

The Danish Maritime Cluster – an Agenda for Growth

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Introduction

It is the Danish Government's objective to ensure framework conditions for Denmark to take part in the development and growth associated with globalisation. It is therefore important that Denmark retains and improves its position as one of the world's most competitive seafaring nations. Danish shipping must also continue to focus on quality shipping, with high standards for the environment and maritime safety. This applies both to shipping and to a number of associated industries. The focus will therefore be on the 'maritime cluster' from here on.

Key figures

Denmark presently enjoys a good position. Danish shipping is currently among the world's most competitive, with foreign currency earnings of approx DKK 140 billion from the sector in 2005. Over half of Denmark's service exports are also attributable to maritime transport. Danish shipping operates 7-8 per cent of world tonnage, but accounts for close to 10 per cent of the total turnover from global maritime goods transport. The other elements of the maritime cluster also make a significant contribution to export earnings.

The cluster accounts for direct and indirect employment of just over 100,000 or six per cent of the private workforce in Denmark.

In 2005, the Danish Maritime Authority, under the Danish Ministry of Economic and Business Affairs, analysed the conditions necessary to create further growth and innovation in the Danish Maritime Cluster. One of the fundamental assumptions of this work has been that the key is the existence of shipping companies undergoing growth, where commercial and technical decisions relating to current shipping operations go hand in hand with investment in the future. These will in turn create growth opportunities for secondary maritime industries.

The work has focused on framework conditions for the maritime cluster, and the result has been presented in the Danish Government's action plan for growth and innovation in the Danish Maritime Cluster, published in March 2006.

This English version presents a summary of the results of the analysis and the political action plan, and focuses primarily on Danish conditions and the structures that characterise the maritime cluster.

Analysis

The foundation for the analysis is the framework conditions, and comparison has been made between Denmark and Germany, the Netherlands, the UK, the Isle of Man, Greece, Cyprus, Singapore and China. This has been achieved through literature studies and interviews with central players in government administrations, enterprises and organisations in the countries studied. In relation to Denmark, the results have been summarised in a SWOT (strengths, weaknesses, opportunities and threats) analysis.

The terms of reference for the analysis have been worked out in cooperation with the Danish Maritime Cluster, and maritime education, knowledge-sharing and research institutions. A steering committee was also set up to oversee the analysis work, involving representatives from the above institutions, the Royal Danish Ministry of Foreign Affairs, the Danish Ministry of Economic and Business Affairs and the Danish Maritime Authority.

Action plan for growth

The analysis has provided the basis for the Danish Government's action plan for growth in the maritime cluster, which rests on three objectives:

- Denmark should develop to become the most attractive place in Europe to operate international quality shipping.
- Conditions for growth, dynamics and competitiveness across the entire Danish Maritime Cluster should be enhanced.
- Health, safety and environment measures on ships should be maintained and improved, so that Denmark develops as a leading maritime nation with an international focus and quality shipping.

The action plan focuses on seven areas: Education and recruitment; research, development and innovation; taxation and development financing; reforms to administrative burden and national requirements; market access; increased focus on quality shipping; and new service initiatives in the Danish Maritime Authority.

Structure and presentation

In parallel with its work on the maritime cluster, the Danish Government has carried out extensive work aimed at ensuring Denmark takes part in the development and growth associated with globalisation. The focus has been on creating the best possible framework for growth and innovation in trade and industry in general, along with improvements to the public sector.

The Danish Government's globalisation work has had a horizontal focus, whereas the focus in this report has been on the maritime cluster. The maritime cluster can therefore be said to have its own globalisation project.

The following exposition is divided into five sections: After a summary SWOT analysis, the analysis results are presented for the maritime cluster, for shipping, and for health, safety and the environment. The initiatives in the action plan are then discussed.

This presentation is based on the work of expanding the framework for growth in the maritime cluster in Denmark, but also incorporates factors significant to understanding the maritime environment in Denmark.

Analysis results – SWOT

The SWOT analysis is a summary of the results from the analysis in which Denmark was compared with several other countries, and should be seen from a Danish perspective.

The review of strengths (S) and weaknesses (W) in the Danish Maritime Cluster summarises the internal conditions that form the basis of Denmark's current position. The exposition of opportunities (O) and threats (T) focuses on new factors that could have vital significance for future growth and employment.

The analysis covers both internal conditions in the maritime cluster and external conditions relating to international competition and market trends.

Summary SWOT analysis

SWOT – strengths

- Stable framework conditions with regular adjustments and optimisations
- Very high gross earnings from shipping
- The average age of the fleet is significantly less than the world average
- Danish shipping enjoys a good international reputation
- A number of leading international companies in shipping and equipment production
- A well-qualified workforce
- A good education tradition
- A smoothly operating maritime authority that serves as a sector authority
- A competitive taxation system for shipping
- Good cooperation between shipping companies and the maritime administration

SWOT – weaknesses

- Denmark's declining ranking in international Port State Control lists
- Growth in tonnage in the Danish-owned fleet is lower than in the other countries
- Limited cooperation within the Danish Maritime Cluster with regard to recruitment, education, career paths, and research, development and innovation
- The education level for charterers is too low
- Lack of public awareness of the good education and career opportunities in the Danish Maritime Cluster, leading to recruitment problems
- Danish national requirements for shipping

SWOT – opportunities

- Attract more shipping companies and other maritime activities to Denmark
- Increase access to growth markets in China, India and South America
- Increase sales to shipbuilding industry growth markets
- Increased strategic research and development activity
- Further structural development in the small enterprises in the Danish Maritime Cluster
- Greater government efforts to promote Danish maritime interests
- Greater international focus on quality shipping

