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MARTEC

ERA-Net Maritime Technologies

Co-ordination Action

ERA-Net

**D1.1 State of the art report
(National programmes, funding organisations,
National priority areas, national policies)**

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1 Executive summary

The ERA-NET MARTEC (2006 – 2009) is an EU funded project in the 6th Framework Programme. The MARTEC partnership consists of 12 partners and 1 observer of 9 European countries. The primary aim of the report is to deliver basic information of maritime programmes. Because of the different understanding of maritime topics and the existence of other ERA-NETs it was necessary to define priority areas in MARTEC.

The overview provides in section 7 national maritime research policies, priority areas, funding organisations and programme information for each country represented in the MARTEC consortium and available information for other European countries. This report includes results of a questionnaire established in MARTEC as well as some information gathered in other projects like ENCONA and ENCOMAR. “ENCONA - Encouraging co-operation between Community funded and National Research in the Maritime Sector” was a FP5 Accompanying Measure. ENCOMAR-TRANSPORT – “Enhanced co-operation between EU member states and Associated Candidate States in Maritime Research on Transport” was a FP6 Specific Support Action. Additional research was done by internet (e.g. <http://cordis.europa.eu/ergo/>) and by direct contact to national Ministries and organisations. General information on national research policies, structures, programmes and organisations can be found on <http://cordis.europa.eu/erawatch/>.

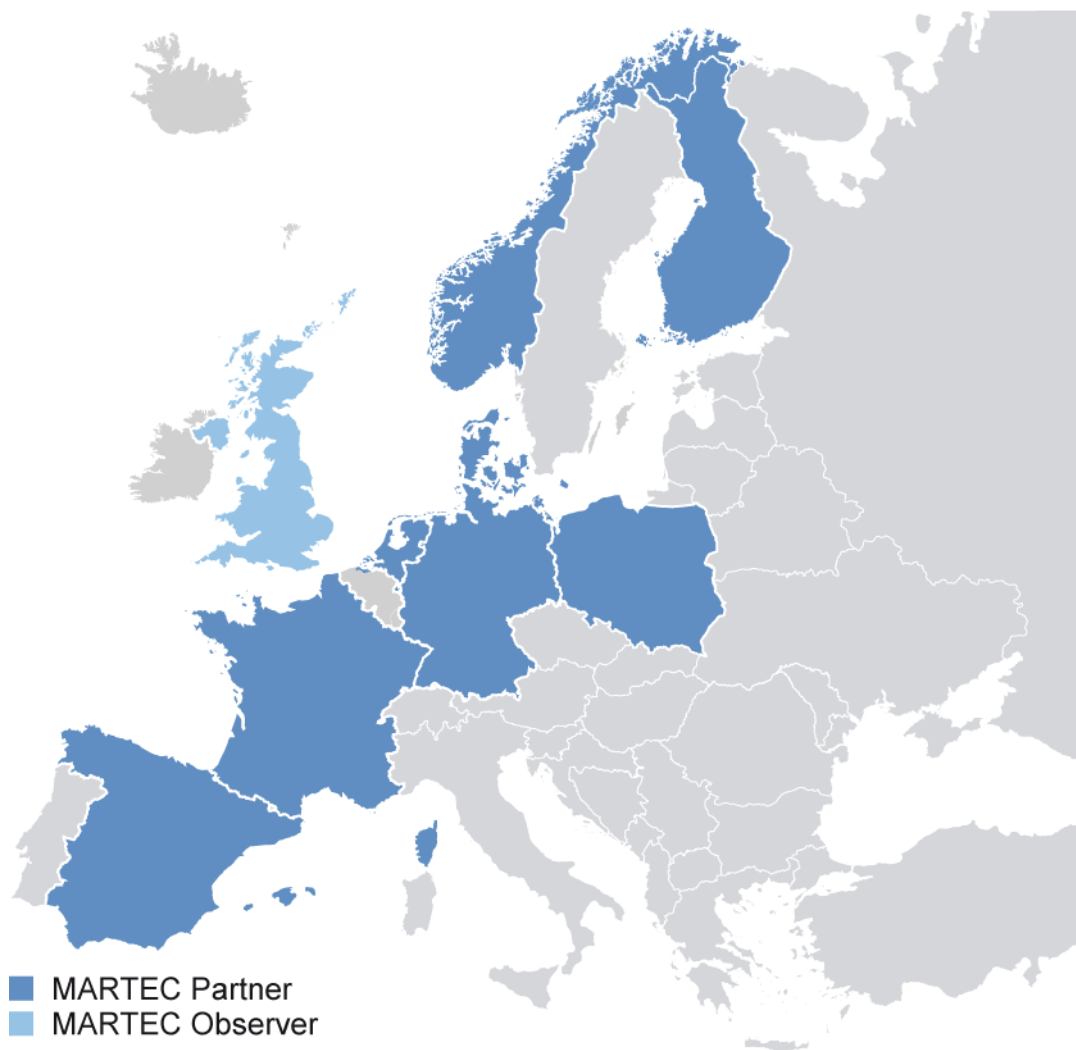


Figure 1: MARTEC Partner Countries

2 Strategic objectives and goals of MARTEC

The objective of the ERA-NET scheme is to develop and strengthen the coordination of public research programmes conducted at national or regional level. It provides a framework to network and mutually open national or regional research programmes, leading to concrete co-operations such as the development and implementation of joint programmes or activities. Networking and mutual opening require a progressive approach and long term perspective.

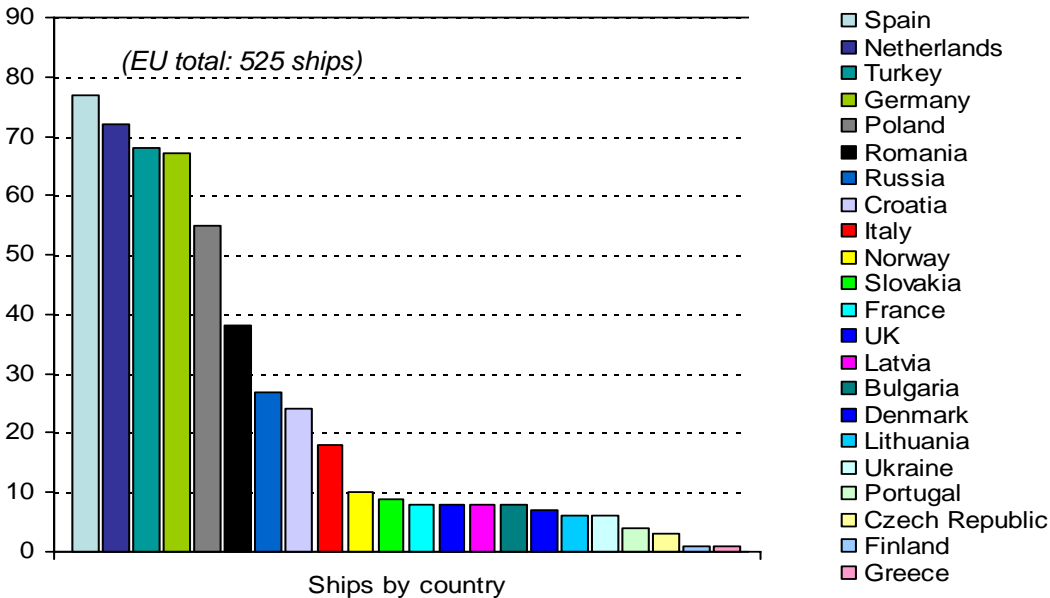
MARTEC – Maritime Technologies – started in June 2006, and aims to create an environment of partnership and co-operative activities between Europe’s disparate national research programmes. The global competition is putting great pressure on Europe’s maritime industry. The European sector must maximise the value of research by creating a sustainable R&D strategy that can bring together Europe’s key players. The MARTEC project brings together 12 ministries and organisations responsible for funding research in maritime technologies and one observer across nine different European countries. At the moment, different countries handle maritime research in different ways. In fact, some do not even have specific programmes, which mean that this important sector may be absorbed into broader areas of research. There are also huge differences in the way research is administered in different European countries.

MARTEC focuses on funding issues and is planning to create a lasting network of key agencies that will improve the way in which maritime technologies research is managed and developed. This network will produce a strategy for future research funding, and will encourage the development of transnational programmes of activity able to reflect the needs of the maritime industry.

3 Maritime statistics – European maritime countries

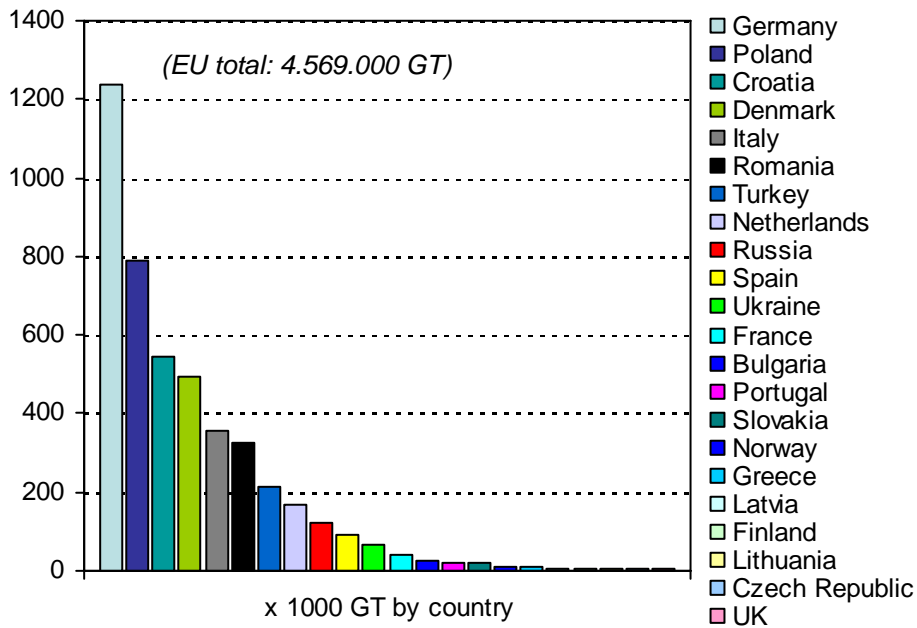
The necessary critical mass is already included in MARTEC since the beginning of the project. The MARTEC ERA-NET encompasses the major shipbuilding, shipping and maritime relevant nations in Europe. The following graphics show the leading European nations in the different sectors in the year 2005.

