How to enhance training and recruitment in the shipping industry in Europe

FINAL REPORT

EUROPEAN TRANSPORT WORKERS' FEDERATION

This study was produced by a network of academics from the University of Groningen, the London Metropolitan University and the University of Nantes for the European Transport Workers' Federation (ETF). The facts stated and the opinions expressed in the report are those of the consultants and do not necessarily represent the position of the ETF on the subject matter.

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1. EXECUTIVE SUMMARY

Despite some efforts by certain EU member government in policies aimed at stemming the decline of the EU's seafaring labour force, numbers continue to fall. Why have these policies not met their objectives? In this report, we show that this failure is primarily caused by the lack of a link between state aid (such as tonnage taxes) and seafaring training and employment.

If the EU wishes its policies to be effective in supporting the whole maritime cluster for the long term, policies must be overhauled. Every EU member state granting subsidies to its shipowners must also ensure that these subsidies are linked to enforceable commitments to employ EU domiciled seafarers.

Key to the long-term sustainability of the maritime cluster is the flow of experienced seafarers into positions ashore and the training and employment of young seafarers to maintain this constant supply of maritime expertise. Yet the number of EU-domiciled seafarers employed aboard EU-owned ships is continuing to fall. Although the *rate* of decline has been somewhat slowed by a combination of state support and global labour market conditions, recent employer responses to the economic crisis threaten to precipitate a new rapid decline in officer numbers. This setback suggests that recent efforts to train a new generation of European officers are not sustainable in the long term.

Despite highly publicized training efforts in a number of European countries the number of officer trainees entering the maritime industry remains insufficient to maintain European maritime expertise, even in the short term. The shortage is most acute among senior officers, but maintaining the maritime skills base requires a continuous flow of junior officers and ratings to replace senior officers as they move ashore or retire.

The future supply of senior officers requires *both* sufficient training *and* employment opportunities for more junior shipboard staff, including ratings. Yet the measures undertaken by the EU and EU member governments to stem the decline of maritime skills have not directly addressed the issue of employment.

Public support for owning and operating ships and the EU maritime cluster have taken two main forms: tonnage taxes and state-supported education and training.

However, the potential for the tonnage taxes in most EU states to enhance employment is undermined by the lack of a mandatory linkage to training and employment. This mandatory link does exist in some countries. Many shipowners are able to gain a competitive advantage by benefiting from the tonnage tax regime at the same time as they employ exclusively non-EU seafarers. This perverse situation exists because owners are able to easily move shipsbetween EU flags and from EU flags to flags of convenience.

The result is that the EU-owned international shipping fleet provides fewer and fewer opportunities for EU-domiciled seafarers (although a minority of European shipowners remain committed to developing career paths for EU seafarers). Thus, subsidies, such as tonnage taxes, are unlikely to achieve their objectives unless access to their benefits are linked to enforceable employment commitments.

Without a prompt remedial response at an EU level the current employer strategies of relocating labour sourcing eastward across Europe and into South East Asia are likely to continue. Current deficits of seafarers available to fill positions ashore in Europe will become worse. We expect that this will lead to a decline in EU-based maritime clusters as these functions move to new areas in Asia where maritime expertise is available,

Our report assesses current initiatives to address the maritime skills crisis.

We recommend:

1. **Industry image campaigns will not solve officer shortages and should not be seen as a potential solution to this problem. Industry image campaigns should encompass the improvement of working and living conditions at sea with a view to make the seafarers' career more attractive and to increase the length of duty at sea.**

2. **National governments and other actors should orient their maritime education systems, tax policies, and cluster promotion policies to enhance the flow of seafaring labour to shoreside industries.**

3. **Employers and maritime education and training institutions should make all possible efforts to promote equality for women in seafaring careers. However, recruiting and training more women will not contribute to solving the officer shortage unless employers hire more EU-domiciled junior officers and ratings.**

4. **Tonnage tax regulations must require shipping firms to participate in national training schemes and to employ significant numbers of European junior officers and ratings. Shipping firms should only be eligible to benefit from tax advantages and other forms of state support if they demonstrate they are meeting these criteria.**

5. **We recommend that a detailed specification of necessary data on seafarers' employment should be developed. Appropriate agencies/organisations (e.g. EUROSTAT, EMSA, OSHA) should be instructed/commissioned to prepare, collect and publish these data, and this with a view to supporting policy developments.**

2. INTRODUCTION

Although European shipping companies continue to be major players in global shipping they employ relatively few European nationals. Over the last three decades seafarers from developed countries have progressively been replaced by relatively low-waged seafarers from developing countries. This change was first facilitated by shifting ships to minimally regulated of flags of convenience, and later by the use of European 2nd registers.

This decline in the employment of European nationals is true for both officers and ratings, although the situation is much bleaker for ratings. While it appears that in some countries national campaigns for recruitment and training of officers have stabilized recruitment, there has been no attempt to promote the careers of ratings.

Some have attributed this decline in the employment of European nationals to a lack of interest in seafaring by young Europeans. Others explanations point to an alleged negative image of the shipping industry. Yet there is substantial interest and application rates for training places where these exist. The problem is an insufficient provision of practical training slots for new entrants and insufficient recruitment of cadets into junior officer positions. The available evidence shows that when recruitment programs are intelligently presented, the number of qualified applicants far exceeds the number of training places provided.

The same problems apply to the recruitment of women into the maritime industry. While efforts to change the maritime shipping culture and to promote the careers of women seafarers can have positive effects, such measures alone cannot solve the officer shortage.

The decline in employment of European nationals has significant implications for the European maritime skills base and the entire maritime cluster, which includes the all aspects of the shipping industry and its infrastructure.

Existing policy has been directed at addressing shortages of senior officers. Yet there remains the unavoidable structure of the stages of career progression. At each stage, it should be expected that a certain number of people will leave training, or leave for jobs ashore. Such labour market exits are a

feature of all specialized careers. Thus more people are needed in each of the lower career stages than in the subsequent stages. There is need for a larger number of junior officers than senior officers, a larger number of cadets than junior officers, and a larger number of maritime academy students than cadets.

If at any point in the career progression there is a lack of opportunity to move to the next stage, all later stages will experience shortages as more senior officers either retire or move into shore employment in the cluster. At least in the short term, shortages at the top can *only* be filled by accelerated promotion programmes.

Despite this attrition, the majority of entrants into seafaring careers do stay through at least the earlier stages of career progression. Of those who later give up seafaring, a majority will find employment in the maritime cluster. Thus proper investment in training and careers at earlier stages will benefit the maritime cluster as long as paths for career progression do exist.

More sophisticated recruitment programs do increase the number and quality of applicants to enter into maritime education and training. They also expand the capacity and breadth of the courses available at maritime academies and the availability of training placements. These measures can increase the availability of trained seafarers.

Well-designed recruitment and training programes must be matched by real employment opportunities. Here, public support for the shipping industry (such as the tonnage taxes in many EU states) could be used to support the long-term public interest in maintaining a European maritime cluster. Yet as this report shows, these opportunities are not being used to their full potential. For example, despite the growth of the German controlled fleet, most German ships neither fly the German flag nor employ EU seafarers.

It is worth noting that this report comes to different conclusions than another recent report commissioned by the European Community Shipowners' Association. We agree with some of that report's conclusions and disagree with others. Critically, the ECSA report suggests that there have been positive developments in officer recruitment in Europe: whilst there may be some examples within the EU where increases have been reported, as an overall conclusion, it is not supported. Our evidence points in a very different direction. We therefore include an assessment of the ECSA report.

This report looks at the seafaring labour market from the perspective of national recruitment and training institutions, national career ladders and labour market demographics. These national situations are set in the context of EU maritime policy and global labour market dynamics. Five case studies of EU countries were undertaken and are outlined in detail in the sections that follow. The ratios of junior to senior officers and the recruitment of women seafarers are examined. The consequences for European maritime clusters are assessed. Finally, the effectiveness of the various EU tonnage taxes in providing public support to the maintainance of vibrant European maritime clusters is evaluated.

3. BACKGROUND AND METHODOLOGY

The ETF project on "Enhancing training and recruitment in the shipping industry in Europe"

Training and recruitment have been core issues over the past years within the Maritime Transport Section of the European Transport Workers' Federation (ETF). These issues have also featured in debates between the ETF and the European ship owners' organisation (ECSA) and in particular in the framework of the Sectoral Social Dialogue Committee (SSDC) on maritime transport.

The ETF therefore decided to carry out this project with a view to supporting the European Social Dialogue process, and, in particular, to implement the European Social Partners' work programme in the field of training and recruitment.

Discussions on how to address problems in recruitment and training have become particularly pressing as evidence points to the decreasing job prospects for EU nationals. The need to counteract the continuous decline in the number of EU seafarers and to halt the critical loss of maritime skills in Europe prompted the ETF to launch a challenging debate on the way to overcome the current crewing crisis and to increase the supply of a skilled workforce willing to work at sea.

Through this project, the ETF looked also at what qualifications and skills training institutes and maritime academies are able to offer to European nationals and what kind of state subsidies are made available to support training schemes. Therefore, the links between the acquisition and the use of new skills and workforce's knowledge and performance were key issues in the debate.

The project also identified the skills gaps and the present and future deficits in the numbers of EU national seafarers and discussed strategies to adapt and upgrade workers' skills to the constantly changing requirements of the shipping industry.

The project also identified factors that have contributed to the deterioration of the image of shipping and proposes positive measures to improve it. The gender perspective was mainstreamed in the whole project and suggestions were made on how to attract more women at sea.

The project was organised around three thematic workshops, each dedicated to a specific theme in training and recruitment. National practices in selected EU Member States have been introduced and discussed on the basis of the three main topics identified:

1. **How to address skills gaps and the deficit in the number of European seafarers (first thematic workshop held in Nantes (FR), 27 April 2010).**
2. **Enhancing the image of the sector and promoting quality working and living conditions at sea (second thematic workshop held in Berlin (GE), 15 June 2010)**
3. **How to ensure a better career path and long term prospects in the maritime cluster (third thematic workshop held in London (UK), 30 September 2010)**

These workshops and the subsequent conference were attended trade unions' representatives; shipowners, maritime academies and training institutes; representatives of major shipping companies etc.

Background papers were circulated in advance to the participants of each workshop. Policy recommendations on how to overcome the current manning crisis in the shipping industry and the shortage of qualified European seafarers were formulated at the end of each workshop.

A final conference held in Genoa on 18-19 November 2010 summed up the outcomes of the three thematic workshops. The conference agreed on final recommendations on training and recruitment and paved the way for a possible follow up in the framework of the Sectoral Social Dialogue Committee for maritime transport.

3.1 Partnership and project management

The ETF built up a network of prominent maritime academics coming from leading universities specializing in maritime-related issues and/or training and skills. These academics were requested to collect and analyse case studies on existing recruitment and training practices in the EU, identifying challenges and needs for the shipping industry in Europe and formulate draft recommendations.

The network of academic institutions included:

- **the Working Lives Research Institute (WLRI) of the London Metropolitan University (United Kingdom);**
- **the "Centre de Droit Maritime et Océanique" (CDMO) of the Nantes University (France), and**
- **the Faculty of Economics and Business of the University of Groningen (the Netherlands)**

The WLRI was responsible for coordinating the work of academics' network throughout the project.

After an initial meeting at the beginning of the project, the network of academics met regularly before each workshop and the final conference with a view to ensuring that the work undertaken by the academics were aligned with the overall objectives of the project.

Country reports based on five selected EU member countries (France, Germany, Greece, Poland and United Kingdom) and Norway were prepared. A background document was presented at each of the thematic workshops. These documents included the main findings from the country reports in the form of an executive summary and recommendations, and served as a basis for discussion. Detailed country reports were also distributed to all participants in advance. Workshop participants and invited speakers contributed their expertise and knowledge to the debate and these were incorporated into the case studies and background documents.

This dynamic process resulted in the production of a draft report which was discussed at the project's Final Conference held in Genoa (IT). That draft served as a basis for this report.

3.2 Research methodology

The academic team used primary data such as a global survey of seafarers (Kahveci 2008) and shipowners (Kahveci and Nichols 2006). The academic team also conducted key stakeholder interviews in Germany, France, Poland and the UK with maritime training institutions, employment placement offices, social service agencies for seafarers, seafarers' unions, shipowners' associations, Human Resources personnel in shipping companies, maritime authorities and individual seafarers.

In addition to these primary sources, the team of academics used substantial review and examination of national and international maritime and seafarer statistics, national shipping association publications, OECD and European Commission's reports, as well as shipping industry newspapers, magazines and periodicals, trade union publications, academic journal articles, books, unpublished theses and subject based internet searches. On the key question of seafarer employment statistical problems in the variability in quality and availability of raw data typical of the ISF/BIMCO surveys of seafarer employment were encountered. These primary and secondary sources are referenced throughout the report.

4. THE EUROPEAN SEAFARERS LABOUR MARKET

The labour market for seafarers is essentially global. It is possible for owners and managers to engage seafarers from almost anywhere in the world, although in practice most owners/managers havea 'portfolio' of preferred nationalities. This labour market is segmented primarily by skill and wage level and only secondarily by the cost of moving seafarers between ships and their home countries.

Statistics on the employment of seafarers are usually assembled by state agencies such as maritime administrations and only give a count of the number of citizens employed as seafarers. This data is not usually collected at sufficiently regular intervals to allow the production of time series and thus identify overall global employment trends. Although national data assemblies are generally too narrow in scope they are important reference points because national labour markets still exist even if only in particular niches, or as 'sub-contractors' to the global market. The range and accuracy of national employment statistics for seafarers could easily be substantially improved and this report's recommendations include practical suggestions to this end.

In this report we analyse national seafarer statistics from France, Germany, Greece, Norway, the UK and Poland. The first four countries are labour "importers" while Poland is a labour "exporter". Seafarers from the labour import countries are more likely to be employed as officers than ratings. The majority of both officers and ratings on ships operated by labour importers come from labour supply countries. Poland, despite being a major labour supplier for officers, has become less significant as a supplier for ratings. Poland's position as a supplier of officers is similarly in decline.

The number of seafarers from western European countries has been falling since the late 1970s although the numbers of officers stabilized somewhat in the early 2000s. A tight global labour market for officers has prompted some shipowners to push for recruiting and training more cadets, and has motivated better recruitment campaigns. Nonetheless, these measures have been on too small a scale and garnered too little long-term support.

4.1 Employers in the global labour market

At the beginning of the twentieth century almost all ships were crewed by nationals of the ship's flag. This situation continued until the 1970s. A British study conducted in the early 1970s into the the reasons people joined, served and left the merchant navy makes no mention of foreign labour (Hill 1972). The practice of crewing ships with a country's nationals (along with some of Irish and Commonwealth origin as well as a few from 'elsewhere' as the study by Hill had put it) was typically a legal requirement which varied in strength from country to country.

Ship-owners circumvented requirements to crew their ships with their country's nationals by re-flagging their ships to open registers in countries different from where ships were owned, a practice known as 'flagging out'. As far as crewing is concerned, flagging out meant that shipowners:

- **had an unrestricted choice of crew in the international labour market;**
- **were neither being subject to onerous national wage scales nor national social security schemes and national labour laws;**
- **had more relaxed manning rules.**

Flagging out was pursued with vigour for the rest of the 1980s. In 1983, 23% of the world fleet was flagged out. By 1990 this had risen to 42 % and by 2000, 56 % of the world fleet was flagged out.

