growth rates between 1990 and 2007 of 464 per cent, 397 per

cent and 381 per cent respectively. This illustrates a trend over the past two decades whereby African economies have been showing high growth in their levels of food imports. The largest African food exporter in 2007 was South Africa, with an export value of $4.2 billion. Other large food exporters were Côte d'Ivoire with $3.2 billion, and Morocco with $2.6 billion. Smaller economies such as Malawi exported food to the value of $584 million.[11]

In 2007, intra-African trade remained low despite strong GDP growth rates. Intraregional trade, therefore, plays only a minor role in Africa's economy. For example, total intraregional merchandise exports in 2007 were around 10 per cent of the total export volume – the smallest share of intraregional trade of all continents.[12] West Africa's intraregional trade registered the highest average growth rates during the 10-year period from 1996 to 2006 (see table 43).

In 2007, intra-African trade remained low despite strong GDP growth rates. Intraregional trade, therefore, plays only a minor role in Africa's economy.

Although estimates indicate that Africa is more vulnerable to commodity prices than to global financial markets,[13] the crisis may still impact economic activity and foreign trade further.

The significant dependence by African countries on foreign trade makes maritime transport – its quality, efficiency and cost-effectiveness – a crucial factor in the continent's competitiveness. Hence the importance of looking at the latest developments and the performance of sea ports in Africa.

B. AFRICAN PORTS: SOME IMPROVEMENTS AND MORE EXPECTED

Most of the world's major ports are located close to the main international shipping routes that traverse the East–West axis. In Africa, the main international shipping route transits the Red Sea into the Suez Canal through the Mediterranean and out through the Strait of Gibraltar (see fig. 30). Vessels travelling along this route deliver goods mainly to and from Asia and Europe, although in recent years intraregional trade has been increasing.

Global port- or terminal-operating companies have sought to expand along the main international shipping routes. However, for a variety of reasons, Somalia, Eritrea, Sudan, the Libyan Arab Jamahiriya and Tunisia are not currently host to these global port- or terminal-operating companies. Among the reasons for this are local physical constraints (e.g. related to water depth, existing shoreside facilities or infrastructure), as well as social, political, legal and economic constraints.

Table 43

Share of intraregional trade in total African trade

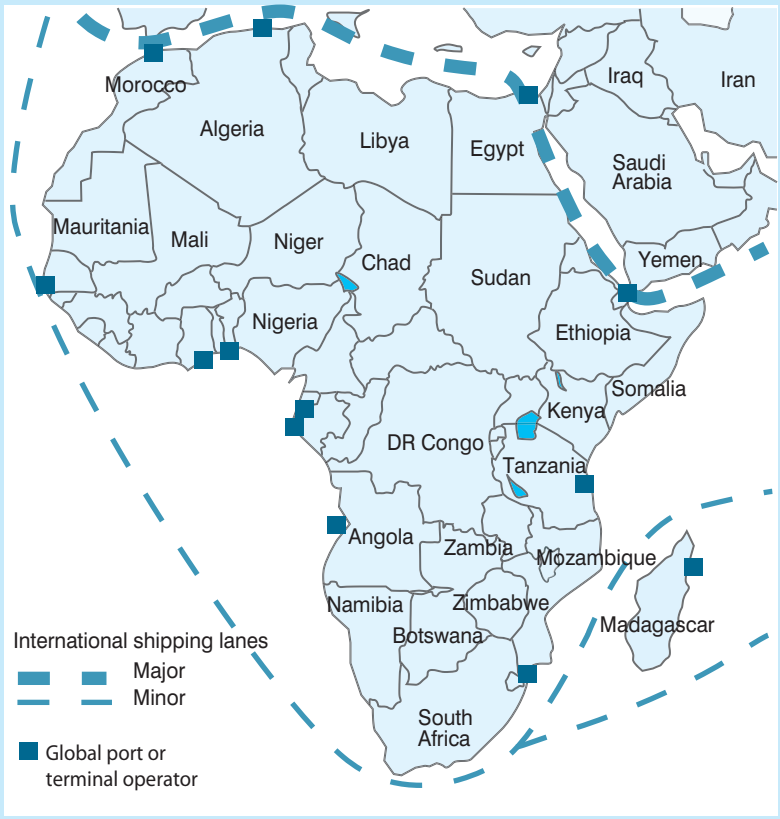
(percentages)

Selected subregions	2006			1996–2006 average		
	Share of intra-group trade	Intra-group trade growth rate	Group trade growth rate	Share of intra-group trade	Intra-group trade growth rate	Group total trade growth rate
Africa	8.33	17.59	21.34	10.57	11.22	12.94
East Africa	14.33	18.85	20.62	9.11	7.52	6.99
Central Africa	0.53	23.59	31.74	6.93	6.18	18.24
North Africa	2.72	23.04	26.49	9.51	12.26	16.8
Southern Africa	..	..	..	..	..	6.59
West Africa	8.41	8.57	22.44	11.78	14.29	12.82

Source: UNCTAD secretariat.

Figure 30

Main international shipping lanes, Africa



Source: UNCTAD secretariat.

This, in turn, has affected trade flows, as an increasing number of ships are now avoiding the Suez Canal passage and taking the longer route around the Cape of Good Hope.

As trade volumes rise, it is even more important for African ports to improve cargo-handling operations. While most African ports can handle containers, their cargo-handling operations will remain less efficient if special container cranes are not used. In some African ports, for instance, container moves of 25 per hour are common, whereas in more developed ports the rate can be double or triple (see chapter 5 for more details on port performance).[14]

In recent years, there has been a growing recognition of the need to improve port operations in some countries in Africa.

In recent years, there has been a growing recognition of the need to improve port operations in some countries in Africa. Nigeria, for example, adopted in 2006 the familiar landlord model in its organizational structure, whereby the public sector takes responsibility for port planning, while the private sector (through concessionaires) is responsible for marine and terminal operations, or the development of port infrastructure and equipment. The advantages of such arrangements include improvements in port efficiency, reductions in berthing time, and an increase in overall port productivity[15] (see table 44 below).

In Ghana, measures taken to enhance the efficiency of port operations include the installation of ship-to-shore gantry cranes, rubber-tyred gantry cranes, the construction of a container terminal, and a new off-dock container devanning area. To facilitate the clearance process, the Ghana Shippers' Council introduced a destination inspection scheme, scanners to examine containers, and a satellite tracking system to monitor the transit of goods. Furthermore, the ports have been refurbished and cameras installed to improve security and to reduce the incidence of theft.[16]

Table 44

Performance indicators

(days)

Country name	Time to import (days)				Time to export (days)			
	2006	2007	2008	2009	2006	2007	2008	2009
Algeria	22	22	23	23	15	15	17	17
Angola	58	58	58	62	64	64	64	68
Benin	41	41	41	40	34	34	34	32
Botswana	43	43	43	42	33	33	33	31
Burkina Faso	54	54	54	54	45	45	45	45
Burundi	71	71	71	71	47	47	47	47
Cameroon	53	33	33	33	39	27	27	27
Central African Republic	66	66	66	66	57	57	57	57
Chad	102	102	102	102	78	78	78	78
Congo	62	62	62	62	50	50	50	50
Côte d' Ivoire	43	43	43	43	23	23	23	23
Democratic Rep. of the Congo	62	66	66	66	50	46	46	46
Djibouti	..	26	18	16	..	25	22	19
Egypt	29	25	18	15	27	20	15	14
Eritrea	69	69	69	60	69	59	59	50
Ethiopia	42	42	42	42	46	46	46	46
Gabon	..	22	22	22	19	19	19	20
Gambia	..	23	23	23	..	23	23	24
Ghana	55	42	29	29	47	21	19	19
Guinea	32	32	32	32	33	33	33	33
Guinea-Bissau	..	24	24	24	..	25	25	25
Kenya	62	37	37	26	45	29	29	29
Lesotho	49	49	49	49	44	44	44	44
Malawi	54	54	54	54	45	45	45	45
Mali	65	65	65	42	44	44	44	38
Mauritania	40	42	42	42	42	35	35	35
Morocco	30	30	19	18	18	18	14	14
Mozambique	38	38	38	32	27	27	27	26
Namibia	24	24	24	24	29	29	29	29
Niger	64	64	64	64	59	59	59	59
Nigeria	53	46	46	42	41	26	26	25
Rwanda	92	95	69	42	63	60	47	42
Senegal	26	26	26	18	20	20	20	14
Sierra Leone	34	34	34	34	31	31	31	29
South Africa	35	35	35	35	30	30	30	30
Sudan	83	83	54	49	56	56	39	35
Swaziland	..	33	33	33	..	21	21	21
Togo	43	29	29	29	34	24	24	24
Tunisia	29	29	22	23	18	18	17	17
Uganda	67	67	37	37	42	42	39	39
United Republic of Tanzania	51	30	30	31	30	24	24	24
Zambia	64	64	64	64	53	53	53	53
Zimbabwe	67	67	67	73	52	52	52	53
Average[a]	52	47	44	42	41	37	36	35

[a] Rounded figures.

Source: World Bank. *Doing Business: Trading Across Borders.*

C. AFRICAN SHIPPING NETWORKS AND LINER SHIPPING CONNECTIVITY IN AFRICA: A DIFFICULT PATH

Access to world markets depends largely on maritime transport connectivity. Important challenges exist for developing countries, especially for sub-Saharan liner operators, as they comprise a large number of relatively small markets, served in many cases by gateways that have lacked investment to take them beyond minimum standards of efficiency. Operations are also hampered by unnecessary paperwork and poor inland connections, and sometimes also by political and economic instability.

Important challenges exist for developing countries, especially for sub-Saharan liner operators …

In general, regional trends have followed the worldwide pattern, whereby a few global carriers have penetrated markets and dominate them. In fact, African trade to and from Europe and North America is dominated by only a small number of lines, including the A.P. Moller–Maersk Group, the Mediterranean Shipping Company (MSC), Safmarine, Mitsui O.S.K. Lines (MOL), Deutsche Afrika-Linien (DAL), Compagnie Maritime d'Affrêtement–Compagnie Générale Maritime (CMA-CGM), and these are all headquartered in Europe. The Far East and South-East Asia route is served by many liner carriers, including major operators from both Europe and Asia.

Operations are also hampered by unnecessary paperwork and poor inland connections, and sometimes also by political and economic instability.

South Africa remains the largest market in volume terms for containerized cargo, with 3.9 million TEUs serviced in 2008. Durban, the largest port in the region, with growth rates of currently 6.6 per cent, had a container throughput of 2.6 million TEUs in 2008. The other major ports in the country, Cape Town and Port Elizabeth, recorded only marginal growth rates. Most of the cargo volume bound for Europe, North America, Asia and the Middle East is carried by the two largest shipping lines: the A.P. Moller–Maersk Group with its subsidiaries, and MSC. South Africa has six ports that attract 30 companies providing regular services. It benefits from its geographical position, as it not only caters for regional trade, but also for some shipping services that connect South America with Asia. However, the ships on these routes tend to be small – the largest ship calling at a South African port in January 2009 had a 6,742-TEU carrying capacity. South Africa is the country on the African continent that has the largest number of intraregional maritime connections, with international carriers providing direct services to 29 other African countries.

Other countries in Southern Africa have seen improvements in their connectivity, notably Mauritius, providing transhipment services, and Namibia, where investments in the port of Walvis Bay aim at attracting cargo from a wider hinterland, including Botswana and Zambia. The small island economies of the Comoros and Seychelles have seen their connectivity worsen in recent years.

Major West African ports (in Cameroon, Côte d'Ivoire, Ghana, Nigeria and Senegal) have experienced strong growth in cargo throughput in the past few years. However, reliable data are not available. The highest growth rates have been experienced in ports of oil-exporting countries, such as Angola, Cameroon and Nigeria. West Africa is serviced largely by the A.P. Moller–Maersk Group and by CMA-CGM. CMA-CGM has a large market share especially in French-speaking countries. It is worth noting that due to the high demand for automobiles and other vehicles, shipping lines that have ro-ro ships have been able to survive.[17] Most countries in West Africa have seen their shipping connectivity improve over recent years, including Côte d'Ivoire after a downturn in 2006. In particular, Senegal has significantly improved its access to shipping services since 2005, when additional companies started to introduce new services, doubling the largest vessel size between 2006 and 2007 when the Dubai-based port operator DP World won the concession to operate the existing container terminal and build a new facility in Dakar.

The smallest cargo volume in sub-Saharan Africa is found in East Africa, a region served mainly by the two major ports of Mombasa and Dar-es-Salaam. Due to the low trading volume to and from this region, with a container throughput in 2007 in Mombasa and Dar-es-Salaam of around 800,000 TEUs, no single line is devoted to servicing this region only. East African ports in Djibouti, Kenya and the United Republic of Tanzania

all saw important connectivity improvements between 2006 and 2007, while Sudan has experienced a slow but steady decline over the last five years, in spite of its closeness to the Suez Canal route.