Ships completed 2005 in the EU broken down by building country¹

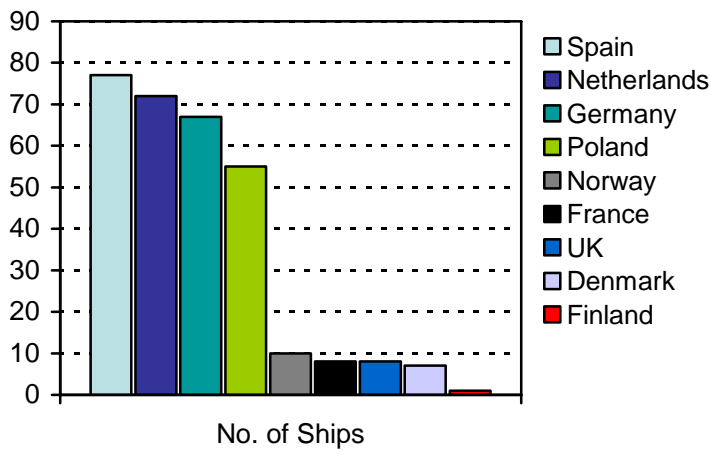


¹ World Maritime Markets, Douglas-Westwood, March 2005

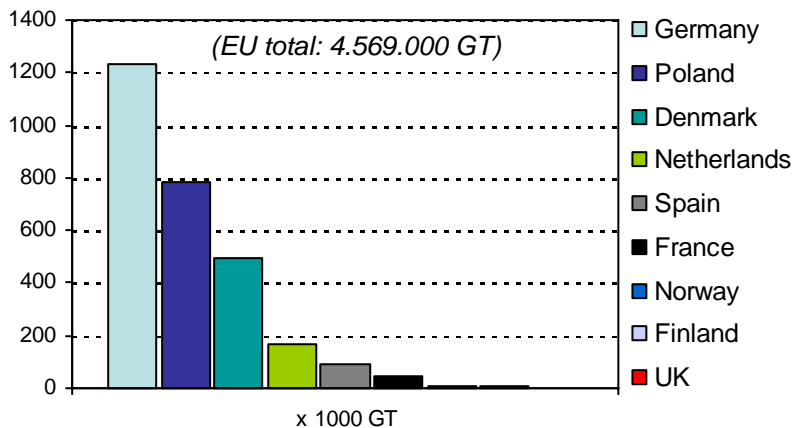
Ships completed 2005 in the EU broken down by building country¹



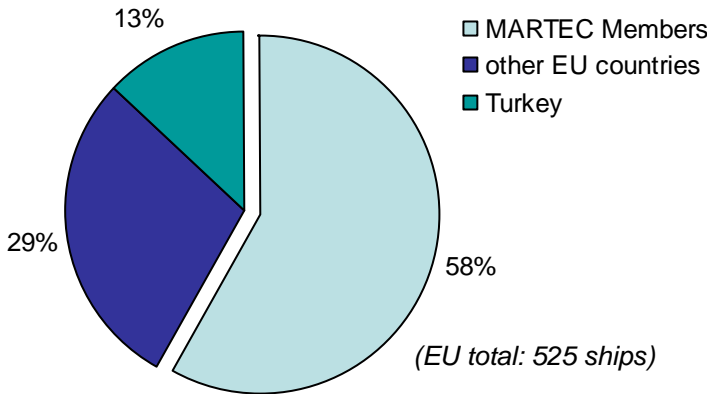
Ships completed 2005 in the EU by partner countries (EU total: 525 ships)¹



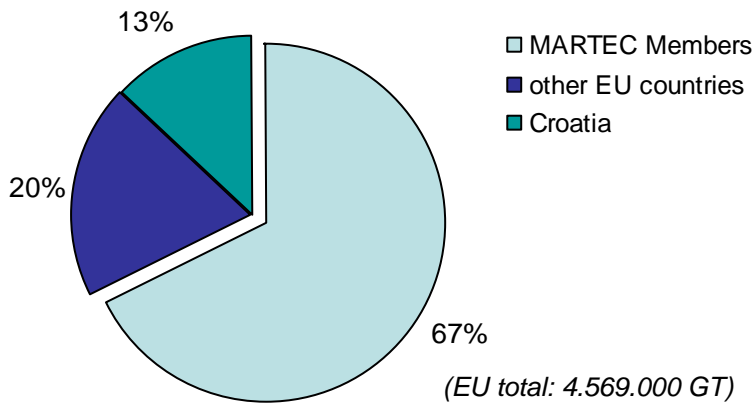
Ships completed 2005 in the EU by partner countries (EU total: 4.569.000 GT)¹



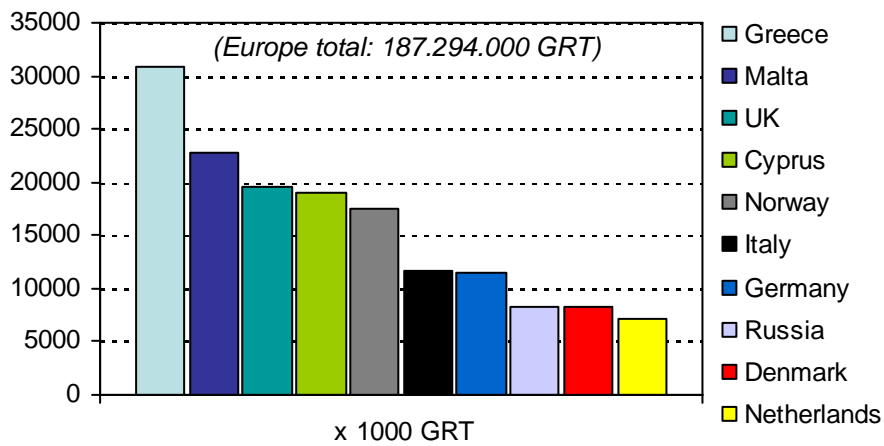
Ships completed 2005 in the EU



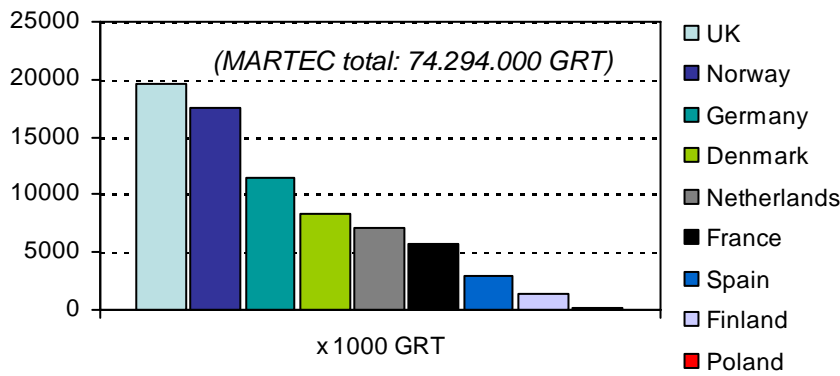
Ships completed 2005 in the EU



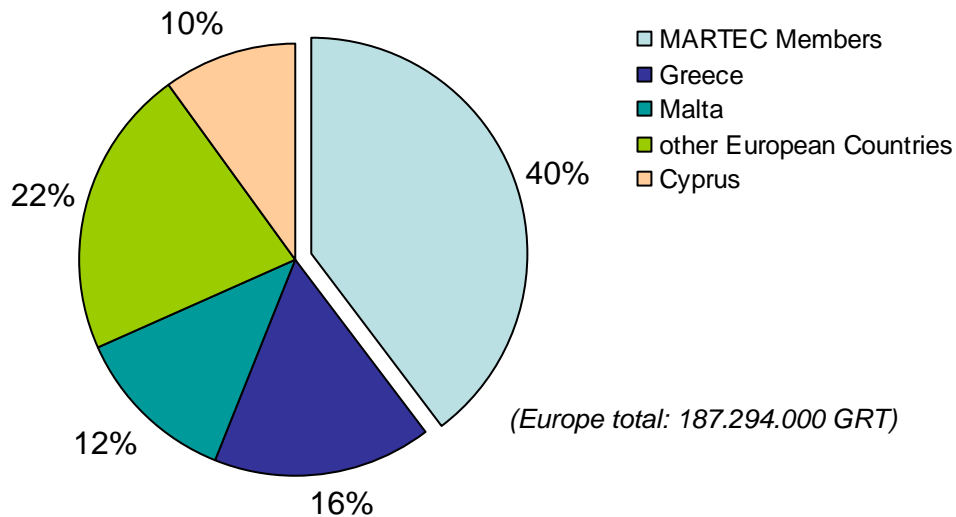
Top 10 Merchant fleets of Europe in 2006 broken down by flags of registration¹



Merchant fleets of MARTEC Members in 2006 broken down by flags of registration¹

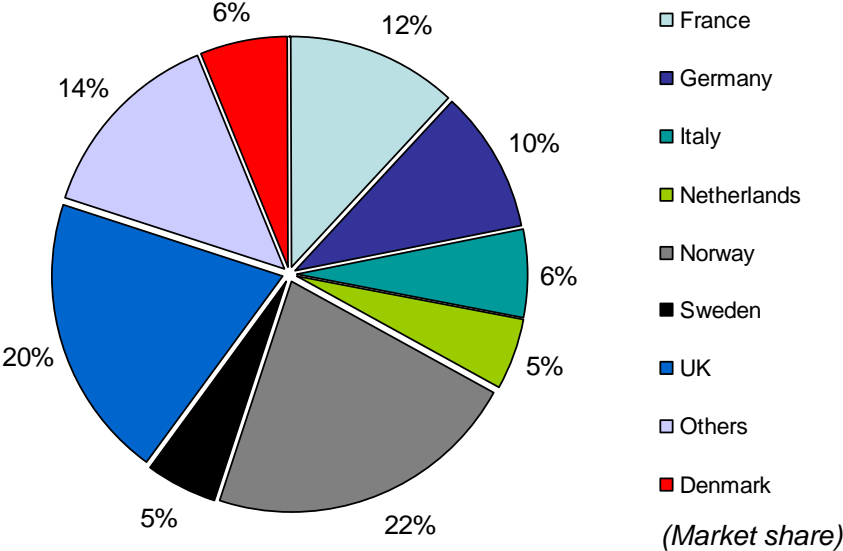


Merchant fleets of Europe in 2006



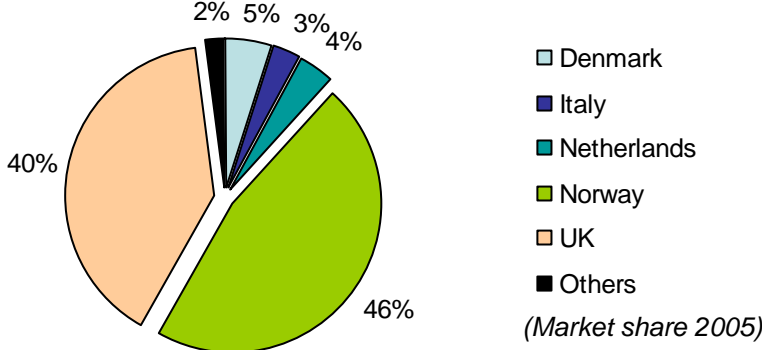
European Underwater Technology Sector Segmentation 2005¹

Norway and the UK, followed by France and Germany form the largest European markets in underwater technology sector. The main customer industries include ROV operators, research and survey contractors. In addition there are survey systems, oceanographic instrumentation, etc. Subsea oil & gas and military equipment are excluded. It is important to note that totals are segmented by the final use market, in other words expenditure on sonar produced in Germany for use off West Africa is allocated to West Africa, not to the initial customer who may be a survey contractor in the Netherlands.



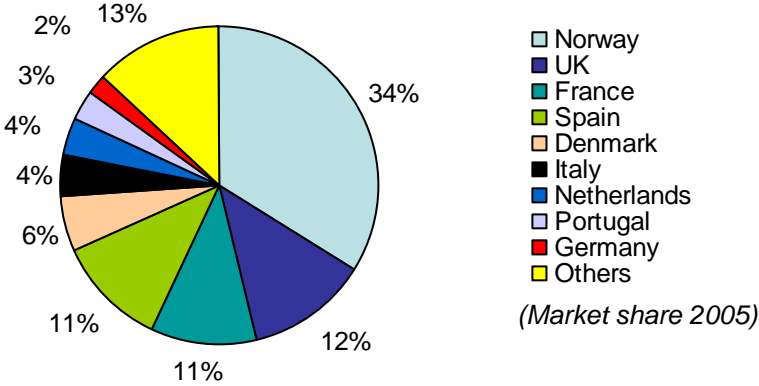
Offshore Europe - European Oil & Gas Sector Segmentation 2005¹

The North Sea has been the region of greatest activity over the past 30 years. In 2005, Western Europe is expected to account for 20% of global offshore expenditure, but production is at peak and the region’s share will decline to 15% by 2010. Two countries, Norway and the UK are forecast to account for 86% of European expenditure over the next five years. Offshore oil & gas is probably the world’s largest marine industry in terms of the value of its output. Some 35% of global oil production and 27% of gas production is from offshore. Although only a small producer itself, Germany is a provider of certain items of technology. The main market driver is the continuing growth in global energy demand of which oil & gas supplies some 62%. Most of this growth is coming from the developing economies.



