

Overview of the International Shipping Industry

Shipping and World Trade

<http://www.marisec.org/shippingfacts/keyfactsindex.htm>

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1. Shipping and World Trade

Over 90% of world trade is carried by the international shipping industry. Without shipping the import and export of goods on the scale necessary for the modern world would not be possible.

Seaborne trade continues to expand, bringing benefits for consumers across the world through low and decreasing freight costs. Thanks to the growing efficiency of shipping as a mode of transport and increased economic liberalisation, the prospects for the industry's further growth continue to be strong.

There are around 50,000 merchant ships trading internationally, transporting every kind of cargo. The world fleet is registered in over 150 nations, and manned by over a million seafarers of virtually every nationality.

The different types of ship in the world merchant fleet

Container ships

which carry most of the world's manufactured goods and products, usually through scheduled liner services.

Useful links

[World Shipping Council](#)

[National Shipowners' Associations](#)



Bulk carriers



the work horses of the fleet, these transport raw materials such as iron ore and coal. Identifiable by the hatches raised above deck level which cover the large cargo holds.

Useful links

[Intercargo](#)

[National Shipowners' Associations](#)

Tankers

transport crude oil, chemicals and petroleum products. Tankers can appear similar to bulk carriers, but the deck is flush and covered by oil pipelines and vents.

Useful links

[Intertanko](#)

[Oil Companies International Marine Forum \(OCIMF\)](#)

[International Parcel Tankers Association \(IPTA\)](#)

[International Tanker Owners Pollution Federation \(ITOPF\)](#)

[National Shipowners' Associations](#)



Ferries and Cruise ships



Ferries usually perform short journeys for a mix of passengers, cars and commercial vehicles. Most of these ships are Ro-Ro (roll on - roll off) ferries, where vehicles can drive straight on and off, making it a speedy and easily accessible way to travel.

Demand for cruise ships expanded rapidly during the 1980s, leading to a new generation of large and luxurious 'floating hotels'.

Useful links

[International Council of Cruise Lines \(ICCL\)](#)

[National Shipowners' Associations](#)

Specialist ships



Such as anchor handling and supply vessels for the offshore oil industry, salvage tugs, ice breakers and research vessels.

Useful links

[National Shipowners' Associations](#)

Top 20 largest shipping flags (January 2005)

Figures in brackets are millions of gross tonnes of shipping registered in the countries listed. Source: Lloyd's Register Fairplay.

1. Panama (131)
2. Liberia (54)
3. Bahamas (34)
4. Greece (32)

5. Hong Kong (China) (25)
6. Singapore (25)
7. Malta (23)
8. Marshall Islands (22)
9. Cyprus (21)
10. China, People's Republic (19)
11. Norway (19)
12. Japan (12)
13. United States (11)
14. Italy (11)
15. UK (mainland) (10)
16. Germany (8)
17. Denmark ((7)
18. Korea (South) (7)
19. India (7)

Top 20 beneficial ownership countries (January 2003)

Based on total deadweight tonnage controlled by parent companies located in these countries. Figures in brackets represent percentage of world fleet. Source: UNCTAD.

1. Greece (19.5%)
2. Japan (13.6%)
3. Norway (7.6%)
4. China, People's Republic of (5.7%)
5. United States (5.5%)
6. Germany (5.3%)

7. Hong Kong, China (4.9%)
8. Korea, Republic of (3.3%)
9. Chinese Taipei (2.9%)
10. Singapore (2.5%)
11. United Kingdom (2.3%)
12. Denmark (2.1%)
13. Russia (2.1%)
14. Italy (1.6%)
15. Saudi Arabia (1.4%)

Numbers and nationality of world's seafarers

The worldwide population of seafarers serving on internationally trading merchant ships is estimated to be in the order of 466,000 officers and 721,000 ratings.

The OECD countries (North America, Western Europe, Japan etc.) remain the most important source for officers, but growing numbers of officers are now recruited from the Far East and Eastern Europe. The majority of the shipping industry's ratings are recruited from developing countries, especially the Far East. The Philippines alone provides almost 20% of the global maritime workforce. China and India are also significant maritime labour supply nations, with many seafarers from these countries enjoying employment opportunities on foreign flag ships operated by international shipping companies.

Other major labour supply countries include Greece, Japan, Norway, Russia and the United Kingdom

Source: Bimco/ISF 2005 Manpower Update

Useful links

[2000 Manpower Update \(Summary Report\)](#)
[Shipping Industry Guidelines on Good Employment Practice](#)

Number of ships (by total and trade)

As at January 1st 2005, the world trading fleet was made up of 46,222 ships, with a combined tonnage of 597,709,000 gross tonnes.