Almost half of the European Economic Area (EEA)-controlled fleet is now registered under third country flags, a practice that has accelerated over the past decade. The employment of EU seafarers has substantially declined and the search for cheaper labour is far from over. Asia, especially the Philippines, was a primary source of labour in the 1970s as was Eastern Europe from the late 1980s. Interest in China as a source of labour has been increasing for some time. In 1995 Japanese ship-owners drew up a plan to employ as many as 20,000 Chinese seafarers as a cheaper alternative to the Filipinos, who represented 80% of their foreign labour force at that time (*Lloyds List* 1995). As a General Manager of one of the biggest ship management companies based in the UK said:

> "*At this moment, we have 14 resources [sic]. We have Bangladesh, Romania, the Philippines, and eleven others. The next option obviously seems to be for us to grow a bit stronger into China, and there are plans for us to go into China*" (Kahveci & Nichols 2006: 31-2).

The search for new sources of cheaper labour is not confined to China: 'We looked at Romania, where we now have a contract in place, and we also have a contract in Bulgaria' a shipping manager told researchers:

> "*In other words, we have the ability to take people from there if we need them. We have looked at Ghana, Senegal, and Cote d'Ivoire. We have had another look at Indonesia and we have recently set up a joint venture crewing agency in China. We have looked at Venezuela, Ecuador, Peru, Cuba, and Jamaica. We are always looking*" (Kahveci, Lane and Sampson 2002: 67).

New even more vulnerable sources of crew labour continue to be monitored to gain further advantage or to prevent the loss of advantage secured already.

The practice of flagging out makes it relatively straightforward for buyers of labour to arrange and rearrange crew composition at will. However, the recruitment of international crews requires organisation. It is the development of a worldwide network of agencies and organisations dedicated to crew management that has made it possible for crews to be recruited from different regions, an expensive and difficult task for shipowners to undertake themselves.

Shipowners also developed direct links with the maritime training institutions in the main labour supply countries, such as the Philippines, India and China. The strategies of the Norwegian Ship-Owners' Association (NSA) are a good example. Norwegian ship owning companies currently employ around 40,000 foreign seamen under the Norwegian flag and foreign flags.

The NSA currently cooperates with seven maritime colleges and universities in the Philippines. Increasing competition for labour, partly from other industries, but also from other major European shipping nations has motivated this coorperation. In response to these challenges, the NSA has established a joint project with the University of Cebu in conjunction with a Phillipines-wide national recruitment campaign.

A great deal of effort has also gone into developing an NSA cadet training project in Russia in partnership with Admiral Makarov State Maritime Academy in St. Petersburg. Other initiatives have included NSA Class Projects in Riga, conducted in collaboration with the Latvian Maritime Academy, and in Shanghai with the China Shipping Group (CSG). The NSA and CSG have agreed several five-year deals for the continuation of the Cadet Programme in alliance with CSG-owned Shanghai Maritime Academy (SMA). As a result of the scheme, the number of Chinese seafarers employed in the Norwegian controlled fleet has increased steadily. Barber International, a subsidiary of Wilhelmsen, has run a similar scheme to train and recruit qualified seafarers from Poland and in Romania (in partnership with the Klaveness group).

The NSA has strengthened these relationships by establishing formal links with maritime colleges with the aim of facilitating the wage negotiations that affect tens of thousands of foreign seafarers, at least half of them Filipinos, on about 3,000 flag merchant ships owned or controlled in Norway.

A similar search for new sources of labour can also be observed at company level and the Danish company Maersk serves as a good example. A. P. Moller-Maersk operates more than 900 containerships, tankers, and offshore supply vessels. It also has substantial towage, container terminal and logistics operations. Container shipping and related activities are the largest business area for A.P. Moller-Maersk, providing almost half of the group's revenue in 2008.[1] Maersk Line alone operates over 550 vessels and has a capacity of 2.1 million TEU. It is currently the largest container shipping company and the largest tanker company in the world.

Maersk has been winding down European-based operations and crewing. In 2008, it announced it was axing 200 Danish chief stewards and ratings positions from Danish flag containerships and tankers and replacing them with international crew. In October 2009 Maersk announced plans to transfer 33 UK registered ships to the Danish International Ship Register (DIS), Hong Kong and the Netherlands. In 2009 Maersk also announced a "zero recruitment in Europe" policy for the foreseeable future (Lloyds List, February 16, 2010).

In October 2009 the trade union Nautilus was informed that Maersk would be seeking 113 voluntary redundancies from the pool of officers employed by Maersk Offshore in Guernsey and on Bermuda-flag container vessels (Telegraph, November 2009). This was a substantial portion of the 560 British officers employed by Maersk at the time. It was also announced that there would no longer be automatic employment for cadets graduating through the company.

In September 2010 A.P. Moller-Maersk announced that the company had registered more than 30 new ships under the Singapore flag. Mr Foldager, who also heads Maersk Crew Management, said that Singapore provides access to Asia's growing pool of seafarers, and the company can find managerial

1 Maersk's operations are, in containerships: Maersk Line, Safmarine, and MCC Transport, in tankers: Maersk Tankers, Brostrom, Handytankers, and LR2, in offshore services: Maersk Supply Service, Maersk Drilling, Maersk FPSOs, Svitzer and ESVAGT. In addition, Maersk holds a 37.5% share in Hoegh Autoliners and a 31.3% share in DFDS ferries.

talent there as well. Maersk Crew Management oversees about 370 ships and 12,000 seafarers for the A.P. Moller-Maersk Group globally.

In 2010 Maersk Line informed the union Nautilus that 40 Dutch jobs would be lost as a result of plans to transfer its Rotterdam-based technical vessel operations to its Singapore and Newcastle offices. The move involved transferring the technical management of 46 vessels. In a separate development, Maersk Ship Management BV announced a 'temporary stop' in the recruitment of Dutch officers and has also presented the Maersk works council with a new voluntary redundancy option for Dutch sea staff (Nautilus International, 15/02/2010).

Despite support by some shipowners for expanding and improving maritime education and training in Europe, the overall strategy undertaken by large shipowning countries, such as Norway, and leading shipowners, such as Maersk is to actively seek out cheaper labour from outside Europe. Efforts to stabilize the European supply of seafarers are now clearly in jeopardy as key shipowners seek to reduce their employment of European seafarers.

4.2 Employment Statistics

Although the labour market for seafarers is global, statistics about it are still collected on a national basis, in ways more appropriate for national labour markets. In some respects, this makes sense, because seafarers enter the labour market through nationally based training and licensing/certification institutions. However, seafarers are very likely to be employed on ships flying flags other than their own, and/or owned by owners or managers of different nationality than their own. Even if they are employed on ships of their own national flag, in most cases, many of their colleagues will be foreigners and probably non-domiciled. In this sense, building an international analysis out of national statistics normally collected for purposes of enumerating national employment and informing social security policy- leaves many questions open. Poland is the most extreme example of this – few Polish seafarers work on Polish flagged ships while there are a great many on flags of convenience's ships owned by other EU countries or, to a lesser extent, on other EU flags ships and especially on second registers. Directly collected, official data on the majority of Polish seafarers is therefore unavailable. The same will undoubtedly apply to Rumania, Bulgaria, the Baltic States and Slovenia. For the other case study countries, the problem exists as well, although this is because they are large *importers* of labour.

Attempts to solve the numbers problem have had uneven success. The influential ISF/BIMCO report purports to conduct a worldwide survey of seafarers' numbers. Since these collections come from many different countries with agencies of varying statistical competence it is impossible for ISF/BIMCO's consultant research team to evaluate the adequacy of the data presented to them. There can be no doubt that the ISF/BIMCO survey results are flawed. The Polish data is a specific case in point (see below) but it is not possible to specify the overall survey's margins of error. On the other hand it can be said that the consultants (The Institute of Employment Research at the University of Warwick) are aware of the data deficiencies and routinely makes attempts to improve the quality of inputs. Deficiencies notwithstanding, the ISF/BIMCO survey continues to provide the only time series of global seafarers employment.

The only reliable way of collecting reliable data of seafarer employment is to conduct a census of ships' crews, which was carried out by Cardiff University's Seafarers International Research Centre (SIRC), and first published by Lloyds Register-Fairplay in 2002. This census depended on a sampling of crew lists of ships calling/transitting in major 'hub ports' around the world. The data provided the best available profile of the characteristics of the global seafaring labour force: i.e. age, rank and nationalities by

shiptype and size (from which one can derive junior-senior officer ratios (see below) to illustrate the European officer shortage problem). The census could of course only provide reasonable estimates of the numbers of the labour force at sea in internationally trading ships. Due to inadequate further funding it was not continued after 2003. (Ellis & Sampson, 2008)

It should be emphasised that there is a lack of systematic and publically available wage cost data despite shipowners always referring to relative wage costs. As presented in the Table below there are wage differences according to the UK Chamber of Shipping data that are based on the comparative wage costs of different nationality complements. We do not know what proportion of the ships' operation budgets are spent on crew costs. Moreover, analysis based on limited data on seafarer's wages suggest that there had been some convergence over the decade, higher paid nationalities faring relatively worse and the lower paid relatively better (Kahveci and Nichols 2006). Therefore, it would be very useful to collect such data in a systematic way at European level.

TABLE 1 Comparative Wage Costs (US$ Per Month)

	Complement	US$ per Month
British Officers / Filipino Ratings	9/10	78,000
Chinese Officers / Ratings	9/10	37,000
Indian Officers / Ratings	9/9	47,000
Filipino Officers / Ratings	9/9	47,000
Polish Officers / Ratings	9/9	48,000

Source: Chamber of Shipping 2004 (cited Kahveci & Nichols 2006)

4.3 Employment data: summary of five case study countries

- **In France the number of seafarers employed on French vessels was at a low in the 1990s. Since then the number has increased slightly.**
- **Germany saw a decrease in the number of seafarers on German vessels to 2003. Thereafter, the number started to increase as also did the number of foreign and domiciled foreign seafarers on the German vessels.**
- **Norway is a major labour importer. Foreigners provide more than 75% of crews aboard Norwegian controlled vessels.**
- **Poland is a labour exporter. At least 80% of Polish seafarers are employed on non-Polish vessels.**
- **The number of U.K. seafarers has decreased. Between 1997 and 2009 the number of U.K. seafarers fell by 25%.**
- **Senior to junior officer ratios show an insufficient number of junior officers needed to replace senior officers and showing that without immediate positive action the situation will deteriorate terminally.**
- **It is common in EU countries for officers to be European, with ratings more frequently drawn from non-Community labour-source countries.**

- **Employment developments for seafarers are closely connected to developments in flagging, and in the regulation of flag administrations.**
- **Employment of seafarers can be supported by policies mandating the employment of EU nationals, as long as these policies are (1) enforced and (2) do not trigger flagging out by shipowners.**
- **Overall, there is an urgent need for greatly improved data on the numbers of seafarers of all ranks.**

4.4 The case studies

4.4.1 FRANCE

On 1 January 2010, the French-flagged merchant fleet consisted of 216 ships, much the same size in the number of ships as in the 1990s. In 1986, France created a second register of the French Southern and Antarctic Lands (TAAF – Terres Australes et Antarctiques françaises), where France had uncontested sovereignty. This region had legal independence and was not a French overseas territory in the manner of French islands in the Caribbean and Indian Ocean. This enabled shipowners to hire non-Community seafarers and apply international working terms and conditions. In 2005, France also created another second register, the French International Register (RIF) in order to allow seafarers and shipowners to pay reduced taxes and social security contributions.

In 1955, some 10,000 officers were employed aboard French merchant ships. There were 8,000 in 1979 and some 3,000 in 1989. Since then, the situation stabilized with a slight increase to 3,600. The number of ratings in the same period fell substantially,. Their current number fluctuating between 6,000 and 7,000 has remained stable since 1990.

A 2009 survey of 51 shipping companies', (but excluding French cruise ships) classified crew members as officers or ratings, and as French, EU or non-EU domiciled seafarers. Although all ratings on French flagged and French owned ships were counted, it was not possible to determine the nationality of ratings on non-French flagged, foreign owned ships. Furthermore, container and bulk shipping companies did not answer the questions on ratings' employment on third-country flagged ships. As a result the number of non-Community seafarers is an underestimate.

TABLE 2 French shipping companies Employees, 2008

Nationality	Number	Percentage
French Seafarers	9,876	72%
Community Seafarers	2,123	16%
Non-Community Seafarers	1,697	12%
Total	13,696	100%

Source: Prospective Observatory of occupations and qualifications in the maritime labour sector, "Employment in the merchant navy on 31 December 2008 – employment situation – development – perspective." Report drafted by A. Grovel, Paris, no.1, February 2010. 41p.

Most ratings are non-community seafarers (85%), and most of the remaining French ratings are employed in passenger transport and port activity. Non-Community seafarers employed by the companies covered by the survey are present in all sectors of activity except for harbour activities. They are more numerous in the liquid bulk transport (39%) and in offshore activites (31%). Out of the total workforce identified by the survey, i.e. 13,696 seafarers, 6,868 are employed under the metropolitan flag, i.e. under first register conditions and 5,063 under the "Registre International Français (RIF). 58% of the RIF-registered seafarers are French, 26% are Community seafarers and 15% are non-Community seafarers. In contrast with the passenger transport and harbour activities, container transport and offshore activities, predominantly employ RIF-registered French seafarers.

4.4.2. GERMANY

The German owned merchant fleet, in 2009 consisted of 3,371 vessels over 100 tons, weighing 71,026,000 tons in total. Of these, 645 ships (15,806,000) are under the German flag, and 474 (15,540,000 tons) are in Germany's 2nd register – the International Shipping Register (ISR). As can be seen from these tonnage figures, ships flying the primary register flag are essentially smaller vessels, while large ships in international trade use the ISR. There are 2599 ships (52,329,000 tons) bare-boat chartered under a foreign flag, and 99 ships (2,891,000) registered under a foreign flag. As can be seen from these numbers, the major part of the German fleet is under bare-boat charter under foreign flags. The other major part of the fleet is in the ISR, which has few constraints on international hiring, and is considered by the ITF as a flag of convenience.[2]

TABLE 3 Number of Seafarers in German Register

Year (December)	Total Seafarers on ships in the German Register, BGS	German Seafarers	Domiciled Foreigners	Non-Domiciled Foreigners
1980	32289	25202		
1985	27017	21781		
1990	15852	11262		
2000	11838	7650	519	3380
2001	12216	7704	918	3161
2002	11207	7454	654	2715
2003	10542	7356	487	2347
2004	10801	7286	459	2788
2005	12962	7664	1105	3867
2006	13155	7885	877	4070
2007	13636	7135	792	4614

Source: adapted from SBG, various years, and Hoffman 2004

2 Figures in this paragraph are from the FK 2009.

TABLE 4 Number of Seafarers in German Register per function

	Deck Officers			Technical Officers			Ratings		
Year	Total	German	Foreign	Total	German	Foreign	Total	German	Foreign
1980	5785	5631	154	4583	4338	245	21921	13940	7981
1990	3777	3601	176	2944	2820	124	9131	4060	5071
2000	3225	2799	426	1917	1633	284	4407	1830	2577
2002	3284	2806	478	1935	1658	277	5622	2220	3402
2003	3072	2688	384	1836	1639	197	3991	2168	1823
2005	3265	2637	628	2530	1861	669	5027	2328	2699
2006	3386	2697	689	2550	1831	719	5290	2542	2748
2007	3486	2729	757	2635	1789	846	5446	2617	2829

Source: compiled from Hoffman 2004, SBG, and FK

A certain number of jobs on ISR ships are reserved for Germans or EU nationals. Before 1998, ships could have either 3 Able Seamen or 2 ship mechanics in the crew. Since then, ISR ships of more than 3000 tons must have one ship mechanic in the crew. Overall, since the 1990s, we can see that about a third of the seafarers on German ships have been foreigners. Most of the officers, however, are German, while most of the ratings are of foreign origin. Interviews indicate that this is a common pattern. Some firms value German officers for the quality of their training, but even so these firms outsource recruitment of ratings to crewing agencies hiring from the global market.