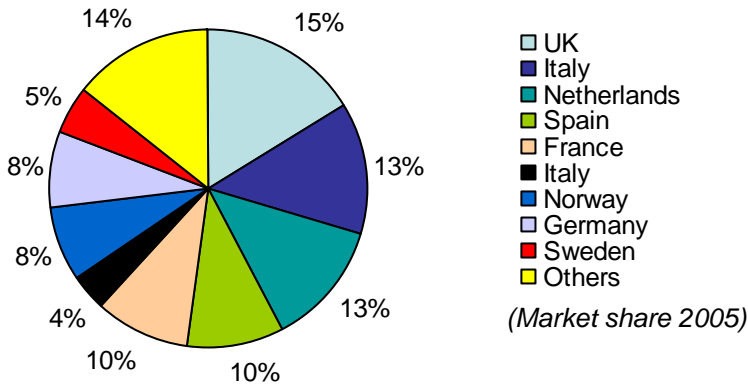
European Market - European Seafood Processing Sector Segmentation 2005¹

A considerable export market exists for processed seafood’s and high cost European producers such as Norway are greatly aided by establishment and development of a premium brand. Challenges for smaller producers include the need to develop and/or invest in automation and increase production to achieve both economy of scale, volumes and continuity of supply required by the major European supermarket chains.



European Ports Sector Segmentation 2005¹

In 2002, Europe had 985 ports of which 285 handled over one million tonnes of traffic. On average they handle 3.5 billion tonnes of cargo per year and 350 million passengers – the equivalent of 70% of the entire European population. Port activity is distributed across all European coastal countries. Rotterdam, as Europe’s largest port is responsible for the shipment of goods to and from several European countries. The sector is of particular importance due the generation of considerable economic activity which is a multiple of port revenues.



4 Purpose of the report “OVERVIEW NATIONAL MARITIME R&D Funding”

The work within this task will be based on the information already gathered by the accompanying measure “ENCONA - Encouraging co-operation between community funded and national research in the maritime sector”, which analysed the structure and nature of national RTD programmes for maritime industries in the countries Germany (co-ordinator), Finland, Norway, Poland and UK. These countries, together with France, Spain, Denmark and the Netherlands form the core group of MARTEC. The main tangible outcome of the project was “White Book on Encouraging co-operation between Community funded and National Research in the Maritime Sector” and the initiation of the ERA-NET proposal MARTEC. The information gathering was mainly done in 2004. All ENCONA members have delivered an updated version as well as additional information. There is rather limited information from other European countries. In MARTEC it is planned to contact and integrate possible further partners in a network of funding organisations. The work will comprise the completion of information on national programmes from European countries which have not been covered within ENCONA including new member states.

Some information was already available from the specific support action “ENCOMAR-TRANSPORT - Enhanced co-operation between EU member states and Associated Candidate States in Maritime Research on Transport” started in April 2005 and completed in October 2006. The countries represented in the project were: Germany (co-ordinator), Bulgaria, Croatia, Finland, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Russia, Slovakia, Turkey and Ukraine. One of the main tangible outcome of the project was the analysis of the maritime key actors and potentials in each country represented in the project and the identification of research priorities for future joint research projects. The main focus was on information exchange about European framework programmes and identification of research priorities for future (FP7) joint projects with high potential for the integration of new member states and associated countries. Some information on national maritime research (not detailed) and contacts were available from Bulgaria, Croatia, Hungary, Latvia, Lithuania, Slovakia, Romania and Turkey.

5 MARTEC priority areas

Shipbuilding (new ship types, ship design, ship constructions, production technology, production processes, ship hydrodynamics, ship materials)

Maritime equipment and services (incl. ship systems and ICT)

Ship operation (ship safety and security, shipping services, traffic management)

The safety for passenger ships is already a topic in the ERA-NET TRANSPORT. Oil spill accidents are included in the ERA-NET AMP-ERA.

Human elements (training aspects, education, marine engineering)

Inland water transport (shipbuilding, shipping, equipment and services, human elements)

Intermodal transport (ICT, technical improvements)

Logistics and regulations are included in the ERA-NET TRANSPORT.

Offshore industry (offshore technology, (e.g. design, construction, installation, operation, maintenance and decommissioning of offshore structures for oil and gas production))

Offshore structures for renewable energy (wind, waves, tides, currents). These topics are partly included also in ERA-NETs like FENCO and HY-CO.

Port operation (security systems, ship manoeuvring, cargo handling systems, waste facilities)

Fishing/aquaculture

Environmental impact (anti fouling, ballast water, waste management, wash waves, noise, emission to air)

Polar technology (ice technology and operation of ships and offshore structures)

The general research on this topic is done by the ERA-NET EUROPOLAR.










Countries	DE	NO	FR	FI	PL	SP	DK	NL	UK	ERA-NET
Priority areas										
Shipbuilding	X	X		X	X	X	X	X	X	
Maritime equipment and services	X	X		X	X	X	X	X	X	
Ship operation	X	X		X	X	X	X	X		
Human elements	X					X	X	X	X	
Inland water transport	X	X	X		X		X	X	X	
Intermodal transport	X	X	X	X	X	X	X	X		TRANSPORT
Offshore industry	X	X		X		X	X	X	X	
Offshore structures for ren. energy	X	X			X	X	X	X		HY-CO
Port operation	X	X	X		X	X	X	X	X	
Fishing/aquaculture		X			X	X	X			MARIFISH
Environmental impact	X	X		X	X	X	X	X	X	AMPERA, MARINERA
Polar technology	X	X		X			X	X		EUROPOLAR

Table 1: Priority areas of MARTEC partners (DK* - Programme innovation consortia)

A more detailed description of priority areas for each country is integrated in the report.

6 General maritime programme information

Country	Maritime Programme	Programme Duration	Budget 2007	Programme Owner	Programme Manager
Germany	“Shipping & Maritime Technology for the 21 st century”	2005 – 2010	21 Mio. €	BMWi	PtJ
Finland	MERIKE	2003 – 2007	5 Mio. €	Tekes	AFMI
France	PREDIT	2002 – 2007	300 Mio. €*	MTETM	ADEME, OSEO
Norway	MAROFF	2002 – 2009	8 Mio. €	RCN	RCN
Poland	part of a general programme	open since 2005	19 Mio. €*	MSHE	MSHE
Spain	PROFIT	2004 – 2007	-	MEC, MITyC	INNOVAMAR
Denmark	Innovation Consortia	open since 1995	17,2 Mio. €*	DMA	DMA
Netherlands	new programme	planned 2007	-	MinEZ	SenterNovem
UK	LINK		1,5 Mio. €	DTI	SSA
Bulgaria	yes				
Croatia	yes				
Hungary	no information				
Latvia	part of a general programme	2006-2009	38 Mio. €*		
Lithuania	no information				
Romania	Part of “Excellency in Research” programme	2005-2007	206 Mio. €*	Romanian Ministry of Education and Research	
Russia	part of a general programme	2002-2006	-		
Slovakia	No special programme but Specific tasks are planned	Until 2015			
Turkey	no information				
Ukraine	no information				
Austria	Project: “Binnenschiffahrt” (inland navigation)	2003-2007	1,5 Mio €		
Belgium	no				
Cyprus	no				

Country	Maritime Programme	Programme duration	Budget 2007	Programme owner	Programme manager
Czech Republic	no				
Estonia	part of a general programme	2002-2006	2/3 to enterprises		
Greece	Operational programme for competitiveness	2000-2006		GSRT	
Ireland	Marine Measure RTDI	2000-2006			
Italy	National Industrial research programme in the area of shipbuilding	2005-2008			
Luxembourg	no				
Malta	no				
Portugal	part of a general programme	2005-2010			
Slovenia	part of a general programme				
Sweden	Safety at sea				
Macedonia	Studies (e.g. TIRS, REBIS, SBI)				
Albania	Durres Port Project	planned 2007	17 Mio. € ?		
Andorra	no				
Belarus	no information				
Bosnia-Herzegovina	no information				
Iceland	Research programmes relating to the safety of ships and crews	ships - 2005 crews 1991-2007			
Lichtenstein	no				
Moldava	no				
Monaco	no				
Serbia & Montenegro	Basic Research Programme	2003 -2007	18,5 Mio € (2003)		
	Technolog. Development Programme	2003-2006	12,6 Mio € (2003)		
San Marino	no				
Switzerland	no information				
Vatican City	no				

Table 2: General maritime programme information (* a maritime budget can be included in a general programme)

7 MARTEC – National maritime research policies, priority areas, funding organisations and programme information

7.1 MARTEC partner and observer countries

7.1.1 Denmark

7.1.1.1 National policies

Funding of research, development and innovation in Denmark includes public as well as private initiatives. The only dedicated source of funding of maritime RD&I at present is a private fund, The Danish Maritime Trust Fund. There is no public funding dedicated to maritime RD&I programs or projects. However, it is in principle possible to apply for funding of maritime RD&I activities under all of the various funding programmes described in the following.

The questionnaire has been elaborated for the private fund and two of the public funding programmes, viz. the strategic research programme and the funding of so-called “Innovation Consortia” by the Danish Council for Technology and Innovation. There are ongoing initiatives to form a dedicated maritime RD&I platform/programme under the strategic research programme, using the different funding schemes and incorporating funding from private companies. In addition, “Innovation Consortia” with maritime focus have been successful in the past.

7.1.1.2 Priority areas

Priorities are defined for the private programme, only, and are formulated in the programme objective: “The objective of the trust fund is to financially support initiatives and actions, which serve to develop and bring forward Danish shipping and shipbuilding industry. All projects, which fulfil the objective may be supported. All types of projects may be considered, including research and development projects. Projects with possible effect on shipping and shipbuilding in the future have priority.”

Some projects funded during the first year of operation of this programme are described in the following as example of some of the priorities of the programme.

Danish Center for Maritime Technology: DCMT is formed as cooperation between Danish Technical University and a research organisation with the objectives of attracting more students to the maritime studies at DTU, to perform relevant R&D, and to develop new services and products for the maritime sector. Specific projects include vessel performance optimisation, onboard decision support systems for increasing operational safety, reduction of emissions. The funding is approximately 3,500,000 Euro over a five year period.

Safe Manning: The project aims at developing a methodology for determination of safe manning of cargo vessels in a rational way by modelling the tasks and qualification requirements of personnel on board. The project is undertaken by two research organisations and an authority. Phase 1 is a pilot phase, which runs over 9 months with a budget of 200,000 Euro.

Development of tug simulator: A research organisation in cooperation with a tug operator and a pilot organisation have been granted support to further develop an existing tug simulator to include the very important interaction effects between the tug and the assisted ship in order to increase the realism in training of tug masters and pilots. The project has duration of one year and a budget of 200,000 Euro.

Recruiting Campaign “The Blue Denmark”: The project is co-funded by the Danish Shipowners Association and the Maritime Trust Fund and has a total budget of 1,500,000 Euro for a two year period. The objective is to promote recruitment and education of qualified personnel in all parts of the maritime cluster, at sea and on land. The means are: uniting the entire industry in a joint campaign, increase visibility and profile of career opportunities, establish a common platform for recruitment,

education and job opportunities, all in support of the government growth strategy “Denmark as Europe’s leading seafaring nation”.

Maritime projects have occurred in the public R&D programmes in the past. Two such projects under the Innovation Consortium programme were

- Design in 7 days, where the objective was to develop a methodology for performing the basic design of the vessel within a period of 7 days. Participants were a shipyard, a university and a research institute.
- SeaSense, which had the objective to develop a sensor based onboard decision support system for safe navigation in rough weather. Participants were two shipowners, a university, a research organisation and an equipment supplier.

7.1.1.3 Funding organisations

The public Danish Advisory and Funding System for Research and Innovation includes the following units:

The Danish Council for Research Policy

The council advises the Minister for Science, Technology and Innovation in matters concerning research policy – including the framework of research, the major national and international research initiatives, and the development of national research strategies. The Parliament and other ministers may also ask the Council’s advice. Advice may be given upon request or on the Council’s own initiative.