*Figures in brackets are numbers of ships, by sector.
Source: Lloyd's Register Fairplay January 2005.*

General Cargo ships (18,150) Tankers (11,356)

Bulk Carriers (6,139) Passenger ships (5,679)

Container ships (3,165) Other (1,733)

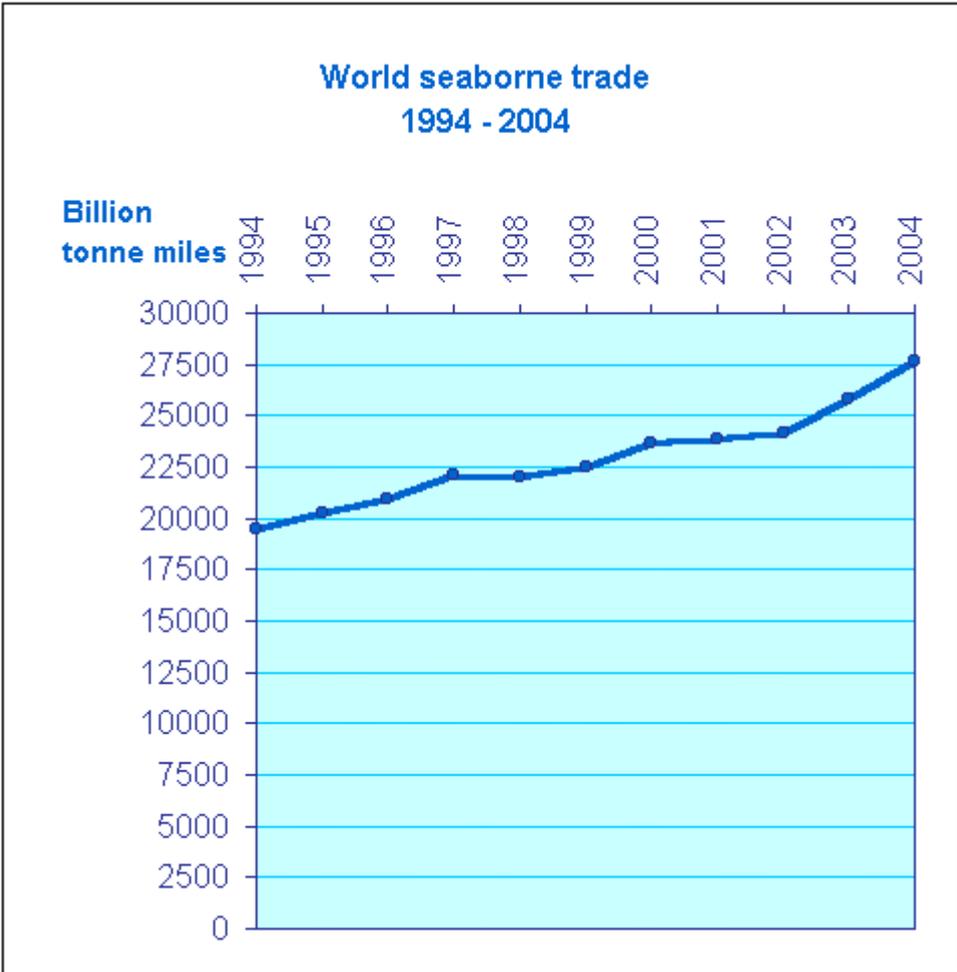
TOTAL (46,222)

Value of volume of world trade by sea

It is difficult to quantify the value of volume of world seaborne trade in monetary terms, as figures for trade estimates are traditionally in terms of tonnes or tonne-miles, and are therefore not comparable with monetary-based statistics for the value of the world economy.

However, United Nations Conference on Trade and Development (UNCTAD) estimates that the operation of merchant ships contributes about US\$380 billion in freight rates within the global economy, equivalent to about 5% of total world trade.

Shipping trade estimates are usually calculated in tonne-miles - a measurement of tonnes carried, multiplied by the distance travelled. In 2003, for example, the industry shipped around 6.1 thousand million tonnes over a distance of about 4 million miles, giving over 25 thousand billion tonne-miles of total trade.



Source: Fearnley's Review
NB: Figure for 2004 is estimated

Throughout the last century the shipping industry has seen a general trend of increases in total trade volume. Increasing industrialisation and the liberalisation of national economies have fuelled free trade and a growing demand for consumer products. Advances in technology have also made shipping an increasingly efficient and swift method of transportation. Over the last four decades total seaborne trade estimates have nearly quadrupled, from less than 6 thousand billion tonne-miles in 1965 to 25 thousand billion tonne-miles in 2003.

As with all industrial sectors, however, shipping is occasionally susceptible to economic downturns - a notable fall in trade occurred during the worldwide economic recession of the early 1980s. However although the growth in seaborne trade was tempered by the Asian financial crisis of the late 1990s there has generally been healthy growth in maritime trade since 1993.

The low cost of transporting goods by sea

Between 1980 and 1999, the value of world trade grew at 12% per year, whilst total freight costs during this period increased by only 7%, demonstrating the falling unit costs of marine transportation.