SWOT – threats

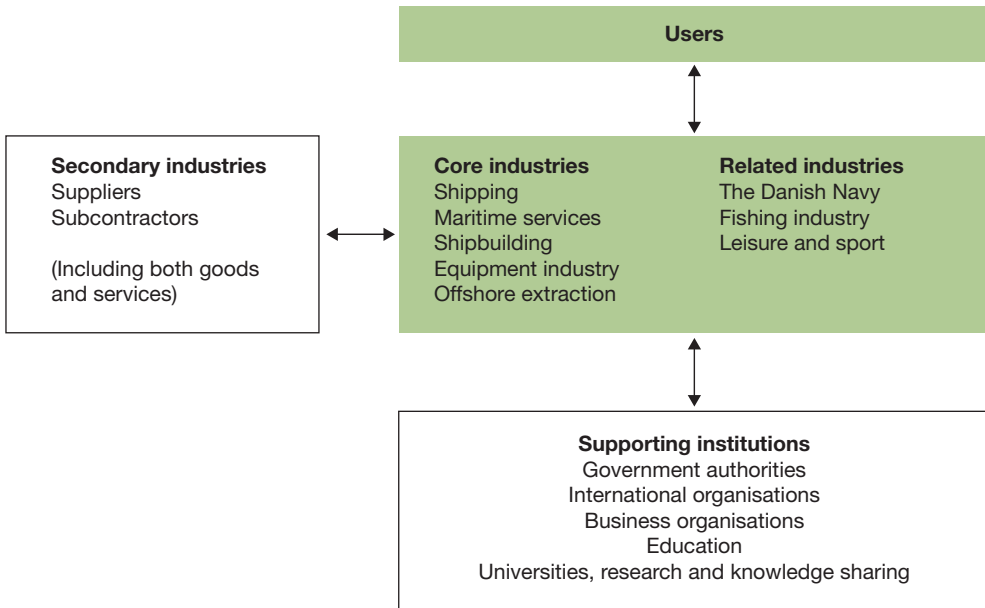
- Insufficient flow of naval architects and other skilled labour into the sector
- Competition from countries with lower wages
- Crew expenses on Danish ships for Danes and foreigners are higher than for comparable registers
- Lack of awareness of the significance of shipping for growth and employment in Europe

The basic conclusion is that Denmark is already a leading maritime nation. But a number of initiatives can be set in motion to counter the threats and weaknesses the maritime cluster in Denmark is facing, and to exploit the opportunities the future holds.

The Danish Maritime Cluster

The cluster basically comprises the industries related to transport by sea, and exploitation of the resources beneath the sea bed. In addition to the sea, the Danish Maritime Cluster is linked together around a common user group in terms of transport purchasers, trade between enterprises, exploitation of common technologies, and use of the same workforce groups. The various industries that make up the cluster are illustrated in figure 1, and include core industries, related and secondary industries, and supporting institutions.

Figure 1. The Danish Maritime Cluster



The analysis of the maritime cluster only includes core industries and supporting institutions. Related industries such as fishing, the navy and leisure and sport have not been included. The same is true for industries that work with renewable energy at sea. Statistical data are only available for shipping and shipbuilding, and it has not been possible to carry out specific statistical surveys. It has therefore been necessary to select representative industries¹ for the other industries in the cluster.

The key economic figures for the maritime cluster are shown in table 2.

¹ Proxy industries

Table 2. Key figures (2002) for the maritime cluster

Industry	Production value	Gross Value Added	Gross Domestic Product at factor cost	Number employed	Direct exports	Export share – direct and indirect (%)
Shipping	89,722	14,952	15,038	14,815	86,681 ¹	96.3
Maritime services	33,776	18,174	18,224	32,460	n.a.	n.a.
Shipbuilding	7,587	1,875	1,880	6,524	883	54.8
Equipment production	19,386	8,980	9,001	20,626	15,535	83.6
Off shore resource extraction	33,845	29,507	29,544	1,287	10,480	79.6
Total for the maritime cluster	193,308	73,488	73,687	75,712	n.a.	n.a.
Total for Denmark	2,325,440	1,175,635	1,176,293	2,782,306	645,380	36.9
The maritime cluster's share (%) of the total Danish economy	8.3	6.3	6.3	2.7	17.6 (minimum)	n.a.

¹ This export figure is approximate, as the sources are not identical. Source: Statistics Denmark (in both cases).

The amounts shown are in DKK million. *Source: Statistics Denmark, Input-output tables and analyses. The information on direct exports for the industries has been derived from special queries run at Statistics Denmark, while the total exports have been taken from Statistics Denmark's Statistical Ten-Year Review.*

The maritime cluster accounts for just over six per cent of the total value added in Denmark. Offshore extraction has a large value added and a very small labour force. If one excludes extraction, shipping accounts for 34 per cent of value added and 20 per cent of the labour force, while the other industries have a lower percentage contribution to value added than to employment. This reflects the highly capital-intensive nature of shipping.

The maritime cluster is far more export-oriented² than other Danish industries.

² The export component here includes both direct exports and sub-supplies to companies that export.

In order to assess the complete significance of the maritime cluster for Denmark, the derived significance for other industries must be calculated. This is shown in table 3.

Table 3. Direct and indirect production and employment (2002)

Industry		Production (DKK million)	Employment ('000)
Shipping	Direct	89,722	14,815
	Direct and indirect	93,922	18,896
Maritime services	Direct	33,776	32,460
	Direct and indirect	46,790	44,765
Shipbuilding	Direct	7,587	6,524
	Direct and indirect	11,854	10,932
Equipment industry	Direct	19,386	20,626
	Direct and indirect	27,397	28,800
Offshore extraction	Direct	33,845	1,287
	Direct and indirect	36,181	3,521
Total for maritime cluster	Direct	184,316	75,712
	Direct and indirect	216,144	106,914
% of Danish economy	Direct	7.9	2.8
	Direct and indirect	9.3	3.9

It can be seen that the maritime cluster has a significant indirect impact on the Danish economy.