As far as Egypt is concerned, in January 2009 there were 47 international shipping companies providing regular services to Egyptian container ports; they employed 405 ships, including vessels with a carrying capacity of up to 9,580 TEUs. Egypt benefits from its geographical position, and from the Suez Canal, which forms part of the world's busiest shipping route, connecting Europe and Asia. Thus, several terminals have been developed by private sector investors, who provide services to shipping lines that redistribute cargo to other Mediterranean and African destinations. As a consequence, Egypt's traders benefit from direct shipping links to 59 trading partners – more than any other African country, and more than twice the region's average of 24 direct connections. Nine out of Egypt's 59 direct connections are to other countries in Africa, particularly in North and East Africa.

With regard to the components of the LSCI, … globally and in Africa, the total number of ships per country, the TEU capacity deployed, and the average maximum ship size have all increased since 2004.

Although Morocco's ports attract only 18 companies, larger ships are employed with up to a 11,000-TEU carrying capacity. Thus, Morocco, benefiting from its geographical position, saw a surge in its shipping connectivity in 2008 and 2009, after a new specialized transhipment facility was inaugurated in Tangier. Tangier connects major East–West and North–South shipping routes, including the routes that connect Europe with South America and with West Africa. This improved connectivity ultimately benefits Moroccan importers and exporters, who have access to more destinations by direct shipping service and who may benefit from lower shipping costs resulting from the economies of scale achieved with larger vessels.

UNCTAD's Liner Shipping Connectivity Index (LSCI) aims at capturing a country's level of integration into global liner shipping networks. The five components of the index are: (a) the number of ships; (b) the container-carrying capacity of those ships; (c) the maximum vessel size; (d) the number of services; and (e) the number of companies.[18] Globally, China leads the LSCI ranking (with an LSCI value of 132 in 2009), followed by other Asian countries and European countries. For most African countries, the LSCI shows values that are far below the world average. The best-connected countries in Africa are Egypt, Morocco and South Africa (see table 45 for the LSCI of African countries for the period 2004–2009).

With regard to the components of the LSCI, it is interesting to note that, globally and in Africa, the total number of ships per country, the TEU capacity deployed, and the average maximum ship size have all increased since 2004. By comparison, the number of companies providing liner services has decreased. In Egypt, for example, the number of international companies providing services to the country's ports went down from 61 in 2004 to 47 in 2009 (according to the latest available figures); in South Africa there are now 30 companies, down from a total of 38 in 2004. This trend raises concerns about the impact of the continuing process of concentration in liner shipping, especially in respect of countries with a low connectivity, where a further decline in the number of service providers may give rise to oligopolistic or monopolistic market structures. Eritrea, Seychelles and Somalia, for example, record services from only one international shipping line; Liberia is served by two providers; and Cape Verde and Sierra Leone receive three liner companies.

Africa's intraregional liner shipping connections are largely determined by the shipping lines' routes connecting African countries with Europe and Asia, and to a lesser extent with the Americas. West African ports are well connected with countries in Europe, but not with countries in East Africa or North Africa; for example, there are no direct shipping services between Côte d'Ivoire and Kenya or between Côte d'Ivoire and Algeria, whereas there are 15 shipping companies that provide regular shipping services between Côte d'Ivoire and Ghana. By the same token, 12 companies provide direct services between Mombasa in Kenya and Dar-es-Salaam in the United Republic of Tanzania, while neither of these two ports have any direct service to the western or northern seaboard of Africa. Thus, maritime trade between African countries lying on the same North–South route benefits from relatively frequent services, whereas maritime trade between opposite coasts of the African continent depends on transhipment services, mostly via Europe or South Africa.

Normally, a transhipment operation in a third-country port means higher costs and longer delivery times

Table 45

Indicators of African countries' connectivity in liner shipping

	LSCI: World ranking		LSCI: Connectivity Index values						Percentage of direct country connections with other african countries [a]
	2004	2009	2004	2005	2006	2007	2008	2009	
Algeria	74	96	10.0	9.7	8.7	7.9	7.8	8.4	14%
Angola	76	75	9.7	10.5	9.5	9.9	10.2	11.3	43%
Benin	73	70	10.1	10.2	11.0	11.2	12.0	13.5	52%
Cameroon	69	73	10.5	10.6	11.4	11.7	11.0	11.6	50%
Cape Verde	153	115	1.9	2.3	2.8	2.5	3.6	5.1	44%
Comoros	105	117	6.1	5.8	5.4	5.5	5.2	5.0	64%
Congo	87	74	8.3	9.1	9.1	9.6	11.8	11.4	43%
Côte d'Ivoire	50	53	14.4	14.5	13.0	15.0	16.9	19.4	45%
Democratic Republic of the Congo	142	137	3.0	3.0	2.7	2.7	3.4	3.8	100%
Djibouti	98	58	6.8	7.6	7.4	10.5	10.4	18.0	24%
Egypt	16	17	42.9	49.2	50.0	45.4	52.5	52.0	15%
Equatorial Guinea	127	141	4.0	3.9	3.8	3.4	3.9	3.7	55%
Eritrea	138	145	3.4	1.6	2.2	0.0	3.3	3.3	33%
Gabon	81	88	8.8	8.8	8.7	8.6	8.9	9.2	48%
Gambia	119	103	4.9	6.1	4.8	4.7	5.0	7.5	44%
Ghana	58	54	12.5	12.6	13.8	15.0	18.1	19.3	43%
Guinea	104	97	6.1	6.9	8.7	8.5	6.4	8.3	54%
Guinea-Bissau	152	143	2.1	5.2	5.0	5.1	5.3	3.5	50%
Kenya	84	72	8.6	9.0	9.3	10.9	10.9	12.8	32%
Liberia	113	112	5.3	6.0	4.5	4.5	4.3	5.5	67%
Libyan Arab Jamahiriya	114	84	5.3	5.2	4.7	6.6	5.4	9.4	13%
Madagascar	96	91	6.9	6.8	8.3	8.0	7.8	8.6	63%
Mauritania	112	104	5.4	6.0	6.2	7.9	7.9	7.5	50%
Mauritius	54	64	13.1	12.3	11.5	17.2	17.4	14.8	41%
Morocco	78	23	9.4	8.7	8.5	9.0	29.8	38.4	35%
Mozambique	99	85	6.6	6.7	6.7	7.1	8.8	9.4	48%
Namibia	102	69	6.3	6.6	8.5	8.4	11.1	13.6	58%
Nigeria	56	50	12.8	12.8	13.0	13.7	18.3	19.9	43%
Sao Tome and Principe	159	153	0.9	1.3	1.6	1.6	2.5	2.4	45%
Senegal	72	63	10.1	10.1	11.2	17.1	17.6	15.0	59%
Seychelles	120	118	4.9	4.9	5.3	5.3	4.5	4.9	75%
Sierra Leone	107	111	5.8	6.5	5.1	5.1	4.7	5.6	43%
Somalia	140	149	3.1	1.3	2.4	3.1	3.2	2.8	33%
South Africa	32	29	23.1	25.8	26.2	27.5	28.5	32.1	40%
Sudan	95	86	6.9	6.2	5.7	5.7	5.4	9.3	33%
Togo	71	68	10.2	10.6	11.1	10.6	12.6	14.4	52%
Tunisia	83	107	8.8	7.6	7.0	7.2	7.0	6.5	19%
United Republic of Tanzania	90	83	8.1	8.6	8.7	10.6	10.5	9.5	30%

Source: UNCTAD secretariat, using data provided by *Containerisation International Online.*

[a] Based on 2008 data.

compared to direct port-to-port services between two trading partners. Port operations in Africa's transhipment centres – such as those in Djibouti, Egypt, Morocco, Senegal and South Africa – are improving; ultimately they benefit not only their own country's importers and exporters, but also contribute to the promotion of intraregional South–South trade, especially on routes where trade volumes are currently not large enough to commercially justify a direct shipping service. However, it must be recalled that the most efficient transport arrangements still need matching trade support services and administrative procedures. Therefore, trade facilitation is another important factor for the competitiveness of African countries, both when they are considered individually and as a continent. A brief overview of the situation shows that recent developments are on the right track, but that more needs to be done.

… trade facilitation solutions are more effective when implemented across countries – by means of multilateral, regional or bilateral arrangements – through cooperation and harmonization. Benefits can be maximized when more countries strive to implement trade and transport facilitation reforms.

D. TRADE FACILITATION ISSUES IN AFRICA

Trade facilitation and efficient transport and logistics services have emerged in recent years as key determinants for successful market access. Globally fragmented production processes and just-in-time inventory techniques have made speed, transparency and security essential for integration into global value chains.

African intraregional trade is confronted with excessive transaction costs, operational uncertainty and border crossing delays. Sub-Saharan countries face comparatively longer time frames for imports and exports, higher transport costs, and a relatively high number of documentation requirements.

Trade facilitation is of particular relevance in the African development context. African intraregional trade is confronted with excessive transaction costs, operational uncertainty and border crossing delays.[19] Sub-Saharan countries face comparatively longer time frames for imports and exports, higher transport costs, and a relatively high number of documentation requirements (table 46; fig. 31). Such barriers to trade impact on trade flows and offset potential gains from trade liberalization.

Of the 118 countries monitored by the World Economic Forum's Global Enabling Trade Index, only 2 (out of 17) sub-Saharan countries are among the middle-performing countries, namely Mauritius (rank 40) and South Africa (rank 59) (see table 47).

Such high barriers to trade cause regional economic integration to lag behind its potential. Operational and administrative barriers to intraregional trade have to be removed in order to fully realize the benefits offered by a single market, a free trade area or a customs union. Furthermore, trade facilitation solutions are more effective when implemented across countries – by means of multilateral, regional or bilateral arrangements – through cooperation and harmonization. Benefits can be maximized when more countries strive to implement trade and transport facilitation reforms. Costs can be reduced through the development of regional solutions based on international standards known to be the most efficient way of harmonizing procedures and formalities. Countries can also support each other in implementation by sharing experiences and by building capacities for development of the required infrastructure and services, including IT applications.

Most African regional economic agreements (see table 48 above) contain provisions or dedicated protocols on transport, transit, and customs cooperation. However, implementation of these provisions and enforcement of commitments have fallen short of their objectives for a variety of reasons, including weak institutional capacity, weak operational coordination, and financial and human resource constraints, among other things. Amid the recent negotiations on trade facilitation at WTO as part of the Doha Development Round and the Economic Partnership Agreement (EPA) negotiations, regional and subregional integration bodies such as the Common Market for Eastern and Southern Africa (COMESA), the Southern African Development Community (SADC), the Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU) have been multiplying their efforts to strengthen implementation of their trade and transport facilitation objectives, including