This transport cost element in the shelf price of consumer goods varies from product to product, but is ultimately marginal, for example, transport costs account for only 2% of a television shelf price and only 1.2% of a kilo of coffee.

Source: ISL Shipping Statistics Yearbook 2003

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The low costs of maritime transport

Due to continuous improvements in technology and efficiency maritime transport costs are very competitive.



- The typical cost to a consumer in the United States of transporting crude oil from the Middle East, in terms of the purchase price of gasoline at the pump, is about half a US cent per litre.



- The typical cost of transporting a tonne of iron ore from Australia to Europe by sea is about US \$12.

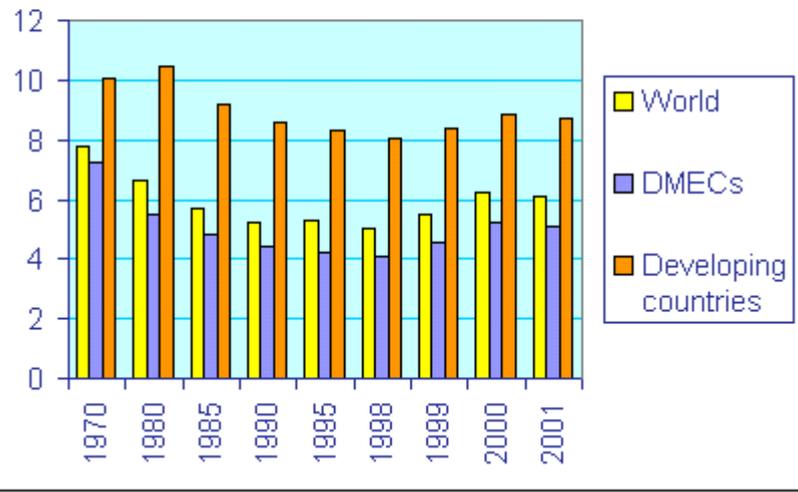


- The typical cost of transporting a 20 foot container from Asia to Europe carrying over 20 tonnes of cargo is about the same as the economy airfare for a single passenger on the same journey.

Typical Ocean Freight Costs (Asia-US or Asia-Europe)

	Unit	Typical Shelf Price	Shipping Costs
	1 unit	\$700.00	\$10.00
	1 unit	\$200.00	\$1.50
	1 unit	\$150.00	\$1.00
	Bottle	\$50.00	\$0.15
	1 kg	\$15.00	\$0.15
	Tin	\$3.00	\$0.05
	Can	\$1.00	\$0.01

Estimates of total freight costs in world trade, as percentage of import value, by country groups 1970 - 2001



Source: ISL Shipping Statistics Yearbook 2003

2. Shipping is the safest and most environmentally benign form of commercial transport. Perhaps uniquely amongst industries involving physical risk, commitment to safety has long pervaded virtually all deep sea shipping operations. Shipping was amongst the very first industries to adopt widely implemented international safety standards.

Because of its inherently international nature, the safety of shipping is regulated by various United Nations agencies, in particular the International Maritime Organization (IMO) which has developed a comprehensive framework of global maritime safety regulations.

2. Safety and Regulation

How shipping is regulated internationally

Merchant shipping is one of the most heavily regulated industries and was amongst the first to adopt widely implemented international safety standards.

Regulations concerning shipping are developed at the global level. Because shipping is inherently international, it is vital that shipping is subject to uniform regulations on matters such as construction standards, navigational rules and standards of crew competence. The alternative would be a plethora of conflicting national regulations resulting in commercial distortion and administrative confusion which would compromise the efficiency of world trade.

The shipping industry is principally regulated by the [International Maritime Organization \(IMO\)](#), which is the London based United Nations agency responsible for the safety of life at sea and the protection of the marine environment. [The International Labour Organisation \(ILO\)](#) is also responsible for the development of labour standards applicable to seafarers worldwide.

IMO has adopted a comprehensive framework of detailed technical regulations, in the form of [international diplomatic conventions](#) which govern the safety of ships and protection of the marine environment. National governments, which form the membership of IMO, are required to implement and enforce these international rules, and ensure that the ships which are registered under their national flags comply.

The level of ratification and enforcement of IMO Conventions is

generally very high in comparison with international rules adopted for shore based industries.

The principal responsibility for enforcing IMO regulations concerning ship safety and environmental protection rests with the flag states (i.e. the countries in which merchant ships are registered - which may be different to the country in which they are owned).

Flag states enforce IMO requirements through inspections of ships conducted by a network of international surveyors. Much of this work is delegated to bodies called classification societies.

However, flag state enforcement is supplemented by what is known as Port State Control, whereby officials in any country which a ship may visit can inspect foreign flag ships to ensure that they comply with international requirements. Port State Control officers have the power to detain foreign ships in port if they do not conform to international requirements. As a consequence, most IMO regulations are enforced on a more or less global basis.