The international focus of Danish shipping is evident from the fact that 90 per cent of intermediate goods and services for the production of maritime transport come from abroad. The expenses incurred by Danish ships in foreign ports are a major contributor. The corresponding figure for shipbuilding and the equipment industry is approximately 40 per cent, and even less for maritime services.

Over 60 per cent of the total sales of Danish maritime services can be attributed to intermediate goods and services. The percentages for the equipment industry and shipbuilding are 25 and 15 per cent, respectively.

When one looks at the significance of intermediate goods and services with regard to interdependence in the maritime cluster, it is characteristic that shipping has the greatest interface with the other industries in the cluster. However when one measures the supply of intermedi-

ate goods and services, there is not a high degree of interdependence between the industries that make up the cluster. However, from a subcontractor perspective, the cluster is interesting for a number of other industries outside the maritime cluster. Apart from the equipment industry, there is only a limited amount of reciprocal supply.

The strongest interdependency in the Danish Maritime Cluster is the socio-economic element, and education and a common labour market in particular. The fact that maritime officers return to land after serving a certain period on ships, and take up employment in the shipping companies' land-based organisations and in the other maritime industries, is seen as an important driver for growth.

A number of maritime parties highlight the Danish Maritime Authority as an important factor for increasing interaction and dynamics in the maritime cluster.

Innovation is also seen as an important driver for greater interaction. For many maritime enterprises, user-driven innovation is the dominant element. Here, it is the dialogue between suppliers and the customer that contributes to the development of processes and products. In other areas, emphasis is on research-driven innovation – where research is the focal point. There are many examples of these types of innovation, but there is a need for further enhancement. Cluster enterprises increasingly highlight the need to develop the right skills, if they are to continue to be able to operate from Denmark. This is necessary in order to be able to manage the innovation processes.

A broad range of enterprises is encompassed by the cluster industries. This applies in terms both of size and representation within the various industry segments, and an export focus is an important factor. With regard to the medium and large enterprises, in addition to sales and production abroad establishment of global service schemes are often a prerequisite for market participation. Several Danish maritime enterprises are seen as leaders within their area³.

In Denmark, technologically oriented maritime research is primarily at the Technical University of Denmark (DTU). This research focuses on the classic disciplines relating to shipbuilding and hydrodynamics, as well as areas such as wave dynamics, structural dynamics, new materials, and safety and risk analyses. DTU works closely with the maritime cluster.

³ In addition to the analysis associated with this project information on interdependency has been drawn from Søfartspolitisk Vækststrategi (Maritime Policy Growth Strategy), the Danish Maritime Authority, November 2003.

Force Technology is a technological service institute approved by the Danish Ministry of Science, Technology, and Innovation. Force focuses on product and concept development, design, production optimisation, and the operation and maintenance of industrial equipment, including for maritime technology. Force has advanced simulators, towing tanks and wind tunnels, and thus forms a bridge between the DTU and industry, with industry financing the activities to a large degree.

The Maersk Mc-Kinney Moller Institute for Production Technology at the University of Southern Denmark is important for the shipbuilding industry. The Institute's aim is to become an internationally recognised centre of excellence, where academia and industry in close collaboration develop new technologies for intelligent autonomous systems⁴.

In 2005, the establishment of the Institute for Maritime Research and Innovation at the University of Southern Denmark paved the way for commercial and scientific maritime research. The Institute aims to establish an interdisciplinary research field that combines business and international economics, economic geography, maritime economics and logistics. The primary research areas are shipping and its framework conditions, and the intermodal transport chains and logistics systems of which shipping forms a part.

In 2005, the Danish Government established the Danish Maritime Trust Fund, which is intended to provide financial support for initiatives and measures that develop the maritime cluster. Research, development and innovation are key focus areas for the Trust Fund. The Trust Fund owns a number of shares in Danish Ship Finance, a private shipping finance company, and the dividends from these finance the Foundation's grants.

The aim of the work in cluster organisations is to focus on and develop dynamics in the cluster. The competitiveness of the individual industries depends on the other industries, along with links to universities, maritime colleges/universities, and other educational institutions, government authorities and business organisations.

4 The Institute conducts research in these areas:

- modern artificial intelligence and its usage in autonomous systems (robots and other technological artefacts)
- vision (2D-image handling and 3D-interpretation of images) for real-time object recognition
- applied mathematics for mathematical modelling of, for example, mechanical systems and processes, and for motion planning
- object-oriented software development, especially in terms of modelling, architecture and evolution of software.

Denmark does not have a unified maritime cluster organisation. The work is divided between the Maritime Development Centre of Europe (MDCE), the Association for Promotion of Danish Shipping and the Danish Society for Naval Architecture and Marine Engineering. The strength of this structure is the voluntary commitment in each association, with coordination via a common secretariat. The Danish Maritime Authority also works closely with the three associations and the secretariat.

Activities revolve around professional and interdisciplinary network building, conferences, seminars, knowledge-sharing, innovation and information activities. Financing derives from membership contributions and foundations, etc.

The boards of these associations are made up of leading figures and directors within the maritime industries, the transport sector and trade associations, etc.