Table 46

Selected indicators of border administration efficiency in Africa

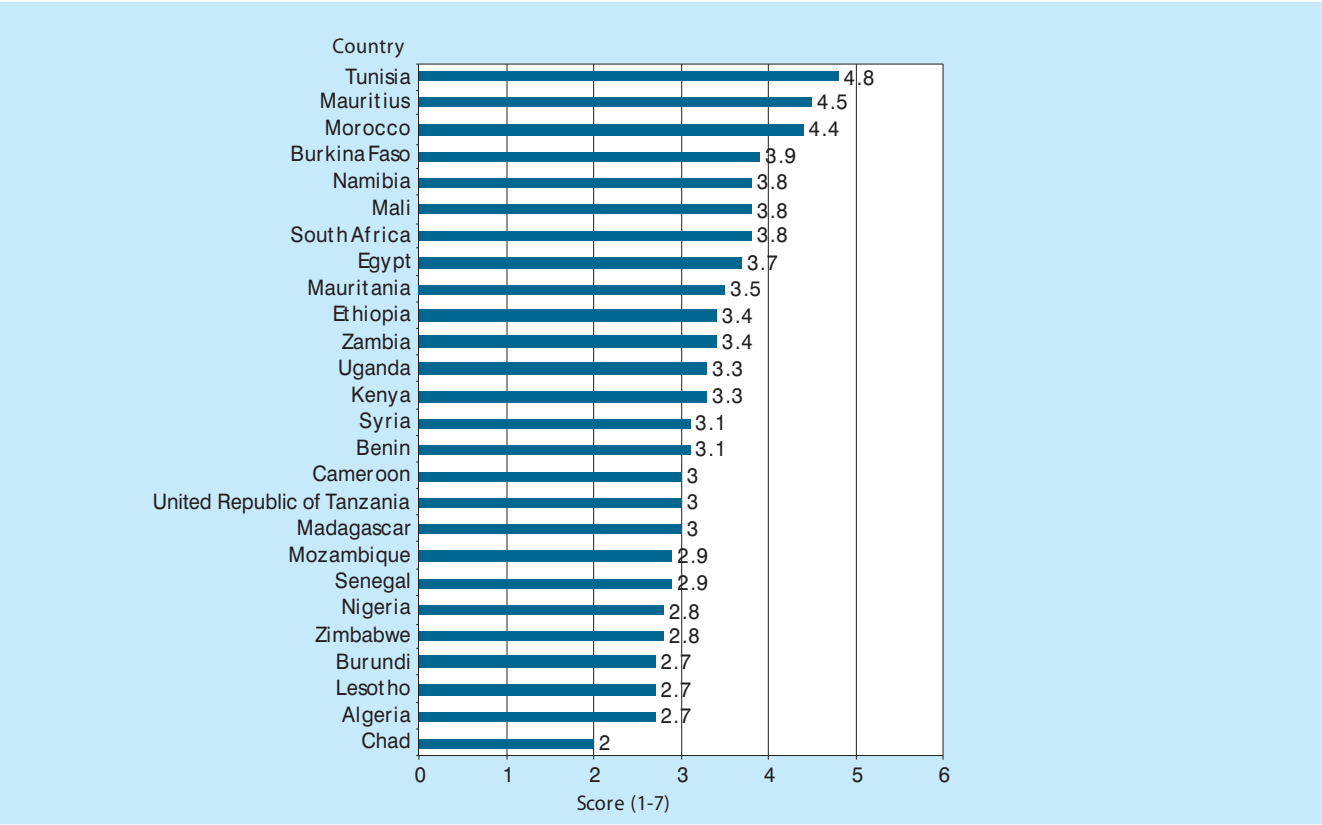
Country	Burden of customs procedures	Customs services Index	Effectiveness and efficiency of clearance	Time to import	Documents for import	Cost to import
	Scale of 1–7	Scale of 0–11.5	Scale of 1– 5	Days	Number	US$
Algeria	2.7	3.7	1.6	23.0	9.0	1 378
Benin	3.1	3.8	1.8	41.0	7.0	1 202
Burkina Faso	3.9	2.7	2.1	54.0	11.0	3 522
Burundi	2.7	..	2.2	71.0	10.0	3 705
Cameroon	3.0	5.8	2.6	33.0	8.0	1 529
Chad	2.0	..	2.0	102.0	9.0	5 520
Egypt	3.7	3.7	2.1	18.0	7.0	729
Ethiopia	3.4	4.2	2.1	42.0	8.0	2 793
Kenya	3.3	4.0	2.3	37.0	8.0	1 995
Lesotho	2.7	2.7	2.4	49.0	8.0	1 210
Madagascar	3.0	2.3	2.2	49.0	10.0	1 282
Mali	3.8	2.3	2.2	65.0	11.0	2 680
Mauritania	3.5	1.8	2.4	42.0	11.0	1 363
Mauritius	4.5	6.5	2.0	16.0	6.0	673
Morocco	4.4	8.2	2.2	19.0	11.0	800
Mozambique	2.9	..	2.2	38.0	10.0	1 185
Namibia	3.8	3.0	2.1	24.0	9.0	1 550
Nigeria	2.8	3.0	2.2	46.0	9.0	1 047
Senegal	2.9	4.0	2.4	26.0	11.0	1 720
South Africa	3.8	..	3.2	35.0	9.0	1 195
Tunisia	4.8	..	2.8	22.0	7.0	810
Uganda	3.3	6.0	2.2	37.0	7.0	2 990
United Republic of Tanzania	3.0	3.0	2.1	30.0	7.0	1 425
Zambia	3.4	6.7	2.1	64.0	11.0	2 840
Zimbabwe	2.8	4.5	1.9	67.0	13.0	2 420
ETI[a] sample average	3.9	5.7	2.7	27.1	7.6	1 338
ETIsample minimum	2.0	1.7	1.6	3.0	3.0	367
ETI sample maximum	6.4	10.2	4.0	104.0	14.0	5 520
Africa average	3.3	4.1	2.2	42.0	9.1	1 903
Africa minimum	2.0	1.8	1.6	16.0	6.0	673
Africa maximum	4.8	8.2	3.2	102.0	13.0	5 520

Source: World Economic Forum. *Africa Competitiveness Report 2009*.

[a] ETI refers to *Enabling Trade Index.*

Figure 31

Burden of customs procedures in Africa, 2007



Source: World Economic Forum. *Africa Competitiveness Report 2009*.

through the extensive use of UNCTAD's ASYCUDA customs automation programme.[20]

Subregional initiatives in this area encompass harmonization of procedures, adoption of cross-border insurance schemes, transit guarantee systems, and the production of standardized documents, as well as cooperation and information exchange among customs administrations. Some areas where progress has been made include:

(a) ECOWAS, where member states now use a single customs document for import, export and transit. ECOWAS members also adopted the harmonized system as customs nomenclature, and use a common certificate of origin. The WAEMU subregion is currently undertaking a comprehensive project to set up joint border posts;

(b) COMESA, which has advanced in the area of cross-border transport facilitation through the adoption of the COMESA Carrier's Licence, the COMESA motor vehicle third-party insurance scheme, and the harmonization of road transit charges. In the area of customs, COMESA members adopted the COMESA Customs Declaration Documents (COMESA-CD) and the World Customs Organization's harmonized system as customs nomenclature, also as part of the implementation of the ASYCUDA system in the subregion. In addition, members plan to launch a regionally recognized customs bond guarantee – the RCBG;

(c) SADC members' adoption of the common customs document SAD 500 for import, export and transit customs regimes, which is also promoted by ASYCUDA projects in member countries; and,

(d) Regulation by SACU members of cross-border traffic rights for the transportation of goods using SACU cross-border transport permits.

Table 47

Global Enabling Trade Index, Africa, 2008

Country	Rank/25 [a]	Rank/118 [b]	Score
Mauritius	1	40	4.50
Tunisia	2	49	4.23
South Africa	3	59	3.98
Morocco	4	74	3.71
Namibia	5	77	3.66
Uganda	6	79	3.63
Zambia	7	85	3.52
Kenya	8	86	3.51
Egypt	9	87	3.51
Madagascar	10	88	3.49
Mali	11	90	3.42
Cameroon	12	92	3.42
Lesotho	13	95	3.36
Mauritania	14	97	3.34
Benin	15	98	3.34
Burkina Faso	16	99	3.33
Senegal	17	100	3.33
Mozambique	18	101	3.30
United Republic of Tanzania	19	112	3.27
Ethiopia	20	106	3.06
Algeria	21	108	3.04
Nigeria	22	111	3.02
Zimbabwe	23	112	2.98
Burundi	24	117	2.70
Chad	25	118	2.60
Africa			3.80
North Africa			3.80
Sub-Saharan Africa			3.90
ASEAN			4.61
Latin America and the Caribbean			3.79

Source: World Economic Forum. *Africa Competitiveness Report 2009*.

Table 48

Major African regional economic communities

Major regional economic communities	Type	Areas of integration and cooperation	Date of entry into force	Member States	Specified objective
Arab Maghreb Union (UMA)	Free trade area	Goods, services, investment, migration	17 Feb 1989	Algeria, Libyan Arab Jamahiriya, Mauritania, Morocco, Tunisia	Full economic union
Common Market for Eastern and Southern Africa (COMESA)	Free trade area	Goods, services, investment, migration	8 Dec 1994	Angola, Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, Zimbabwe	Common market
Community of Sahel-Saharan States (CENSAD)	Free trade area	Goods, services, investment, migration	4 Feb 1998	Benin, Burkina Faso, Central African Republic, Chad, Côte d'Ivoire, Djibouti, Egypt, Eritrea, Gambia, Libyan Arab Jamahiriya, Mali, Morocco, Niger, Nigeria, Senegal, Somalia, Sudan, Togo, Tunisia	Free trade area and integration in some sectors
Economic Community of Central African States (ECCAS)	Free trade area	Goods, services, investment, migration	1 Jul 2007	Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Sao Tome and Principe, Rwanda	Full economic union
Economic Community of West African States (ECOWAS)	Free trade area	Goods, services, investment, migration	24 Jul 1993	Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo	Full economic union
Intergovernmental Authority on Development (IGAD)	Free trade area	Goods, services, investment, migration	25 Nov 1996	Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, Uganda	Full economic union
Southern African Development Community (SADC)	Free trade area	Goods, services, investment, migration	1 Sep 2000	Angola, Bostwana, Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia, Zimbabwe	Full economic union
Economic and Monetary Community of Central Africa (CEMAC)	Customs union	Goods, services, investment, migration	24 Jun 1999	Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon	Full economic union

Table 48 (continued)

Major regional economic communities	Type	Areas of integration and cooperation	Date of entry into force	Member States	Specified objective
East African Community (EAC)	Customs union	Goods, services, investment, migration	7 Jul 2000	Kenya, United Republic of Tanzania, Uganda, Rwanda, Burundi	Full economic union
Southern African Customs Union (SACU)	Customs union	Goods, services, investment, migration	15 Jul 2004	Botswana, Lesotho, Namibia, South Africa, Swaziland	Customs union
West African Economic and Monetary Union (UEMOA)	Customs union	Business law harmonized. Macroeconomic policy convergence in place	10 Jan 1994	Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo	Full economic union

Source: UNCTAD secretariat. *Economic Development in Africa Report 2009.*

These recent implementation efforts have taken place against the background of the ongoing negotiations on trade facilitation at WTO aimed at clarifying and improving relevant aspects of General Agreement on Tariffs and Trade (GATT) articles V, VIII and X (on freedom of transit; fees and formalities; and the publication and administration of trade regulations; respectively). The negotiations started in late 2004, and delegations have put forward numerous proposals on trade facilitation provisions in areas such as:

(a) Access to trade-related information;

(b) Expediting the clearance and release of goods;

(c) Strengthening the uniform administration of trade regulations;

(d) Simplifying and reducing procedures and formalities; and

(e) Strengthening transit guarantee systems, and national and cross-border border agency coordination.

Many of the provisions proposed have a regional dimension for implementation. Hence, to the extent that regional trade facilitation objectives are in line with the negotiated commitments at WTO, the multilateral negotiation process can contribute to advancing regional reforms – provided that technical assistance for implementation is forthcoming. One of the objectives of the WTO negotiations is to enhance trade facilitation–related technical assistance and assist delegations in the design of special and differential treatment provisions that link the application of commitments to countries' individual implementation capacity. African members individually, and the African group as a whole, have been very active in the negotiations. They expect to be both key actors in the negotiating group and main beneficiaries when implementing the outcome of the negotiations (through technical assistance and capacity-building activities).

E. SPECIAL CASE: TRANSIT AND INLAND TRANSPORT FOR LANDLOCKED DEVELOPING COUNTRIES IN AFRICA

Sixteen of the world's 31 landlocked developing countries (LLDCs) are amongst the poorest countries in the world, and of the world's 31 LLDCs, 15 are located in Africa. The macroeconomic difficulties of LLDCs are evident. Over the period 2003–2005, the GDP per capita of LLDCs was approximately 50 per cent of the GDP per capita of transit-developing countries, and only a quarter of the GDP per capita of developing countries in general.[21]

The main problems for LLDCs with regard to overseas trade are geographical remoteness from the sea and dependence on transport systems in neighbouring and/or coastal countries. This transit dependence increases

transaction costs and complicates the countries' export and import processes. As a result, LLDCs trade less and grow more slowly than neighbouring coastal countries. None of the landlocked countries – except Ethiopia – depends exclusively on one trade route. LLDCs often have the choice of two or more ports. The choice of transit route depends mainly on transport costs, time to transport, and the quality and reliability of the trade support services available for goods in transit.

Landlocked countries are affected by high cost in freight transport and unpredictability in transportation time. Countries such as Burundi, the Central African Republic, Mali and Uganda spend an average of 15 per cent of their export earnings on transport, and for some this cost is as high as 50 per cent. According to recent World Bank figures, the cost of transporting a container from an LLDC to a port in a developed country is about 20 per cent higher than transporting from a coastal country.[22] The main factors behind the higher costs are unreliable transport chains due to inadequate transit procedures, over-regulation, multiple controls, and poor services.

Landlocked countries are affected by high cost in freight transport and unpredictability in transportation time. Countries such as Burundi, the Central African Republic, Mali and Uganda spend an average of 15 per cent of their export earnings on transport, and for some this cost is as high as 50 per cent.