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The principal regulations governing maritime safety

The following are the major international shipping conventions, adopted by the International Maritime Organization (and the International Labour Organization) concerning safety and pollution prevention. However, many other maritime instruments concerning more specific issues are also in force worldwide.

Dealing with the ship

SOLAS (International Convention for the Safety of Life at Sea, 1974) lays down a comprehensive range of minimum standards for the safe construction of ships and the basic safety equipment (e.g. fire protection, navigation, lifesaving and radio) to be carried on board. SOLAS also requires regular ship surveys and the issue by flag states of certificates of compliance.

MARPOL (International Convention for the Prevention of Pollution from Ships, 1973/1978) contains requirements to prevent pollution that may be caused both accidentally and in the course of routine operations. MARPOL concerns the prevention of pollution from oil, bulk chemicals, dangerous goods, sewage, garbage and atmospheric pollution, and includes provisions such as those which require certain oil tankers to have double hulls.

COLREG (Convention on the International Regulations for Preventing Collisions at Sea, 1972) lays down the basic "rules of the road", such as rights of way and actions to avoid collisions.

LOADLINE (International Convention on Loadlines, 1966) sets the minimum permissible free board, according to the season of the year and the ship's trading pattern.

ISPS (The International Ship and Port Facility Security Code, 2002) includes mandatory requirements to ensure ships and port facilities are secure at all stages during a voyage.

Dealing with the Shipping Company

ISM (The International Safety Management Code, 1993) effectively requires shipping companies to have a licence to operate. Companies and their ships must undergo regular audits to ensure that a safety management system is in place, including adequate procedures and lines of communication between ships and their managers ashore.

Dealing with the Seafarer

STCW (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978/1995) establishes uniform standards of competence for seafarers.

ILO 147 (The ILO Merchant Shipping (Minimum Standards) Convention, 1976) requires national administrations to have effective legislation on labour issues such as hours of work, medical fitness and seafarers' working conditions.

The reduction in the number of ship losses

Relatively few ships actually sink at sea. The vast majority of the following "losses" simply refer to ships which are damaged and "written off" by the hull insurers as being beyond economical repair - described by underwriters as "total constructive losses".

The figures below cover the entire global industry and indicate the steady improvement in safety performance since the 1990s.

Source: Lloyd's Register Fairplay

The reduction in the number of accidents

The following figures concern insurance claims for third party liability, such as incidents involving personal injury, cargo damage, pollution, or damage to property (e.g. other ships or port equipment). The figures have been produced by the UK P&I Club, which insures around 20% of the world's ships, and take account of changes in the number of ships entered in the Club.

The decrease in the number of large claims (over US \$100,000) is all the more significant given the increasing value of claims that are made.

Source: UK P&I Club

3. Environmental Performance

The reduction in the quantity of oil spilled by ships

Quantity of oil spilled, tonnes

Source: International Tanker Owners Pollution Federation Limited

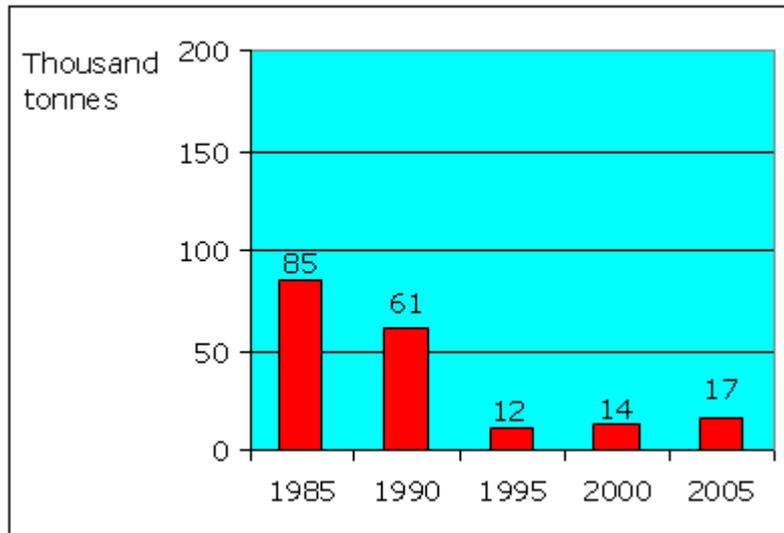
Lives lost at sea (1995 - 2002)

As in all transport sectors, lives are sadly lost as a result of accidents. However, the loss of life in shipping is in fact relatively modest, and the overall trend is one of reduction in the number of fatalities, which is all the more impressive in view of the growth in the number of ships in the world fleet. The figures below relate to lives lost on cargo ships and cover the entire international industry, which employs over one and a quarter million people, plus many more employed in coastal trades.