4.4.3 GREECE

According to the OECD Review of Maritime Transport in 2009, Greek shipowners account for 15.33 % of the world's ships. However, 69 % of Greek-controlled vessels sail under foreign flags. The majority of Greek controlled, foreign flagged vessels are registered under Liberian, Maltese and Panamanian flags.

The Greek flag fleet ranks third internationally and first in the EU in terms of dwt. The Greek-owned fleet under EU flags accounts for 44.1% of the EU dw tonnage. Greek owners control 21.7% of the world tanker fleet (crude/oil product tankers) and 20.4% of the world bulk carrier fleet in terms of dwt (excluding ships currently on order).

According to Tsamourgelis's study (2007:122), the number of Greek seafarers working on Greek-flag ships and Greek-owned ships linked to the Seamen's Pension Fund (NAT) in 2004 dipped under 18,000, which is 4.5% less than 2002, and 27.5% down in comparison with a decade ago. However, the number of foreign seafarers employed on Greek owned / controlled ships continued to grow. This has been driven by wage costs, which tend to be higher for Greek seafarers, in relation to their foreign colleagues. The increasing role of foreign seafarers is evident in the formation of crews. In 1996 non-Greeks occupied almost 35% of the employment positions on ships under Greek flags and ships owned by Greeks under foreign flags registered with NAT. By 2004 this proportion had increased to 42%.

Although there are legal requirements specifying that a certain number of Greek crew be employed on Greek flagged ships, the law is not fully applied, so that the actual number of employed Greek seafarers

is less than that mandated by the law. In 2004, 38.32% of the vacancies to be filled by Greek seafarers were actually occupied by non-Greek seafarers (Tsamourgelis 2007:149-150). However a 2006 study of Greek shipping companies showed they preferred to employ Greek seafarers. (Theotakas et al. 2006). It may be that Greek shipping companies highly appreciate Greek seafarers' cooperation, skill, experience, education, loyalty and cost effectiveness but their appreciation is not fully reflected in their recruitment strategies. In practice, Greek shipping companies increasingly resort to the recruitment of non-Greek seafarers.

4.4.4 NORWAY

Until the 1980s Norwegian shipping had been almost exclusively a national industry, employing Norwegian crews sailing Norwegian-owned ships under the Norwegian flag. From the early 1980s, with the global shipping industry still plagued by overcapacity, Norwegian shipowners with relatively high costs increasingly felt they had no option but to "flag out". The Norwegian-flagged fleet dwindled from 38.2 million dwt in 1982 to 16.9m in 1986. By then, the industry became desperate for some mechanism which would enable shipowners to remain "Norwegian" while recruiting crews abroad. The solution was the establishment in 1987 of a parallel register, the Norwegian International Ship Register (NIS). NIS tonnage began to fall from its 1992 high of 1516 vessels and 54 million dwt to 686 ships of 30.8 million dwt at the end of 1996. The solution this time was the landmark 1996 tonnage tax reform. Following the example of the Netherlands and Greece, the government decided to change the basis on which ship-owners were taxed. Neither of these reforms prevented the slow decline of the Norwegian flag, however. In June 2009, only 47 % of the Norwegian foreign-going fleet sailed under the Norwegian flag, and for the first time more than half of the Norwegian-controlled fleet was under foreign flag.

As can be seen from the table below, Norwegian-controlled shipping is manned by about 75% foreigners, and 25% by Norwegians.

TABLE 5 Employees on Norwegian ships 2006-2007

	2006	2007
Ships		
Norwegians	12000	13100
Foreigners	35500	38400
Total	47500	51500

Source: Annual Report 2007, Norwegian Shipowners' Association. p.35

The numbers of Norwegian seafarers have dwindled by tens of thousands over three or four decades. As we have seen since the 1970s with flagging out and the introduction of the NIS, Norwegian shipowners have been increasingly relying on foreign seafarers to crew their ships. This process gradually resulted in declining national maritime skills and a deficit in the number of Norwegian seafarers.

4.4.5 POLAND

In 2009 the Polish maritime transport fleet consisted of 118 vessels with the total carrying capacity of 2.626,9 thousand tons, and gross tonnage (GT) 1928,9 thousand tons. At the end of 2009, 18 ships (contributing to 15.3% of the maritime transport fleet in terms of quantity) of deadweight 37.4 thousand tonnes and gross tonnage GT 49.7 thousand, served under the Polish flag. Given the shrinkage of the Polish fleet, and the movement of most of the remainder to foreign flags, it is not surprising that Poland became a maritime labour exporter. A small minority of Polish seafarers now work on ships under the Polish flag, while many foreign shipping companies and crewing agencies have opened recruitment offices in Poland to hire Polish seafarers.

There are different opinions as to the size of the Polish seafaring workforce. A 2006 ECOTEC report to the European Commission put the number at 35,000. The ISF/BIMCO numbers, however, are substantially smaller.

TABLE 6 ISF/BIMCO numbers for Poland

1990		1995		2000		2005	
Officers	Ratings	Officers	Ratings	Officers	Ratings	Officers	Ratings
6400	11700	5500	6500	5955	6162	8,446	4,737

Source: OECD/ Precious Associates, 2003

If the ISF/BIMCO numbers are accurate, then there was a decline in the number of Polish ratings from 1990-1995 during the early transition period, but after this adjustment the number of Polish seafarers has remained stable. However, there are good reasons to believe the ISF/BIMCO numbers for Poland are seriously inaccurate – even more so than for other countries. The fact that, according to Glen (2008: 850), in 2006 there were 1443 Polish certified officers working in the UK register alone suggests that the number of Polish seafarers is quite a bit larger than the ISF/BIMCO numbers report.

In any case, it is possible to obtain an official figure for persons working in the maritime shipping industry in Poland, although as the flagging figures demonstrate, these numbers really represent those working in coastal trade:

TABLE 7 Employees in Sea and Coastal Transport, Poland

Year	Employees
2004	2088
2005	2083
2006	2840
2007	2002
2008	2157

Source: Statistical yearbook maritime economy 2007: p. 8; 2009: p. 35

It is possible to make a guess at the total number of Polish seafarers from this. Using the GLM database, Wu and Morris (2006: 36) estimate that 10% of Poland's seafarers sail on Polish-flag ships. This would suggest that there are 21570 Polish seafarers in total. For one more alternate method, it is also possible to estimate the number of active Polish officers from certificate renewals. The certificate issuance numbers for deck officers are as follows:

TABLE 8 Total number of certificates issued for deck officers

Year	Certificates
2004	1142
2005	1948
2006	3043
2007	1862
2008	1976

Source: Yearbook of the maritime industry 2009: p. 264

Since certificates must be renewed every 5 years, if there is no upward or downward trend (i.e. if new seafarers are entering the market at the same rate as retirees are leaving), the average number of renewals over all available years, multiplied by five and adjusted downward for the possibility of licensed seafarers in shore side positions should give an approximation of the size of the labour market. The size of this adjustment for non-active seafarer license holders could be 9-16% (Li and Wonham 1999; Glen 2008). This calculation suggests a figure of 8375 deck officers, if it is assumed that 16% of valid certificate holders are in shore-side work.[3] Likewise, the number of machinery and electrical officers is:

TABLE 9 Total number of certificates issues for Machinery and Electrical officers

Year	Certificates
2004	1329
2005	2145
2006	4570
2007	1739
2008	1569

Source: Yearbook of the maritime industry 2009: p. 264

Using the above formula indicates 9763 mechanical and electrical officers, for a total of 18137 active officers holding Polish licenses. Unfortunately, the number of ratings cannot be estimated in this way.

These numbers come with a warning that the calculations require assumptions which may be incorrect. Still, they are consistent with ECOTEC's guess of 35000 (which would include ratings as well). The Polish Seafarer's Union (PSU) and discussions with Polish manning agents indicate that 30000-35000 is a broadly accepted estimate (18,000-20,000 officers and 15,000-17,000 ratings). The number for

3 Note: the averaging and dividing by five in this case is unnecessary, since there are five years in the series. It would be, however, necessary to do it that way if there were more or fewer years in the series.

ratings is complicated by the fact that many ratings enter and exit the seafaring labour market readily. The PSU estimates that seafarers for whom seafaring is only a supplementary source of income make up 10 to 15 %of the total.

4.4.6 UNITED KINGDOM

The 1950 count of UK seafarers was 140,000. By 1975, there were 87,000 UK-resident seafarers and when the UK tonnage tax was introduced in 2000 the number of active UK seafarers was 28,085.

According to the latest National Statistics on Seafarers (2009) the number of UK national seafarers working regularly at sea in 2009 totalled about 26,700. This consisted of:

- **11,400 certificated deck and engine officers (assuming a retirement age of 62),**
- **1,100 un-certificated technical officers,**
- **2,100 un-certificated 'hotel & other' officers,**
- **5,000 deck, engine room and general purpose ratings,**
- **5,400 catering/hotel ratings and**
- **1,800 trainees in training.**

Of these, just under two-thirds held qualifications related to handling ships or their engines ('deck' or 'engine' officers and ratings), while the remainder were employed for other duties (e.g. technical or hotel/hospitality staff), or were trainees.

The total number of UK seafarers active at sea in 2009 was about 4% higher than in 2002, the earliest year for which estimates are available for all groups. The number of those with qualifications related to ship and engine handling was down 7%.

The number of certificated officers in 2009 was 20% lower than in 1997. However, the certification system for deck and engine officers has been expanded in recent years, and if the newly eligible groups are excluded, the overall decrease since 1997 is 25%.

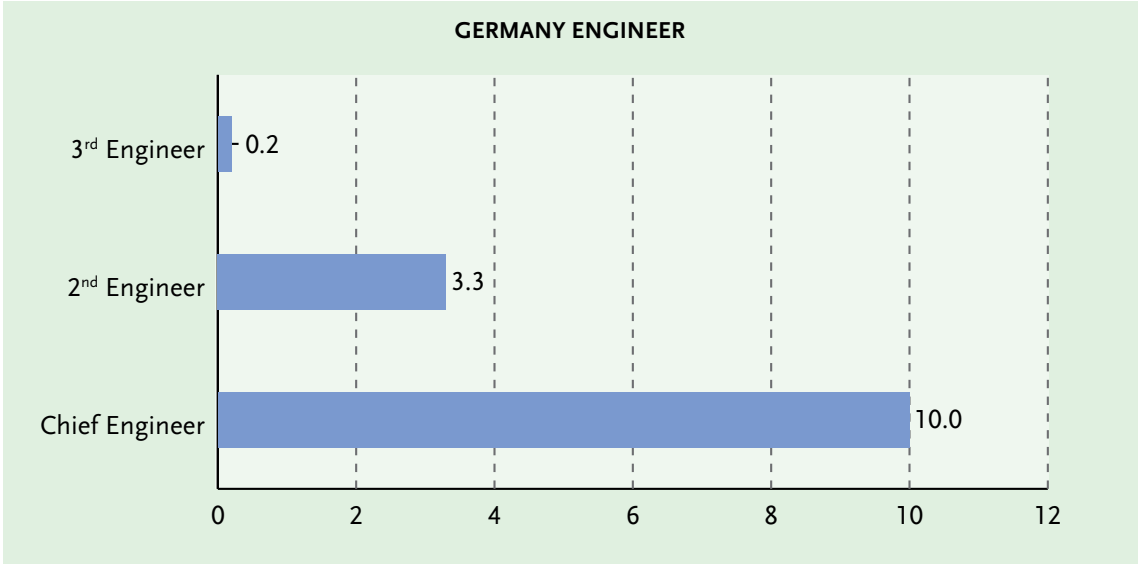
Part of the problem underlying the decline in officer numbers was the dramatic reduction in cadet intakes during the 1980s and 1990s. There then followed an inevitable transformation in the age profile, with the average age of UK officers increasing from 27 in 1980 to 47 in 2010.. More than 80% of the entire British seafarer workforce is aged over 35, compared with just 41% in 1971. Some 65% of certificated UK officers are now aged over 40, compared with 53% of the overall UK male workforce. The situation for deck and engineer ratings is even starker: with 72% now aged over 40.

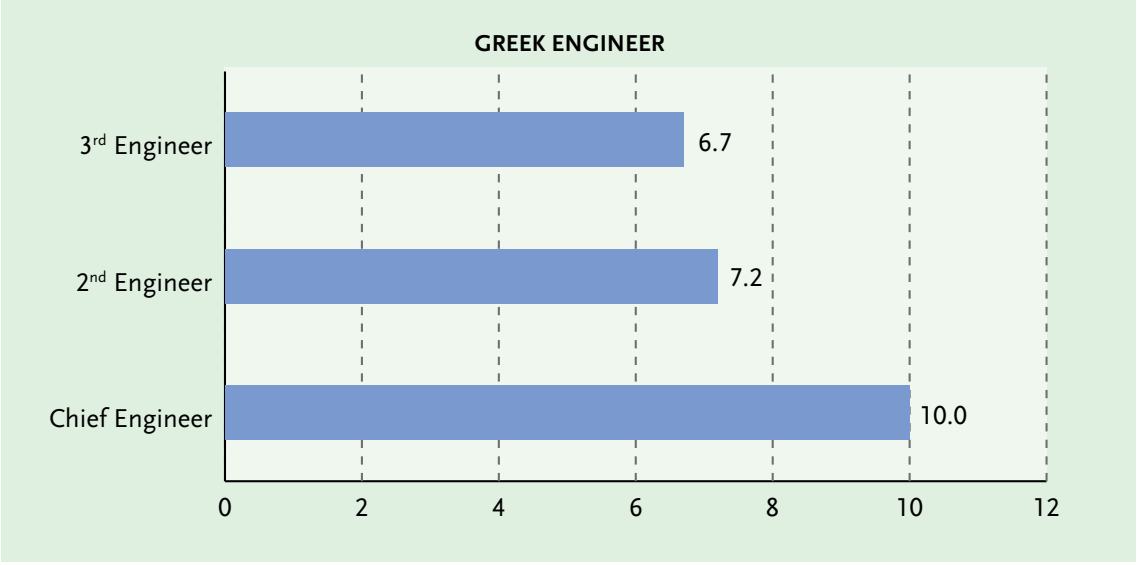
The demographics of the existing UK seafarer population are therefore such that further numerical decline is inevitable without radical and immediate action. On current trends, assuming a retirement age of 65 and an annual cadet entry rate of 800, UK officer numbers will fall from 14,419 in 2009 to 11,956 in 2014, 10,071 in 2019, and just 8,504 in 2029.