The cost of importing appears to be rising, especially in landlocked countries (fig. 32). A recent study on the trading costs of landlocked countries suggests that improving the condition of road infrastructure is not sufficient to eradicate inefficiency and high transport costs. The main problems are associated with port infrastructure and the quality of port services, which affects the process of dispatching goods out of transit ports.[23]

Various landlocked countries are planning to design or upgrade railway lines connecting them to neighbouring ports (for existing transit corridors; see fig. 33). For example, railway lines have been proposed to link the United Republic of Tanzania's main port of Dar-es-Salaam with Burundi, the Democratic Republic of the Congo, southern Sudan, and Uganda. These links will make the Dar-es-Salaam route cheaper and more direct than the Mombasa route, and may divert cargo transiting through Uganda, thereby affecting Uganda's trade sector. This is why Uganda plans to improve its network connections, so that its current rail and road network remains the shortest link from the Indian Ocean to East and Central African countries. The plans include connecting a wider standard-gauge rail to replace the abandoned northern link to Gulu then Juba, and also connecting to Rwanda and the eastern part of the Democratic Republic of the Congo. The standard-gauge railway is planned to run from the port of Mombasa, through Kenya and Uganda, to Rwanda and Burundi, and also to connect in the north with Ethiopia and southern Sudan by the year 2017.[24]

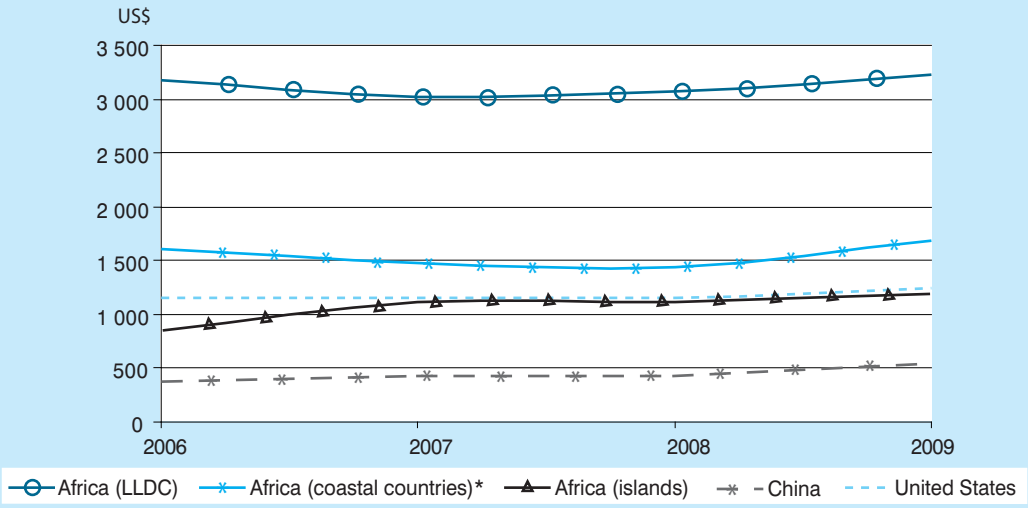
The African Development Bank is funding the direct rail project linking Dar-es-Salaam with the Rwandan capital, Kigali. This new link, along with planned upgrades of cargo handling facilities, is aimed at helping Dar-es-Salaam secure a significant share in Rwanda's growing foreign cargo exchange. The project, which is expected to be completed by 2013, involves laying new tracks over a distance of 770 kilometres. The track will be designed to carry heavy cargo at a faster speed, and this is expected to improve security during transit (by diminishing the vandalism of railroads and reducing attacks on trucks in transit).[25]

Goods destined for landlocked countries spend too much time crossing borders, and are subject to unnecessarily lengthy clearance procedures. Much of the delay is caused by red tape at border clearance, as well as inefficient and complicated customs processes. For example, cargo bound for Kenya's inland destinations remains in the port of Mombasa, on average, for five days less than similar goods that are destined for Uganda. This is also the case for goods transported to other LLDCs from other transit ports in Africa. A steady reduction in the number of documents required for imports to landlocked countries in East and Central Africa has been observed in recent years (fig. 34), however more work is needed to reduce these obstacles to trade, by implementing policies that improve bilateral operations between neighbouring countries.

In 2006 and 2007, import times were shorter for landlocked countries in southern Africa than for other landlocked countries, especially those in West and Central Africa (fig. 35). In 2008, East African landlocked countries significantly reduced the time it took to import. These developments could be attributed to the introduction of measures aimed at enhancing transparency

Figure 32

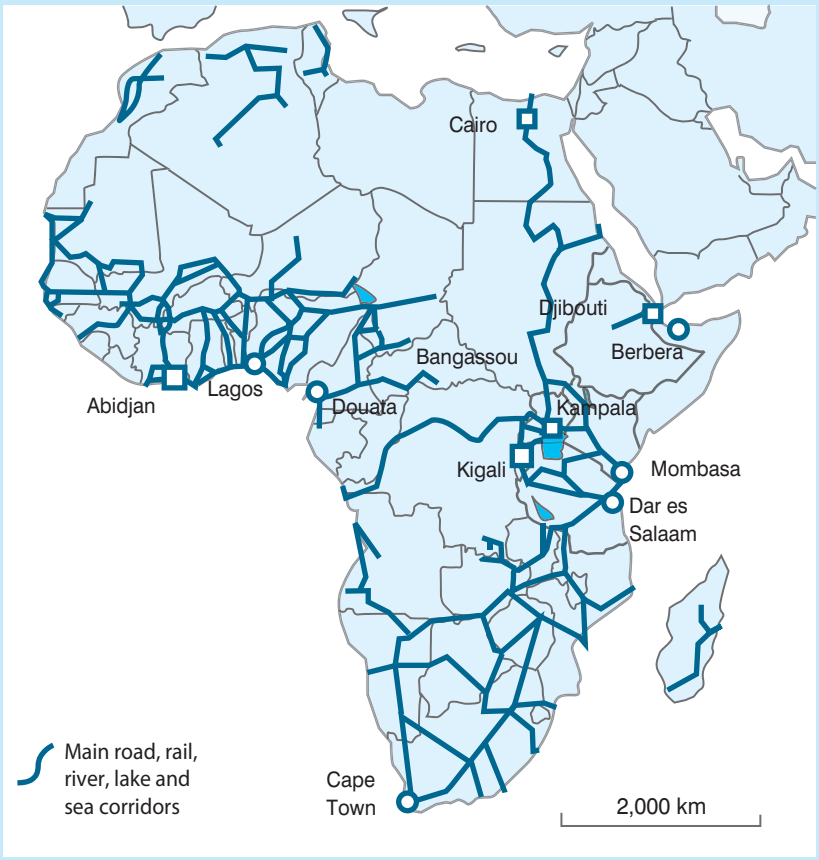
Annual average cost of importing a container



Source: World Bank. *Doing Business: Trading Across Borders.*

Figure 33

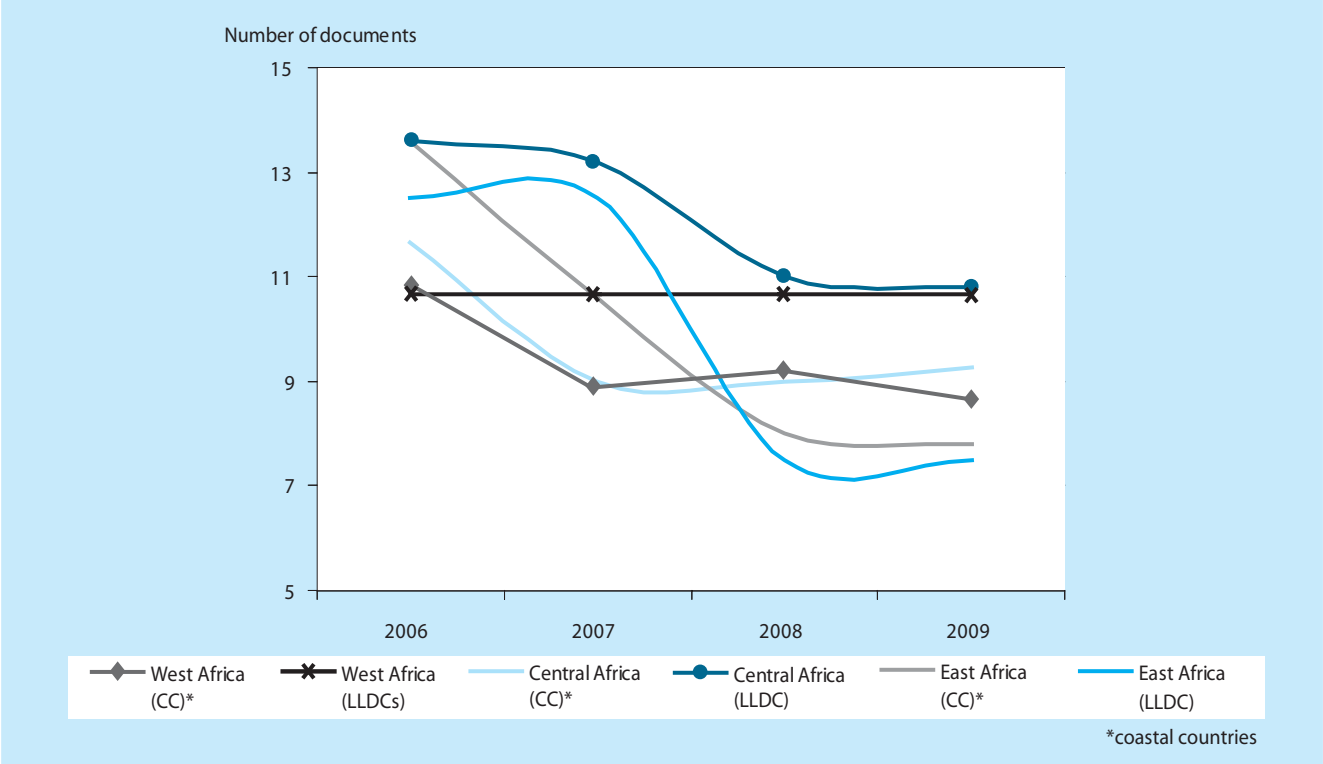
Main road, rail, sea, lake and river corridors in Africa



Source: Bolloré, *The Economist.*

Figure 34

Average number of documents required for import

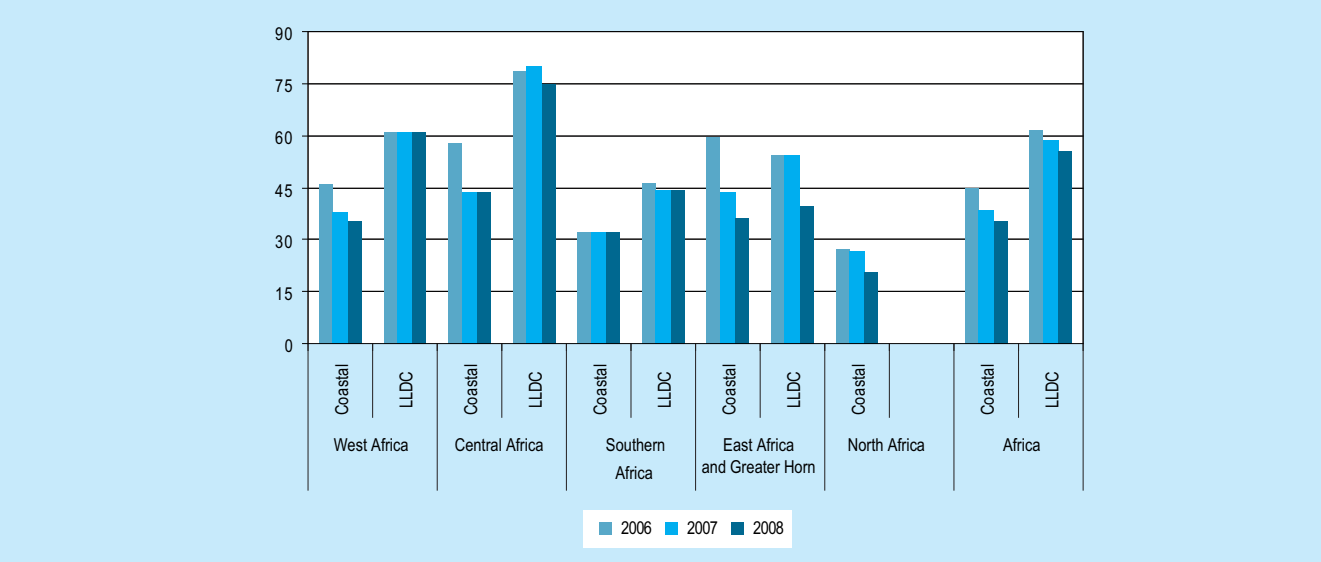


Source: World Bank. *Doing Business: Trading Across Borders.*

Figure 35

Time to import

(days)



Source: World Bank. *Doing Business: Trading Across Borders.*

in intraregional trade and efficiency of custom clearing procedures. In fact, very recently, the East African Community, at its third steering committee in Kampala, adopted a common Authorized Economic Operator (AEO) scheme, based on the internationally recognized WCO Framework of Standards to Secure and Facilitate Global Trade (the "SAFE Framework"). This model is designed to implement modern customs procedures and ensure structured dialogue between customs and the private sector at national and regional levels.