The reduction in the quantity of oil spilled by ships

For more information about the environmental performance of shipping [click here](#)

Quantity of oil spilled, tonnes



Source: International Tanker Owners Pollution Federation Limited

Lives lost at sea (1995 - 2002)

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Source: Lloyd's Register Fairplay

4. Useful Links

BIMCO

International Chamber
of Shipping

International Shipping Federation

International Association
of Dry Cargo Shipowners

International Association of Independent
Tanker Owners

With the support of

ECSA

European Community Shipowners'
Associations

Oil Companies International Marine Forum

IPTA

International Parcel Tankers Association
(IPTA)

International Ship Managers' Association

International Council of Cruise Lines

3. Shipping and the Environment

Environmental Performance

Shipping is the least environmentally damaging form of commercial transport and, compared with land based industry, is a comparatively minor contributor to marine pollution from human activities.

There has been a substantial reduction in marine pollution over the last 15 years, especially with regard to the amount of oil spilled into the sea, despite a massive increase in world sea borne trade.

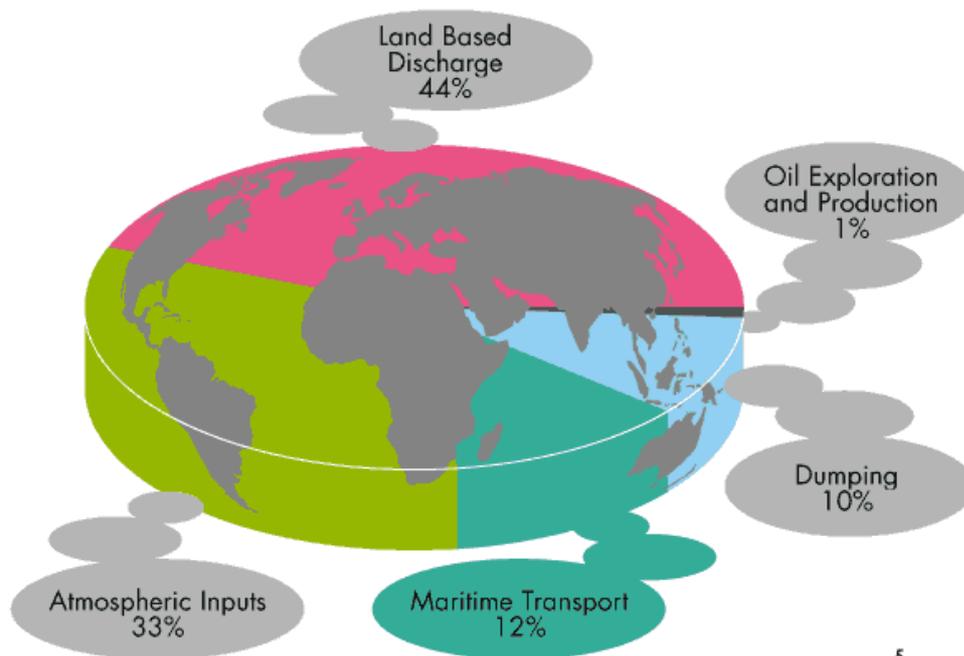


[Shipping Facts Index](#)

Small contributor to overall marine pollution

Sea transport is one of the least environmentally damaging modes of transport and, when compared with land based industry, is a comparatively minor contributor to marine pollution from human activities.

Source: Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP)