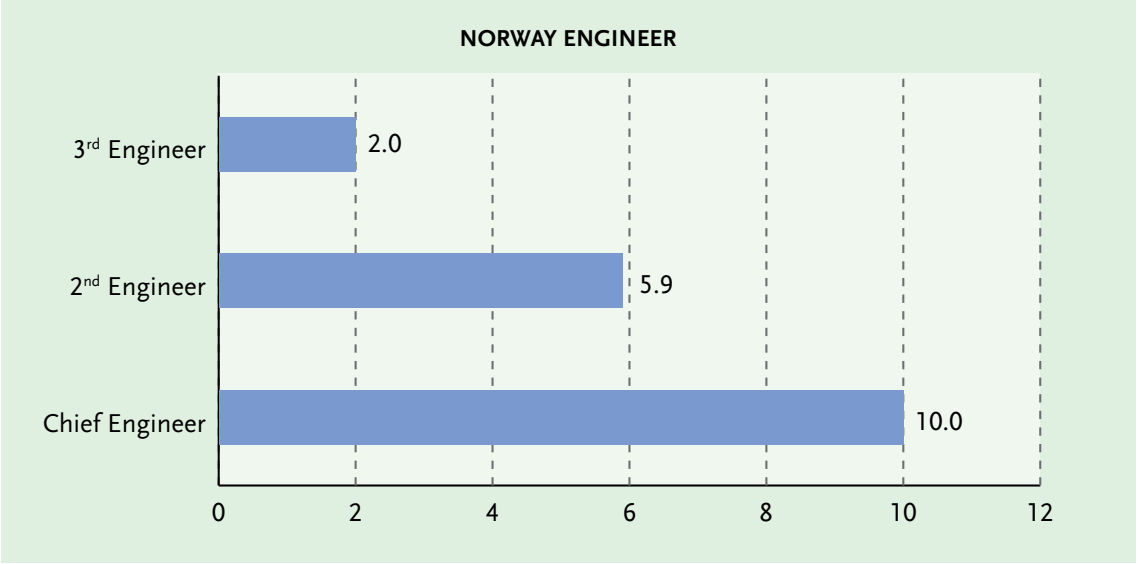
Formal projections for UK ratings numbers are not made, but with an even more acute age profile and no rating trainee new-starts recorded during 2008 and 2009, it is reasonable to assume that further and very rapid in the total can be anticipated over a similar period.

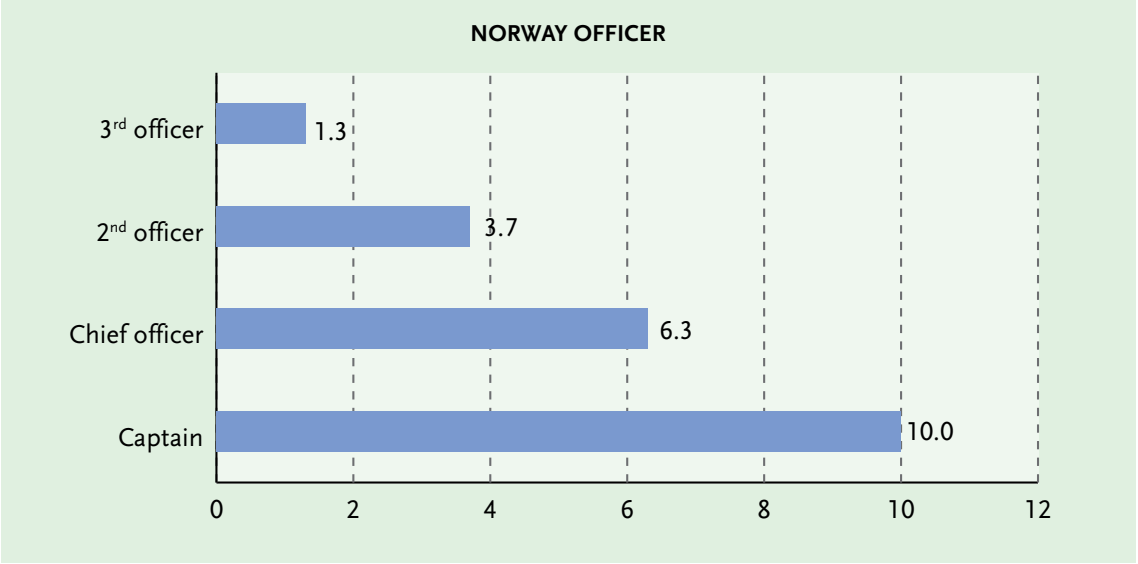
4.5 Junior-Senior Officer Ratios in Selected Eu countries 2002

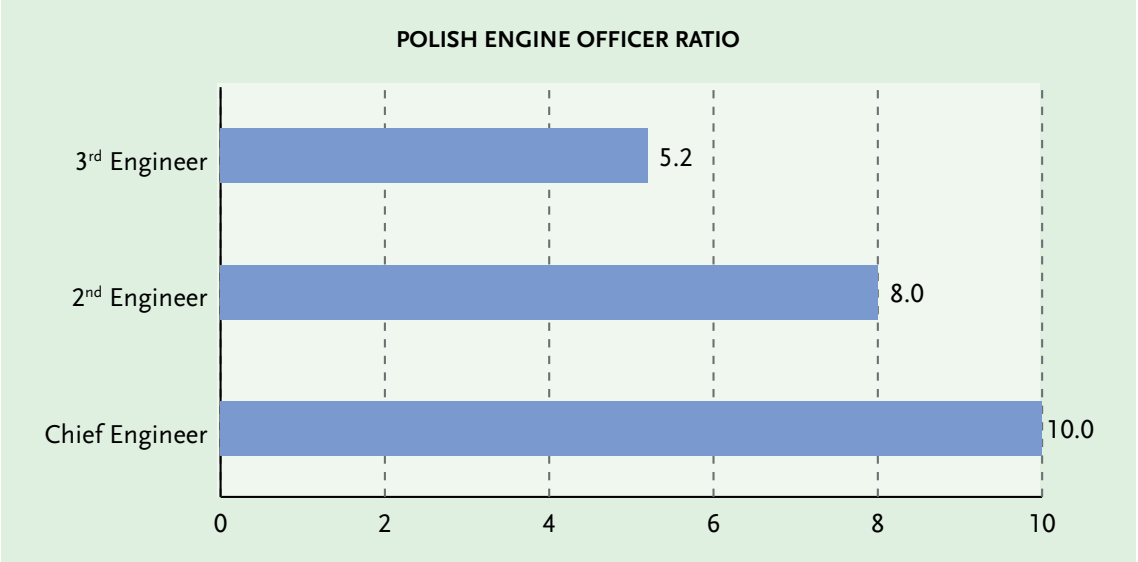
The Cardiff University SIRC Global Labour Market Survey enabled the production of junior to senior officer ratios for both deck and engineer officers. The ratios displayed in the bar charts below show the proportions of junior officers to senior officers in 2002. The ratios show the number of officers below the ranks of master and chief engineer for every ten masters and chief engineers. The important point here is that not all junior officers will progress to become senior officers, and no one who hasn't been a junior officer can ever qualify as a senior officer. Senior officers must have both sufficient training and experience, and the experience aspect can only be acquired on the job. If there are substantially fewer junior officers than senior officers, then the number of senior officers will decline. This is the situation in all the case study countries including Poland, and it shows that if the shortage of senior officers is to be alleviated, and if the cluster is to be supplied with sufficient numbers of experienced seafarers in the future, it is imperative that more employment opportunities for junior officers must be made available. The ratio data for China is included to illustrate the type of pattern needed to ensure a relatively smooth career progression from junior to senior officer.



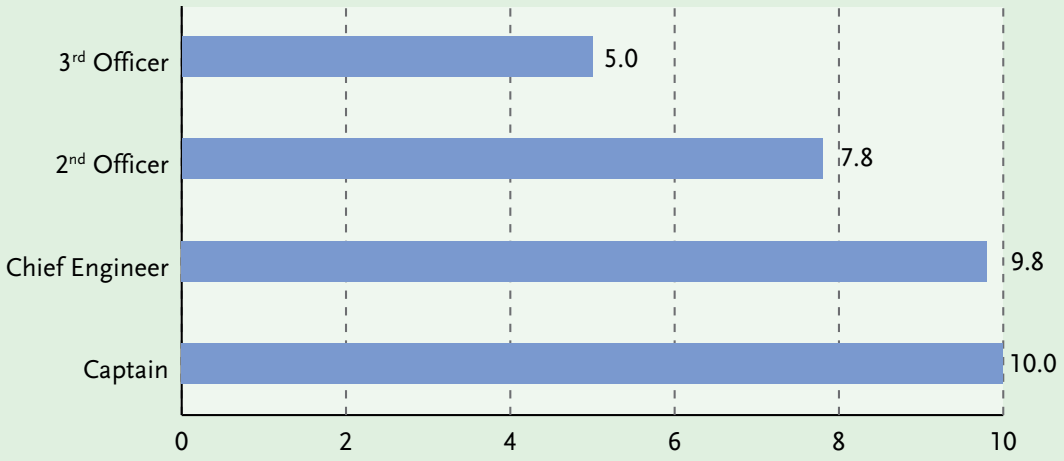



NORWAY ENGINEER
3rd Engineer
2nd Engineer
Chief Engineer
2.0
5.9
10.0
0
2
4
6
8
10
12

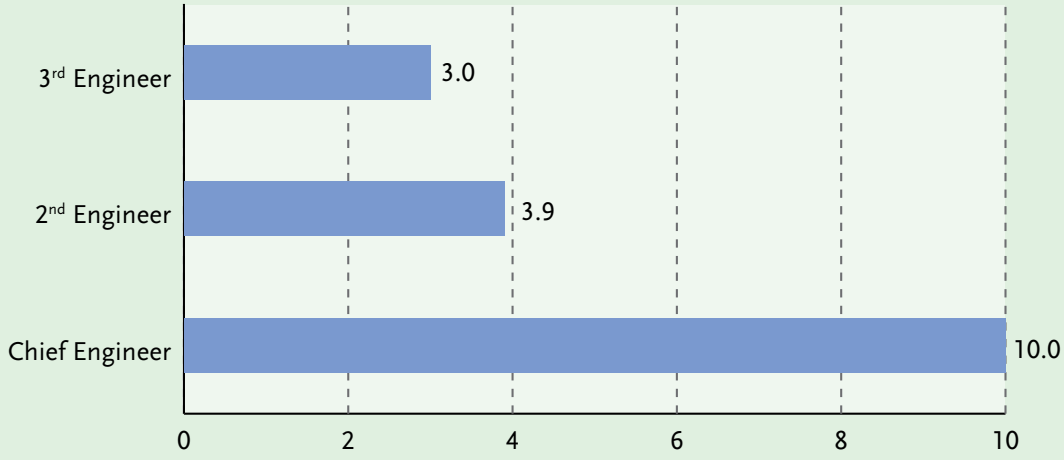

NORWAY OFFICER
3rd officer
2nd officer
Chief officer
Captain
1.3
3.7
6.3
10.0
0
2
4
6
8
10
12


POLISH ENGINE OFFICER RATIO
3rd Engineer
2nd Engineer
Chief Engineer
5.2
8.0
10.0
0
2
4
6
8
10

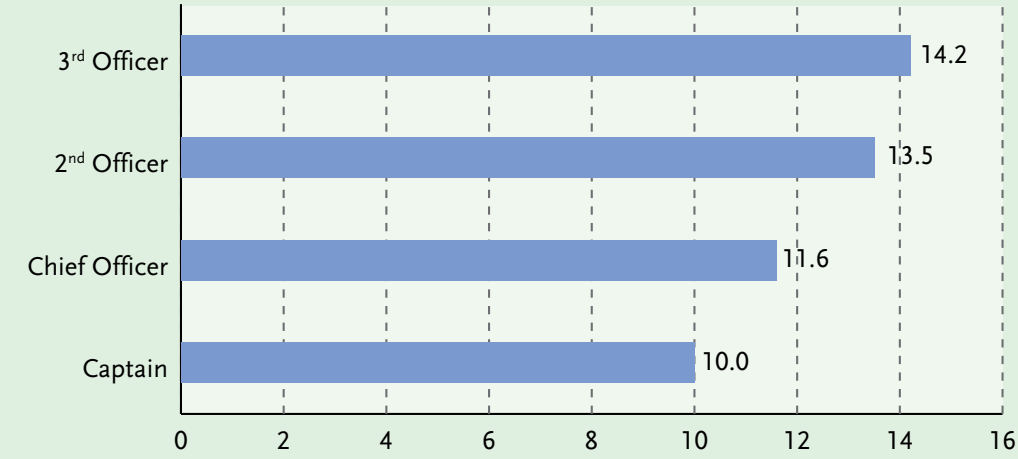
POLISH DECK OFFICER RATIO



BRITISH DECK OFFICER RATIO



CHINA OFFICER



4.6 Recruitment of women seafarers

Despite an increasing emphasis on the importance of female participation in the global shipping labour market, to date, women account for only a very small proportion of the seafaring labour force. Belcher et al. (2003) estimate the participation of women to be at between 4 and 2 %. In the EU, the number of women officers aboard ship is almost certainly higher than in the world fleet as a whole, although it is mainly in North Europe that systematic recruitment of women has been attempted, albeit on a modest scale. The UK officers' union NUMAST (now Nautilus International) reported that, in January 2000, women accounted for just 1.4% of its total membership of over 19500.

The International Maritime Organisation (IMO) reported that women are an 'under-utilised and under-developed resource which could provide part of the solution to the problem of crewing the future world merchant fleets' (Action Programme 1997–2001). The same view is reflected in a communication of the European Commission which states that: '[The social partners] should make every effort to promote and facilitate women's access to the seafaring professions (COM 2001)". The OECD report on the availability and training of seafarers recommended that 'greater encouragement should be given to female entrants into the industry' (OECD 2003).

Studies based on the interviews with senior managers in shipping and ship management companies documented that there was a reluctance to employ women seafarers (Thomas 2004, Belcher et. al. 2003). However, there are few positive examples, the HR director of the German heavy-lift specialist, Beluga, having actively sought to recruit female cadets, reported favourably of them, saying that they were generally better than their male counterparts (Interview: Beluga HR director, 2010). A small number of other German shipowners have also recruited female cadets so that, whereas in 1999 there were about ten each of women deck and engineer officers employed aboard German ships, by 2007 there were sixty-five women deck officers but only about fifteen female were engineers. However, while the absolute numbers have increased, women account only for between 2 and 3 % of all German officers (derived from SBG 2007). Germany's Flottenkommando annual maritime report for 2010 recorded 407 women crew members in the German-flagged fleet of whom eight were shipmasters. (Lloyds List, 1 Nov. 2010). In the UK the head of the maritime administration, said that among the 25,000 British seafarers there were 36 female shipmasters. (Lloyds List, 22 April, 2010)

Thomas (2004) recorded a number of experiences of women seafarers and their difficulties in pursuing a career at sea. Several women denounced being victims of sexism from staff at their training institutions.Both younger and older women reported difficulties in finding companies willing to let them sailing on their vessels in order to complete their training. Once qualified, many women felt that their opportunities for promotion were equal to that of men's. However several women said that when they applyed for a job, certain companies rejected their applications on the grounds of their gender, or applied unofficial 'ceilings' on the level at which women could be promoted. In addition to these problems of professional acceptance, many women also reported problems with some male colleagues of 'sexual harassment'.

Thomas' study also challenged the concern over possible differential retention rates between male and female seafarers. She successfully argued that the separation from home and family is a significant source of stress for seafarers regardless of their gender. Indeed, dissatisfaction with prolonged separations from home and family has been reported to be one of the most common reasons for (male) seafarers abandoning their seagoing career. There is no reliable data available relating to differential wastage rates of male and female seafarers. However, Thomas' data also suggested that women remained at sea for significant periods and found examples of women combining both marriage and motherhood with a very successful sea career (Thomas 2004: 315-6).