Many busy ports in Africa are located within cities, and congestion is therefore prevalent. This characteristic makes it difficult for ports to effectively manage the growth in trade volume, which is why countries in Africa are considering expanding their seaports and improving port processes and infrastructure. Dry ports/ inland container depots present a possible solution to this growing problem, and are becoming an integral part of port logistics design in Africa. Their function varies among countries, and depends on the characteristics of the country. For landlocked countries, inland container depots are a gateway to the world's trade routes, while inland container depots in coastal countries often serve to reduce rising congestion on roads and in areas within close proximity to ports.

Solutions to trade and transport facilitation for LLDCs have, in recent years, focused on collaborative solutions between LLDCs and transit countries, and were discussed in October 2008 at the mid-term review of the Almaty Programme of Action. UNCTAD's report to the global preparatory meeting on the mid-term review of the Almaty Programme of Action, entitled "Trade and transport facilitation opportunities for landlocked and transit-developing countries", highlighted areas of concrete action, including:

(a) Deepening the understanding of the costs of landlockedness by pursuing and disseminating the results of research programmes on the economics and political economy of transit corridors, notably through surveys and case studies;

(b) Implementing capacity-building programmes aimed at setting up collaborative mechanisms on specific corridors, and developing competences accordingly;

(c) Promoting targeted projects within transit and landlocked countries to implement, when required, core reforms related to facilitation, especially in the area of transport and customs;

(d) Assisting groups of countries on a corridor or within a trading subregion to address systemic issues, including the design and implementation vehicles of transit regimes, based on international best practices; and,

(e) Developing transit corridor performance measurement systems that are cost-effective and sustainable, and facilitate benchmarking of performance between corridors, using toolkits and capacity-building initiatives to help transit and landlocked countries implement them.

This brief overview of recent developments relating to transport and trade facilitation in Africa shows that due to its continuing, and sometimes growing, dependence on overseas markets, efforts will be needed to improve the performance of the maritime transport sector, including in ports and shipping connectivity. At the same time, if intraregional trade is not to be hampered, sea–land connections, as well as transport and border crossing services, will require major improvements. These may take place at the subregional level, and when appropriate at the bilateral level in the case of some landlocked countries and their coastal neighbours. UNCTAD works on these issues by monitoring developments and partnering with countries and regional schemes to build capacity and to design suitable actions to bring about improvements.

ENDNOTES

1 Economic Report on Africa 2009.

2 Economic Report on Africa 2009.

3 Economic Report on Africa 2009.

4 Excluding intra-EU 27 trade. The total value of exports for Africa in 2007 was $424.14 billion. Figures from WTO's International Trade Statistics 2008.

5 Excluding intra-EU 27 trade. Figures from WTO's International Trade Statistics 2008.

6 WTO, International Trade Statistics 2008.

7 WTO, International Trade Statistics 2008.

8 Figures for other regions are: North America (6.0 per cent), South and Central America (8.7 per cent), Europe (9.2 per cent), the Commonwealth of Independent States (10.9 per cent), the Middle East (10.2 per cent) and Asia (7.4 per cent). Figures from International Trade Statistics, WTO, 2008.

9 Figures for other regions are: North America (9.6 per cent), South and Central America (25.1 per cent), Europe (9.0 per cent), the Commonwealth of Independent States (7.6 per cent), the Middle East (2.5 per cent) and Asia (5.6 per cent). Figures from International Trade Statistics, WTO, 2008.

10 WTO, International Trade Statistics 2008.

11 WTO, International Trade Statistics 2008.

12 WTO, International Trade Statistics 2008.

13 International Monetary Fund (2008). *Regional Economic Outlook: Sub-Saharan Africa.* Washington D.C.

14 More developed Asian ports can handle up to 452 container moves per hour (see: http://tradeinservices.mofcom.gov.cn/en/f/2008-01-10/22497.shtml).

15 Pálsson G, Harding A and Raballand G (2007). Port and maritime transport challenges in West and Central Africa. Sub-Saharan Africa Transport Policy Programme. Working paper 84. World Bank. Washington D.C.

16 *The Statesman* (June 2007). GUTA (Ghana Union Traders Association) educated on import procedures. Article by Adu Koranteng.

17 Roll-on roll-off (RORO or ro-ro) ships are vessels that are designed to carry wheeled cargo.

18 These data are derived from *Containerisation International Online*.

19 For more detail, please refer to UNCTAD's *Economic Development in Africa Report 2009* at http://www.unctad.org/Templates/WebFlyer.asp?intItemID=4923&lang=1.

20 For further detail on experiences in regional integration in Africa, refer to UNCTAD's *Economic Development in Africa Report 2009* at http://www.unctad.org/Templates/WebFlyer.asp?intItemID=4923&lang=1.

21 Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and the Small Island Developing States (UN-OHRLLS). Indicators and statistics for Landlocked Developing Countries 2007.

22 Improving trade and transport for landlocked developing countries: World Bank contributions to implementing the Almaty Programme of Action. A report for the mid-term review October 2008.

23 Arvis J-F, Raballand G and Marteau J-F (2007). The cost of being landlocked: logistics costs and supply chain reliability. World Bank Policy Research working paper 4258.

24 "Tanzania/Rwanda plan to build rail link" from *Containerisation International Online* on 1 May 2008; and "Uganda rail at crossroads as attention shifts to Dar – US gives Shs 1.8 trillion for rail link from Dar to Kigali", article by Patrick Kagenda writing in *The Independent* on 11 February 2009.

25 "Tanzania/Rwanda plan to build rail link" from *Containerisation International Online* on 1 May 2008.

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 Germany Gibraltar Greece Guadeloupe Hungary Iceland Ireland Italy	Latvia Lithuania Luxembourg Malta Martinique Monaco Netherlands Norway Poland Portugal Réunion 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 Republic of Moldova	Russian Federation Serbia The former Yugoslav Republic of Macedonia Ukraine
Code 5.2 **In Asia**	Armenia Azerbaijan Georgia Kazakhstan	Kyrgyzstan Tajikistan Turkmenistan Uzbekistan

Annex I (continued)

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 the 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 the Grenadines Trinidad and Tobago Turks and Caicos Islands United States Virgin Islands

Annex I (continued)

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 (Plurinational State of) 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	22.2	86.4	436.8	545.4	511.0	155.7	492.1	1 158.7
Code 1	2007	23.9	91.8	519.7	635.5	513.5	156.1	453.1	1 122.7
	2008	24.3	91.5	544.8	660.6	453.9	148.1	492.6	1 094.5
Europe	2006	100.9	235.8	768.6	1 105.2	535.6	281.9	1 245.2	2 062.7
Code 2	2007	96.9	253.3	779.6	1 129.8	492.2	262.2	1 154.7	1 909.2
	2008	79.3	269.7	839.3	1 188.3	483.4	251.0	1 188.5	1 922.8
Japan and Israel	2006	0.0	10.0	153.1	163.1	210.3	84.4	559.6	854.3
Code 3	2007	0.0	14.4	164.2	178.7	213.3	88.5	560.9	862.6
	2008	0.0	10.0	162.7	172.7	215.2	92.7	597.0	904.8
Australia and New Zealand	2006	9.9	4.2	632.7	646.8	26.2	13.5	50.2	90.0
Code 4	2007	13.3	4.0	662.3	679.6	27.0	17.3	51.7	96.0
	2008	13.3	4.1	703.0	720.5	28.4	19.1	59.0	106.6
Subtotal: Developed economies	2006	132.9	336.4	1 991.3	2 460.5	1 283.0	535.5	2 347.2	4 165.7
	2007	134.2	363.5	2 125.8	2 623.6	1 246.0	524.0	2 220.5	3 990.5
	2008	116.9	375.4	2 249.7	2 742.0	1 180.8	510.8	2 337.1	4 028.7
Economies in transition	2006	123.1	41.3	245.9	410.3	5.6	3.1	61.9	70.6
Codes 5.1 and 5.2	2007	124.4	39.9	253.7	417.9	7.3	3.5	66.0	76.8
	2008	133.4	33.9	312.8	480.2	6.3	4.5	77.4	88.1
Developing economies									
North Africa	2006	117.4	63.8	77.2	258.5	6.0	13.3	142.0	161.3
Code 6.1	2007	116.1	61.8	83.2	261.1	7.5	14.6	155.4	177.4
	2008	116.6	61.3	78.3	256.2	7.7	15.1	144.2	166.9
Western Africa	2006	110.6	12.6	31.1	154.3	5.4	14.2	62.4	82.0
Code 6.2	2007	110.1	10.3	34.5	155.0	7.6	17.1	55.5	80.2
	2008	99.1	11.9	34.3	145.3	7.6	16.0	65.6	89.3
Eastern Africa	2006	11.8	1.1	19.7	32.6	1.9	8.2	25.6	35.7
Code 6.3	2007	13.6	1.2	19.9	34.7	2.0	9.3	27.9	39.2
	2008	11.6	1.4	21.6	34.6	1.9	9.7	28.4	39.9
Central Africa	2006	114.0	2.6	6.3	122.8	2.2	1.7	7.3	11.2
Code 6.4	2007	122.7	2.6	7.8	133.1	2.8	1.9	7.7	12.3
	2008	131.5	3.1	6.4	141.0	3.0	1.7	8.4	13.1
Southern Africa	2006	0.0	5.9	129.9	135.8	25.6	2.6	39.1	67.4
Code 6.5	2007	0.0	5.9	129.9	135.8	25.6	2.6	39.1	67.4
	2008	0.0	6.1	135.6	141.6	22.1	2.7	43.7	68.5
Subtotal: Developing Africa	2006	353.8	86.0	264.2	704.0	41.1	39.9	276.5	357.5
	2007	362.5	81.8	275.3	719.6	45.5	45.5	285.6	376.6
	2008	358.8	83.7	276.2	718.7	42.2	45.2	290.3	377.7

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]		
Caribbean and Central America	2006	108.4	34.6	73.5	216.6	18.5	42.1	101.5	162.2
Codes 7.1 and 7.2	2007	100.4	32.4	75.2	208.1	38.8	44.5	103.1	186.5
	2008	92.3	36.4	80.1	208.8	39.2	45.5	102.1	186.8
South America: northern	2006	110.8	49.1	499.5	659.4	16.9	10.3	119.1	146.4
and eastern seaboard	2007	120.2	47.2	541.0	708.4	19.9	10.8	132.4	163.1
Codes 7.3 and 7.5	2008	132.3	51.8	563.5	747.6	20.4	10.9	132.9	164.2
South America:	2006	32.1	10.2	112.4	154.8	14.1	7.7	45.9	67.8
western seaboard	2007	31.6	10.5	118.3	160.4	17.2	8.7	47.5	73.4
Code 7.4	2008	33.9	12.0	133.3	179.3	19.2	9.0	53.5	81.7
Subtotal: Developing America	2006	251.3	93.9	685.5	1 030.7	49.6	60.1	266.6	376.3
	2007	252.3	90.1	734.5	1 076.8	76.0	64.0	283.0	423.0
	2008	258.6	100.1	776.9	1 135.6	78.8	65.4	288.5	432.8
Western Asia	2006	723.1	126.2	182.8	1 032.2	27.0	50.3	282.4	359.7
Code 8.1	2007	751.5	120.4	188.8	1 060.7	34.4	51.2	330.8	416.4
	2008	758.9	122.3	194.2	1 075.5	36.1	54.2	350.2	440.4
Southern and Eastern Asia	2006	132.3	102.5	927.6	1 162.3	313.4	104.0	1 421.0	1 838.4
Codes 8.2 and 8.3	2007	128.1	104.7	964.2	1 197.0	455.0	106.9	1 598.1	2 160.1
	2008	132.0	103.4	972.9	1 208.2	414.1	115.8	1 685.6	2 215.5
South-Eastern Asia	2006	62.3	78.7	597.2	738.2	113.5	95.3	330.1	538.8
Code 8.4	2007	56.4	90.7	632.3	779.4	130.8	104.0	369.6	604.5
	2008	70.9	96.4	633.2	800.5	133.0	107.0	340.7	580.7
Subtotal: Developing Asia	2006	917.6	307.5	1 707.7	2 932.7	453.9	249.6	2 033.5	2 737.0
	2007	936.0	315.7	1 785.3	3 037.0	620.2	262.2	2 298.6	3 181.0
	2008	961.8	322.1	1 800.3	3 084.2	583.2	277.0	2 379.4	3 239.7
Developing Oceania	2006	4.4	0.1	2.4	6.8	0.0	6.7	6.2	12.9
Code 9	2007	4.5	0.1	2.5	7.1	0.0	7.0	6.5	13.5
	2008	4.6	0.1	2.5	7.3	0.0	7.1	6.6	13.8
Subtotal: Developing	2006	1 527.0	487.5	2 659.7	4 674.2	544.6	356.4	2 582.8	3 483.7
economies	2007	1 555.3	487.8	2 797.5	4 840.6	741.7	378.7	2 873.6	3 994.1
and territories	2008	1 583.8	506.1	2 856.0	4 945.8	704.3	394.7	2 964.9	4 063.9
World total	2006	1 783.0	865.2	4 896.9	7 545.0	1 833.2	895.0	4 991.9	7 720.1
	2007	1 813.9	891.1	5 177.1	7 882.0	1 995.0	906.2	5 160.1	8 061.3
	2008	1 834.1	915.3	5 418.6	8 168.0	1 891.4	910.0	5 379.4	8 180.7

Source: Compiled by the UNCTAD secretariat on the basis of data supplied by reporting countries, ports and specialized sources and published on ports' websites. Data updated to most recent available and as revised at the source.