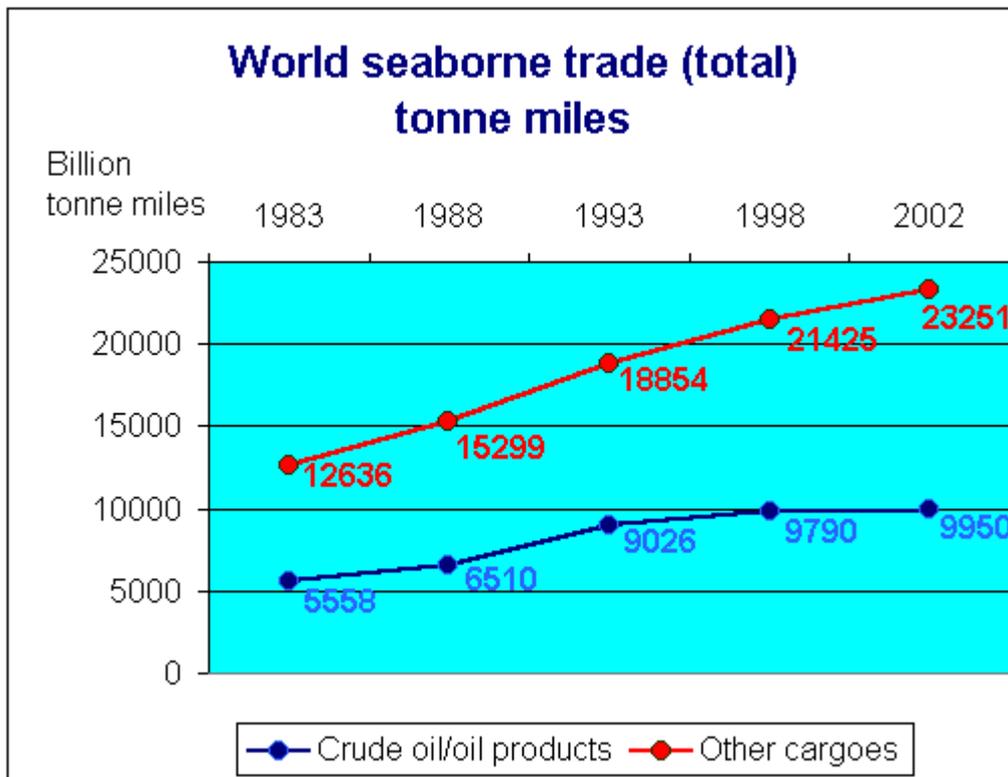
5

It is estimated that land based discharge (sewage, industrial effluent and urban/river run off etc.) and atmospheric inputs from land industry sources account for some 77% of marine pollution generated from human activities.

In contrast, maritime transport is only responsible for some 12% of the total (see graphic).

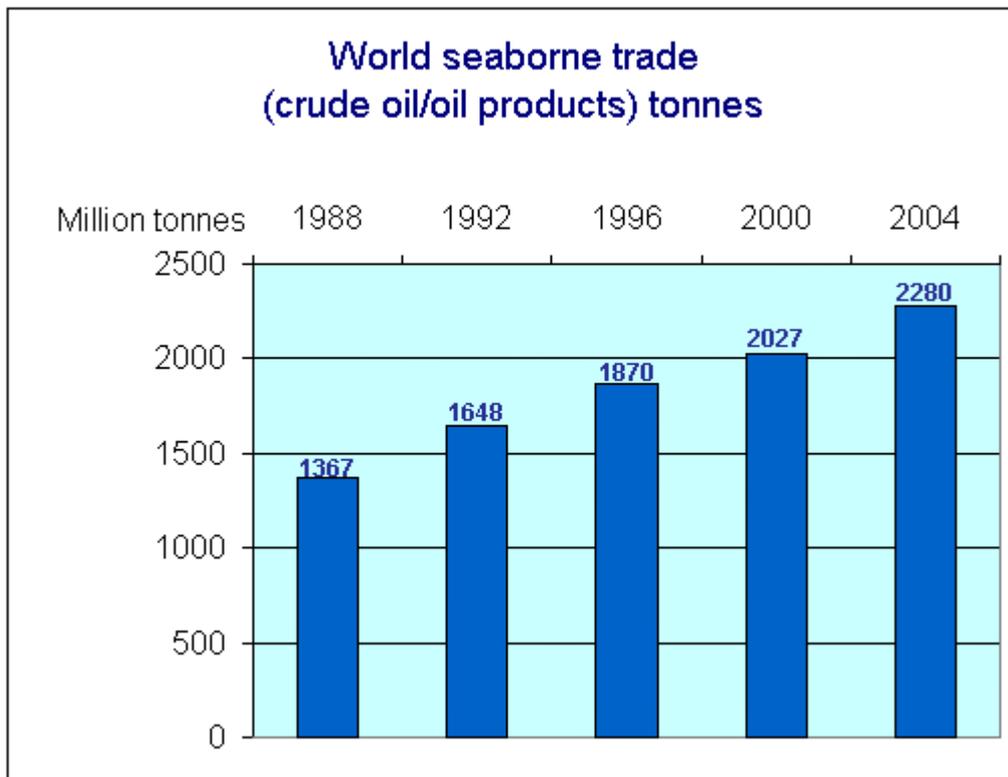
Reduction in marine pollution

Between 1983 and 2002, world seaborne trade rose from around 12 billion tonne miles to some 23 billion tonne miles, an increase of over 90%. The carriage of oil and petroleum products accounts for a significant part of this increase, rising to approximately 76% from 5.6 billion tonne miles to 9.9 billion tonne miles during the same period.