4.7 Education, Training & Certification

Despite international standards for training and certification of seafarers, there are a wide variety of training procedures and education institutions for seafarers around the world and across the EU. These differences must be considered when making comparisons of seafarer training numbers and practices. In addition, there are also differences in the methods of data collection and of data availability with respect to the training of seafarers.

The recruitment and output of licensed seafarers in both the EU 15 and the Member States is reviewed in Appendix 1. In Germany and in the U.K. the number of seafarers in training have almost doubled since 2002. In Germany there were 348 trainees in 2003. By 2008 this had doubled to 826 trainees (although numbers fell to 755 in 2009). In the U.K. the number of cadet officers in training rose from 450 in 2000 to 890 in 2009.

In France the number of trainees has fluctuated between 750 and 450 per year. Recruitment was at its lowest point in the mid-1990s. The number of seafarers in training then increased to 550 in 2008-2009.

In Norway and Poland the number of seafarers in training has fallen. In Norway the number dropped from 1,243 in 2002 to 1,065 in 2006. In Poland there were 16,050 students in maritime universities in 2004 and 13,520 in 2008. There are no recent data for Greece but in 2002-2003 there were 3745 deck and engine cadets in the training system either ashore, in the Merchant Marine Academies, or at sea.

Now that the world's shipping industry operates with the minimum certification standards set by the International Maritime Organisation's convention on Standards of Training, Certification and Watch-keeping (STCW) it should be possible to compare and evaluate maritime education and training (MET) across the EU. In practice it is much more difficult. In all EU countries MET lies within each member states' educational framework of schools, technical colleges and universities but in some countries, Poland for example, MET is taught in universities. It is most common for MET to be taught at post-school technical college level, although in some countries it remains at secondary school level. In most countries there are provisions enabling progression from schools and technical colleges to universities.

In Norway students aged about 16 have the option of joining a vocational secondary school, where they can choose deck, engine or electrical courses after the first year. This equips them for a further two-year apprenticeship at the end of which they are qualified as ratings and can enter a maritime tertiary vocational education institution for a two-year degree in the process of becoming fully qualified officers.

Examinations for certificates and licenses are typically conducted by MET institutions but are subject to the supervision and syllabus requirements of state maritime agencies to ensure they conform to the STCW. Comparative data on syllabus standards are not available although it is well-known that there are considerable differences in required levels of knowledge and subject range.

The origins of STCW certification lie in the globalization of the shipping industry and its labour force, and the consequent recognition that there was a need for uniformity in the global training and certification standards for seafarers. Most of the labour supply countries did not have the established maritime education systems or the economic means to meet comparable standards existing in North America, Europe, India and Japan where maritime education and training and certification standards are long-established.

The gap in educational standards and certification in some of the new labour supply countries was recognised by shipowners in several North European countries and in Japan. As a result, some compa-

nies set up their own training schools to enhance skills while shipowner associations provided funding aid to MET institutions. Both forms of support are still in place.

Many (or most) EU ships that benefit from the tonnage tax are wholly or partly crewed by seafarers that are not EU nationals. To ensure proper training and certification, the European Commission via the European Maritime Safety Agency (EMSA) assesses certification procedures and training establishments for seafarers in both EU and non-EU countries on behalf of EU Member States and in line with the International Maritime Organisation's STCW Convention. This assessment covers procedures and establishments in more than 80 countries covering more than 90% of seafarers operating in EU waters, as well as other seafarers operating on EU registered ships around the world.

4.7.1 CONTINUOUS CAREER AND PROFESSIONAL DEVELOPMENT

The main aim of the STCW is to clearly set minimum international standards for the certification of seafarers of various different ranks and functions. The continuous career and professional development of seafarers is another issue.

Differences in labour and training costs have lead many shipowners and ship management companies to look for labour outside the EU. By way of response there are initiatives in Europe designed to ensure that European maritime education and training goes substantially beyond the minimum requirements of the STCW. The logic is that if you cannot make European seafarer labour costs comparable then you must provide higher levels of professional development. This initiative can be summarised as 'STCW +', meaning that qualifications involve STCW certifications in addition to competence in leadership, green shipping, safety culture, innovation, work in multicultural settings, and so on. Increasing international regulation of shipping and the globalization of the labour market require ships' crews, and especially officers, to be more broadly educated and less dependent on shipping agencies. The sophistication of modern shipping needs to be incorporated into ships' operations. Europe's highly developed technical educational systems are very well placed to significantly improve the skills and comparative advantage of its seafarers.

Another initiative is to add value to existing maritime qualifications by creating training for seafarers to bridge the gap between ship and shore. In "The Mapping of Career Paths in the Maritime Industries" (2005), a study completed for the ETF and ECSA, Barnet and his fellow researchers found that:

> *"An officer's education may be too preoccupied with narrow operational technical questions for some management positions ashore. There is a view among some prospective shore-based employers that maritime education should focus more on general management issues, including commercial and business management."*

A similar view was taken in a recent article by the CEO of the recruitment agency, Fastream, who advised officers thinking of going ashore to broaden their educational background (Chapman, 2011).

Both approaches to increasing the breadth of seafarers' training were addressed by the European Commission Communication "Strategic goals and recommendations for the EU's maritime transport policy until 2018". This communication recommended: suggested to:

- **Promoting cooperation between European maritime training institutions for upgrading seafarers' competences and adapting requirements to the prerequisites of today's shipping industry;**

- **Working in partnership with training institutions and the industry towards establishing 'maritime certificates of excellence' (European maritime postgraduate courses) that may well go further than STCW requirements. In that context, the creation of a network of centres of excellence for maritime training in Europe (European Maritime Academy) could be considered (COM (2009) 8 final Brussels, 21.1.09).**

Certifying the higher skills of European seafarers may be a partial solution to the problem of wage-based competition and career transitions from ship to shore. However, many shipowners have made clear that they seek only the minimum qualification. It is unlikely that such shipowners will pay extra for more qualified seafarers. Therefore, it is not clear to what extent STCW+, continuous career development, and other proposals for improving training and certification systems can help preserve Europe's maritime skills base. More research is needed into the real employment effects of specific proposals.

4.8 ECSA report on enhancing recruitment and training

A report produced by the European Community Shipowners' Association (ECSA) on the subject of enhancing recruitment and training in the European maritime industry was published for the Brussels ECSA workshop, 28, September, 2010. The substantive data for the report relied principally on a survey of the opinions of ECSA members in countries employing some 75 %of the estimated total number of European (domiciled?) seafarers. It is of course important to be aware of employers associations' *opinions* of labour market conditions on matters of training and recruitment although the absence of hard data does limit its usefulness for evaluating public policy.

The ECSA report's most important finding, is the discovery of an alleged increase in the number of EU officers and that this increase is attributable to the widespread adoption of tonnage taxes by EU flags. The report says that the 'very encouraging signs' of increased officer trainees appear to be the direct result of state aid measures which have boosted the number of ships registered with EU states and generated notable increases in cadet totals in Greece, Italy, Norway, Denmark, Germany and the UK. It is nevertheless a little surprising to find some employers associations having an optimistic view of recruitment when a number of studies of labour market enumerating entries and exits has shown a declining number of EU nationals/EU-domiciled seafarers employed aboard EU controlled (Leggate & McConville, 2005; Weber & Nevala, 2006; Gardner, Marlow et al, 2007; Glen, 2008; Mitroussi, 2008). Furthermore national statistics on seafarers also suggest stagnation or a decrease in numbers.[4]

There is a very serious absence of aggregations of European seafarers labour market data able to show trends of entries and exits and it would have been unrealistic to expect ECSA and its affiliates to have sufficient resources to have remedied this deficiency. The report's authors method of data collection is therefore understandable under the circumstances, but the inherent deficiencies of such a method should be discussed in the analysis rather than concealed. The report's data is presented in the form of facts and figures, when in fact it is only a aggregation of shipowner association views. Making the claim that "the questionnaire results are therefore statistically valid" (ECSA workshop 2010: 6) because a large proportion of shipowner associations responded is misleading.

The sections of the ECSA report discussing approaches to enhancing recruitment and training are in general very positive. Here, there are clear indications of the ways in which policies could be developed and implemented.

4 See: Seeberufgenossenschaft 1975 – 2007 national social insurance scheme for German seafarers; UK National Statistics on Seafarers - various years up to 2009; KVNR – Royal Association of Netherlands Shipowners –2009 Annual Report, Danish Shipping Statistics – November 2010; Lille – country report for Poland, 5 April 2010.

5. MARITIME CLUSTERS

All industries consist of a web of related organisations. The academic literature on clusters makes it clear that clusters are held together by localized knowledge, bonds of trust, networks and institutions which link the competitive advantages of particular kinds of firms to particular places. Porter (1998) defines a cluster as "geographic concentrations of interconnected companies and institutions in a particular field [which] encompass an array of linked industries and other entities important to competition" (Porter, 1998, p. 78). The automobile industry for example, shows its most public face in its vehicle manufacturers but its 'hinterland' or 'infrastructure' of other manufacturers and service providers employs more people and has a larger turnover than the vehicle manufacturers around whom they orbit. Makers of tyres, instruments, gearboxes, braking systems, steel sheet and castings; retailers and repairers, and so on, are just the more obvious segments, fractions and interlinked constituents. This web of cognate organisations forms a 'cluster', a term usefully capturing the character of these interlinkages and inter-dependencies which, of course, applies with equal relevance to the shipping industry and *its* hinterland/infrastructure. This is why the EU has a competitive advantage in maritime sectors and why it is likely to lose it if it loses its skilled seafaring labour.

Whatever the apparent focal point of clusters, the coherence among the constituents depends on the skills and experiences of its occupational communities. Clusters imply interconnections between firms, local and national government, private institutions, educational systems, and other organizations. De Langen identifies four reasons firms might locate in places where they can join a cluster: a joint labour pool, a broad supplier and customer base, knowledge spillovers, and low transaction costs (De Langen 2002). This implies networks between the individuals who carry the knowledge of the cluster – this in some cases can be the most important factor. Occupational communities are a key factor in the formation of clusters (Casper and Murray 2005). Occupational communities consist of individuals with special skills and experience, and include not only executives and management, but also skilled and experience employees at all levels of the organization. In the case of the shipping industry's cluster, seafarers are a key occupational community. The shortage of senior officers, especially those who have higher level degrees and training, has serious implications for skill availability in a range of onshore occupations in the cluster. Junior officers and ratings also have skills that are in many cases highly valued in the cluster - notably when they have acquired additional sectorally relevant qualifications. It follows that the health of shipping and the maritime cluster does rely upon the availability of a continuous flow of skilled, experienced seafarers. This is very well understood throughout the industry where employers routinely rely upon recruiting agencies.

Appreciating that seafaring skills and experience are an important resource for shipping's cluster, the European Union has granted special exceptions to its competition policy by allowing EU member states

to give tonnage tax benefits to shipowners (European Commission 2004). Despite this support, declining numbers of seafarers from European countries has inevitably entailed a steadily increasing rate of loss of maritime operational expertise, threatening to significantly diminish the capacities of clusters. Maritime shipping is an anchor point for the rest of the cluster, providing a demand for services on which other cluster participants depend (DSA 2010: 15). The growing pace of loss of expertise especially threatens to undermine shipping's infrastructure in such areas as specialist ship finance and insurance, admiralty law, classification, niche shipbuilding and repair, salvage operations, ship management, pilotage, training and education, seafarers welfare. In all of this sub-structure, upon which shipowning is dependent, personnel with direct experience are critical. A study commissioned by the UK government and conducted by the University of Cardiff in 2004 assessed current and forecast UK shore-based demand for skilled seafarers to fill posts in such key areas as classification societies, port services, marine insurance and law, and maritime training. The report concluded that there are some 132,000 jobs in the shore-based maritime sector, of which around 12% (i.e. 16,000) are posts that employers would *prefer* to fill with former seafarers and more than 6.5% (i.e. 7000) are jobs for which companies consider seafaring experience to be *essential*.

Researchers discovered that companies facing a shortage of ex-seafarers had cut the proportion of positions in the 'essential' category by as much as 23% since 1996 and warned that this could lead to deterioration in the quality and competence of staff working in maritime-related posts ashore. 'It is clear, in some circumstances, that a suitably qualified and trained non-seafarer would be an inappropriate substitute for a trained seafarer,' adding that re-classifying jobs would not be sufficient to offset the increasing shortfall of skilled seafarers caused by inadequate training over the past 20 years.

The importance of the experience of men and women who intimately understand the rules, customs and practices of operating ships at sea and in port because they have done it, has meant that throughout the modern history of shipping, whether in Europe, the USA or Japan, there has always been substantial strategic and tactical advantage in having a backroom technocratic 'corps' of ex-seafarers. It is not by chance that the advance of Hong Kong and Singapore as maritime metropoles has been technically under-pinned by expatriate Europeans and European-trained Asian ex-seafarers.

The employment requirements as well as the numbers employed naturally vary with the scope and density of the national clusters. Germany, for example, employs relatively large numbers in specialized merchant shipbuilding and marine equipment. The UK on the other hand has a large offshore support sector and is the world's leading centre for marine finance and insurance. Where relevant statistics of cluster size are concerned comparisons are difficult. This is due partly to variations in determining which sectors/activities should be included in the shipping cluster. In some cases, for example, maritime tourism and recreation, the naval military and fishing industries are doubtfully included. Another and probably more important source of variation is the extent to which the cluster is itself self-consciously and actively organized. Norway and Germany appear to have well-organised clusters, while the British and French clusters are still developing. (For a detailed analysis of the cluster politics of the case study countries, see Appendix 2 *Cluster Politics)*

6. TONNAGE TAX & EMPLOYMENT

As stated by Wilen (2004) the first guidelines on state aid to maritime transport date from 1989. The idea behind them was, to bridge the cost gap between vessels operating under Flags of Convenience and those operating under EU flags. The initial system was very complicated and never fully utilised. The progress towards an EU tonnage tax gained momentum with the European Commission's paper "Towards a New Maritime Strategy" published in March 1996 and new guidelines were established in 1997. They set the conditions within which state aid to maritime transport would be approved. The guidelines covered any aid granted to maritime transport including any financial advantage funded by public authorities.

The Guidelines basically allow Member States to create a tax-free environment for Community shipowners. Since the aid should enhance the competitiveness of community fleets, state aid may in principle be granted only in respect of ships entered in Member States' registers. Reduced rates of corporation tax for shipping companies may however be allowed for earnings from vessels flying a non-EU flag. The control of such companies must be within the EU. Tax breaks linked to seafarers' income tax and social costs are strictly EU flag linked.

Over the years the Guidelines have been progressively adopted by member states i.e. the Netherlands (as early as 1996), Germany and the UK in 1999. Norway also followed the Dutch initiative in 1996. Most EU member states have since introduced tonnage tax systems and / or schemes to reduce crew costs observing the guidelines. It needs to be emphasised that of all EU states, Greece is distinctive and does not fit in with the wider EU pattern because it had introduced a tonnage tax proactively as early as 1975 (Wilen 2004, Gekara 2008). In Poland, the tonnage tax has been introduced in 2010 and so far has been used in one company only. However, its introduction did not result in benefits either for the training or the employment of Polish seafarers.