The Danish Council for Strategic Research

The council supports research in politically prioritised research areas and contributes to strengthening interaction between public and private research. Furthermore, the council is to seek out new research trends and provide professional research advice to the Minister for Science, Technology and Innovation. Private and public institutions can also receive professional research advice.

The council is also responsible for approving the allocation procedures and conducting a professional assessment of the incoming applications in connection with the allocation of government research funds by the individual ministers.

The Danish Councils For Independent Research

The councils provide support to research based on the initiatives – both single-discipline and cross-discipline – of researchers themselves. The councils also provide scientific research advice in all scientific fields for the Minister for Science, Technology and Innovation, the Danish Parliament and Government. The councils consist of a Board of Directors and five scientific research councils.

The Danish Research Coordination Committee

The main task of the committee is to ensure the coordination between all government research funding, whether the funding is allocated at the institutions or under the auspices of public foundations. Furthermore, the committee prepares joint general guidelines for the performance of the funding function of the Councils for Independent Research and the Council for Strategic Research. Finally, the committee provides advice to the Minister for Science, Technology and Innovation as well as the Danish Parliament and Government on research training.

Danish National Advanced Technology Foundation

The foundation’s general objective is to enhance growth and strengthen employment by supporting strategic and advanced technological priorities within the fields of research and innovation. Furthermore, the foundation shall make a special effort to promote research and innovation in small and medium-sized enterprises.

The foundation will pay special attention to applications that fall within the areas of nano-, bio-, and/or information and communication technology, including the interface between these areas.

The Danish National Research Foundation

The foundation is an independent foundation, which aims at strengthening Danish basic research (frontier research) within the Natural Sciences, the Technical Sciences, the Health Sciences, the Social Sciences, and the Humanities.

The Danish Council for Technology and Innovation

The council gives advice to the Minister of Science, Technology and Innovation regarding scheduling and developing the effort to strengthen the future growth and innovation in the business community, and administrates specific initiatives set-aside to the Council by the Minister of Science, Technology and Innovation. Important initiatives are the technological infrastructure (Technological service institutes), Innovation consortia and Science parks.

7.1.1.4 Programme information

Public funded research in Denmark

Recent years public spending on R&D in Denmark amounts to approximately 0,8% of GDP. The spending level is close to the European average but somewhat below the level of public spending on R&D in countries like Iceland, USA, Finland, France and Sweden.

The public R&D funds in Denmark are partly distributed to R&D institutions as institutional block grants and partly to specific R&D project through open calls in order to stimulate competition. 1/3 of the total public R&D funds were distributed through open calls in 2005.

Innovation Consortia Program facts:

Programme name	Innovationskonsortier / Innovation Consortia
Programme owner	Ministry(s)
Web site	
Brochures	
Programme manager	Government agency (ies)
Web site	
Year of programme start	1995
Year of programme end	N.A.
Next programme update	Not planned
Calls and all deadlines of national programme	No. of calls: 2 Annual calls Dates of Deadlines: February/March and October
Project information	www.innovationskonsortier.dk The site is presently (november 2006) under re-construction
List of completed projects	
Funded types of activities	R&D projects: (industrial research, pre-competitive development)
Funded disciplines	All disciplines possible, not just maritime
Funded institutions	Universities: Public and private research institutes: Regulatory bodies: Other: Approved technological service organisations (GTS)
Annual programme budget	2001: 4,4 Mio. € 2002: 13,3 Mio. € 2003: 14,8 Mio. € 2004: 5,8 Mio. € 2005: 8,7 Mio. € 2006: 13,7 Mio. € 2007 (expected): 17,2 Mio. €
Funding type	Grant
Funded cost items	Direct costs: (human resources, equipment, travel expenses, materials, subcontracting) Indirect costs: (overhead)
Lowest funding rate	37 % Different organisations have different funding rate 100% Universities and research institutes 75 % Technological service organisations (GTS) 0% Industry
Highest funding rate	50 %

Strategic Research Programme facts:

Programme name	Strategic Research Programme
Programme owner	Danish Council for Strategic Research
Web site	
Brochures	
Programme manager	Programme committees in the individual prioritised areas or, to a lesser extent, specialist research councils
Web site	
Year of programme start	
Year of programme end	
Next program update	
Calls and all deadlines of national programme	No. of calls: 1 annually, possibility for 2 calls Dates of deadlines: September-October, possibly May-June
Project information	www.forsk.dk (presently, nov. 2006, under re-construction)
List of completed projects	
Funded types of activities	R&D projects: (fundamental research, industrial research) Human Resources: (Scholarship (Research, Information), Researchers recruitment (Public and private R&D centres, Technologists in enterprises and technologic centres, Researchers mobility) Scientific-technical infrastructures: (Construction or extension of R&D centres , Acquisition and installation of equipment) Special actions: (Scientific cooperation, Scientific-technological nets, International Cooperation, Dissemination (Publications, Organization of congresses and seminars, International promotion and technology transfer)
Funded disciplines	Presently none maritime disciplines are covered but efforts are being made to establish a maritime RDI platform/programme. A platform/programme is a prerequisite for funding of projects.
Funded institutions	Universities: Public and private research institutes: Companies:
Annual programme budget	2001: - Mio. € 2002: - Mio. € 2003: - Mio. € 2004: - Mio. € 2005: 40 Mio. € 2006: 40 Mio. € 2007 (expected): 45 Mio. €
Funding type	scholarships/prizes, grant
Funded cost items	Direct costs (human resources, equipment, travel expenses, materials, subcontracting) Indirect costs: (overhead) and other (specify) funding of foreign research teams relocated to Denmark, funding of guest researchers
Lowest funding rate	Companies may be funded, but under all circumstances, a substantial own funding of the research is required
Highest funding rate	Universities and research organisations may be funded up to 100%

The Danish Maritime Trust Fund Program facts:

Programme name	Den danske maritime Fond – The Danish Maritime Trust Fund
Programme owner	Private institution(s)
Web site	
Brochures	
Programme manager	Private institution(s)
Web site	
Year of programme start	2006
Year of programme end	ongoing
Next program update	No plans at present
Calls and all deadlines of national programme	Open
Project information	www.dendanskemaritimefond.dk
List of completed projects	
Funded types of activities	R&D projects: (fundamental research, industrial research, Pre-competitive development) Human Resources: (Scholarship, Researchers recruitment, Other) Scientific-technical infrastructures: Special actions:
Funded disciplines	Shipbuilding, Maritime equipment and services, Ship operation, Intermodal transport, Offshore industry, Port operation
Funded institutions	Universities: Public and private research institutes: Regulatory bodies: Companies: Other: Individuals may be funded as well
Annual programme budget	2001: - Mio. € 2002: - Mio. € 2003: - Mio. € 2004: - Mio. € 2005: - Mio. € 2006: 6,0 Mio. € 2007 (expected): 8,8 Mio. €
Funding type	guarantees / bond, scholarships/prizes, grant
Funded cost items	Direct costs: 50 – 100% Indirect costs: (overhead) 50 – 100%
Lowest funding rate	50 %
Highest funding rate	100 %

7.1.2 Finland

7.1.2.1 National policies

Technology forms an essential part of the Finnish industrial policy and is acknowledged at the highest level of the Finnish government. Key issues concerning technology are regularly discussed at the Science and Technology Policy Council, chaired by the Prime Minister.

Finland is increasingly investing in research and technological development and R&D investment now totals 5.3 billion euros, 3.5 per cent of the Gross Domestic Product (GDP) in 2004. The private sector share accounted for 3.7 billion euros.

The results of R&D investment are clearly visible in the structural change of the industry and in the wide range of Finnish high-tech exports.

The electronics and electrical industry, the forest industry and metal and engineering industries are the three strong sectors of the Finnish national economy. Tekes' role is to ensure the competitiveness of traditional industrial clusters, and at the same time, to create and oversee the growth of new industry.

The Ministry of Trade and Industry oversees Finland's technology policy. On an operational level Tekes independently promotes and coordinates R&D projects and programmes, in addition to maintaining cooperation within international networks.

Tekes works in collaboration with several partners within the Finnish innovation environment. For basic research, the main agency of implementation is the Academy of Finland. At regional level, the technology policy is implemented by the T&E centres (Employment and Economic Development Centres).

From a purely business perspective, the key players are Sitra (the Finnish National Fund for Research and Development), Finnvera (Export Credit Agency), Finpro (Association for internationalisation services) and Invest in Finland.

The National Technology Agency (Tekes) as one of the two main research funding agencies in Finland supports the Finnish participation in international, especially EC funded research projects. This support starts from making the proposal as a certain percentage (40-60 %) of the costs in participation of the proposal preparation is covered. There is an overall maximum for this kind of support. Tekes also supports quite willingly feasibility studies which are done before a full application for a subject is made. The typical ways Tekes supports international activities are (www.tekes.fi):

- Organised exchange of information
- Organised information gathering
- Joint project
- Exchange of researchers to Finland
- Purchase of industrial or patent rights.

The Academy of Finland supports the mobility of researchers in various ways. Finnish researchers are encouraged to work abroad by grants to do research in foreign research organisations. Also exchange of researchers is encouraged and there is support for foreign researchers to work in Finland. Finally the post graduate schools funding post grads are urged to invite foreign lecturers.

Apart from these funding means, both funding organisations support strongly participation in EC funded projects by acting as national hubs towards different activities of the 7th Framework Programme. This support includes partner search, guidance in proposal compilation etc.

To summarise, the Finnish RTD funding encourages the international research but concentrates on supporting the Finnish partners in these international research projects. The funding can be seen to encourage the Finnish organisations to join international networks. The general rule is that no funding flows across the Finnish borders. Funding is provided to develop international projects and for the international projects funding is provided to support and encourage mobility. This is done by supporting Finnish scientists going abroad but also by giving support for foreign scientists working in

Finland. Thus, the ideal international joint project is such where a number of partners, each having secured their own funding, come together to form a research consortium.

7.1.2.2 Priority areas

A. SeaTech 2000+ - Research Programme 2000 – 2003 (National Technology Agency)

Ship concepts:

- new hull concepts for cruise liners where the superstructure participates in the longitudinal strength, Sea keeping characteristics of very broad vessels
- high speed Short Sea Shipping vessels with podded propulsion and new GA
- ship fire safety and improved damage stability in passenger vessels
- development of Green Ship solutions for environmental safety

Design methods and system solutions:

- development and adoption of the best suited 3D-CAD for Finnish shipyards taking into account all phases in ship design
- application of the 3D-CAD to ship systems design, GA design, hydrodynamic design and weight control

The changing organisation of shipbuilding:

- mechanisation and robotisation of the production and the effect of increasing requirements for exact measures
- simulation of ship hull steel production
- logistics of materials and personnel in ship outfitting stage, and the control of fire load during the outfitting
- replacing wood and more specifically teak with other materials in ship furnishing

B. MERIKE - Research Programme 2003 – 2007 (National Technology Agency)

As a result of the pre-study, the focus of the programme has been generally on three subject areas:

- earning ability of ships
- reducing production costs
- cutting the time of delivery

The programme has been realised through development projects that have had focused on the following themes:

- networking in the shipbuilding process between the different operators
- efficient design in a scattered surroundings, creation of a design network having efficient procedures, document handling processes and material handling
- an efficient use of information technology in the marine industry in taking care of all product information during the ship life time
- improved transport efficiency using new concepts and automatization of the operation, reliability of ships and ship systems and sustainability in marine technology with new low emission fuels and improved recycling and handling of waste
- challenges of increased networking in ship production including more extensive standardisation, production control, new cutting and joining techniques, automatization of outfitting and requirements new materials pose
- analysis of the earning ability of ship owners' products and the life cycle support shipyards can offer new roles a shipyard can take.

C. VAPI CFD Technology Programme 2000 – 2003 (National Technology Agency)

The focus in the marine technology has been on the turbulence models and the effect of the free surface in modelling the flow around ship hull.