[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 2009

(In thousands of GT)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPING ECONOMIES OF AFRICA						
Algeria	748	17	121	45	0	565
Angola	59	5	0	12	0	42
Benin	1	0	0	0	0	1
Cameroon	17	0	0	2	0	14
Cape Verde	29	3	0	9	0	18
Comoros	757	90	161	378	13	114
Congo	4	0	0	0	0	4
Côte d'Ivoire	9	1	0	0	0	8
Democratic Republic of the Congo	14	1	0	0	0	12
Djibouti	4	0	0	0	0	4
Egypt	1 070	201	388	259	54	168
Equatorial Guinea	27	1	0	2	0	24
Eritrea	13	2	0	10	0	1
Ethiopia	118	0	0	118	0	0
Gabon	14	1	0	4	0	9
Gambia	35	4	0	27	0	4
Ghana	117	3	0	13	0	101
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	276	195	0	33	0	48
Madagascar	33	5	0	12	0	15
Mauritania	52	0	0	1	0	51
Mauritius	41	0	0	14	0	28
Morocco	495	9	0	26	82	377
Mozambique	38	0	0	6	0	32
Namibia	122	0	0	3	0	120
Nigeria	612	402	10	12	0	188
Saint Helena	4	0	0	0	0	4
Sao Tome and Principe	23	1	4	15	0	4
Senegal	46	0	0	1	0	45
Seychelles	207	120	0	43	0	44
Sierra Leone	612	36	25	411	12	128
Somalia	6	1	0	2	0	4
South Africa	195	5	0	0	27	163
Sudan	26	1	0	22	0	3
Togo	75	5	14	41	0	15
Tunisia	142	16	17	5	0	104
United Republic of Tanzania	41	9	0	21	0	11
DEVELOPING ECONOMIES OF AFRICA						
Total	6 122	1 1138	740	1 549	189	2 506

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	785	340	69	71	13	292
Aruba	0	0	0	0	0	0
Barbados	725	160	233	241	0	91
Belize	1 215	29	186	714	3	283
Bolivia (Plurinational State of)	75	21	4	36	0	14
Brazil	2 359	984	506	242	210	417
Cayman Islands	2 978	1 296	931	540	0	210
Chile	863	240	187	122	17	297
Colombia	91	5	0	39	0	47
Costa Rica	4	0	0	0	0	4
Cuba	60	15	6	9	0	30
Dominica	1 018	308	541	100	0	69
Dominican Republic	10	0	0	5	0	5
Ecuador	318	190	0	6	0	122
El Salvador	7	0	0	0	0	7
Falkland Islands [d]	48	0	0	1	0	47
Grenada	3	0	0	1	0	2
Guatemala	4	0	0	0	0	3
Guyana	41	5	0	23	0	14
Haiti	2	0	0	2	0	0
Honduras	705	120	63	247	2	273
Jamaica	218	0	126	47	40	5
Mexico	1 279	608	53	43	0	575
Netherlands Antilles	1 564	99	81	1 100	81	203
Nicaragua	7	1	0	0	0	5
Paraguay	54	3	0	40	6	5
Peru	285	59	0	25	0	200
Saint Kitts and Nevis	939	118	293	443	2	83
Suriname	6	2	0	3	0	1
Trinidad and Tobago	54	4	0	3	0	47
Turks and Caicos Islands	1	0	0	0	0	1
Uruguay	109	8	0	9	0	92
Venezuela (Bolivarian Republic of)	1 016	487	147	46	0	336
British Virgin Islands	16	0	0	1	0	16
DEVELOPING ECONOMIES OF AMERICA						
Total	16 859	5 102	3 428	4 160	373	3 796
DEVELOPING ECONOMIES OF ASIA						
Bahrain	498	81	58	1	247	111
Bangladesh	440	64	52	254	35	35
Brunei Darussalam	494	1	13	3	0	478
Cambodia	2 096	54	357	1 533	19	133
China	26 811	4 765	11 364	4 808	3 869	2 006

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
Hong Kong (China)	39 100	8 776	19 587	2 552	7 447	739
India	9 283	4 793	2 513	510	268	1 200
Indonesia	5 810	1 365	647	2 023	463	1 313
Iran (Islamic Republic of)	1 096	80	347	287	167	216
Iraq	159	48	0	39	0	72
Jordan	285	139	0	55	14	77
Korea, Democratic People's Republic of	983	98	132	632	22	99
Korea, Republic of	14 145	1 617	8 261	1 276	1 515	1 475
Kuwait	2 366	1 754	23	98	269	221
Lao People's Democratic Republic	0	0	0	0	0	0
Lebanon	141	1	34	103	0	3
Macao (China)	2	0	0	0	0	2
Malaysia	7 078	2 692	279	472	704	2 932
Maldives	144	9	1	121	0	12
Mongolia	669	17	393	235	0	23
Myanmar	166	3	14	119	0	29
Oman	26	1	0	2	0	23
Pakistan	409	218	36	130	0	25
Philippines	5 029	411	2 404	1 338	208	668
Qatar	903	302	37	1	335	227
Saudi Arabia	1 350	527	0	271	204	347
Singapore	39 886	17 342	7 374	3 834	7 933	3 403
Sri Lanka	174	10	45	85	12	22
Syrian Arab Republic	317	1	26	277	8	5
Taiwan Province of China	2 672	759	1 223	108	375	207
Thailand	2 842	416	877	1 057	252	241
Timor-Leste	1	0	0	0	0	1
Turkey	5 181	794	2 010	1 513	425	438
United Arab Emirates	1 075	404	55	78	345	192
Viet Nam	2 993	762	591	1 306	99	235
Yemen	30	11	0	6	0	13
DEVELOPING ECONOMIES OF ASIA Total	174 658	48 316	58 754	25 127	25 237	17 223
DEVELOPING ECONOMIES OF OCEANIA						
American Samoa	25	0	0	0	0	25
Fiji	33	0	0	9	0	24
French Polynesia	55	0	0	30	0	26
Guam	3	0	0	0	0	3
Kiribati	270	30	92	124	0	23
New Caledonia	10	0	0	2	0	8
Papua New Guinea	90	4	5	65	0	16

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
Samoa	10	0	0	8	0	2
Solomon Islands	11	0	0	2	0	8
Tonga	68	1	6	47	0	14
Tuvalu	1 052	655	174	116	9	98
Vanuatu	2 065	95	938	346	25	661
DEVELOPING ECONOMIES OF OCEANIA						
Total	3 693	785	1 214	750	35	908
DEVELOPING ECONOMIES TOTAL	201 332	55 341	64 136	31 587	25 833	24 434
DEVELOPED ECONOMIES						
Australia	1 828	246	408	149	7	1 017
Austria	14	0	0	10	4	0
Belgium	4 242	1 124	1 483	320	116	1 199
Bulgaria	876	18	595	153	54	56
Canada	2 962	533	1 237	102	16	1 073
Denmark	10 536	2 566	339	446	5 851	1 333
Estonia	363	5	0	16	0	343
Finland	1 565	363	26	494	29	654
France	6 245	2 591	176	105	1 626	1 748
French Guyana	1	0	0	0	0	0
Germany	15 283	517	418	416	13 233	699
Greece	36 822	20 881	10 667	371	2 577	2 326
Guadeloupe	7	0	0	1	0	6
Iceland	169	0	0	1	0	167
Ireland	186	13	0	95	5	72
Israel	437	3	0	4	422	9
Italy	13 600	3 806	2 265	2 283	958	4 288
Japan	13 536	2 123	2 910	2 663	486	5 354
Latvia	290	62	0	46	0	182
Lithuania	424	3	0	230	13	178
Luxembourg	730	160	178	127	33	232
Martinique	1	0	0	0	0	1
Netherlands	6 684	365	3	2 607	1 654	2 054
New Zealand	388	54	12	146	7	168
Norway	18 311	6 565	2 334	4 443	5	4 964
Poland	213	7	0	40	0	165
Portugal	1 096	279	113	324	32	348
Reunion	5	0	0	0	0	5
Romania	262	30	0	76	0	156
Slovakia	190	0	10	178	0	1
Slovenia	2	0	0	0	0	2
Spain	3 055	562	27	317	226	1 923
Saint Pierre and Miquelon	1	0	0	0	0	1
Sweden	4 389	534	26	2 622	0	1 208
Switzerland	640	46	325	82	170	17

Annex III (a) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
United Kingdom	16 855	1 448	1 594	2 457	7 908	3 447
United States	11 237	2 215	1 194	1 585	3 114	3 129
United States Virgin Islands	3	0	0	0	0	3
DEVELOPED ECONOMIES Total	173 447	47 122	26 341	22 909	38 547	38 528
TRANSITION ECONOMIES						
Albania	66	0	0	64	0	2
Azerbaijan	726	240	0	109	0	377
Croatia	1 445	569	638	97	0	141
Georgia	678	20	97	478	11	71
Kazakhstan	60	29	0	3	0	28
Moldova (Republic of)	179	10	38	122	4	4
Montenegro	14	0	0	12	0	2
Russian Federation	7 527	1 277	445	2 876	122	2 807
Turkmenistan	54	6	0	17	0	30
Ukraine	1 087	32	83	591	29	353
TRANSITION ECONOMIES Total	11 836	2 184	1 302	4 368	166	3 815
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES						
Antigua and Barbuda	9 537	16	826	3 195	5 413	87
Bahamas	46 543	16 983	7 388	7 157	1 739	13 276
Bermuda	9 592	1 312	1 776	101	770	5 634
Cyprus	20 109	4 944	8 437	1 569	3 954	1 206
Isle of Man	8 965	5 137	1 590	361	160	1 716
Liberia	82 389	32 010	15 817	3 973	25 641	4 948
Malta	31 633	10 862	13 355	3 639	1 878	1 899
Marshall Islands	42 637	19 978	11 466	1 556	4 484	5 153
Panama	183 503	36 945	77 912	24 176	30 763	13 708
Saint Vincent and the Grenadines	5 203	210	1 822	2 499	150	522
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES Total	440 113	128 396	140 389	48 227	74 953	48 149
Unknown flag	3 932	612	497	1 312	43	1 467
WORLD TOTAL [e]	830 660	233 656	232 665	108 403	139 542	116 393

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 2009

(In thousands of dwt)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPING ECONOMIES OF AFRICA						
Algeria	755	25	204	55	0	471
Angola	51	8	0	15	0	27
Benin	0	0	0	0	0	0
Cameroon	10	0	0	3	0	6
Cape Verde	22	4	0	12	0	5
Comoros	978	156	251	472	17	83
Congo	1	0	0	0	0	1
Côte d'Ivoire	5	1	0	0	0	4
Democratic Republic of the Congo	17	2	0	1	0	14
Djibouti	1	0	0	0	0	1
Egypt	1540	347	679	302	63	150
Equatorial Guinea	16	2	0	2	0	12
Eritrea	14	3	0	10	0	1
Ethiopia	150	0	0	150	0	0
Gabon	8	1	0	4	0	4
Gambia	12	5	0	5	0	2
Ghana	86	5	0	16	0	65
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	425	358	0	39	0	28
Madagascar	30	7	0	16	0	7
Mauritania	25	0	0	1	0	24
Mauritius	37	0	0	12	0	26
Morocco	346	14	0	24	83	224
Mozambique	30	0	0	11	0	19
Namibia	73	0	0	2	0	71
Nigeria	897	673	13	19	0	191
Saint Helena	1	0	0	0	0	1
Sao Tome and Principe	29	1	7	19	0	2
Senegal	19	0	0	2	0	17
Seychelles	287	199	0	56	0	32
Sierra Leone	754	60	39	548	17	90
Somalia	5	2	0	1	0	3
South Africa	125	9	0	0	30	86
Sudan	29	1	0	26	0	1
Togo	98	8	25	57	0	9
Tunisia	83	24	26	7	0	25
United Republic of Tanzania	43	16	0	25	0	2
DEVELOPING ECONOMIES OF AFRICA Total	7 028	1 938	1 245	1 913	210	1 723