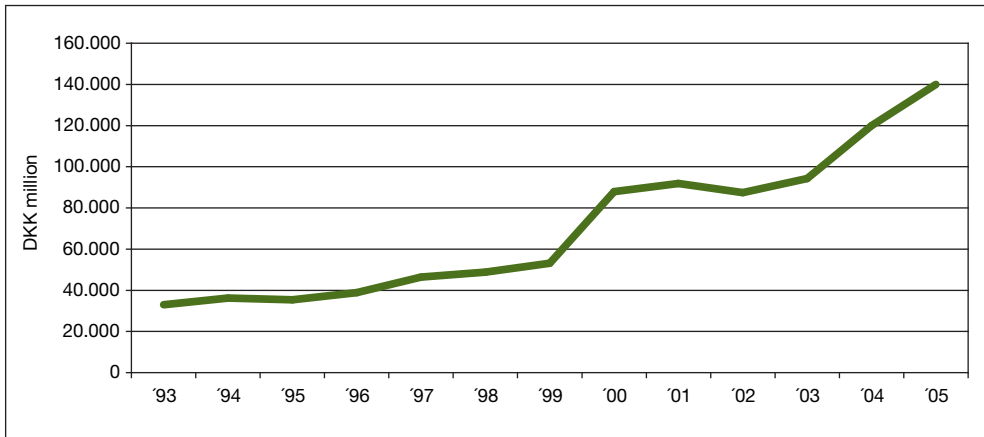
Danish Shipping

Foreign currency earnings

Danish shipping is one of the strongest players on the global market, and forecast gross earnings for 2005 are DKK 140 billion. The net foreign currency earnings from Danish shipping in 2004 were DKK 20 billion⁵, making it a vital contributor to the Danish balance of payments surplus.

5 Calculated for this report. Source: Statistics Denmark, the Danish National Accounts and Balance of Payments, 2005:12. If one deducts bunker expenses and adds maritime transport expenses for Danish imports, the surplus increases to DKK 25 billion.

Figure 2. Gross earnings from Danish shipping in the balance of payments (1993-2005)



Source: OECD Statistics on International Trade in services. The figures for 2004-05 are estimates from the Danish Shipowners' Association.

Table 4 shows that Denmark has the largest turnover of all the European countries in the comparison, and yet the lowest Value Added. This might be explained by the fact that Danish shipping companies operate a very large fleet of chartered ships, increasing the turnover, but with associated charter expenses⁶, etc.

Table 4. Turnover and Value Added for shipping (2002)

		The UK	Germany	The Netherlands	Greece	Denmark
DKK million	Turnover	40,741	95,841	45,063	62,890	100,685
DKK million	VA	17,781	39,839	14,532	n.a.	13,496

Source: Eurostat & Research & Statistics Unit; OECD, 2002 (table A.2.1) (figures for Greece). Calculated using the annual average exchange rate for EUR/DKK, source: Denmark's Nationalbank.

Greece and Denmark are the only OECD countries with stable profits from trade in maritime transport services – and hence net foreign currency earnings (see table 5). In both countries, this item makes a major net contribution to the balance of payments.

⁶ The charter expenses are defrayed before the value added.

Table 5. Shipping income and expenses in the balance of payments (DKK million)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
The UK												
Revenue	34,741	35,369	38,393	37,365	38,740	48,976	46,651	45,273	53,040	51,577	50,865	58,399
Expenses	35,193	36,207	39,283	37,040	41,249	55,836	52,826	50,224	59,148	59,338	64,870	61,233
Net	-452	-838	-896	325	-2,515	-6,860	-6,175	-4,951	-6,108	-7,761	-14,013	-2,827
Germany												
Revenue	29,576	33,356	34,728	36,204	39,174	43,583	44,354	46,607	63,687	72,923	68,275	70,551
Expenses	38,864	37,740	41,741	38,245	42,559	46,617	50,314	52,843	68,679	68,664	67,384	65,615
Net	-9,288	-4,390	-7,013	-2,040	-3,385	-3,027	-5,960	-6,243	-4,992	4,259	891	4,936
The Netherlands												
Revenue	44,355	44,403	46,753	44,848	43,637	51,051	52,799	51,670	59,714	62,133	57,194	47,823
Expenses	43,884	46,747	49,491	44,001	43,075	48,170	51,767	52,718	61,745	63,190	55,562	46,505
Net	470	-2,345	-2,734	846	562	2,881	1,031	-1,048	-2,039	-1,056	1,631	1,331
Greece												
Revenue		9,034	10,132	8,660	11,012	13,085	7,661	33,318	61,163	62,890	59,322	66,657
Expenses		3,715	4,396	3,957	3,843	4,038	3,074	12,465	26,819	32,227	29,610	28,409
Net		5,313	5,730	4,703	7,170	9,047	4,581	20,852	34,343	30,663	29,712	38,241
Denmark												
Revenue		33,038	36,240	35,409	38,832	46,379	48,821	53,178	87,941	91,857	87,387	94,268
Expenses		30,739	35,344	35,224	38,160	45,414	46,993	48,346	76,073	83,479	80,238	81,708
Net		2,299	896	185	672	958	1,828	4,833	11,868	8,377	7,156	12,560
USD exchange rate	602.7	649.5	635.2	560.5	579.6	660.9	669.7	698.3	809	831.9	788.12	659.0

The calculations are based on the methods used for balance of payment accounting. No statistics are available for Cyprus, China and Singapore, as these countries are not members of the OECD. Exchange rates are annual averages. Sources: OECD, 2002 (table A.2.1) and Nationalbanken.dk

The merchant fleet

Trends in the owner-controlled fleet between 2001 and 2005 are shown in table 6 below. There has been a global increase in tonnage of 17 per cent, while Danish tonnage has only risen by 14 per cent, a rise that can be attributed to 2005.