D. KENNO Lightweight panels - Research Programme 1999 – 2002 (National Technology Agency)

The target of the KENNO technology programme for lightweight panels was to take hollow-core structures into use to a significant effect in 5-10 companies. The programme aimed at starting up

industrial production of the panels and promoting their use. Implementation of the programme target was meant an estimated EUR 50-90 million of new turnover in a field where, at that time, there was hardly any industrial activity at all. The use of laser welding in all steel sandwich panels was one of the topics of the programme.

E. BIREME – Baltic Sea Research Programme 2003 – 2005 (The Academy of Finland)

The objective of the Baltic Sea Research Programme (BIREME) was to deepen the understanding of conditions for science-based management of environmental issues in the Baltic Sea. The programme focused on research aiming at preventing problems caused by eutrophication and harmful substances as well as on maintenance of biodiversity and sustainable use of marine resources. The themes of the programme were:

- Analysis of change in the Baltic Sea and its drainage basin
- Interactions between the land, coast, air and open sea
- Social and environmental interactions in the Baltic Sea region

The projects and consortia of BIREME have been organised in six thematic sectors. The sectors in the figure below refer to percentages of total funding.

H. SISU 2010 Innovative Manufacture 2005-2009

The SISU 2010 Innovative Manufacture technology programme develops new innovative thinking in manufacture and related basic competences in the Finnish manufacturing industry by developing new production methods and manufacturing technologies for the manufacture of discrete products in the factory of the future. The programme has a total volume of 93 million euros in years 2005-2009.

7.1.2.3 Funding organisations

The main research funding agencies in Finland are the Academy of Finland (AF) and the National Technology Agency (Tekes). AF funds research projects based on application, the deadline being in mid-May. The funding covers all the costs following roughly the AC model in EU funding. Tekes, on the other hand, accepts applications continuously i.e. without a deadline. Tekes funds 30-50 % of the total budget (based on a FC cost model) for industry and up to 80 % of the budget for universities doing basic research.

Both these main RTD funding agencies in Finland favour strongly international links, although with slightly different methods. At Tekes, research projects containing a foreign partner are favoured in the selection process even if basically no funding is assumed to cross the Finnish border. This preference is shown in numbers i.e. in 2002 51 % of the overall funding (381.3 M€) was given to projects including international co-operation. The same applies to the Academy of Finland, even if here the more important measure of merit in the selection process is the scientific content.

The role of these two main funding agencies in the Finnish RTD is central. This applies also to the RTD in the maritime sector. The RTD in marine technology is concentrated in the Helsinki University of Technology (HUT) and in the Technical Research Centre of Finland (VTT) – apart naturally from the industry and consultants. Some other organisations do research related to oceanography (the Finnish Institute of Marine Research), maritime law (University of Turku) and maritime finance (Turku Business School).

The RTD funding in HUT and VTT comes partly from the funding agencies mentioned above. The overall figures of HUT serve as an example. The university received 53 % of its funding from outside i.e. 47 % came from the state budget. Out of the outside funding, Tekes provided 23 % and Academy of Finland 11 %. These overall figures are very similar for the maritime sector at the university. VTT obtains 31 % of its income from the state budget and 36 % out of the outside funding from the public sector including as a major funder Tekes. The EU-funded RTD projects play an even more increasing role in the outside funding of both these organisations. These funding figures show overall that the RTD funding from the industry and government organisations is substantial. This emphasises the strong co-operation between the industry and research organisations in Finland in the overall field of technology. Again this is similar in the field of maritime technology.

7.1.2.4 Programme information

The main funding agencies of RTD in Finland are the National Technology Agency (TEKES) and the Academy of Finland (AF). Both these organisations fund research projects. The funding is based on applications which are evaluated based on scientific merit in AF and based on potential application in TEKES. TEKES funds thus more technologically oriented projects in the industry, research organisations and universities. If the proposer is a research organisation or a university, it is necessary that industry is also participating in the project. This way the route to applications is kept open. The Academy of Finland funds research projects mainly in universities. These projects should have scientific targets and thus it is not necessary to have industrial partners in the projects. The Academy of Finland funds also research fellows (three or five year positions located in some university laboratory).

Programmes related to mechanical industry in general:

Both these main RTD funding agencies have programmes of more focused RTD. These programmes concentrate on many fields and as an example, the on-going programmes in TEKES in mechanical industry are:

MASINA - Mechanical Engineering into new era 2002-2007 (Tekes):

Tekes has started a technology program for mechanical engineering – Masina.

Clean Surfaces (PINTA) 2002-2006 (Tekes):

In January 2002 Tekes started a new National Technology Program on surface sciences called Clean Surfaces (PINTA in Finnish). The primary goal of this program is to create a comprehensive understanding on the basic phenomena in the chemistry and physics of clean and dirty surfaces.

The basic characteristics of this program are Multidisciplinary International Cooperation Long-term research Net-working Impact on the Finnish industry. The total budget of this program is 27 Meur.

SISU 2010 Innovative Manufacture 2005-2009 (Tekes)

Programmes more closely related to marine technology

At TEKES there have been several research programs which are related to marine technology. Some of the finished programs are:

KENNO – Lightweight panels 1998-2003 (Tekes):

Programmes specifically devoted to marine technology

TEKES has been also funding some programmes in maritime technology, e.g. SeaTech 2000+. A programme for marine technology (MERIKE) has started in spring 2003. These were programmes run by the maritime industry and coordinated by the Association of Finnish Marine Industries (AFMI).

SeaTech 2000+:

This research programme was realised during the years 2000-2003. The objective of SeaTech 2000+ was to support a new co-operation culture between the different parties in the marine industry in Finland so that it would also make the joint R&D more effective. The budget of the programme was about 4 million euros.

MERIKE – Technology Programme of the Marine Industry:

This programme is, so far, the most extensive national proposal for the Finnish marine industry. The budget is in 2006 40 million euros and the programme is scheduled for the years 2003-2007. The aim of MERIKE is to prepare the Finnish marine industry for a new way of operating that is needed to maintain and to increase the volume and profitability of the industry. The Association of Finnish Marine Industry (AFMI) and the National Technology Agency of Finland (Tekes) are responsible for the realisation of the programme. The essential difference between MERIKE and the previous programmes conducted in Finland is that within this programme networking will be emphasised more than before.

The Academy of Finland has similarly several research programmes. An example of these in the area of technology is:

SUNARE 2001-2004:

The research program on Sustainable Use of Natural Resources (Sunare) aimed at producing research knowledge to improve decision making on natural resources, developing multidisciplinary research on sustainable use of natural resources, enhancing the dissemination of research results from the researchers to the users of research results, creating new national and international contacts in the research on sustainable use of natural resources and improve and diverse the use and nurturing of natural resources. The program aimed at co-operation with other research programs of the field and supporting the concept concentrated clusters.

The budget of the research program was about EUR 9,25 million during the years 2001-2004. Sunare is financed by the Academy of Finland (EUR 8,07), Ministry of Agriculture and Forestry (EUR 0,84 million), and Tekes, the National Technology Agency (EUR 0,25 million). The program is co-ordinated by the Department of Forest Ecology of the University of Helsinki. (http://honeybee.helsinki.fi/mmeko/index_eng.htm)

There is a general description of the program in the pages of Academy of Finland (http://www.aka.fi/content_eng.cfm?frame=users/115/1940.cfm)

PROACT Proactive Computing Research Program 2002-2005:

The funding of the program is organized in collaboration with Tekes, the National Technology Agency and the French Ministry of Research and New Technologies. The Academy of Finland funds 13 projects with 5.7 million euros and the French Ministry of Research and New Technologies funds the French partners in three French-Finnish consortia with 1.84 million euros. Tekes participates in the funding of the Finnish partners in one French-Finnish consortium.

MERIKE Programme facts:

Programme name	MERIKE
Programme owner	Public body(ies)
Web site	
Brochures	
Programme manager	Association of Finnish Marine Industries
Web site	http://www.techind.fi/
Year of programme start	2003
Year of programme end	2007
Next programme update	2007
Calls and all deadlines of national programme	open calls
Project information	http://www.tekes.fi/merike/
List of completed projects	
Funded types of activities	R&D projects: (industrial research, pre-competitive development) Scientific-technical infrastructures: (Acquisition and installation of equipment, Communication nets) Special actions: (Scientific cooperation, Scientific-technological nets, International Cooperation, Assistance in proposal preparation, Organization of congresses and seminars)
Funded disciplines	Shipbuilding, maritime equipment and services, ship operation, intermodal transport, offshore industry, environmental impact, polar research
Funded institutions	Universities: 15 % Public research institutes: 5 % Companies: 80 %
Annual programme budget	2001: - Mio. € 2002: - Mio. € 2003: 5 Mio. € 2004: 8 Mio. € 2005: 10 Mio. € 2006: 12 Mio. € 2007 (expected): 5 Mio. €
Funding type	loans, grant, mixed (loan and grant)
Funded cost items	Direct costs: (human resources, equipment, travel expenses, materials, subcontracting, intellectual property protection) Indirect costs: (overhead)
Lowest funding rate	25 %
Highest funding rate	80 %

7.1.3 France

7.1.3.1 National policies

Diagnosis, a national maritime research policy traditionally weakly structured.

In France maritime public research is in particular directed on marine resources which are not in the scope of Martec, ports and terminals (dredging, infrastructure, transshipment and security) and shipping (ICT, intermodality, markets, safety and security). As for shipbuilding and offshore energy technologies, these topics of maritime research seem to be mainly coped with by the private research sector.

Various ministries are concerned with the maritime research policy.

The Ministry for Transport, Infrastructure, Tourism and the Sea is in charge with the preparation and the development of the French maritime policy.

On one hand its Directorate for Research and Scientific and Technical Affairs (DRAST) which is in charge with the research policy ensures the interdepartmental secretariat of the research programmes in surface transport (PREDIT) and on civil and urban engineering (RGCU).

On the other hand the General Maritime and Transport Directorate (DGMT) of the ministry applies the intermodal policies for land and maritime transport and ensures its quality, reliability and the safety of users. Shipping, ports and terminals are maritime research topics which DGMT studies.

Traditionally the national maritime policy led by the **Ministry for the Economy, Finance and the Industry** was focused on aids to the shipbuilding industry. Its Directorate General for Enterprise (DGE) now funds **Competitiveness Clusters** via the Fund for Enterprises Competitiveness (FCE).

The French government created in 2006 Competitiveness Clusters in order to group together public and private players in innovative sectors and so strengthen the competitive force of French companies. Researchers and enterprises are mobilised, within a public/private partnership, to work on new projects, resulting in innovative advances, economic efficiency and job creation, which should enable those players involved to attain leading positions in their field.

The main maritime Competitiveness Cluster is “Mer” (Sea). It encompasses two regions, each with a subcluster, with interregional coordination and steering committee:

- ▶ Brittany: « Pôle MER BRETAGNE »
- ▶ Provence-Alpes-Côte d’Azur: « Pôle MER PACA »

It is dedicated to maritime safety and security, engineering, maintenance and shipyard services, leveraging marine energy sources, recycling marine biological resources, environment concerns and coastal engineering.

These two geographical clusters also concentrate almost all France’s naval tests.

Another competitiveness clusters carry out research in maritime technologies in the region Pays-de-Loire. EMC2 focuses on materials for different application including shipbuilding.

The General Direction of Research and Innovation of the **Ministry delegated to the Higher Education and Research** works out the policy of the state research by proposing orientations and priorities and takes care of its implementation.

Eventually, the **Ministry for Agriculture and Fisheries** focuses on marine resources.

Nevertheless maritime research has not been up to now a priority area for the research policy.

For example, there is no French research program dedicated to maritime transport and the inland navigation component needs to be developed.

7.1.3.2 Priority areas

Competitiveness Clusters

The Competitive Cluster “Mer” is focused on maritime safety and security, engineering, maintenance and shipyard services, leveraging marine energy sources, recycling marine biological resources, environment concerns and coastal engineering.