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	1 066	590	116	101	18	241
Aruba	0	0	0	0	0	0
Barbados	1 003	247	386	298	0	72
Belize	1 389	44	286	827	3	231
Bolivia (Plurinational State of)	102	33	7	48	0	14
Brazil	3 423	1 585	863	284	266	425
British Virgin Islands	11	0	0	1	0	10
Cayman Islands	4 314	2 217	1 553	256	0	288
Chile	1 049	398	316	94	21	220
Colombia	113	8	0	55	0	50
Costa Rica	0	0	0	0	0	0
Cuba	77	25	9	13	0	31
Dominica	1 786	544	1 019	142	0	81
Dominican Republic	7	0	0	6	0	1
Ecuador	399	327	0	6	0	66
El Salvador	2	0	0	0	0	2
Falkland Islands [d]	35	0	0	1	0	34
Grenada	1	0	0	1	0	0
Guatemala	3	1	0	0	0	2
Guyana	41	7	0	28	0	7
Haiti	2	0	0	2	0	0
Honduras	791	216	108	328	2	136
Jamaica	310	0	208	50	51	1
Mexico	1 629	1 005	89	32	0	503
Netherlands Antilles	2 027	172	148	1 319	102	287
Nicaragua	3	1	0	1	0	1
Paraguay	62	4	0	50	6	1
Peru	225	98	0	37	0	91
Saint Kitts and Nevis	1 334	182	489	610	2	52
Suriname	7	3	0	3	0	1
Trinidad and Tobago	19	4	0	0	0	14
Turks and Caicos Islands	0	0	0	0	0	0
Uruguay	70	11	0	12	0	47
Venezuela (Bolivarian Republic of)	1 503	837	244	63	0	358
DEVELOPING ECONOMIES OF AMERICA						
Total	22 805	8 558	5 841	4 669	472	3 265
DEVELOPING ECONOMIES OF ASIA						
Bahrain	596	154	85	2	271	83
Bangladesh	616	111	89	344	48	23
Brunei Darussalam	445	1	20	3	0	421
Cambodia	2 785	84	562	2 036	25	78
China	39 998	8 091	19 583	6 281	4 628	1 415
Democratic People's Republic of Korea	1 390	165	219	902	30	75
Hong Kong (China)	64 183	15 769	35 779	3 341	8 570	724

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
India	15 300	8 629	4 334	686	328	1 324
Indonesia	7 025	2 192	1 061	2 594	609	570
Iran (Islamic Republic of)	1 515	120	600	367	225	203
Iraq	202	78	0	54	0	70
Jordan	396	293	0	64	18	21
Korea, Republic of	22 600	2 890	15 142	1 653	1 766	1 149
Kuwait	3 865	3 219	39	86	292	229
Lao People's Democratic Republic	2	0	0	2	0	0
Lebanon	155	1	54	97	0	3
Macao (China)	2	0	0	0	0	2
Malaysia	9 391	4 796	477	572	858	2 688
Maldives	192	19	2	164	0	8
Mongolia	1 011	30	659	304	0	18
Myanmar	193	5	24	151	0	14
Oman	14	2	0	2	0	11
Pakistan	671	396	66	184	0	26
Philippines	6 750	658	3 819	1 637	239	396
Qatar	1 206	546	59	0	366	235
Saudi Arabia	1 667	881	0	271	221	294
Singapore	60 798	31 118	13 653	2 786	9 429	3 812
Sri Lanka	245	18	75	120	17	15
Syrian Arab Republic	453	2	41	399	8	2
Taiwan Province of China	4 246	1 296	2 238	147	468	96
Thailand	4 218	730	1 446	1 503	339	201
Timor-Leste	0	0	0	0	0	0
Turkey	7 476	1 391	3 429	1 888	530	238
United Arab Emirates	1 410	685	88	88	378	172
Viet Nam	4 663	1 248	980	2 053	133	250
Yemen	27	17	0	3	0	6
DEVELOPING ECONOMIES OF ASIA Total	265 709	85 634	104 622	30 783	29 798	14 873
DEVELOPING ECONOMIES OF OCEANIA						
American Samoa	2	0	0	0	0	2
Fiji	16	0	0	7	0	9
French Polynesia	35	0	0	28	0	7
Guam	2	0	0	0	0	2
Kiribati	401	48	172	169	0	11
New Caledonia	5	0	0	3	0	2
Papua New Guinea	103	3	6	83	0	12
Samoa	10	0	0	9	0	1
Solomon Islands	6	0	0	2	0	5
Tonga	74	2	7	57	0	9
Tuvalu	1 803	1 207	318	169	13	96
Vanuatu	2 593	191	1 535	223	29	615
DEVELOPING ECONOMIES OF OCEANIA Total	*5 051*	1 451	2 039	749	41	771
DEVELOPING ECONOMIES Total	300 594	97 580	113 746	38 115	30 521	20 632

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
DEVELOPED ECONOMIES						
Australia	2 146	426	649	140	10	922
Austria	18	0	0	12	6	0
Belgium	6 631	2 150	2 896	218	145	1 222
Bulgaria	1 243	26	953	165	64	36
Canada	3 419	879	1 900	93	17	530
Denmark	12 668	4 239	652	389	6 514	874
Estonia	95	9	0	20	0	67
Finland	1 219	609	38	404	37	131
France	7 917	4 744	346	58	1 797	972
French Guyana	0	0	0	0	0	0
Germany	17 949	850	828	474	15 439	358
Greece	63 036	38 750	19 913	418	2 832	1 122
Guadeloupe	5	0	0	2	0	4
Iceland	71	0	1	1	0	69
Ireland	193	18	0	140	7	27
Israel	533	5	0	5	518	5
Italy	14 415	6 279	4 223	1 410	1 065	1 439
Japan	15 417	3 896	5 121	2 473	511	3 415
Latvia	248	103	0	44	0	101
Lithuania	370	4	0	284	18	65
Luxembourg	964	249	315	83	40	277
Martinique	1	0	0	1	0	0
Netherlands	6 815	567	6	3 222	1 905	1 115
New Zealand	361	85	17	164	8	87
Norway	23 541	11 494	4 149	3 517	7	4 373
Poland	136	11	0	33	0	92
Portugal	1 146	503	189	255	41	158
Reunion	2	0	0	0	0	2
Romania	263	48	0	91	0	124
Slovakia	252	0	15	235	0	1
Slovenia	0	0	0	0	0	0
Spain	2 711	1 025	43	221	287	1 135
Sweden	2 513	789	36	1 395	0	293
Switzerland	1 012	68	577	106	236	25
United Kingdom of Great Britain and Northern Ireland	18 092	2 276	2 982	1 885	9 043	1 906
United States of America	11 961	3 769	2 271	855	3 325	1 742
United States Virgin Islands	1	0	0	0	0	1
DEVELOPED ECONOMIES Total	217 365	83 874	48 120	18 812	43 870	22 689

Annex III (b) (continued)

	Total fleet	Oil tankers	Bulk carriers	General cargo [c]	Container ships	Other types
TRANSITION ECONOMIES						
Albania	92	0	0	91	0	1
Azerbaijan	635	339	0	118	0	177
Croatia	2 344	1 064	1 130	114	0	35
Georgia	915	35	159	662	16	44
Kazakhstan	73	50	0	2	0	21
Moldova, Republic of	248	19	56	162	6	5
Montenegro	15	0	0	14	0	1
Russian Federation	7 140	1 851	623	3 243	126	1 297
Turkmenistan	47	8	0	15	0	23
Ukraine	1 092	53	134	672	27	205
TRANSITION ECONOMIES Total	12 601	3 420	2 103	5 092	176	1 810
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES						
Antigua and Barbuda	12 455	26	1 332	4 121	6 875	101
Bahamas	62 013	31 271	13 043	6 724	1 942	9 033
Bermuda	10 298	2 437	3 438	113	813	3 497
Cyprus	31 388	8 922	15 009	1 945	4 774	738
Isle of Man	14 516	9 160	3 035	406	206	1 708
Liberia	125 993	57 726	28 372	3 708	30 372	5 815
Malta	50 666	19 374	23 943	4 181	2 294	873
Marshall Islands	68 451	36 231	20 852	1 693	5 487	4 188
Panama	273 961	66 826	141 357	18 842	34 345	12 591
Saint Vincent and the Grenadines	7 400	394	3 209	3 243	188	367
MAJOR 10 OPEN AND INTERNATIONAL REGISTRIES Total	657 141	232 368	253 589	44 978	87 296	38 910
Unknown flag	4 617	1 024	798	1 885	56	854
WORLD TOTAL [e]	**1 192 317**	**418 266**	**418 356**	**108 881**	**161 919**	**84 595**

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 and 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

	Index points								Rank 2009
	2004	2005	2006	2007	2008	2009	Average annual growth 2004 – 2008	Growth 2009/2008	
Albania	0.40	0.40	0.40	2.28	1.98	2.30	0.39	0.31	154
Algeria	10.00	9.72	8.70	7.86	7.75	8.37	-0.56	0.62	96
American Samoa	5.17	5.30	4.86	6.28	6.44	4.60	0.32	-1.84	123
Angola	9.67	10.46	9.46	9.90	10.22	11.31	0.14	1.09	75
Antigua and Barbuda	2.33	2.56	2.43	3.76	3.82	2.66	0.37	-1.16	152
Argentina	20.09	24.95	25.58	25.63	25.70	25.99	1.40	0.29	40
Aruba	7.37	7.52	7.53	5.09	5.09	3.52	-0.57	-1.57	144
Australia	26.58	28.02	26.96	26.77	38.21	28.80	2.91	-9.40	36
Bahamas, The	17.49	15.70	16.19	16.45	16.35	19.26	-0.29	2.91	55
Bahrain	5.39	4.34	4.44	5.99	5.75	8.04	0.09	2.29	99
Bangladesh	5.20	5.07	5.29	6.36	6.40	7.91	0.30	1.51	101
Barbados	5.47	5.77	5.34	5.79	5.36	4.75	-0.03	-0.61	119
Belgium	73.16	74.17	76.15	73.93	77.98	82.80	1.21	4.82	8
Belize	2.19	2.59	2.62	2.61	2.32	2.30	0.03	-0.02	155
Benin	10.13	10.23	10.99	11.16	12.02	13.52	0.47	1.50	70
Bermuda	1.54	1.57	1.57	1.57	1.57	1.57	0.01	0.00	159
Brazil	25.83	31.49	31.61	31.64	30.87	31.08	1.26	0.21	33
Brunei Darussalam	3.91	3.46	3.26	3.70	3.68	3.94	-0.06	0.26	134
Bulgaria	6.17	5.61	4.47	4.83	5.09	5.78	-0.27	0.70	109
Cambodia	3.89	3.25	2.93	3.25	3.47	4.67	-0.11	1.20	121
Cameroon	10.46	10.62	11.41	11.65	11.05	11.60	0.15	0.55	73
Canada	39.67	39.81	36.32	34.40	34.28	41.34	-1.35	7.06	21
Cape Verde	1.90	2.28	2.76	2.45	3.63	5.13	0.43	1.50	115
Cayman Islands	1.90	2.23	1.79	1.78	1.78	1.76	-0.03	-0.02	158
Chile	15.48	15.53	16.10	17.49	17.42	18.84	0.48	1.42	56
China	100.00	108.29	113.10	127.85	137.38	132.47	9.34	-4.91	1
Colombia	18.61	19.20	20.49	29.13	21.64	23.18	0.76	1.54	44
Comoros	6.07	5.84	5.39	5.51	5.15	5.00	-0.23	-0.16	117
Congo	8.29	9.10	9.12	9.61	11.80	11.37	0.88	-0.43	74
Costa Rica	12.59	11.12	15.08	15.34	12.78	14.61	0.05	1.83	67
Côte d'Ivoire	14.39	14.52	12.98	14.98	16.93	19.39	0.63	2.46	53
Croatia	8.58	12.19	10.47	12.33	15.36	8.48	1.70	-6.88	94
Cuba	6.78	6.51	6.43	6.71	6.12	5.92	-0.16	-0.20	108
Cyprus	14.39	18.53	17.39	18.01	11.81	13.31	-0.65	1.50	71
Czech Republic	0.44	0.44	0.44	0.44	3.20	0.44	0.69	-2.76	160
Democratic Republic of the Congo	3.05	3.03	2.66	2.68	3.36	3.80	0.08	0.45	137
Denmark	11.56	24.25	25.39	22.10	26.49	27.68	3.73	1.19	37
Djibouti	6.76	7.59	7.36	10.45	10.43	17.98	0.92	7.56	58
Dominica	2.33	2.51	2.33	2.40	2.31	2.73	0.00	0.41	151
Dominican Republic	12.45	13.95	15.19	19.87	20.09	21.61	1.91	1.53	47
Ecuador	11.84	12.92	14.17	14.30	13.16	17.09	0.33	3.93	59
Egypt	42.86	49.23	50.01	45.37	52.53	51.99	2.42	-0.55	17
El Salvador	6.30	7.32	8.07	7.90	8.67	10.34	0.59	1.67	81
Equatorial Guinea	4.04	3.87	3.76	3.36	3.86	3.73	-0.05	-0.12	141
Eritrea	3.36	1.58	2.23	-	3.26	3.26	-0.02	0.00	145
Estonia	7.05	6.52	5.76	5.78	5.48	5.71	-0.39	0.24	110
Faeroe Islands	4.22	4.40	4.43	4.45	4.20	4.20	0.00	0.00	128
Fiji	8.26	8.32	7.24	7.35	10.31	8.74	0.51	-1.57	89
Finland	9.45	10.16	8.58	10.70	9.72	10.15	0.07	0.43	82
France	67.34	70.00	67.78	64.84	66.24	67.01	-0.28	0.77	13
French Polynesia	10.46	11.14	8.91	8.60	9.01	8.39	-0.36	-0.62	95
Gabon	8.78	8.76	8.72	8.57	8.93	9.16	0.04	0.23	88
Gambia	4.91	6.13	4.80	4.74	4.97	7.53	0.01	2.56	103
Georgia	3.46	3.81	2.94	3.22	4.03	3.83	0.14	-0.20	136
Germany	76.59	78.41	80.66	88.95	89.26	84.30	3.17	-4.96	7
Ghana	12.48	12.64	13.80	14.99	18.13	19.33	1.41	1.21	54