Table 6. Owner-controlled fleet – ‘000 DWT

	End of 2001		End of 2004		End of 2005	
	Number	DWT	Number	DWT	Number	DWT
The UK	623	17,790	582	18,414	745	30,032
Germany	2,212	37,582	2,575	57,812	2,747	74,993
The Netherlands	616	4,956	535	5,163	541	5,748
Greece	3,100	144,738	2,920	152,083	2,973	161,922
Cyprus	74	2,634	73	3,019	94	2,089
Singapore	667	17,565	648	20,681	682	22,834
China	2,010	41,277	2,329	55,566	2,594	64,016
Hong Kong	552	36,044	656	42,557	635	42,946
Denmark	608	16,524	525	16,274	643	18,990
Global	30,062	800,148	30,929	876,716	32,172	938,069

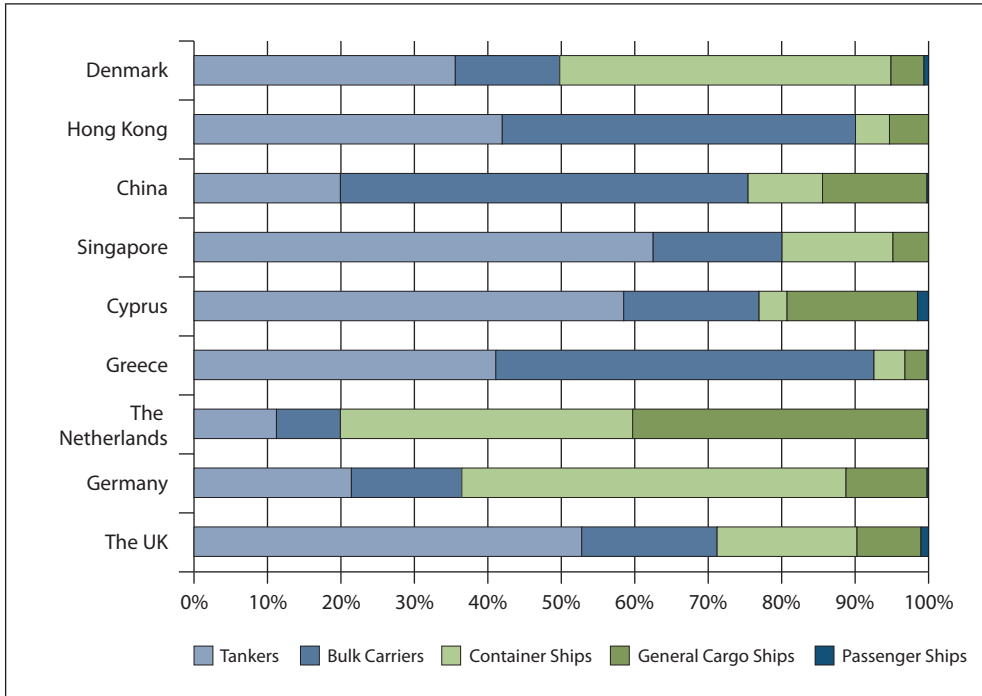
Summary of controlled (nationally owned) tonnage and number of ships over 1000 DWT. The Isle of Man has been included in the figures for the UK. However, only a few ships exceeding 1000 DWT are owned by shipping companies based on the Isle of Man. Denmark includes figures for DIS (Danish International Ship register) and DAS (Danish Ship register). Source: Lloyd's Register Fairplay "World Fleet Statistics" 2001, 2004 and 2005 table 3A-3I.

The difference between earnings and tonnage is due to the fact that Danish shipping companies largely use chartered ships. At the end of 2005, the total Danish chartered tonnage is estimated to have been 30 million DWT. Given that much of Danish shipping operates in high-value markets, it is estimated that up to 10 per cent of the total turnover from global maritime goods transport is linked to Danish-owned or controlled ships⁷.

This is supported by the distribution between the various types of owner-controlled ship in figure 3, which shows that Denmark has a large share of its tonnage in the container ship segment. Furthermore the Danish shipping companies charter container capacity.

⁷ These estimates were made by the Danish Shipowners' Association.

Figure 3. Owner-controlled fleet (end of 2004), ship types by DWT for each country



Source: Lloyd's Register Fairplay "World Fleet Statistics" 2004, p. 59-73.

Denmark was the world's 17th largest flag State at the end of 2005, but the 11th largest based on vessel ownership. At the end of 2005, almost 9,500 DWT were registered (see table 7). Despite a slight decline in the owner-controlled fleet from 2001 to 2004, there was an increase of more than seven per cent in the Danish registers. In 2005 there were increases in both the registered and owner-controlled fleets.

Several other countries have seen significant rises in their ship registers. In many cases, this is due to strategic efforts to attract foreign shipping companies and to encourage national shipping companies to transfer ships from other registers and/or register new ships under the national flag.

Table 7. Registered tonnage – in '000 DWT

	End of 2001		End of 2004		End of 2005	
	Number	DWT	Number	DWT	Number	DWT
The UK	443	4,324	611	10,792	611	10,949
Isle of Man	222	9,451	270	11,199	302	13,364
Germany	577	7,336	490	9,255	553	13,422
The Netherlands	679	5,077	621	5,041	579	4,714
Greece	1,692	48,167	1,304	54,679	1,259	52,329
Cyprus	1,280	35,400	986	34,100	903	30,330
Singapore	1,038	32,556	1,101	41,009	1,201	48,727
China	2,823	23,407	2,455	29,209	2,510	31,998
Hong Kong	1,027	22,900	1,000	43,941	1,071	50,376
Denmark	461	8,131	466	8,774	388	9,443

Summary of registered tonnage and number of ships. Figures for Denmark include both DIS (Danish International Ship register) and DAS (Danish Ship register). Source: Lloyds Register Fairplay "World Fleet Statistics" 2001, 2004 and 2005 table 2A-2I.

The most popular foreign register for Danish shipping companies is Singapore, accounting for 14 per cent of tonnage. Denmark, Singapore, Norway and the UK account for 79 per cent of Danish registrations (see table 8).

Table 9 indicates that hardly any foreign shipping companies use the Danish International Ship Register – DIS.