During 2003, the Commission finalised a revision of the 1997 state aid guidelines. The new guidelines were applicable from January 17, 2004 and should be revised again in 2011. According to the new Guidelines, aid schemes should support the community maritime interest with the aim of:

- **improving safety, efficiency, security and environmental friendliness of maritime transport,**
- **encouraging the flagging or re-flagging to member states' registers,**
- **contributing to the consolidation of the maritime cluster established in the member states while maintaining an overall competitive fleet on world markets,**
- **maintaining and improving maritime know-how and protecting and promoting employment for European seafarers, and**
- **contributing to the promotion of new services in the field of short sea shipping following the White Paper on Community transport policy.**

Although there are common overall aims and objectives for the EU tonnage tax, each member state is allowed to design its own version tailored to individual situation and circumstances, subject to approval by the European Commission. Therefore, the utilisation of the provisions of the guidelines varies widely from county to country.

6.1 Tonnage tax: training and employment link

As we have seen one of the main aims of the state aid guidelines was maintaining and improving maritime know-how and protecting and promoting employment for European seafarers. However, the review of the different tonnage tax systems in the EU shows that, in practice, there are not many measurements that have been put in practice to achieve these aims. There are some crewing requirements, for example Greek tonnage tax requires the officers to be Greek nationals. The Dutch tonnage tax system requires masters to be Dutch citizens but in practice this is not applied (Lloyds List 2000, Kuiper and Loyens 2001, Selkou and Roe 2004). As in some other tonnage tax systems, German shipowners under the scheme are required to employ a certain number of German or EU domiciled seafarers. However, it is possible to register a ship in Germany, but fly a foreign flag. This defeats the objective of employing a certain number of German seafarers despite benefitting from the state aid guidelines. As a result, a significant number of German shipping companies do not participate in the training system, and many appear to have no interests in recruiting their crews on the German labour market. It seems likely that the German-owned fleet is growing at the expense of other EU countries, because of the ability to access a favourable tonnage tax system while using FOCs and negligible employment of EU seafarers.

As far as the UK tonnage tax system is concerned, it is unique in its direct training links. Once companies have opted for the tonnage tax system, they are expected to remain with it for 10 years. The tonnage tax is tied to a formal commitment by shipping companies to boost the number of training places. Companies must train one officer for every 15 they already employ. To be eligible to count against the training commitment, a trainee must be resident in the UK and either a UK national or a national of another EEA State. Companies applying for the tonnage tax regime must submit officer-training plans to the Department for Transport or make a payment instead estimated around £500 per month. However, according to the calculations of Trinity House, this contribution would provide training for only around 11 cadets a year (HCTH 2005:17).

In 2005, the UK House of Commons Transport Committee reported that: "Tonnage tax was introduced in 2000 to try and achieve both these aims: to boost the UK fleet and to increase the training of seafarers. It has considerably increased the UK registered merchant fleet and the training commitment in the tonnage tax has led to an increase in the number of cadets. The committee welcomed this success. But tonnage tax has not created the number of jobs for UK seafarers that had been expected, and there are fears that too few officers are moving from training to employment to meet the future needs of shipping and its cluster. (HCTH 2005:3)"

The committee recommended that the Government considered refining the scheme so that participation in the tonnage tax regime is linked to providing employment and training to higher certificate level (i.e. higher than cadet level). It should be emphasised that there are no nationality restrictions on shipowners using the UK tonnage tax scheme. As a result many of the seafarer posts on tonnage tax ships are occupied by non-UK nationals. The proportion of UK nationals among officers on UK tonnage tax ships has fallen from 79.7% in 2000 to 38.1% in 2009. Over the same period the proportion of UK nationals among ratings on UK tonnage tax ships has fallen from 48.6% to 22.1%.

In summary, the tonnage tax has been operating in Europe in different forms since the mid -1990s. Greece was the first country to introduce a tonnage tax in the mid 1990s followed by the Netherlands and Norway, Germany in 1999, the UK in 2000, and Denmark, Spain, Ireland, Belgium, Italy, Finland and France in 2002. The introduction of tonnage tax has led to an increase in the number of vessels registered under European flags and a decline in the average age of the Community flagged fleet. However, the extent to which it has managed to address the decline in the number of EU seafarers varies significantly from Member State to Member State.

7. CONCLUSIONS

In most of the maritime nations within the EU, the marked downturn in recruitment and training over the past 30 years has created a huge 'generation gap' amongst the seafarer population, despite some increased intakes and small-scale recruitment programmes in recent years. Analysis of current trends shows a stagnation in seafarer numbers generally, with clear indications that senior officer shortages will become even more serious – both in maritime shipping and in the cluster. As documented in the case studies, the EU maritime skill base, stabilized for several years (although a shadow of what it once was) is now threatened again with sharp decline. Although the numbers of officers have been stable in some countries, this appears to have been a temporary hiatus brought about by a fragile consensus that something needed to be done about the officer shortage. With the economic crisis, parts of the industry are no longer willing to pay a share to keep the officer skill base in place, and another downward spiral appears likely.

This research project started from the premise that we would investigate the effectiveness of some of the solutions which have been applied to the problem of declining seafaring employment in Europe. These solutions included improving the attractiveness of the industry for young people and women, engaging in a more active cluster politics, and building seafaring careers within the cluster. As the project proceeded, it became clear that tonnage tax, and its links to employment, training, flagging and crew nationality could not be ignored.

7.1 Attracting Young People to the Industry

National, regional and international demand for highly skilled and experienced seafarers is likely to increase, not decrease, as a result of increasingly strong regulatory requirements and the introduction

of increasingly sophisticated and technologically advanced tonnage. Research showed that shipping company demand for officers is likely to remain high, yet a large proportion of those who employ them do not train them. There is little evidence to show young people are reluctant to consider careers at sea. The companies that do recruit and train attract many more applications than the limited number of positions they offer. Successful campaigns to attract young people, such as those in Germany and Norway, show that it is entirely possible to revive the industries image – but employers are now showing reduced commitment to recruitment. Industry image campaigns appear to work insofar as attracting good potential future seafarers into maritime education and training programs, but if the opportunities for these young people are not really there – i.e. if employers are not employing European ratings and junior officers in sufficient numbers, industry image campaigns will not solve senior officers shortages.

Although such campaigns may be worthwhile to raise awareness on maritime careers among youngsters, we do not recommend industry image campaigns as a *solution to the officer shortage.*

7.2 Maritime clusters

As documented, the EU wide and member state shipping policies include a number of initiatives orientated towards increasing the competitiveness of European shipping and creating training and employment opportunities for EU seafarers. National initiatives such as the German National Maritime Conference, the Forum for Education and Employment, the Norwegian Maritime Forum's recruitment campaign in 2007 and the Union of Greek Shipowners' campaign in 2008 had positive impact on attracting youngsters to a maritime career.

Maintaining and improving maritime know-how in the context of the maritime clusters is vital to the economic and social interest of the European Community. In addition to employment on board ships, there is a clear need for skilled seafarers in port administrations and pilotage, shipping companies, maritime administrators, financial institutions, and equipment manufacturers among many others.

A UK study, for example, suggested the live possibility of a negative feedback loop should the supply of ships' officers continue to decline. Shore based firms needing seafarers would increase salaries to attract serving seafarers thus encouraging seafarers to move to onshore employment sooner in their career than they otherwise would have done, the study predicted. If a shorter career at sea becomes the norm, companies currently employing UK junior officers will have less incentive to train them and less incentive to recruit UK officer cadets and be more likely to employ foreign officers (Pettit, Gardner, Marlow, Naim and Nair, 2004). The only realistic way of avoiding this outcome is to increase the numbers of cadets and ratings and onward promotions through the ranks. No doubt in other countries, failure to recruit new entrants would have similar consequences. The shortage might play out slightly differently because of institutional differences, but the ultimate result is likely to be similar.

Tonnage tax exists in Europe in order to preserve Europe's competitive position in maritime industries broadly defined, through the preservation of maritime shipping employment. In all the country cases we look at, shipowners have received public subsidy in the form of tonnage tax. However, the expected public benefit, increased employment of domiciled seafarers, and the anchoring of the maritime cluster industries in EU countries , has not materialized.

Notably in Germany and the UK, there have also been substantial incentives for shipowners to contribute to seafarer education and training. In Germany, this is done through a direct subsidy to shipowners who take on ship mechanic apprentices, and is part of that country's normal vocational education

system. It is not, however, linked to the tonnage tax. In the UK, a training obligation is linked directly to the tonnage tax. In both these cases, and in the Norwegian one, there is an awareness of the broader uses of maritime manpower to the cluster, which affects public investment and promotion of maritime shipping. In the Greek and Polish case, cluster politics seems to be oblivious to the potential use of maritime manpower in the cluster and in the French one, shipping actors are actively hostile to it, regarding gone-ashore seafarers as "wastage".

We recommend that national governments and other actors form their maritime education systems, tax policies, and cluster promotion policies in a way which promote the flow of seafaring labour to shoreside industries. This has been shown to be a successful way to anchor the cluster in Europe, to make seafaring a more attractive career, and to preserve levels of maritime employment.

7.3 Women Seafarers and the Officer Shortage

While clearly gender equality in shipping is an important issue, and policy solutions are needed to change employer attitudes and fight discrimination, we do not believe that recruitment of women can be a solution to the current officer shortage. This is because the roots of the officer shortage are in the way the maritime industry is regulated, and the nature of the global labour supply system.

Bearing in mind that recruiting more women is not a solution to the officer shortage, **we recommend that employers and maritime education and training institutions should make all possible efforts to promote equality of access for women in seafaring careers.**

7.4 Linking Tonnage tax, training and employment

Within Europe the tonnage tax was perceived as a method of reversing the decline of the maritime industry. This is because there are a whole host of allied industries that rely on the maritime business and the skills emanating from seafaring employment. For these reasons the potential demise of the maritime industry is seen as commercially and strategically catastrophic for the whole 'maritime cluster'. Tonnage tax legislation in the EU context has the objective of increasing tonnage on the registers, to encourage the recruitment and training of European seafarers. Tonnage tax entered into force very early in Greece and was progressively extended to the Netherlands (1996), to Norway (1996), to Germany (1999), to the United Kingdom (2000), to Denmark, to Spain, Finland Ireland Belgium and France (2002) The analysis of EU countries showed that while the tonnage tax has undoubtedly led to an increase in both tonnage and vessel numbers, the decline in numbers of EU seafarers continued. European shipowners have continued resorting to recruiting non-EU crews. Finally, many European employers appear to be moving away from commitments to employ Europeans to deal with the officer shortage in a serious way. There have only been a few employers

who have in recent years been seriously involved in developing the EU seafaring labour force, and this number appears to be falling. If this trend is not reversed, it will undermine the justification for state aid.

We therefore recommend that tonnage tax specifications be structured so that shipping firms must actively participate in national training schemes and employ significant numbers of European junior officers and ratings in order to be eligible to benefit from state support.

7.5 Improved Seafaring Labour market statistics

Given that, unlike in many other industries, substantial parts of the maritime cluster have remained in Europe, it is likely that the European maritime cluster has a very good long-term chance of survival as pivotal in the global economy provided its skills basis is simultaneously preserved and enhanced. Intelligent policies to support this skill base, however, are much harder to develop and design in the absence of reliable, systematically collected data on key issues. This report has amply demonstrated the difficulties in collecting reliable and comparable data on an EU-wide basis and this problem should be addressed urgently. Comparable EU data should be a made available on

- **numbers annually entering and exiting officer and ratings training, so that it can be determined if sufficient numbers of seafarers will be entering the labour market in the future, and whether trained seafarers are successfully finding seafaring employment**
- **number of STCW certificates issued by grade annually, differentiating between EU, EU-domiciled and foreign candidates, as this indicates the supply of seafarers available in the labour market**
- **biennial sample census of crewing patterns aboard EU-flagged and EU-owned but not EU-flagged ships, including numbers of employed seafarers by age, rank and nationality, wage costs by age, rank and nationality. This would help establish the demand in the labour market – for EU domiciled seafarers as well as other nationalities**
- **cohort studies of career progression in selected EU states, as this will give insight into whether and where career bottlenecks occur, and how the seafaring labour market interacts with related labour markets in the cluster**

We recommend that a detailed specification of necessary data should be developed together with practical proposals as to which appropriate agencies/organisations should be instructed/commissioned to prepare, collect and publish data.

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9. APPENDICES

9.1 Appendix 1: MARITIME EDUCATION AND TRAINING NUMBERS BY COUNTRY

The number of French trainees has fluctuated between 700 and 450 per year since 2000. There was a strong decrease in the numbers following 2002. In the following years the numbers have stabilized and in recent times there has been a slight increase in the number of French trainees.

9.1.1 FRANCE

Statistical data on French trainees in ENMM (Levels 1 and 2)

School years	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	2009/ 2010
Admission in the 1st year O1	183	170	153	181	177	180	134	176	210	214
DEO1MM/ DEOMM	177	205	159	148	125	127	160	127	125	-
DESMM	98	126	121	105	158	174	170	159	188	-
Admission in the 1st year O2	70	60	48	0	0					
DEO2MM/ DC2NM	89	107	57	60	62	2	0	0	0	-
Admission in OCQM			*6	*48	*49	*48	*48	*40	*60	*60
Admission in OCQP (Marseille)	-	-	-	-	-	-	-	-	32	32
Total	**617**	**668**	**544**	**542**	**571**	**531**	**512**	**502**	**615**	**306**

Source: Inspection Générale de l'Enseignement Maritime - IGEM 25/01/2010

* Credit accumulation in modular training in occupational activities makes it difficult to quantify the number of graduates because modules are valid for 5-years.

KEY TO APPENDIX 1

O1 : Officier de 1ère classe de la marine marchande – 1st class officer of the merchant navy
O2 : Officier de 1ère classe de la marine marchande – 1st class officer of the merchant navy
OCQM : Officier chef de quart machine – engine officer (in charge of the watch)
OCQP : Officier chef de quart passerelle – desck officer (in charge of the watch)
DEO1MM : Diplôme d'élève officier de 1ère classe de la marine marchande – 1st class officer degree for the merchant navy
DEOMM : Diplôme d'élève officier de la marine marchande – Officer student degree of the merchant navy
DESMM : Diplôme d'études supérieures de la marine marchande – Higher education degree for the merchant navy
DEO2MM : Diplôme d'élève officier de 2ème classe de la marine marchande. – 2nd class officer student for the merchant navy
DC2NM : Diplôme de capitaine de 2ème classe de la navigation maritime – 2nd class captain degree for sea transport.

Education and training courses for seagoing occupations are provided in 'lycées professionnels maritimes – LPM', i.e.in merchant navy schools and centres certified by the ministry of the sea, in metropolitan and overseas France.

Students who opt for professional training centres (LPM) follow a training upon completion of which a certificate is delivered called "Certificat d'Aptitude Professionnel Maritime (CAPM)", a "Brevet d'Etudes Professionnel Maritime (BEPM)" or a "Baccalauréat professionnel maritime (Bac pro)". There are 12 "Lycées professionnels maritimes" in France. To have access to the 'Ecole de la marine marchande (EMM)', the applicant has to pass an exam unless although selection is also possible based on prior qualifications and experience. There are 4 national schools of the Merchant Navy (ENMM), one each in Marseille, Le Havre, Nantes and Saint-Malo. These are higher public or State-managed schools directly supervised by the Ministry of the Sea, with the objective of training merchant navy officers. (art. L. 757-1 Code de l'Education).