The aim of “Pôle Mer Bretagne” (Brittany) is to develop equipment and services offering significant technological ruptures, in order to put on the world markets of the advanced solutions in response to the emergent needs for safety and durable development in 5 fields:

- maritime safety and security: monitoring and control of the maritime approaches, safety of the sensitive installations (ports, punt forms offshore oil rig...),
- engineering, maintenances and services naval: E-maintenance, modelling and dynamic follow-up of the state of the ships, improvement of the productivity by the development of intelligent robots,
- exploitation of the marine energy resources: offshore oil rig oil exploitation, underwater robots of intervention, exploitation of the energy of the marine currents, the waves, the tides and the wind,
- exploitation and valorisation of the marine living resources: new molecules resulting from the marine biodiversity, tools and services for a durable fishing, new dies and control of the environmental risk in aquiculture,
- coastal environment and genius: monitoring and modelling of the marine and coastal environment, installation of the littoral, coastal infrastructure respecting the environment

“Pôle MER PACA” (Provence-Alpes-Côte d’Azur) Competitiveness cluster brings together key players from the worlds of industry, research and education working in the areas of safety and security and in sustainable development.

They are united in their ambition

- to become a leading player in "homeland security",
- to develop innovative products and services for the shipping sector
- to make the region an international centre of expertise in marine sciences and related environmental risk management.

7.1.3.3 Funding organisations

In France, the research policy is funded by a multiplicity of actors. It generally results from an intergovernmental co-operation. The principal actors for funding maritime research are actually the Directorate-General for Companies (DGE) of the **Ministry for the Economy, Finance and Industry** and to a lesser extent the Directorate for Research and Scientific and Technical Affairs (DRAST) of the **Ministry for Transport, Infrastructure, Tourism and the Sea**. The **Ministry in charge with Ecology and the durable Development** and the **Ministry delegated to the Higher Education and Research** could also play an important role in maritime research funding.

Ministries

The Ministry for the Economy, Finance and Industry supports industrial R&D collaborative projects via the Agency for Industrial Innovation (AII) and the national Agency for Research (ANR) and to innovative SMEs projects via OSEO-ANVAR.

The Ministry for Transport, Infrastructure, Tourism and the Sea with the three ministries in charge of Research, Ecology and the Industry, as well as the agencies ADEME and OSEO fund the surface transport research programme PREDIT.

Agencies

ADEME is a publicly-owned establishment placed under the joint supervision of the three ministries in charge with Ecology and the durable Development, Industry and Research. Its missions are to cause, animate, coordinate, facilitate or carry out operations having for object the environmental protection and the control of energy.

The National Agency for Research (ANR) was created on February 2005 for funding research projects. Its objective is to increase the number of research projects, coming from all the scientific community. ANR is addressed to the publicly-owned establishments of research and the companies with a double mission: to produce new knowledge and to support the interactions between public laboratories and laboratories of company by developing the partnerships.

OSEO was created in 2005, by bringing together ANVAR (the French innovation agency) and BDPME (SME development bank), around a mission of general interest supporting the regional and national policies. Its mission is to provide assistance and financial support to French SMEs and VSEs in the most decisive phases of their life cycle: start up, innovation, development, business transfer / buy out. By sharing the risk, it facilitates the funding of SMEs by banking partners and equity capital investors. OSEO covers four areas of activity:

- Innovation support and funding: for technology transfer and innovative technology-based projects with real marketing prospects.
- Funding investments and operating cycle alongside the banks, through OSEO bdpme.
- Guaranteeing funding granted by banks and equity capital investors.
- Performing studies (SMEs Observatory) and providing services to SMEs.

The Agency for Industrial Innovation (AII) was set up in 2005 to promote the development of industrial activities of high technology with two objectives: high qualified employment and exports. It selects and helps initiatives coming from enterprises and that aim to design and produce a new and innovating product, implying a technological break. The Agency must initiate, identify and select mobilising programmes for industrial innovation, contribute to their funding and carry out the control and the periodical evaluation of these programmes.

7.1.3.4 Programme information

There is still no specific programme at national level but we can currently notice a favourable situation. The constitution by members (public and private sectors) of the European technology platform Waterborne^{TP} of a national working group (the first meeting proceeded in October 2006 under this name) and the French participation to ERA-NET MARTEC are good signs of the willingness to build up a structured maritime research policy.

An important implementation of this new policy could be for example the widening of the field of the surface transport PREDIT to maritime and inland navigation topics or the setting up of a specific maritime programme.

As developing public-private partnerships for R&D is a priority for the young **National Agency for Research**, we can expect this new agency contribute to build up a national maritime programme.

There is no specific maritime programme at national level in France but there is a power escalation of the Surface Transport Programme (PREDIT) for maritime and waterways sectors. Moreover the structure of research sector in France which was changed in 2005 can be seen as a good sign for the implementation of a national maritime programme.

PREDIT is a programme of research, experimentation and innovation in land transport. By stimulating cooperation between the public and private sectors, this programme aims at encouraging the creation of transportation systems that would be safer and economically and socially more effective. research, development and innovation programme in surface transport (PREDIT) and that of the technological network of civil and urban engineering research (RGC&U). The scope of **PREDIT** includes harbour hinterland, river-sea transport, intermodality and now the motorways of the sea.

Intermodality and motorways of the Sea are two important topics studied in the PREDIT. Maritime and waterway harbour structures are thematics studied in RGC&U program.

PREDIT Programme facts:

Programme name	Programme de recherche et d'innovation dans les transports terrestres (PREDIT)
Programme owner	Ministry(s), Government agency (ies)
Web site	
Brochures	
Programme manager	Ministry(s)
Web site	
Year of programme start	2002
Year of programme end	2007
Next programme update	
Calls and all deadlines of national programme	Dates of deadlines: 2002-2006
Project information	http://www.predit.prd.fr/predit3/menu.fo?cmd=englishVersion
List of completed projects	
Funded types of activities	R&D projects: (fundamental research, industrial research, pre-competitive development) Human Resources: (Scholarship, Research, Information) Special actions: (Scientific cooperation, Scientific-technological nets, International Cooperation, Dissemination & Exploitation of Results: (Publications, Organization of congresses and seminars))
Funded disciplines	Inland waterways facilities, Inland shipping, Intermodal transport, Port operation
Funded institutions	
Annual programme budget	Total budget : 300 M€ for 2002-2007
Funding type	Grant
Funded cost items	
Lowest funding rate	
Highest funding rate	

7.1.4 Germany

7.1.4.1 National policies

Germany possesses an efficient infrastructure for basic and applied research and is among the top nations for inventions. In comparison with other countries, Germany has the potential to improve the transfer of research findings into marketable products, the development of innovative and knowledge-intensive services and the area of education and training.

The aim is to bring about sustainable improvement in the conditions for innovation and technological progress, and in this way to promote the innovative capabilities of the small and medium-sized sector in particular. The key points for this are outlined in the Federal Ministry of Economics and Technology's (BMWi) concept description for a forward-looking technology and innovation policy. Against the background of global economic and technological change, the innovation policy of the BMWi is becoming increasingly international in its orientation. The BMWi works in close collaboration with its partners in the European Commission, the other EU Member States and with some other countries. As globalisation continues, the promotion measures are increasingly oriented towards the demands of an internationally active economy.

International co-operation is therefore considered to be the essential key for the exploitation of globally available knowledge and increasing of own efficiency. Furthermore, international co-operation is considered politically as being "lived partnership". By international co-operation in research Germany takes responsibility for solving global problems and contributes to the economic, social and cultural development of co-operation partners. Increasing the competitiveness of the German science and research system and further intensifying the European and international relationships in science and research remains a paramount goal. Of particular interest are:

- Close co-operation within Europe
- Bi-lateral treaties on scientific and technological co-operation (WTZ) with more than 50 countries world wide
- Engagement in multi-national organisations
- Encouragement of international experiences of students and young scientists
- European integration

Co-operation within Europe covers the active participation in European research. Especially the BMBF (Federal Ministry of education and research) and BMWi are encouraging German participants of the framework programmes and installed more than 60 national contact points and other advisory services.

In basic research (oceanography, polar research, and climate research) the research community is very well integrated in international programmes, projects, organisations and frameworks. The most general criteria for public funded research in the maritime sector are that funding is provided for projects which contribute to improving the international competitiveness of German shipbuilding and maritime industry. This and the more specific research aims do not explicitly exclude trans-national projects.

Based on discussions with different stakeholders it can be stated that, at least in the maritime sector, the German funding agencies are quite conservative in the implementation of Article 169. The "International Co-operation" and the planning, administration and co-ordination of maritime programmes or other programmes with some maritime entry points are each executed on behalf of the BMWi by different organisations.

Eligible for funding are all commercial and non-commercial institutions. Depending upon the subject, these include in particular institutions of higher education, non-university research establishments and similar institutions, business enterprises, territorial authorities and associations. In some cases, calls for proposals are addressed to specific groups of potential applicants. The focus is on projects which involve co-operation by several partners who, in an interdisciplinary approach and on the basis of shared responsibility, develop highly innovative solutions for the above-mentioned funding activities and/or try to demonstrate their suitability for practical application and which, by involving or co-operating with science, industry and the planning sector, aim to ensure utilisation of the research results on the broadest possible scale.

7.1.4.2 Priority areas

Regional funding programmes are open to different topics. There are programmes of the Federation of Industrial Co-operative Research Associations 'Otto von Guericke' e.V. (AiF) supporting joint industrial research. Special maritime priority areas are defined in strategic research programmes of the German government. The actual research programme of the BMWi, "Shipping and Maritime Technology for the 21st Century (2000–2004)" was presented to the public in April 2000. The research programmes and thematic priorities in this research area are directly derived from research objectives which are formulated in the earlier concept. Three thematic areas are covered by the maritime research concept:

- research and development in ship technology,
- shifting of transport to short sea shipping and inland waterways,
- research and development in marine technologies.

Most topics are integrated as defined in MARTEC (shipbuilding, maritime equipment and services, ship operation, partly human elements, inland water transport, intermodal transport, offshore industry, partly offshore structures for renewable energy, port operation, environmental impact, polar technology).

Another special initiative of BMWi is a limited programme called „innovative shipbuilding secures competitive jobs“. Eligible for funding are new types of ships (development, design and construction). Furthermore growth concepts for new components and new procedures in ship innovation can be funded as well as innovative products for industrial use. Also fundable are new concepts in development and introduction of innovative processes and procedures for planning, construction, manufacturing and design. The funding is limited to 20 % of eligible costs. Funding has to return in cases of further use of the innovation.

One of the latest initiatives of the German government is the "High-tech strategy Germany". With this initiative additional funding for the maritime programme "Shipping and Maritime Technology for the 21st Century (2005–2010)" is available. Special priority areas for shipbuilding and maritime technology are: use of new materials, optical technologies, information and communication technology, virtual ship design and simulation of shipbuilding production, mechatronic components, fuel cell technologies for underwater vehicles and satellite navigation systems to improve ships safety.

7.1.4.3 Funding organisations

Ministries

At the federal level, the former BMWA, now the BMWi (Federal Ministry for Economics and technology) is responsible for all innovation policy and industry-related research, supervising not only specific innovation programmes, mainly geared towards SME, but also a couple of industry-oriented research institutes. The BMBF (Federal Ministry of Education and Research), on the other hand, is mainly responsible for the federal science and research policy, administering most federal research institutes, co-financing many institutes jointly with the state, and responsible for all kinds of research and science supportive schemes. All states have a science and technology policy of their own, often shared by two ministries, similar to the structure at the national level. The states have the main competency for the organisation of state universities.

As a rule, support is provided in the form of non-repayable grants. Public funded research in Germany is organised through a number of Funding organisations, foundations, associations and project executing organisations.