Table 8. The four most popular registers for shipping companies from the countries studied (1 January 2005)

Shipping company from:	1	2	3	4
The UK	The UK (23 %)	Isle of Man (19 %)	Bermuda (12 %)	Liberia (10 %)
Isle of Man	Liberia (96 %)	Panama (3 %)		
Germany	Liberia (33 %)	Germany (15 %)	Antigua Barbuda (13 %)	Cyprus (11 %)
The Netherlands	The Netherlands (62 %)	The Bahamas (9 %)	Liberia (9 %)	Panama (6 %)
Greece	Greece (32 %)	Malta (16 %)	Panama (14 %)	Cyprus (13 %)
Cyprus	Panama (23 %)	The Bahamas (23 %)	Norway (19 %)	Cyprus (16 %)
Singapore	Singapore (54 %)	Liberia (18 %)	Panama (10 %)	Hong Kong (4 %)
China	China (49 %)	Hong Kong (21 %)	Panama (19 %)	Liberia (5 %)
Hong Kong	Hong Kong (42 %)	Panama (23 %)	Norway (12 %)	Singapore (7 %)
Denmark	Denmark (51 %)	Singapore (14 %)	Norway (8 %)	The UK (6 %)

This table is based on the proportion of DWT for ships over 1,000 DWT in the various registers. Source: Special query at ISL.

Table 9. Nationality of the shipping companies that use the registers of the countries studied (1 January 2005)

Register:	1	2	3	4
The UK	The UK (55 %)	Denmark (9 %)	Germany (8 %)	Norway (5 %)
Isle of Man	The UK (42 %)	Greece (18 %)	Japan (16 %)	Germany (8 %)
Germany	Germany (97 %)			
The Netherlands	The Netherlands (53 %)	Germany (23 %)	The UK (4 %)	Norway (4 %)
Greece	Greece (94 %)	The UK (2 %)		
Cyprus	Greece (59 %)	Germany (18 %)	The UK (3 %)	Russia (3 %)
Singapore	Singapore (30 %)	Norway (15 %)	Japan (12 %)	Hong Kong (7 %)
China	China (93 %)			
Hong Kong	Hong Kong (39 %)	China (26 %)	Japan (7 %)	Greece (3 %)
Denmark	Denmark (95 %)	Sweden (2 %)	Greece (1 %)	

This table is based on the proportion of DWT for ships over 1,000 DWT in the various registers. Source: Special query at ISL.

The Danish new construction programme of 14 million DWT, as of 1 January 2006, is the fourth largest in the world. This corresponds to 74 per cent of the Danish owner-controlled fleet at the end of 2005. The three largest new construction programmes are in Japan (39 million DWT), Greece (20 million DWT), and Germany (16 million DWT)⁸.

Economic framework conditions

Taxation systems for seafarers and shipping companies are vital factors in shipping operations. This means there is international competition in this area. With respect to margins on the purchase and sale of ships and pool fees, the Danish tonnage taxation system is different to those in other countries (see table 8).

Table 8. Tonnage tax, pool fees and sales margins

	Are pool fees included in the tonnage taxation system?	Are sales margins on the purchase and sale of ships included in the tonnage taxation system ¹ ?
Germany	No	Yes
The Netherlands	Yes, from 1 January 2006	Yes
The UK	Yes	Yes
Isle of Man	No corporation tax paid.	No corporation tax paid.
Greece	No, but there are other taxation schemes under the "89 law" which mean that income can be tax exempt.	No, but there are other taxation schemes under the "89 law" which mean that income can be tax exempt.
Cyprus	Yes, but in some cases corporation tax at 4.25 %	Yes
Singapore	Yes	Yes, until 2009
China	There is no tonnage taxation scheme.	There is no tonnage taxation scheme.
Denmark	No	No

1 Only applies to ships that are operated under the national tonnage taxation systems.

This information derives from public documents and discussions with ministries, except in Germany where the source was Verband Deutscher Reeder.

Danish taxation for seafarers is fully competitive with the other countries.

⁸ Fairplay Information Systems.

Recruitment and education

There have been problems recruiting staff for the Danish merchant fleet for a number of years, while at the same time, initiatives have been implemented to promote recruitment. The other countries in this comparison (apart from China) have the same recruitment problems to varying degrees, and have initiated various campaigns to relieve these problems. Most countries view recruitment from a wider cluster perspective, but it seems that only Denmark offers a commercially oriented master's level course on top of its officer training courses. Greece, and Singapore to a certain extent, are in the process of implementing a similar structure.

Maritime administration

The Danish Maritime Authority is part of the Danish Ministry of Economic and Business Affairs.

The Danish Maritime Authority is a sector authority for maritime trade and industry, and its mission is to promote health and safety on the open sea, and efficiently improve the competitiveness and employment levels of the maritime cluster.

The Authority works to create competitive conditions for the Danish merchant fleet in open and extended markets, with a high level of health and safety and environmental consideration. It also focuses on having and developing close cooperation with the maritime industries. Exploitation of the benefits of IT technology is a major focus area, in order to make this cooperation and working procedures as efficient as possible.

The Authority's sphere of operations is centred on vessels and their crews offshore, while the interface to other authorities is primarily the vessel's side. The authority is responsible for:

- The construction, equipping and operation of Danish vessels, including safety, prevention of terrorism, navigation provisions, crews, the occupational health and safety and environmental protection, along with Port State Control for foreign vessels in Danish ports.
- Ship registration
- Seafarer education, employment, health and maritime social conditions, and a commercially oriented masters level degree for maritime officer training courses.
- Maritime policy, business policy, and maritime law, including regulations governing liability for sea transport.

An important activity of the Danish Maritime Authority in its work with health, safety and the environment is the prevention of industrial injuries, including occupational accidents, work-related diseases and over-exertion among employees of the Danish merchant fleet. The activities of the authority aim to prevent crews from being exposed to unnecessary risks and health impacts.