Annex IV (continued)

	Index points								Rank 2009
	2004	2005	2006	2007	2008	2009	Average annual growth 2004 – 2008	Growth 2009/2008	
Greece	30.22	29.07	31.29	30.70	27.14	41.91	-0.77	14.77	20
Greenland	2.32	2.32	2.27	2.27	2.36	2.27	0.01	-0.09	156
Grenada	2.30	2.52	3.37	4.09	4.20	4.13	0.48	-0.07	130
Guam	10.50	10.52	9.56	8.73	8.56	8.57	-0.48	0.00	93
Guatemala	12.28	13.85	18.13	15.40	15.44	14.73	0.79	-0.71	65
Guinea	6.13	6.89	8.71	8.47	6.41	8.32	0.07	1.91	97
Guinea-Bissau	2.12	5.19	5.03	5.14	5.34	3.54	0.81	-1.80	143
Guyana	4.54	4.37	4.60	4.28	4.36	4.34	-0.05	-0.02	125
Haiti	4.91	3.43	2.91	2.87	3.44	4.40	-0.37	0.95	124
Honduras	9.11	8.64	8.29	8.76	9.26	10.68	0.04	1.42	78
Hong Kong, China	94.42	96.78	99.31	106.20	108.78	104.47	3.59	-4.30	2
Iceland	4.72	4.88	4.75	4.72	4.72	4.73	0.00	0.01	120
India	34.14	36.88	42.90	40.47	42.18	40.97	2.01	-1.21	22
Indonesia	25.88	28.84	25.84	26.27	24.85	25.68	-0.26	0.83	41
Iran (Islamic Republic of)	13.69	14.23	17.37	23.59	22.91	28.90	2.31	5.99	35
Iraq	1.40	1.63	4.06	2.61	1.20	5.11	-0.05	3.90	116
Ireland	8.78	9.66	8.18	8.85	7.64	7.60	-0.29	-0.04	102
Israel	20.37	20.06	20.44	21.42	19.83	18.65	-0.14	-1.17	57
Italy	58.13	62.20	58.11	58.84	55.87	69.97	-0.56	14.10	12
Jamaica	21.32	21.99	23.02	25.50	18.23	19.56	-0.77	1.33	52
Japan	69.15	66.73	64.54	62.73	66.63	66.33	-0.63	-0.30	14
Jordan	11.00	13.42	12.98	16.46	16.37	23.71	1.34	7.34	42
Kenya	8.59	8.98	9.30	10.85	10.95	12.83	0.59	1.88	72
Kiribati	3.06	3.28	3.05	3.06	3.06	2.85	0.00	-0.20	147
Kuwait	5.87	6.77	4.14	6.22	6.14	6.54	0.07	0.40	106
Latvia	6.37	5.82	5.10	5.87	5.52	5.18	-0.21	-0.34	114
Lebanon	10.57	12.53	25.57	30.01	28.92	29.55	4.59	0.63	34
Liberia	5.29	5.95	4.55	4.50	4.25	5.49	-0.26	1.23	112
Libyan Arab Jamahiriya	5.25	5.17	4.71	6.59	5.36	9.43	0.03	4.07	84
Lithuania	5.22	5.88	5.66	6.83	7.76	8.11	0.63	0.35	98
Madagascar	6.90	6.83	8.31	7.97	7.82	8.64	0.23	0.82	91
Malaysia	62.83	64.97	69.20	81.58	77.60	81.21	3.69	3.61	10
Maldives	4.15	4.08	3.90	4.75	5.45	5.43	0.32	-0.02	113
Malta	27.53	25.70	30.32	29.53	29.92	37.71	0.60	7.78	24
Marshall Islands	3.49	3.68	3.26	3.06	3.06	2.85	-0.11	-0.20	148
Mauritania	5.36	5.99	6.25	7.90	7.93	7.50	0.64	-0.44	104
Mauritius	13.13	12.26	11.53	17.17	17.43	14.76	1.08	-2.67	64
Mexico	25.29	25.49	29.78	30.98	31.17	31.89	1.47	0.73	31
Micronesia (Federated States of)	2.80	2.87	1.94	3.13	3.85	3.85	0.26	0.00	135
Montenegro	2.92	2.92	2.96	2.96	3.20	0.02	0.07	-3.18	161
Morocco	9.39	8.68	8.54	9.02	29.79	38.40	5.10	8.61	23
Mozambique	6.64	6.71	6.66	7.14	8.81	9.38	0.54	0.57	85
Myanmar	3.12	2.47	2.54	3.12	3.63	3.79	0.13	0.16	139
Namibia	6.28	6.61	8.52	8.37	11.12	13.61	1.21	2.49	69
Netherlands	78.81	79.95	80.97	84.79	87.57	88.66	2.19	1.09	4
Netherlands Antilles	8.16	8.23	7.82	9.22	8.56	8.57	0.10	0.01	92
New Caledonia	9.83	10.34	9.00	8.81	9.23	8.74	-0.15	-0.49	90
New Zealand	20.88	20.58	20.71	20.60	20.48	10.59	-0.10	-9.89	79
Nicaragua	4.75	5.25	8.05	7.89	8.91	10.58	1.04	1.68	80
Nigeria	12.83	12.79	13.02	13.69	18.30	19.89	1.37	1.59	50
Northern Mariana Islands	2.17	2.20	1.85	2.86	3.76	3.76	0.40	0.00	140
Norway	9.23	8.31	7.34	7.80	7.91	7.93	-0.33	0.03	100
Oman	23.33	23.64	20.28	28.96	30.42	45.32	1.77	14.90	19
Pakistan	20.18	21.49	21.82	24.77	24.61	26.58	1.11	1.98	38
Palau	1.04	1.04	1.87	3.07	3.79	3.79	0.69	0.00	138

Annex IV (continued)

	Index points								Rank 2009
	2004	2005	2006	2007	2008	2009	Average annual growth 2004 – 2008	Growth 2009/2008	
Panama	32.05	29.12	27.61	30.53	30.45	32.66	-0.40	2.21	28
Papua New Guinea	6.97	6.40	4.67	6.86	6.92	6.58	-0.01	-0.34	105
Paraguay	0.53	0.53	6.32	6.25	0.65	0.00	0.03	-0.65	162
Peru	14.79	14.95	16.33	16.90	17.38	16.96	0.65	-0.42	60
Philippines	15.45	15.87	16.48	18.42	30.26	15.90	3.70	-14.36	61
Poland	7.28	7.53	7.50	7.86	9.32	9.21	0.51	-0.12	87
Portugal	17.54	16.84	23.55	25.42	34.97	32.97	4.36	-2.00	27
Puerto Rico	14.82	15.23	14.68	15.96	15.62	10.92	0.20	-4.70	77
Qatar	2.64	4.23	3.90	3.59	3.21	2.10	0.14	-1.12	157
Republic of Korea	68.68	73.03	71.92	77.19	76.40	86.67	1.93	10.28	5
Romania	12.02	15.37	17.61	22.47	26.35	23.34	3.58	-3.02	43
Russian Federation	11.90	12.72	12.81	14.06	15.31	20.64	0.85	5.32	48
Saint Kitts and Nevis	5.49	5.32	5.59	6.16	6.19	3.08	0.18	-3.11	146
Saint Lucia	3.70	3.72	3.43	4.21	4.25	4.25	0.14	0.00	126
Saint Vincent and the Grenadines	3.56	3.58	3.40	4.34	4.52	4.13	0.24	0.40	131
Samoa	5.44	5.33	5.09	6.50	6.66	4.62	0.31	-2.04	122
Sao Tome and Principe	0.91	1.28	1.57	1.64	2.54	2.38	0.41	-0.16	153
Saudi Arabia	35.83	36.24	40.66	45.04	47.44	47.30	2.90	-0.14	18
Senegal	10.15	10.09	11.24	17.08	17.64	14.96	1.87	-2.67	63
Seychelles	4.88	4.93	5.27	5.29	4.49	4.90	-0.10	0.40	118
Sierra Leone	5.84	6.50	5.12	5.08	4.74	5.56	-0.28	0.83	111
Singapore	81.87	83.87	86.11	87.53	94.47	99.47	3.15	5.01	3
Slovenia	13.91	13.91	11.03	12.87	15.66	19.81	0.44	4.15	51
Solomon Islands	3.62	4.29	3.97	4.13	4.16	3.96	0.13	-0.20	133
Somalia	3.09	1.28	2.43	3.05	3.24	2.82	0.04	-0.42	149
South Africa	23.13	25.83	26.21	27.52	28.49	32.07	1.34	3.58	29
Spain	54.44	58.16	62.29	71.26	67.67	70.22	3.31	2.56	11
Sri Lanka	34.68	33.36	37.31	42.43	46.08	34.74	2.85	-11.34	26
Sudan	6.95	6.19	5.67	5.66	5.38	9.28	-0.39	3.89	86
Suriname	4.77	4.16	3.90	4.29	4.26	4.16	-0.13	-0.10	129
Sweden	14.76	26.61	28.17	25.82	30.27	31.34	3.88	1.07	32
Switzerland	3.53	3.40	3.20	3.27	3.01	2.74	-0.13	-0.27	150
Syrian Arab Republic	8.54	11.84	11.29	14.20	12.72	11.03	1.05	-1.70	76
Taiwan Province of China	59.56	63.74	65.64	62.43	62.58	60.90	0.75	-1.67	15
Thailand	31.01	31.92	33.89	35.31	36.48	36.78	1.37	0.30	25
Togo	10.19	10.62	11.09	10.63	12.56	14.42	0.59	1.86	68
Tonga	3.81	4.75	4.45	4.07	4.23	3.99	0.10	-0.24	132
Trinidad and Tobago	13.18	10.61	11.18	13.72	12.88	15.88	-0.08	3.01	62
Tunisia	8.76	7.62	7.04	7.23	6.95	6.52	-0.45	-0.43	107
Turkey	25.60	27.09	27.09	32.60	35.64	31.98	2.51	-3.66	30
United States Virgin Islands	1.77	3.00	3.22	3.76	3.81	3.70	0.51	-0.11	142
Ukraine	11.18	10.81	14.88	16.73	23.62	22.81	3.11	-0.81	45
United Arab Emirates	38.06	39.22	46.70	48.21	48.80	60.45	2.69	11.65	16
United Kingdom	81.69	79.58	81.53	76.77	77.99	84.82	-0.92	6.83	6
United Republic of Tanzania	8.10	8.59	8.71	10.58	10.46	9.54	0.59	-0.92	83
United States of America	83.30	87.62	85.80	83.68	82.45	82.43	-0.21	-0.02	9
Uruguay	16.44	16.58	16.81	21.28	22.88	22.28	1.61	-0.60	46
Vanuatu	3.92	4.48	4.41	4.34	4.36	4.22	0.11	-0.15	127
Venezuela (Bolivarian Republic of)	18.22	19.90	18.62	20.26	20.46	20.43	0.56	-0.03	49
Viet Nam	12.86	14.30	15.14	17.59	18.73	26.39	1.47	7.65	39
Yemen	19.21	10.18	9.39	14.28	14.44	14.61	-1.19	0.17	66

Source: UNCTAD, calculated from data of *Containerisation International Online*, www.ci-online.co.uk.

QUESTIONNAIRE

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