9.1.2 GERMANY

A decade ago, the shipping industry had problems attracting young people to train to become seafarers. Sometimes, apprenticeship positions and cadetships went unfilled. This situation has been reversed due to an increased effort by certain ship-owners and the VDR to publicize career opportunities in seafaring, based on an alliance between the seafarers Union verdi and VDR called "Alliance for Training and employment," and by a turnaround in the labour market for German seafarers. Now, after consolidation, there are a relatively small number of training positions is offered and there are a large number of applicants for each place. For those who graduated, the employment outlook was very good up to 2009 but has recently been more difficult. There appears to have been an improved standard of applicants with a growing number of successful applicants having a *Realschule* or higher-level education. The below chart shows the numbers of people in the various seafaring education programs:

Numbers of Seafarers in Different German Training Programs

	2003	2004	2005	2006	2007	2008	2009
Training Alternative							
Ship mechanic	166	235	330	331	364	326	275
Officer Assistant	27	37	97	99	72	102	79
Metal or Electrical Worker	NA	24	40	73	38	23	9
Praktikanten	NA	24	22	49	42	46	37
Sub-total	193	306	489	552	516	497	400
Number in Vocational School or Polytechnic							
1st training semester on a sea-related polytech	127	142	313	288	260	265	297
Ships Technical Operator's Assistant	28	28	26	47	63	64	58
Sub-total	155	170	339	335	323	329	355
Total	**348**	**476**	**828**	**887**	**839**	**826**	**755**

Source: Translated from ver.di document

Germany is well known for its system of vocational education, involving a combination of work-based training with employers, and theoretical training at vocational schools. The path to beginning an education as a ship officer depends on the type of secondary school-leaving certificate. There are three categories of secondary school-leaving certificates in Germany: tThe *Hauptschule* certificate is the least academically qualified, the *Realschule* certificate is an intermediate level. The highest *Gymnasium* type of secondary school leads to the completion of the *Abitur* exam, which is a requirement for university admissions.

Aspiring officers with a certificate from the lower *Hauptschule* must qualify as ratings first, before they can proceed to an officer training track. German ratings are trained via the dual system, in which employers offer a training position, pay the trainee a salary, and supervise the trainee's studies while the trainee is on board a ship. The trainee works part of the time, and studies part of the time at a shore-based training school. Employers receive a subsidy from the government for training they provide. There have been various categories of position available historically, but current trainee ratings all study for the position of "Ship mechanic". Ship mechanics are trained for a period of 3 years, and are involved in both deck and engine room tasks. After finishing this education, they can work as a ship mechanic rating, go on to study at a vocational school (Fachschule) or polytechnic university (Fachhochschule) to become either a "technical watch officer" (engine room) officer, or to become a "nautical watch officer" (deck officer). Ship mechanics are an important source entrants into officer education programs. As the chart below shows, only a fraction of those training to be ship mechanics will actually want to work as ship mechanics per see; the majority prefer to train for various officer positions.

It is also possible to become a ship officer by obtaining a mid-level secondary school degree from a "Realschule," or by passing the "Abitur" exam (which also qualifies one for university education). In this case, instead of undertaking an apprenticeship as a ship mechanic, it is possible to take the more direct path, choosing one of various combinations of practical training as an "officer's assistant" (cadet) and schooling at a vocational school or polytechnic. The practical part takes either 1 year or 18 months depending on the program, and is accompanied by either a 2 year vocational program, or a 3 year polytechnic program. The advantage of the polytechnic degree is that a Bachelor's Degree is awarded, which has greater transferability to other types of careers.

Many people with a Realschule certificate, or even with a polytechnic degree also enter into the ship mechanic training program, rather than going via the more rapid route. Many of these then proceed later to officer training (BBIS 2008).

As can be seen, most trainees who drop out do so on the first year. Especially compared with overall apprenticeship completion rates, the numbers finishing the ship mechanic program have been very satisfactory

Number of Apprentices and Drop-outs, Ship Mechanic Program

		% of drop-outs, in each year			Drop-out %	
Year	New apprenticeship contracts	Year 1	Year 2	Year 3	in Seafaring	in other professions outside seafaring (for comparison)
2003	166	14,4%	3,6%	1,2%	19,3%	21,9%
2004	235	8,5%	3,0%	2,1%	13,6%	21,0%
2005	330	8,8%	1,6%	0,7%	11,1%	19,9%
2006	331	11,2%	3,6%	1,2%	16,0%	19,8%
2007	364	9,1%	3,6%	1,4%	14,0%	NA
2008	326	10,0%	2,2%	2,2%	14,4%	NA

Source: Translated from BBS Jahresbericht 2009

9.1.3 GREECE

Greek cadet officers follow training courses provided by the Merchant Marine Academies (MMA) operating in nine locations across Greece - under the supervision of the Seafarers' Training Directorate of the Ministry of Mercantile Marine.

There are 1218 cadet places within the Deck Officer MMAs and 696 cadet places in the Engineer Officer MMAs. During the academic year 2002/2003 there were 1141 deck cadets and 690 engineer cadets studying within the Greek MMAs. Including the cadets undergoing training at sea on Greek vessels, the total number of cadets in the training system during 2002/2003 was 3745 In 1998 the drop-out rate in maritime education and training was 15%. There are no schools in Greece offering education for ratings

No fees are charged to the cadets for their tuition or accommodation and subsistence. Funding for cadet training is provided from three sources, the Greek government, mandatory contributions from the owners of vessels flying the Greek flag according to size and number of vessels registered, and from the European Union.

Cadets, who must be High School graduates, have to pass an entrance examination in order to gain entry into the Merchant Marine Academies. The cadets start their studies with one semester at the MMA, followed by their first semester of onboard training. They then have two more semesters at the MMA followed by their second semester of onboard training. Their studies conclude with three more semesters at the MMA. The full course lasts almost four years, after which successful cadets are awarded their third class Deck or Engineer Officer certificate of competency.

After 24 months of seagoing service, and successfully completing the mandatory STCW courses, third class officers are awarded their second-class certificates of competency. Following a further 36 months of seagoing service and successful completion of the mandatory STCW management level short courses they are awarded their first class certificate of competency, Master or Chief Engineer.

There are two government funded Centres of Post-Training, one at Aspropyrgos and one at Rendis, which run STCW professional short courses for continuing professional development of Greek seafaring officers. In addition, there are five private maritime training institutions that run a variety of maritime training courses that are approved by various maritime administrations, but not by Greece. It is understood that the Greek Maritime Authority is looking to approve the courses at the private maritime academies at some point in the future.

9.1.4 NORWAY

The table shows that the number of students following a maritime education in Norway has been decreasing since 2002. In 2006 the number of students had decreased by almost 200 compared to 2002. There are three main parties in the Norwegian merchant maritime educational system: institutions of further education, technical colleges and university colleges.

Number of students in maritime education Norway 2002-2006

Specification	2002	2003	2004	2005	2006
Further Education	625	631	621	569	519
Technical College	493	494	509	461	457
University College	125	135	117	98	89
Total	**1243**	**1260**	**1247**	**1128**	**1065**

Source: Norwegian Maritime Strategy (2007), Norwegian Ministry of Trade and Industry.

Under the auspices of the Norwegian Maritime Forum, and with funding from the Norsk Maritime Kompetanse foundation, a recruitment campaign was launched in 2007 under the banner "Not for everyone – training that takes you places". The campaign is aimed at pupils in middle school and upper secondary school. Through a dedicated web portal (www.ikkeforalle.no), it aims to alert young people on

training and occupational opportunities in the maritime sector. With interest and awareness surrounding the campaign running high, intakes at maritime colleges increased by 12 per cent over 2006 – and "Not for everyone" went on to win a prize for best direct marketing campaign of the year. In 2008 the campaign really paid off and the numbers of applications for maritime university colleges rose by almost two-thirds. After nearly three years there was an increase in applications for a maritime education of 40%.

The officer training syllabus, prepared by the Norwegian Maritime Directorate, incorporates the latest regulations and amendments of the IMO's International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). Graduates holding this degree are qualified academically as officers, typically aged about 23, and receive their officer's certificates after serving a further six months on board.

This model is exceptional and possibly unique in Europe. It complements the general A-level system, whereby primary school graduates can end up in one of the four maritime academies after a three-year course, also using a syllabus based on IMO standards. The drawback to this system is that A-level graduates can start maritime academy with no on-board training; but after the first year at the academy they can apply for a year as cadet before returning to the academy for a further two years. Six months of sea time after finishing this two-year stint at the academy qualifies them for their officer's certificate.

In 2008 the Norwegian Ship-owners Association, Det Norske Veritas and Norwegian Industry Maritime joined forces and launched "Maritime Career", an initiative aimed at attracting more university and university college level students to the industry. Students can write a bachelor's or master's thesis on the Norwegian maritime industry and take advantage of a placement program and company visits, internationally and nationally.

9.1.5 POLAND

There are large numbers of graduates of Polish maritime academies. Since there are far too many likely to be absorbed by the Polish owned fleet of 120-odd ships the great majority expect to work for EU or foreign employers.. Most of them work on ships owned by European ship-owners (for example in Norway, Germany, United Kingdom, Greece), including the flags of Member States (Cyprus, Malta, Denmark (DIS), Germany (GIS)).

Students of Polish Maritime Academies by profiles

Specification	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
Navigation Faculty	2303	2340	2227	2096	2115
Faculty of Electrical Eng.	763	693	659	359	623
Faculty of Marine Eng.	2000	1976	1788	1575	1337
Total	**16050**	**15345**	**14129**	**13278**	**13520**

Source – statistic data

The education of Polish maritime officers takes place at Poland's maritime academies, of which there

are three[5]. Only two of them, Gdynia and Szczecin, have programs clearly related to merchant ship officers. The third is a naval academy – although there is a path to becoming a merchant ship officer from there, after completing a career in the Navy. It is not clear how significant a source of manpower this is, however. There are also a number of private academies. These do not publish graduation numbers and the manning agencies we called did not hire from these, however, so it appears that the Gdynia, Szczecin and Navy are the main sources of trained maritime officers in Poland

Gdynia and Szczecin educate students to work on ships, but also for many other maritime and sea related jobs, as varied as oceanography, marine biology, maritime history and ship architecture. As such, many of the degree have overlap with shore-based careers and one cannot assume that graduates will necessarily become ship officers.

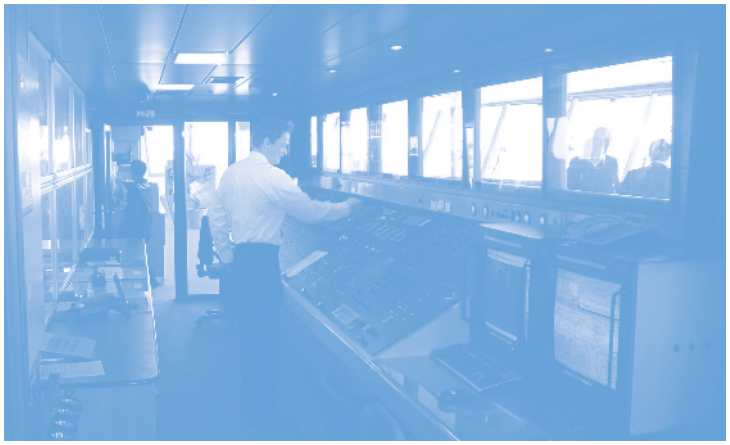
9.1.6 UK

In 2009 a total number of 1,800 trainees were in training in the UK maritime schools. This figure includes foreign students and others preparing for higher level officer certification. The table below shows the numbers of cadets that have followed an officer training in the UK since the 1970s. This data reveals that in the 1980s the number of cadet following an officer's training in the UK was at an all time low. The number of trainees has increased and compared to 2000 the number of cadets almost doubled in 2009.

Cadet Intake for Officer training

Year	Number of Cadets
1975	2315
1980	1274
1985	165
1986	82
2000	450
2001	480
2009	890
2010*	700

* predicted



The UK tonnage tax training link requires a fixed proportion of new training to be undertaken which correlates with existing officer complements on tonnage tax ships. Whilst this has increased officer trainee numbers, serious concerns continue over long-term employment trends. The training link notwithstanding, the total number of UK officers and ratings continues to decline the average age of British officers and ratings continues to rise. Training for rating positions has fallen off to an alarming degree and it is the case that the great majority of ships were entered into the UK tonnage tax scheme employ non-UK seafarers regardless of rank. Although the UK does provide income tax concessions for

5 It should be noted that, in addition to schools managed and financed by the polish state, there are also private schools which has not been included for the purpose of this study.

UK-domiciled seafarers in the deep-sea trades, many shipping companies contend that cost pressures continue to make it difficult for them to train and employ British nationals.

The scale of the gap between supply and demand, and employer expectations and commitment, was underlined in a survey of employers that sought to examine the current and future employment position of British junior officers. Commissioned jointly by the Chamber of Shipping and Nautilus International, the 2005 study was carried out by an independent research company, The Mackinnon Partnership, and was based on responses from 57 companies employing British junior officers.

The employers who responded:

- **were training three-quarters (74%) of all British officer cadets currently in training;**
- **were due to produce 837 newly trained British cadets between 2005 and 2007, drawn from just over half (54%) of the employers responding;**
- **employed just under half (48%) of all British officers who are at sea;**
- **operated one sixth (18%) of the trading and non-trading Red Ensign fleet (by number of vessels).**

The action taken by governments over the past 20 years in response to the decline of the UK fleet and UK seafarer training have helped to arrest the marked downturn recorded between 1975 and 2000. However, recruitment is still failing to reach the level acknowledged as necessary for future needs and to maintain the current level of the maritime skills base.,

9.2 Appendix 2: ORGANIZED CLUSTER POLITICS

9.2.1 GERMANY & NORWAY

In some European countries there is political support for the maintenance of the cluster, as a source of jobs and economic vitality. Social actors such as firms, industry associations, government agencies at various levels, trade unions, and educational institutions are involved in organized cluster activities. These take place at the national level, in Norway in the form of a Maritime Forum and in Germany in the form of periodic National Maritime Conferences. Sometimes, activities also take place at the local level. Concrete goals and cooperative activities result from cluster activities, some of which have proven important. The cluster is promoted by government and private institutions, through support for education and skill development, and by targeted subsidies for maritime shipping, in the form of tax concessions to shipowners, designed to keep this key “anchor” industry from moving abroad. For example, mobility between ship and shore side jobs can be promoted by designing seafaring training programs which also teach skills useful in shore side aspects of the maritime business – for example, general management skills. This facilitates the development of a cohesive cluster with a unified labour market.

9.2.2 GERMANY

There is evidence that German employers see seafarers as an actual or potential source of skills. German shipbuilders, for example, have asked the Federal Employment Office to create a database of seafarers, to make it easier to recruit them (Wijnolst and Janssens 2006). Certain seafarer job training and apprenticeship programs are designed to give skills useful both at sea and on land. Barnett et. al.'s (2006) study indicates that in Germany shipbuilding, marine equipment, and various other maritime industries (not necessarily directly connected to maritime shipping) employ former seafarers, and value their skills.

Bundesanstalt für Arbeit (German Federal Employment Office) statistics indicate that around 30% of deck officers and ratings, and nearly 50% of technical officers actually work in other industries. Notably, about 15% of technical officers end up in manufacturing. Barnett et al. (2006) assert that seafarers who go ashore tend to move into "transitional" positions, related to their maritime positions in some way . Furthermore, it is highly dependant on ex-seafarers and has problems filling vacancies because there are not enough of them. According to the Policy Research Corporation's (2008) report, employment estimates for Germany's maritime cluster sectors total 277,000 people.