A central player in these prevention activities is the Danish Maritime Working Environment Council, which provides advice and guidance to shipping companies and vessels. The Council's activities are financed by shipping companies and the Danish Government, and it has a board with equal representation by shipping companies and employees.⁹ The Research Unit of Maritime Medicine (RUMM), linked to a Danish university, is a central player in the area of maritime occupational health and safety research and documentation. The RUMM is financed by the Danish Government, as well as receiving significant external financing.¹⁰

With respect to the maritime health service, the Danish Maritime Authority is responsible for setting and maintaining regulations and ensuring skilled personnel and equipment are present on vessels. When treating illnesses on vessels, access is available to a Radio Medical Service providing medical advice. The health service is financed by the Danish Government.¹¹

The Authority is also responsible for various tasks relating to the regulation of navigation in Danish territorial waters, while the other tasks in this area, including ice-breaking and combating pollution are the responsibility of the Danish Ministry of Defence. The Danish Ministry of the Environment is responsible for matters relating to the marine environment.

The responsibilities of the Danish Maritime Authority include both compliance and policy formulation, and active participation to protect Danish interests in international forums such as the EU, IMO, ILO and WTO.

Dialogue, customer friendliness and a minimum of national requirements are important parameters for the industries, and the maritime administrations in all study countries are pursuing an active and customer-oriented course. This fact is recognised by the shipping companies in the various countries. The Isle of Man, Singapore and Denmark are the countries that receive the most praise from shipowner associations.

9 www.seahealth.dk

10 www.maritimmedicin.dk

11 A more detailed description of the maritime health service is available at <http://www.dma.dk/sw6494.asp>

In most of the countries, maritime activities are spread across several ministries, with each one being responsible for some of the government duties relating to shipping. This is seen as a barrier to development of the maritime industries in several cases. Denmark and Greece are the only countries to have established an authority with a specific maritime sector responsibility.

Health, safety and the environment

These areas are central in the Danish work with quality shipping, both nationally and internationally. Having a level playing field for all parties is vital to the development of competitive international shipping.

Given that international conventions and EU regulations are increasingly supporting Danish viewpoints in relation to quality shipping, the Danish Maritime Authority's primary line has become to abolish national requirements, or to seek to incorporate these into the international conventions so that they apply to all vessels.

The Danish Maritime Authority, in cooperation with the industries, is in the process of completing a major review of the Danish regulations in the areas of health, safety and the environment.

International cooperation in relation to Port State Control is important for the work of the Danish Maritime Authority. The detentions under the various control regimes provide an important indication of whether individual flag States are fulfilling their responsibilities in relation to health, safety and the environment in a responsible manner.

Denmark is doing significantly better in relation to the Tokyo MoU than the Paris MoU. In 2005 it is expected to occupy fourth and ninth place, respectively. In relation to the Paris MoU, there has been an improvement compared to previous years, but the position is not satisfactory.

Out of the eight study countries and Denmark, only China was on the US Coast Guard's list of quality shipping nations at the beginning of 2006. Denmark lost its place on the list in 2005.

Primarily smaller, older dry-load vessels are detained. The problems are attributed to two causes. Firstly, some shipowners have difficulty, technically and operationally, honouring the

international requirements placed on shipping today. Secondly, shipowners fail to appreciate that detentions represent not only a temporary problem for the shipping company in question (i.e. that the vessel is tied up), but also a problem for all Danish registered vessels and their ability to operate internationally with the greatest administrative ease.

The detentions have been receiving increasing attention in the Danish Maritime Authority, in part through consistent follow-up and an increased focus on information and experience exchange.

The Danish Government's action plan for growth in the Danish Maritime Cluster

The basic aim of the action plan is to help ensure that there continue to be attractive conditions for growth in the Danish Maritime Cluster in the future. This growth will not happen automatically. Globalisation and international competition are placing greater demands on shipping companies and the other enterprises in the Danish Maritime Cluster. It is essential that the framework conditions for the industry always remain attractive and are regularly adapted. It is also essential to have a maritime administration that can match the regulatory needs of the industry, both nationally and internationally. This is the only way that Denmark can retain and improve its position as an international maritime nation with quality shipping and commercial efficiency. This is necessary in order to create growth in the Danish Maritime Cluster.

There are three central objectives for Danish initiatives:

- Denmark should develop to become the most attractive place in Europe to operate international quality shipping.
- Conditions for growth, dynamics and competitiveness across the entire Danish Maritime Cluster should be enhanced.
- Health, safety and environment measures on ships should be maintained and improved, so that Denmark develops as a leading maritime nation with an international focus and quality shipping.

Action plan

Based on these objectives, and the analysis of the framework conditions in Denmark compared with a number of other leading seafaring nations, the Danish Government has prepared an action plan which aims to improve the framework conditions for the Danish Maritime Cluster.

The action plan will realise the objectives through seven focus areas:

1. Better education and greater flow of skilled labour into the Danish Maritime Cluster.
2. Research, development and innovation in the Danish Maritime Cluster.
3. Taxation and development financing.

4. Reduced administrative burden and fewer Danish national requirements.
5. Promotion of Danish influence and market access.
6. Greater focus on quality shipping.
7. An efficient, service-oriented and modern administration.

These focus areas are discussed below.

1. Better education and greater flow of skilled labour into the Danish Maritime Cluster

The Danish Government will continually monitor the skills needs of the maritime industries, to ensure educational courses are up-to-date and correctly targeted. To increase the flow of qualified young people into the maritime industries, greater recruitment and information initiatives will be implemented regarding career opportunities and patterns in these industries.

Efforts will be made to increase the inflow of qualified maritime officers into the merchant fleet via a retraining program for navigators in the fishing fleet. In 2006, the Danish Government will also permit qualified maritime officers from EU and EEA countries to become masters on Danish ships.

Continuing training courses available to masters from smaller vessels will be reviewed and modified.

The Danish Government will initiate an analysis of the skills required by the shipping companies' onshore organisations. It will also consider the need for bachelor and diploma level courses in the area of shipping and chartering, and a technical master's degree in addition to the maritime officer courses.