German Research Community (Deutsche Forschungsgemeinschaft, DFG)

For academic research in Germany the DFG has a prominent role. The DFG is the central self-administration of science in Germany. The major duty of the DFG is to support research, where funding is mainly provided to universities. Further tasks are supporting co-operation between researchers, to support young scientists, consultancy of parliaments and authorities in scientific queries and the ministration of international research relationships. The DFG is financed by the federal government (58 %) and the federal states (Länder, 42 %). Funding is provided for humanities/social sciences, Biology/medicine, science and engineering. The total budget in 2005 was about 1,3 billion

Euro. Other organisations with minor relevance to the purpose of this report: The German Service for academic exchange (Deutscher Akademischer Austauschdienst, DAAD), Alexander von Humboldt Foundation, German Foundation of peace research and organisations for talents support.

The Federation of Industrial Co-operative Research Associations 'Otto von Guericke' e.V. (AiF)

Association of Industrial Research Organisations (registered association) forms an important part of the research scene. The AiF is a commercial umbrella organisation comprising around 107 industrial research organisations. The main responsibility of the AiF is to support joint industrial research. Public funding is used to support projects relating to applied research that takes account of the practical needs of small and medium-sized undertakings. The co-operative research work of these is funded by the Federal Ministry of economics and technology (BMWt). Typically AiF-Projects are located between pre-competitive basic research and applied industrial research. A number of AiF programmes provide chances for the maritime sector.

Project management organisations

Project executing organisations are located at e.g. Helmholtz centers or other qualified institutions which execute the technical and administrative management related to public funded research. Additionally they provide support in planning, analysis and evaluation of programmes, conferences and international co-operation. The project executing organisations are authorised by the BMBF or BMWt to prepare research funding and even to take final decisions within a dedicated framework. The two project executing organisations with major relevance for the maritime sector are Project Management Organisation Jülich (PtJ) and TÜV Rheinland.

Project Management Jülich (PtJ):

Project Management Jülich (PtJ) undertakes the project management of support programmes and research priorities for various contractors: above all for the Federal Ministry of Education and Research (BMBF), the Federal Ministry of Economics and Technology (BMWt), the Federal Ministry for the Environment (BMU) and also federal state ministries.

The maritime research areas shipping and maritime technologies as well as oceanography and polar research are in the responsibility of the PtJ-MGS.

TÜV Rheinland:

The TÜV Rheinland undertakes the project management in transport and mobility.

In addition to R&D funds from BMBF and BMWt through e.g. PtJ, TÜV Rheinland and Aif there are certain other foundations which on a case to case basis support maritime research work. Such funds are typically used for production technologies, structural research and IT-technologies.

Federal Office for economics and export control (BAFA)

The BAFA is the management organisation for the BMWt special initiative „innovative shipbuilding secures competitive jobs“.

7.1.4.4 Programme information

There are several initiatives with broader range in R&D funding (e.g. promotion of economic development, funding programme „innovative shipbuilding secures competitive jobs“, the “High tech strategy Germany”) and regional calls. Maritime programs for structurally weak areas are developed to strengthen primarily these regions as well as small and medium enterprises.

The main programme for the funding of German maritime technology is the research programme „Shipping & Maritime Technology for the 21st century“. The first edition of the research programme (2000 to 2004) was evaluated in 2004. Because of its relevance it is still valid in its entirety for the funding phase 2005 to 2010. With the programme a broad range of topics can be covered further by R&D. Projects with a high complexity of maritime products and interdisciplinary for shipbuilding and maritime technologies can be integrated as well as projects, which improve the efficiency, safety and

environmental protection in shipbuilding, shipping and maritime technologies. The structure of the programme is divided into three main topics.

Research and development in shipbuilding technology

Improvement of ships as traffic carrier

- Development of new ship types/improved ship constructions
- Advancement of ship hydrodynamics
- Improvement of ship safety
- Increased reliability of ship operation
- Decrease of the noise load and oscillation features
- Environmental protection

Increase productivity of shipyards

- Development of software-based tools for the production process
- Reduction of ship phases
- Standardisation and modularity of construction units/groups
- Details manufacturing, new adding techniques

Movement of transportation to offshore waters and inland water ways

- Faster inland waterway shipping
- Ship constructions for existing width of lock chambers/bridge heights
- Applications of telematics for inland waterway shipping
- Ships for coastal and hinterland traffic and bulk carrier
- Cargo handling

Research and development in maritime technologies

- Offshore technology
- Maritime environmental technology
- Ice technology

	Fundamental R&D	Industrial R&D	Pre-competitive dev.
2005			
2006			
2007			
2008			
2009			
2010			

**Shipping & Maritime
Technology for the
21st Century**

Table 2: Funded types of activities - Shipping & Maritime Technology - Germany

Shipping & Maritime Technology for the 21st century Programme facts:

Programme name	Shipping & Maritime Technology for the 21 st century (Schifffahrt und Meerestechnik für das 21. Jahrhundert)
Programme owner	Federal Ministry of Economics and Technology (BMW i)
Web site	http://www.bmwi.de/BMWi/Navigation/Technologie-und-Innovation/Technologiepolitik/schifffahrt.html
Brochures	http://www.bmbf.de/pub/schifffahrt.pdf
Programme manager	Forschungszentrum Jülich GmbH – Projektträger Jülich (PtJ) [Government agency]
Web site	http://www.fz-juelich.de/ptj/schifffahrt-meerestechnik/
Year of programme start	2005
Year of programme end	2010
Next programme update	2010
Calls and all deadlines of national programme	Permanent open call
Project information	http://foerderportal.bund.de
List of completed projects	http://oas2.ip.kp.dlr.de/foekat/foekat/foekat
Funded types of activities	R&D projects (fundamental research, industrial research, pre-competitive development)
Funded disciplines	Shipbuilding, maritime equipment and services, ship operation, human elements (partly), inland water transport, intermodal transport, offshore industry, offshore structures for renewable energy (partly), port operation, environmental impact, polar research
Funded institutions	Universities: 27 % (2000 – 2004) Public and private research institutes: 19 % (2000 – 2004) Companies: 54 % (2000 – 2004)
Annual programme budget	2001: 17,5 Mio. € 2002: 15,3 Mio. € 2003: 15,4 Mio. € 2004: 15,2 Mio. € 2005: 13,2 Mio. € 2006: 12,6 Mio. € 2007 (expected): 21,5 Mio. €
Funding type	grant
Funded cost items	Direct costs (human resources, equipment, travel expenses, materials, subcontracting, intellectual property protection, taxes (universities: VAT – except for R&D orders), indirect costs (overhead)
Lowest funding rate	25 %
Highest funding rate	100 %

7.1.5 Netherlands

7.1.5.1 National policies

The Ministry of Economic Affairs aims to make the Netherlands one of the most attractive knowledge economies for innovative development. That is why the government, despite the difficult budgetary situation, is investing € 800 million in education and knowledge. But money alone is not enough. It is also a question of what trade and industry and knowledge institutions can do themselves to contribute to a greater innovative capacity. A coherent strategy and the input of all parties involved are therefore essential.

New policy measures in the field of innovation are related to process innovation and small and medium-sized enterprises. The industrial business community can achieve significant productivity improvements by facilitating process innovation. Problems encountered in introducing and using new technology often obstruct the modernisation of processes. To improve productivity, the Netherlands organises especially production processes in an ever-smarter way. The cabinet has extended the Research & Development Work Act to process innovation.

The Netherlands generally has a strong public knowledge infrastructure (universities, knowledge institutions, etc). But insufficient interaction exists between the public knowledge infrastructure and companies' demands and requirements for knowledge.

A greater emphasis has been placed in policy on better utilisation of knowledge by small and medium-sized enterprises. This is done by an experiment with innovation vouchers. Such a voucher enables enterprises to purchase knowledge in a simple way from a public knowledge institution and submit research questions. If the experiment is a success, it will be enlarged.

One of the three main lines of the new Dutch industry policy is to boost innovations. A generic innovation policy stimulates the modernisation of all companies. As an extension to this, the government must support innovation focal points, whereby excellent companies and knowledge institutions, including those operating regionally, can jointly capitalise on opportunities for modernisation. This is in line with recent recommendations made by the "Innovation Platform" concerning the support of key areas.

In 2003 the innovation platform has been established by the government. The innovation platform has designated privileged areas which can make an important contribution to the sustainable increase of the Dutch economy. Key areas are: flowers & food, high tech systems and materials, water, creative and chemical sector.

7.1.5.2 Priority areas

The Dutch Ministry of Economic Affairs would like to develop together with entrepreneurs innovation programmes on promising areas in Dutch economy which are internationally competitive.

In these innovation programmes entrepreneurs together with knowledge institutions identify the research themes within a promising area. For these themes specific research subjects are described. If that is clear, other companies and institutions are identified which can be involved in the further development of these themes. The result is a better focus of the innovation programme. The ministry of Economic Affairs supports these activities, but the lead is in hands of the entrepreneurs.

After the focus being made the parties write a common vision and strategic agenda for this focus. What are threats and opportunities? What will be the common position of the participating parties in the future? Which goals must have been achieved? Which steps are necessary to achieve these goals?

The vision and strategic agenda will be judged by the minister of Economic Affairs. The minister decides if and how the government can support to the realisation of the strategic agenda. A commission with independent experts (industry, science, public) advises the minister.

If the minister gives its approval to the vision and the strategic agenda, entrepreneurs and institutions can develop this agenda further to an innovation programme. Entrepreneurs indicate what their

common (financial) contribution to the innovation programme will be and show how they tackle the innovation programme and organise it. It must become clear that the objectives from the strategic agenda can be obtained effectively.

The Minister of Economic Affairs ascertains whether, and if so, how, the government will provide a contribution to the realisation of the programme. At the appraisal of the innovation programme the minister is recommended by the commission of external experts.

Maritime innovation programmes

The Netherlands didn't have specific programmes for the maritime industry since 2001. For our shipbuilding industry it was very difficult to participate in general research and development programs because much of the R&D is spent on the ship that has to be sold. And according to EU-rules it isn't allowed to give innovation aid on commercial products.

Since "the EU-framework on state aid to shipbuilding" member states are allowed to grant innovation aid to their shipbuilding industry. At this moment the Netherlands is working on an aid scheme (within the EU-framework) for Dutch shipbuilding industry.

As stated before one of the key areas in the Netherlands is water. The Netherlands is well known for its water management. Dutch companies and institutions have an excellent reputation of water management, water construction, water purification and the maritime sector. At this moment two innovation programmes, water technology and maritime cluster, are developed to strengthen Dutch industry.

At this moment the maritime cluster is writing an innovation programme in the field of water construction (dredge), offshore and the maritime industry (yards and subcontractors) to reinforce their international knowledge and export position.

The Dutch Ministry of Transport, Public Works and Water Management and the inland shipping associations recently signed an agreement to improve sustainability, innovation, market potentials and security in the field of the performances of the inland shipping. An important appointment is the choice of the minister for an automatic identification system within the framework of the setting-up of River Information services. This system is also used in sea-shipping.

Moreover the parties strive to switch over in Europe as soon as possible to fuel without sulphur. This measure is necessary to ensure that the inland shipping will be the cleanest transport modality in 2016. Furthermore the minister of Transport, Public Works and Water Management makes 10 million euro available for inland shipping innovation projects. The company branch contributes 1.9 million euro to the establishment of a new expertise and innovation centre for the inland shipping.

7.1.5.3 Funding organisations

Ministry of Education, Culture and Science

Responsibility for Science & Technology lies jointly between two Dutch ministries - the Ministry of Education, Culture and Science (Ministerie van Onderwijs, Cultuur en Wetenschappen) and the Ministry of Economic Affairs (Ministerie van Economische Zaken).

The Directorate of Research and Scientific Policy is responsible for S&T within the Ministry. Their mandate includes the formulation and coordination of the science and information policy; the creation of an international science and technology policy and the implementation thereof; policy development and coordination of research areas and organisations.

Ministry of Economic Affairs

The Directorate of Innovation within the Ministry of Economic Affairs is responsible for the Dutch innovation policy. Its mandate is to strengthen innovation policy within the Dutch economy in the areas of knowledge, technology, labour and innovative entrepreneurs. The core tasks of the Directorate include: vision and knowledge of innovation; improved efficiency of the public knowledge

infrastructure; promotion of innovation development in the market; establishment of a strong ICT base.