Source: Fearnleys Review

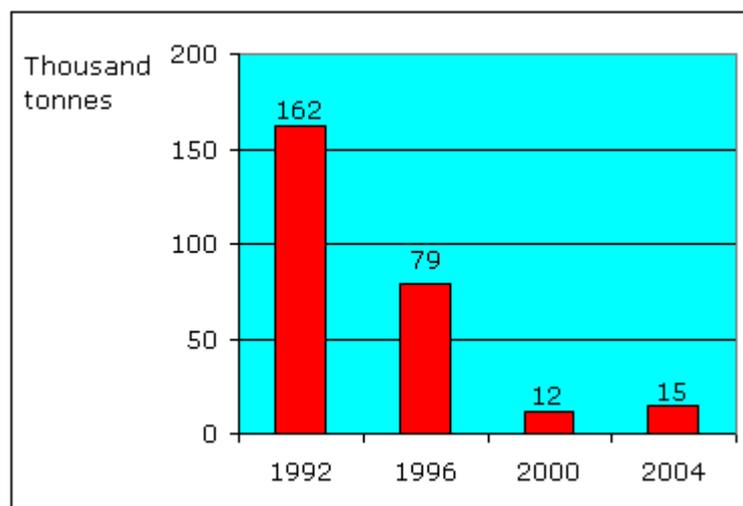
In tonnage terms, the amount of oil transported by sea increased from 1.21 billion tonnes in 1983 to almost 2 billion tonnes in 2002. A total of 33.73 billion tonnes was carried over the 19 year period. By contrast, estimates of the quantity of oil spilled during the same period show a steady reduction. Although serious accidents occasionally occur - for example in 1991 a single incident accounted for more than half of the oil spilled that year - the trend shows a continuing improvement, both in frequency and quantity of oil spills each year.



Source: Fearnleys Review

The introduction of industry practices such as 'load on top' and crude oil washing, coupled with segregated ballast requirements for tankers, has contributed significantly towards reducing operational pollution. The entry into force of the international Convention MARPOL 73/78 is credited with substantial positive impact in decreasing the amount of oil that enters the sea from maritime transportation activities.

Quantity of oil spilled



Source: International Tanker Owners' Pollution Federation

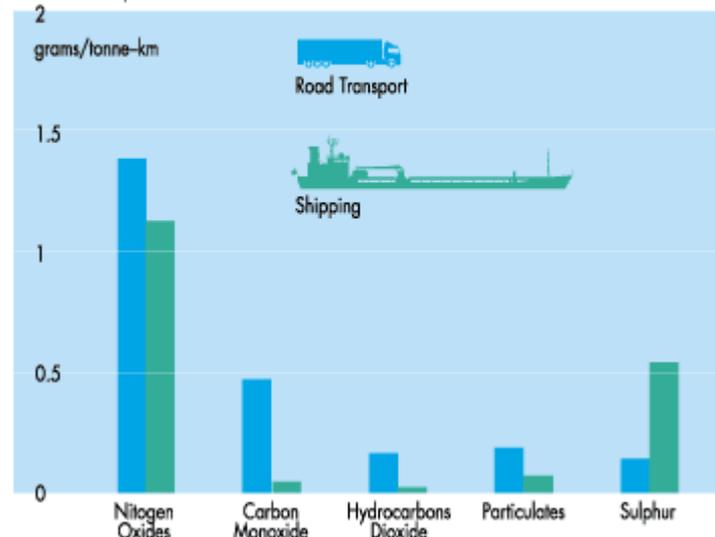
Important advances have been in the design of oily water separating equipment for machinery space bilges and oil tanker discharges and in the monitoring and control of such mixtures. These technological advances have allowed international regulations to be adopted reducing the permitted operational discharge of oil effluent from machinery space bilges from 100 parts per million (ppm) to only 15ppm).

Atmospheric pollution

The shipping industry is a small contributor to the total volume of atmospheric emissions compared to road vehicles (see graphic) and public utilities such as power stations, and atmospheric pollution from ships has reduced in the last decade. There have been significant improvements in engine efficiency. Improved hull design and the use of ships with larger cargo carrying capacities have led to a reduction in emissions and an increase in fuel efficiency.

Figure 5 Equivalent exhaust gas emissions - heavy domestic road transport vs shipping

Source: Swedish Transport Research Board 1993



However, there is worldwide concern about atmospheric pollution and global warming and the shipping industry is playing its part with a new Protocol to the IMO MARPOL Convention which entered into force in 2004. The major task for the future is to improve the quality of fuel oil supplied to ships by the oil companies, the sulphur content of which is relatively high.