2. Research, development and innovation in the Danish Maritime Cluster

Work will be initiated to establish an overall strategic, business-oriented platform for research, development and innovation in the technological area of the maritime cluster. This will take place in close cooperation with the cluster and research, pro-active knowledge-sharing and educational institutions.

As part of this process, a national research and development programme has been initiated in the area of maritime technology. The programme has been developed in cooperation with

the Technical University of Denmark (DTU) and Force Technologies. The programme aims to ensure that Denmark continues to maintain advanced research in the area of maritime technology.

An entrepreneur project will be established which aims to make it easier to start and survive as a new entrepreneur in the Danish Maritime Cluster.

3. Taxation and development financing

Analyses will be initiated into the opportunities for expanding tonnage taxation to include taxation of pool fees paid to the shipping company that manages a given pool, tax on profits from the sale of tonnage-taxed vessels, and taxation on cable-laying ships. These analyses will be carried out during 2006.

The Danish Government, in cooperation with the shipping industry, will also investigate the options for development financing based on private capital for smaller vessels. The intention is to create a better foundation for renewing the fleet of smaller vessels.

4. Reduced administrative burdens and fewer Danish national requirements

In order to support the international competitiveness of Danish shipping, a task force has been appointed in the Danish Maritime Authority, involving participation from the maritime industries. The purpose has been to review Danish national requirements and assess whether there continues to be a need for these. It has already been decided that a number of national requirements can be abolished. In the case of some national requirements, submissions will be made to international organisations proposing that these be incorporated into international conventions.

As part of the Danish Government's process of reducing administrative burdens, the Minister for Economic and Business Affairs has appointed a committee focusing on maritime administration. The committee comprises representatives from the Danish Maritime Authority, other government authorities and the maritime industries. In the short term (i.e. during 2005/2006), the goal is to achieve a reduction in administrative burden of approx. DKK 11 million. By 2010, the goal is to achieve further administrative reductions of approx. DKK 20 million.

5. Promote Danish influence and market access

Greater efforts are needed in international organisations such as IMO, ILO, WTO and the EU to promote quality shipping and open new markets. There is also a need for greater Danish focus on the largest foreign markets, such as North America and China, and the new growth markets in Asia and South America.

In collaboration with the maritime industries and the Danish Export Council under the Royal Danish Ministry of Foreign Affairs, greater efforts will be made to promote export and investment opportunities for maritime industries and attract investment to Denmark.

The Danish Maritime Authority will offer shipping companies that are not familiar with the procedures of the Danish authorities a key account manager. A “start-up kit” will be prepared for foreign shipping companies. The kit will provide rapid insight into the most important issues relating to registration in the DIS, and hence support foreign shipping companies in choosing a register.

6. Greater focus on quality shipping

Efforts to improve Denmark’s position on certain Port State Control lists must be increased, as a detention is not only a problem for the shipping company in question, but for Danish shipping in general. Broad initiatives will be introduced, including extraordinary audits for shipping companies after a detention or accident, as well as seminars and conferences, etc. Master meetings will also be arranged for smaller vessels, involving participation by several shipping companies and the Danish Maritime Authority. The aim of these will be to widely disseminate information on experiences and initiatives to achieve safe shipping operations.

To ensure greater safety in Danish territorial waters, proposals will be made to the IMO regarding bridge watch alarms and blood alcohol limits at sea.

7. An efficient, service-oriented and modern administration

The Danish Maritime Authority must be further developed as an efficient, service-oriented and modern administration with one-stop-shopping that makes it easy for shipping companies to run a business in Denmark.

There must be the option for self-service facilities and electronic solutions. During 2007, it should be possible for almost all vessel ownership registrations to be processed electronically, without using paper. The aim is to eliminate the waiting time for Danish shipowners, banks, and lawyers, who should be able to report electronically a change of ownership or a new mortgage deed, etc.

A number of further digitalisation projects will be initiated, and clients will have the choice of verbal or written information in Danish or English.

The terms of reference for the Danish Maritime Authority will be extended to cover Danish-operated ships, to support the activities of the shipping companies in this area. Assistance will cover whatever problems they might have in connection with navigation, etc., on a user pays basis. Assistance must be rendered in a way that appropriately divides the tasks with the ship's flag State and the port states.

Regular monitoring

In order to achieve the growth objectives set for the Danish Maritime Cluster, maritime activities in Denmark must increase at a faster rate than in the other European countries.

The following indicators have been put forward to measure this:

- Value Added¹²
- Export earnings
- Employment¹³
- Nationally registered fleet – total and by segments
- Average age for the Danish registered fleet – total and by segments
- Owner and operator¹⁴ controlled fleet – in total and by segments
- Average age for the owner-controlled fleet – in total and by segments

12 For countries where the information is available via EUROSTAT. Value Added – VA as an expression of earnings is not an unambiguous measure. Returns and depreciation for proprietary ships are defrayed by VA, while they are part of the hire charge for chartered ships, which is paid before VA. Chartered ships have accounted for a major proportion of growth in recent years.

13 For countries where the information is available via EUROSTAT.

14 Currently only Danish (total) figures are available for the chartered component of the fleet, according to statements prepared by the Danish Shipowners' Association.

- Changes in gross earnings from chartered ships¹⁵
- Danish shipowners' new construction orders
- Quality shipping – few detentions

The aim of the indicators is that they should together provide a picture of the changes in the sector. Priority has been given to analytical clarity, and to finding indicators that should be measurable and easy to use.

Denmark must have the highest percentage increase in the largest possible number of the above 10 indicators in order to achieve the goal of growth in the maritime cluster. The measurements will be carried out annually.

It has not been possible to identify equivalent indicators for other industries in the maritime cluster.

¹⁵ Currently only Danish (total) figures are available for the chartered component of the fleet, according to statements prepared by the Danish Shipowners' Association.