9.2.3 NORWAY

As noted by Wijnolst, Jenssen and Sodal (2003), the maritime cluster of Norway represents about seven % of value creation in the Norwegian economy, or approximately 12 billion Euros. In 2007 there were about 97,000 employees in the Norwegian maritime industry. Of this, 29 % as in shipping, equipment producers 26 %, service providers 24 %, and shipyards 21 %. This makes the maritime cluster the second biggest industrial sector in Norway, behind the oil and gas-sector. It should also be emphasized that a large proportion of the maritime cluster in Norway is closely linked with offshore oil and gas in some way or another.

Estimates indicated that in the years from 2007 running up to 2010 the industry expanded with the entry of between 3,000 and 4,000 new maritime industry workers. In addition, increased activity in oil and gas rigs called for some 2,000 new rig employees. Currently there is an increased demand for personnel in the ships owners' offices' and operations' in onshore organizations – both technical and commercial.

The maritime industry in Norway is facing competition for labour from other high status industries. In response to deficit in the maritime cluster the government, companies in the industry and the unions intervened in various ways to address the deficit and strengthening recruitment in the maritime industry. The Maritime Forum focuses on promoting a positive image of the sector among the Norwegian public and encouraging young people, especially those living in coastal districts, to pursue careers in the industry's various branches and offshore. Norsk Maritim Kompetanse ("Norwegian Maritime Competence") is a foundation set up in 2003-4 to address these issues. Financed by a levy on shipowners, the foundation's board comprises representatives of the Norwegian Shipowners' Association, seamen's unions and the Norwegian Maritime Directorate. Allocations for trainee positions (which have more than doubled since the body started work) totaled NOK 48.3 million in 2008, a year on year rise of almost 20 %.

The OECD 2003 study demonstrated that shore-based maritime organisations / companies like maritime training and development organisations, shipowners / technical department; ship owning / ship management companies and shipowners' organisations employed a substantial number of ex-seafarers Their ex-seafarers ratio within all employees in these sectors were 65%; 54%; 47% and 35% respectively (OECD 2003, p.55)

There have been efforts to re-conceptualize maritime careers in terms of ship-shore transitions and career paths in the cluster. In 2005, the Norwegian Shipowners' Association (NSA) launched a "Maritime Trainee Programme" to groom new graduates for senior positions in "all aspects of the maritime business cluster". The project was described as "a joint competence-building venture" involving the leading companies in the maritime sector. Potential trainees showed an enormous interest from the start, filing no fewer than 4000 applications for the first 25 positions available. The scheme recruits newly-qualified students with Masters Degrees in economics, technology and/or law, and equivalent qualifications from maritime university colleges. What is unique about the scheme is the way a number of companies have joined forces to mount a programme offering trainees great breadth in training and networking opportunities. Equally, the trainees gain broader insights into the entire maritime industry than is possible from a traineeship with a single company. The Maritime Trainee scheme currently comprises a score of enterprises from across the entire maritime industry: shipping companies and rig operators, shipyards, equipment manufacturers and suppliers, and shipping-related services in classification, banking, brokerage and law.

9.2.4 CLUSTERS AS POLITICAL LOBBIES:

9.2.4.1 UK and France

In the UK and France, the political definition of the maritime shipping cluster tends to be more narrow than in Germany and Norway. Political representation of the cluster does not include unions on an institutionalized basis, although there may be ad hoc social partnership. The UK Chamber of Shipping presents itself as the UK's representative of the cluster, which defines it both as a club of firms, and not unions or other groups, and as a maritime shipping dominated entity. Although the UK Chamber of Shipping has, for example, ship repair companies as members, these are clearly in the minority and marginal to the overall interests of the group.

9.2.4.2 UK

The UK has a economically important cluster with clear labour-market links between cluster industries. Politically, the cluster is not as cohesive as in Germany or Norway, but there is also social partners' cooperation around issues of mutual interest. For example, the social partners in the UK shipping (Nautilus, the RMT and the Chamber of Shipping) have put joint pressure on the government to spend more on the improving the training support regime. The idea was to improve an existing Support for Maritime Training (SMarT) scheme to cover 100% of all training costs. The UK government, however, declined to support the proposals because of the budget crisis. However, alternative means of providing additional support (such as through aid mechanisms for apprenticeships) are currently being examined by the social partners and the government.

The UK has traditionally been a major global maritime nation and for much of the 20th century held a dominant position in many shipping-related industries and services. Despite the decline in the size of its merchant fleet during the final quarter of the 20th century, the UK managed to maintain a significant maritime cluster and the sector is of continued national importance, ranking as the largest of its kind in Europe, with a turnover of £37bn — twice the size of aerospace or agriculture — and employing more than a quarter of a million people.

The wider maritime sector has always relied extensively upon a supply of skilled and experienced seafarers. The 2009 National Statistics on Seafarers estimates that some 16% of certificated UK officers work onshore, although it notes that attempts to define the true figure range between 7% and 21%. A 2007 study put the total of shore-based UK seafarers as 8,500. A number of studies have

attempted to pinpoint the exact numbers of experienced seafarers required for shore-based positions. In 2005, the UK government estimated that 74,000 people were working directly on port-related activities alone.

9.2.4.3 France

As in the UK case, in France an association of maritime companies claims to represent the interests of the maritime industries. The French Maritime Cluster (Cluster maritime français, CMF) was established in 2006 following an initiative by a former shipowner, Francis Vallat. The French Shipowners Association (Armateurs de France) is the main member contributing half of the organisation's budget. The Cluster purports to represent 1.5% of the working population, between 2 and 2.5% of the gross national product. The CMF has its offices on the premises of Armateurs de France, which is suggestive of where the power lies in the organization. French unions have not been invited into the Cluster, and have viewed the establishment of the Cluster as the reinforcement of an industrial lobby and a means of excluding them from joint consultative bodies.

This cluster is primarily a gathering of maritime and para-maritime operators, shipowners (11,000 seafarers and 8,000 onshore personnel, a turnover of € 12 billion, 1,400 vessels, of which 700 fly the French flag), the offshore para-petroleum and para-gas industries (20,000 jobs, a turnover of € 9.1 billion), the naval construction and repair sectors (40,000 jobs, a turnover of € 5 billion), the maritime security and safety industries and services, marine renewable energy, ports (40,000 jobs, a turnover of € 4.5 billion), logistics, state activities on the sea (the Navy (Marine Nationale), i.e. 51,000 persons, the Maritime Administration), nautical services (45,000 employees, 5,000 companies, a turnover of € 5 billion), environmental equipment and services, marine scientific research (3,000 jobs and a turnover of € 410 million), fisheries and marine products (18,500 jobs, a turnover of 6 billion), maritime insurance (1,200 jobs, a turnover of 1.4 billion), maritime brokerage (200 brokers, 30 companies), maritime financing, classification, maritime training and education, various legal service companies.

The French Maritime Cluster, as an organization, regards the redeployment of seafarers in on-shore occupations as wastage, and as something to be avoided rather than encouraged. In this sense, the Cluster's policy is a reflection of the interests of the Armateurs de France, in "locking up" seafaring careers in order to avoid loss of expertise into other sectors. They have therefore not encouraged efforts to broaden the maritime career concept to include labour-market interactions with related sectors.

9.2.5 IMPLICITLY DEFINED CLUSTERS:

9.2.5.1 Greece and Poland

EU policy in maritime favors cluster thinking, by allowing governments specific tools to favor the competitiveness of their maritime clusters. In this sense, countries which do not define a cluster politically give up the ability to promote their domestic maritime industries. Countries which do not have cohesive social partners capable of organizing the cluster, or lobbying for its interests do not necessarily take advantage of the possibility to promote their industry. Furthermore, if the cluster is not perceived as such, there may be increased difficulties in mobility between cluster industries.

The Polish maritime economy in 2008 employed 83,455 workers in the traditional maritime sectors, which accounted for 0,6% of the total number of employees in Poland. The Polish cluster concept is politically undeveloped, despite the fact that Poland has a strong presence in ship manning and shipbuilding. This in part reflects a neo-liberal ideological stance which has been held by the post-communist Polish government, and a lack of interest in the maritime industry. It also reflects a lower level of

integration in the operations of the various cluster participants (Sedler 2005), as well as weaker organization by the Polish social partners. Shipbuilding is ultimately seen as a more important industry and more central to the needs of the cluster than maritime shipping (InterMar–C 2007). As a result, Poland has not been using the tools available to it to promote the maritime shipping industry under the EU's state aid allowances. This appears to be changing, now, however, with talk of cluster promotion, and the creation of a tonnage tax scheme in 2007. There was a 2009 policy paper setting out the goal of promoting cluster formation. However, in comparison to the German and Norwegian cases, and indeed even the UK case, it seems to be more based on government initiatives and reforming government policy, and less about providing a forum for the initiatives of private actors.

Shipping is an important industry in Greece, employing 36,000 people. Around 72,200 are employed in traditional maritime sectors (Inland navigation, marine aggregates, marine equipment, marine services, maritime works, navy and coastguard, offshore supply, recreational boating, seaports, shipbuilding and shipping). A further 165,000 are employed in coastal an sea-related marine recreation and tourism, and 37,700 in fisheries. Figures are from PRC (2008). However, according to Barnett et al. intra-cluster employment mobility for seafarers is weak. Individuals do enter other professional maritime shore-based sectors such as maritime training, classification societies, maritime equipment suppliers and law, but the numbers are extremely low and probably less than five per cent of the total number of seafarers leaving career at sea (Barnett, 2005: 57-8).

9.3 Appendix 3

Tonnage Tax Characteristics in the EU (the table is being updated)

Member state	Companies	Windows and Limitations	Income Subject	Other Issues
Belgium	Approved in 2003	Optional but binding for 10 years	Lump sum profit taxation based on tonnage. 50% reduction for vessels under 5 years; 25% vessels 5-10 years old.	Particularly low taxation rates on vessels over 40,000gt. Further tax deductions linked to losses from other (non-transport) divisions of shipping companies.
Bulgaria	nd	nd	nd	nd
Cyprus	Approved in 2010	nd	shipowners, ship charterers and ship managers are subject to tonnage tax, which is calculated based on the net tonnage of the vessels that they possess, charter or manage respectively	qualifying ships are certified under the applicable international or national rules and regulations; registered in the ship register of any state, being a member of the International Maritime Organisation and the International Labour Organisation, which is recognised by Cyprus.

Denmark	Introduced from 2002. Limited shipping companies registered in Denmark; EU shipping companies with a permanent base in Denmark and subject to company taxation in Denmark.	Optional but binding for 10 years. Qualified companies are obliged to choose either corporate or tonnage taxation before filing for income tax. All qualifying shipping companies within a group have to select the same option.	Transport of goods and passengers and related activities are shipping business and only this can be subject to tonnage tax. Income taxed derived from own fleet, and vessels on bareboat time charter of 20gt or more. Time chartered vessels can be included on 4:1 ratio town tonnage.	National seafarers are granted a special standard deduction from taxable income.
Estonia	nd	nd	nd	nd
Finland	Introduced from 2002. Ferries and passenger ships excluded from crew subsidies.	Ship-owners to choose between corporation and tonnage tax. 10 year-period.	Duty-free sales excluded.	Company dividends taxed at normal rate.
France	Available to companies drawing 75% of their revenue from merchant shipping.	Owners had to opt by the end of 2004.	Flat rate taxation scheme.	Tugs, fishing boats and fixed vessels excluded.
Germany	Introduced in January 1999. Restricted to German ship-owners with merchant vessels in international operations. Management of the company must be in Germany.	Vessels must be German registered. 10-year commitment.	Includes chartering of ships as well as operation and incidental, related activities.	Profits include sale of ships and closing down of shipping business. No depreciation allowances under tonnage tax. it is possible to register a ship in Germany, but to fly a foreign flag.
Greece	Introduced in April 1975. Applies to all Greek flagged ships – no options.	Non-shipping activities are excluded. No taxation on capital gains from ship sales. Ships built and registered in Greece pay no tax for 6 years; those repaired in Greece and under 20 years old pay a reduction; ferries and cruise vessels pay 50%.	Taxation based on vessel type, gross tonnage and age. Specific definition of ship types.	Status guaranteed under Greek Constitution. Employment of EU officers remained obligatory.

Ireland	Introduced in 2001. The company must be subject to corporation tax, operate qualifying ships, and be strategically and commercially managed from Ireland. Companies part of a group must enter as a group.	10-year option; cannot return for 10 years. Maximum 75% of net tonnage of fleet can be chartered.	Taxation rate reduces as vessel size increases.	Vessels must have a certificate of navigation and can be over 100 grt. Excluded – fishing, sports, recreation vessels; offshore installations; dredgers, tugs and coastal / river ferries. The regime has no explicit flag link.
Italy	Earliest attempt detected in 1996 in parallel to proposals for a second register.	Minimum 5 year option.	Based on vessel tonnage; variable according to trade and age of vessel.	
Latvia	nd	nd	nd	nd
Lithuania	nd	nd	nd	nd
Luxemburg	nd	nd	nd	nd
Malta	In early 2010, the Malta government promulgated new regulations which extend the tonnage tax regime to foreign flagged ships and to ship-management activities.	nd	nd	nd
Netherlands	Introduced in 1996 (modified in 2009). Must have a significant presence in the Netherlands.	Binding for 10 years.	Based on net registered tonnage.	Flag blind. Combined with seafarer tax concessions on wages and social security payments. There are no limitations applied to the work of foreigners onboard vessels flying Netherlands flag – non-nationals do not benefit from the income tax subsidy. The requirement that master is a citizen of the Netherlands is not applied either.

Poland	Approved in 2010	nd	A flat-rate tax, based on the tonnage of their fleet	The Commission also approved the inclusion in the scheme of management activities since they fulfill all the requirements of the new Guidelines on State aid to ship management companies.
Portugal	nd	nd	nd	One of the very few in the EU not having a "tonnage tax system"
Romania	nd	nd	nd	nd
Slovenia	Approved in 2009, backdated to 2008.	Optional but binding for 10 years	nd	nd
Spain	Introduced in 2003,backdated to 1st January 2002. Must be registered as ship operators and be managed from the EU.	Sole activity must be ship operation. Ships had to be capable of sailing on the high seas. Voluntary. Ten year option but can leave at any time. Cannot return within 5 years.	Subject to approval of taxation authorities. Chartered in vessels must not exceed 75% of the totalnet tonnage of the fleet. Taxable base was the net tonnage, on a reducing scale.	Basque regional tonnage tax as well. Awaits implementation.
Sweden	On April 1 2009 the Swedish infrastructure minister announced that no tonnage tax will be introduced during the present term of office	nd	nd	nd
United Kingdom	First established in 2001. Can opt for the existing capital allowances system or tonnage tax. Company must be registered in UK and a substantial commercial base must take place there.	Minimum 10-year option. Can leave but at a cost of £500 per month per vessel. Companies entering shipping have one year opt in. Renewal of tonnage tax for a further 10 years can be at any time.	Profits from shipping ring-fenced. Only shipping related activities allowable.	Training commitment or levy payable. Flag blind: ships in tonnage tax do not have to be on the register of an EU member state.

Note: nd means "no data", we could not find reliable information

Sources: Adopted from Selkou and Roe 2004, Wilen 2004, and developed further through analysis of various secondary sources (newspapers and web based materia

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