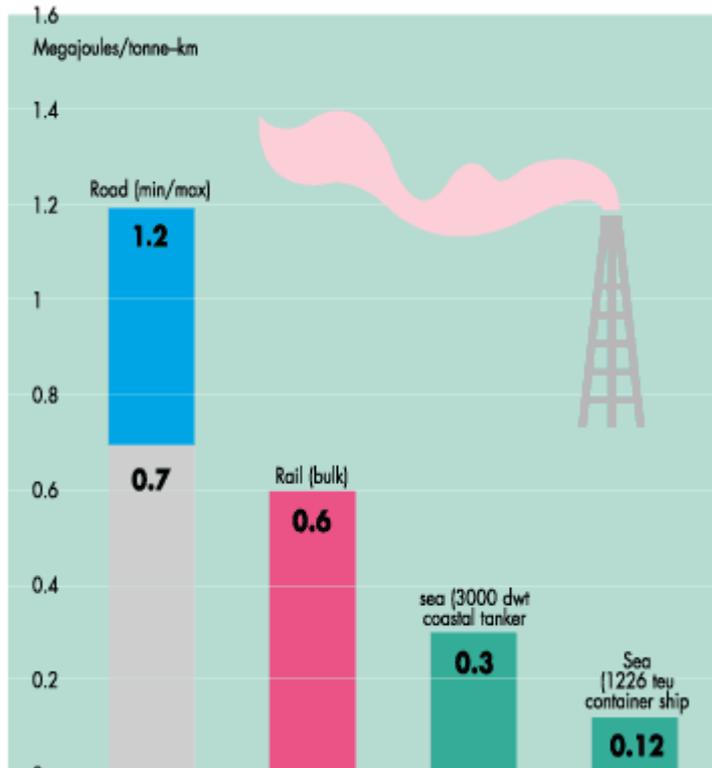
Meanwhile, improvements in hull design are expected to lead to further reductions in fuel oil consumption with consequent reductions in air pollution. The latest marine engines give a 30%-40% reduction in discharges of nitrogen oxide, with reductions of 60% likely in the future.

Energy efficiency

In those sectors where it competes directly with other means of transport, shipping remains by far the most energy efficient form of transport. Research undertaken by the UK government has demonstrated that energy consumption of road transport by truck lies in the range 0.7 to 1.2 Megajoules/tonne-km.

Comparative fuel consumption

Source: UK Department of Transport



By comparison, the consumption of a 3,000 dwt coastal tanker at 14 knots is about 0.3 Mj/tonne-km and a medium size container ship (1,226 TEU) at 18.5 knots about 0.12 Mj/tonne km.

[Shipping and the Environment](#)

Other Useful Information Sources

[Equasis Database \(Safety records of individual ships\)](#)

[Key issues for ship operators and maritime employers](#)

[Seascapes \(information for schools and general public\)](#)

International Ship Operators' Organisations

[BIMCO](#)

[European Community Shipowners' Associations \(ECSA\)](#)

[Intercargo](#)

[International Chamber of Shipping \(ICS\)](#)

[International Council of Cruise Lines \(ICCL\)](#)

[International Ship Managers' Association \(ISMA\)](#)

[International Shipping Federation \(ISF\)](#)

[Intertanko](#)

[Oil Companies International Marine Forum \(OCIMF\)](#)

[International Parcel Tankers Association \(IPTA\)](#)

[Society of International Gas Tanker & Terminal Operators \(SIGTTO\)](#)

Inter-governmental Organisations

[International Maritime Organization \(IMO\)](#)

[International Labour Organization \(ILO\)](#)

[United Nations Conference on Trade and Development \(UNCTAD\)](#)

[International Telecommunications Union \(ITU\)](#)

[Economic Commission for Europe \(ECE\)](#)

[World Meteorological Organization \(WMO\)](#)

[World Customs Organization \(WCO\)](#)

[International Hydrographic Organization \(IHO\)](#)

[International Maritime Mobile Satellite Organization \(INMARSAT\)](#)

[Paris MOU on Port State Control](#)

[Tokyo MOU on Port State Control](#)

[Indian MOU](#)

[Mediterranean MOU](#)

[Black Sea MOU](#)

[Latin American MOU](#)

Other Maritime Organisations

[Baltic Exchange](#)

[International Association of Classification Societies \(IACS\)](#)

[International Association of Ports and Harbours \(IAPH\)](#)

[International Committee on Seafarers' Welfare \(ICSW\)](#)

[International Federation of Shipmasters' Associations \(IFSMA\)](#)

[International Group of P&I Clubs](#)

[International Maritime Mobile Satellite Organization \(INMARSAT\)](#)

[International Maritime Pilots' Association \(IMPA\)](#)

[International Salvage Union \(ISU\)](#)
[International Tanker Owners Pollution Federation \(ITOPF\)](#)
[International Transport Workers Federation \(ITF\)](#)
[International Underwriting Association of London](#)
[International Union of Marine Insurance \(IUMI\)](#)
[United States Coast Guard](#)
[World Maritime University \(WMU\)](#)

International Trade Press

[Fairplay Daily News](#)
[Lloyd's List](#)
[Seatrade](#)
[Tradewinds](#)

Other Links

[Q88.com - technical info on 1,900 ships](#)
[Videotel \(video footage of merchant ships\)](#)
[Marine Safety Forum](#)
[The Federation of National Associations of Ship Brokers and Agents \(FONASBA\)](#)
[International Ship Suppliers Association \(ISSA\)](#)
[International Federation of Freight Forwarders Associations \(FIATA\)](#)
[Cyprus Marine Environment Protection Association](#)

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