Ministry of Transport, Public Works and Water Management

The Dutch Ministry of Transport, Public Works and Water Management makes 10 million euro available for inland shipping innovation projects.

Funding of Marin by Dutch government

Four ministries, the Ministries of Economic Affairs, Transport, Public Works and Water Management Education, Culture and Science and Defence, have a relationship with Marin. On behalf of the ministries of Transport, Public Works and Water Management and Education, Culture and Science the ministry of Economic Affairs looks after the financing of the research programs of Marin. The Ministry of Defence has a separate relationship with Marin.

The Ministry of Economic Affairs supports Marin with 2.4 million euro in 2007. The Ministry of Transport, Public Works and Water Management supports Marin with 0.7 million euro in 2007. The Ministry of Education, Culture and Science supports Marin with 0.9 million euro in 2007. The Ministry of Defence has 0.4 million euro available.

Funding of WL Delft Hydraulics by Dutch government

The Ministry of Economic Affairs supports WL Delft Hydraulics with 1.5 million euro in 2007 on the condition that fifty percent of WL Delft Hydraulics is being financed by industry, not only by large companies. The Ministry of Transport, Public Works and Water Management and the Ministry of Education, Culture and Science support WL Delft with 3.5 million Euro in 2007.

7.1.5.4 Programme information

The Dutch Ministry of Economic Affairs will fund the following programmes:

1. Maritime Innovation Programme

The maritime cluster is writing an innovation programme in the field of water construction (dredge), offshore and the maritime industry (yards and subcontractors) to reinforce their international knowledge and export position.

The Ministry of Economic Affairs will provide a contribution to the realisation of the programme. At the appraisal of the innovation programme the minister is recommended by the commission of external experts. But first this commission must agree with the proposed innovation programme. Probably in February 2007 decisions will be made regarding the launch of a Maritime Innovation Programme.

2. Aid scheme on innovation for shipbuilding industry

Since "the EU-framework on state aid to shipbuilding" member states are allowed to grant innovation aid to their shipbuilding industry. At this moment the Netherlands is working on an aid scheme (within the EU-framework) for Dutch shipbuilding industry.

But first the European Commission must agree with the Dutch aid scheme.

The Agency for International Business and Cooperation (EVD) and SenterNovem will administer this scheme that will be funded by the Ministry of Economic Affairs. The EVD and SenterNovem are part of the Ministry of Economic Affairs.

7.1.6 Norway

7.1.6.1 National policies

The national research policies of Norway are described in the latest white paper for research, St.meld.nr. 20 (2004-2005). One of the four national thematic priorities is research related to the Ocean, and maritime research is an important part of this.

Maritime research and development in Norway has for several decades been characterised by close collaboration. The shipping companies, the shipbuilders and the equipment industry have collaborated with universities and research institutions. The Department for Maritime Technology at the Norwegian University of Science and Technology (NTNU) in Trondheim work closely together with the Norwegian Marine Technology Research Institute (MARINTEK). The two institutions share teaching facilities, office buildings and laboratories, including the Ship Towing Tank and the Ocean Basin. An other important player in research and knowledge building is Det Norske Veritas, a world leading classification society with head office at Høvik just outside Oslo.

Research connected to the field of marine technology and naval architecture does not only serve the shipping industry, but also the offshore oil & gas industry as well as the fishing industry. The collaboration between these sectors is of mutual benefit for all.

The collaboration in research between the different actors in the maritime sector and between different sector sharing the same technology is encouraged by the Research Council of Norway.

The primary objective of is to support research which will contribute to better innovations and increased value creation in the Norwegian maritime sector. However the industry to large extent global and the same is true for the research community. Therefore international cooperation in research projects will in many cases be beneficial for the participants.

The general rule from the Research Council of Norway is to encourage international co-operation in the RTD projects. For projects with long term of competence development called "Competence projects with user involvement" (KMB) international co-operation can be at University / Research Institute level or with industry partners. Also in the "User-driven innovation projects" (BIP) one criteria in the evaluation is international co-operation.

Text from Proposition No. 1 (2003-2004) to the "Storting" regarding the budget of the Ministry of Education and Research: "The EU has taken the initiative to develop an area for European Research and innovation - ERA. The objective is to strengthen the research activity in Europe by enhancing the co-operation between research programmes in different countries, co-ordination of research infrastructure, activities to improve the quality of the research and mobility and recruitment among researchers. Norway has actively taken part in this development. In order to follow up the objectives of ERA, the Research Council of Norway will, on a trial basis, open up some national programmes for international participation." This view is also reflected in the budget propositions from the Ministry for Trade and Industry.

7.1.6.2 Priority Areas

The overall goal for the MAROFF program is to support research which will contribute to better innovations and increased value creation in the maritime sector.

The topics and priorities of MAROFF are described in ten innovation areas and several competence areas.

The ten innovation areas are:

Smart Shipping

Transport, Logistic, Management, Efficiency, Safety and Sustainability

Maritime ICT

Infrastructure, Rules and regulations, Standards, Integration

Eurofeeder

Ship-, Equipment-, Logistical- solutions for Short Sea Shipping, Standardised, Modulbased with emphasise on Intermodality D-2-D

Equipment provider

Increase delivery to worldwide shipbuilding by National cooperation and International networking

Operation in cold climate

Ship Transport and Operations for Ships, Floating structure, Sub-sea structure and Terminals

Coastal gas

Small scale transport by ship, Logistical chains and Use of gas in ships

Seafood provider

Ship transport and logistic
Offshore fish-farms and equipment

SAFESHIP

Reliable, Safe, Efficient and Sustainable maritime transport with
Focus on logistical chains, D-2-D

MODSHIP

Modul-based Design, Hull, Systems as well as Contracts, Business relations and International relations

NETPROFIT

Next-generation network companies – distributed resources and competence; internationalisation and specialisation; new forms of organisation; new business ideas; knowledge management

The competence areas are:

- Maritime technology
- Logistics
- Maritime and offshore operations
- Health, environment and safety
- Network economy, Organisation and Market understanding

General priorities:

Broad scope and participation:

- Several partners needed to solve research challenges
- Research results useful for many

7.1.6.3 Funding organisations

The Research Council of Norway plays a vital role in developing and implementing the country's national research strategy. It acts as:

- a government adviser, identifying present and future needs for knowledge and research;
- a funding agency for independent research programs and projects, strategic programs at research institutes, and Norwegian participation in international research programs;
- a coordinator, initiating networks and promoting co-operation between R&D institutions, ministries, business and industry, public agencies and enterprises, other sources of funding, and users of research

The Research Council of Norway receives its funds from a number of government ministries. The main contributor, who also is the owner of the Research Council, is the Ministry of Research and Education. The MAROFF program is funded mainly from the Ministry of Trade and Industry, and gets a smaller amount from the Ministry of Fisheries and Coastal affairs.

The Research Council of Norway is organized with three operating divisions:

- Division for Science
- Division for Innovation
- Division for Strategic Priorities

The MAROFF program belongs to the Division for Innovation.

7.1.6.4 Programme information

The MAROFF program – “Maritime Activities and Offshore Operations” – started in 2002, and the planned duration is eight years. It superseded the programme MARITIM, which included several sub-programs:

Ship Operation and ICT – SIKT (1998 – 2002)

Sea transport and Logistics – SEATRALOG (1999 – 2002)

Maritime activities and offshore operations – MAROFF:

From the outset in 2002, the research programme MAROFF had the following areas in focus:

- SAFESHIP
Reliable and ecological maritime transport. Central topics include: zero-error safety, intermodality, value chain simplification, organisation and management, training.
- MODSHIP
The module-based ship – a genuine cluster project covering topics such as: block and module-based vessel design, industrialised shipbuilding, new techniques of installation, joining and transport, module-based planning and administration, design based life-cycle analysis, construction and operation of module-based ships, cargo and operational flexibility.
- INNOGAS
Maritime operations to provide “cheap” gas for consumers, which entails challenges such as simplification of the value chain, operating in demanding waters, intermodal transport, new energy carriers, offshore production and storage.
- FRESHFISH
High-capacity production and deliveries of seafood. The major challenges are large-volume seafood production, operating in demanding waters, intermodal transport, sustainable exploitation of resources, supply services, handling, treatment and processing of materials, energy consumption.

- NETPROFIT
Next-generation network companies – distributed resources and competence; internationalisation and specialisation; new forms of organisation; new businessideas; knowledge management

From 2005 the Norwegian Government put increased emphasise on maritime research and development in order to promote innovation and increase value creation. The MAROFF program got larger budgets and at the same seven new innovation areas were selected. These were:

- *Smart Shipping*
- *Maritime ICT*
- *Eurofeeder*
- *Equipment provider*
- *Operation in cold climate*
- *Coastal gas*
- *Seafood provider*

These innovation areas are briefly described in section 3.1.6.2 above. The areas Costal gas and Seafood provider are similar to INNOGAS and FRESHFISH. The three other original innovation areas from 2002 – SAFESHIP, MODSHIP and NETPROFIT – are kept as continued priority areas.

International companies can participate in this programme, but not receive funding from The Research Council of Norway.

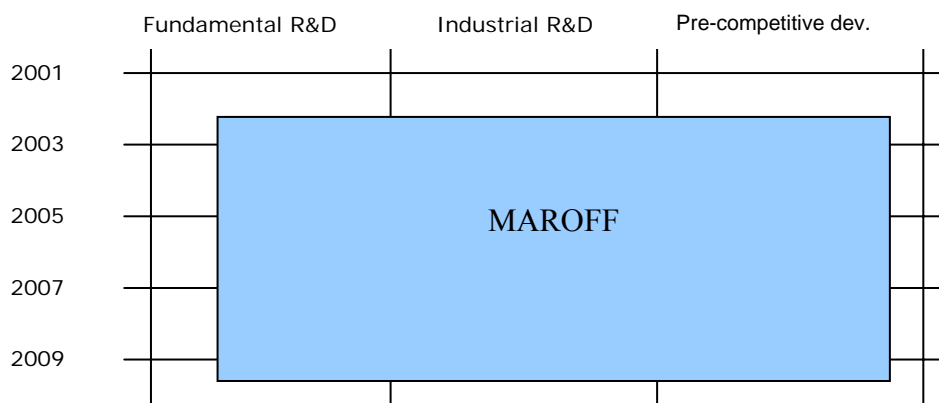


Table 3: Funded types of activities – MAROFF – Norway

7.1.6.5 Example projects

Examples of projects funded under the programme Maroff:

- Energy-efficient all electric ship
- Deep Water Marine Operations
- Safeship
- High Capacity transport logistic system for seafood
- TEKMAR – Technical Innovation in aquaculture industry
- SMARTLOG - SEACHAINS; Sea Transport as a competitive part of the integrated transport logistic chains
- Small-Scale, Short-Sea Distribution of LNG – INNOGAS
- Development of a standard method and guidelines for Testing of Ballast Water Treatment Systems (BWTS) - Introducing the model group concept

MAROFF Programme facts:

Programme name	Maritime Activities and Offshore Operations (MAROFF)																		
Programme owner	Government agency (ies)																		
Web site																			
Brochures																			
Programme manager	Government agency (ies)																		
Web site																			
Year of programme start	2002																		
Year of programme end	2009																		
Next program update	2007																		
Calls and all deadlines of national program	No. of calls: 12 <table border="1"> <thead> <tr> <th>Year</th> <th>Competence building projects</th> <th>Innovation projects</th> </tr> </thead> <tbody> <tr> <td>2002</td> <td>15. June</td> <td>15. October</td> </tr> <tr> <td>2003</td> <td>15. June</td> <td>15. October</td> </tr> <tr> <td>2004</td> <td></td> <td>16.02 & 14.10</td> </tr> <tr> <td>2005</td> <td>1. September</td> <td>13. October</td> </tr> <tr> <td>2006</td> <td>15. March and 31. August</td> <td>15.03 & 12.10</td> </tr> </tbody> </table>	Year	Competence building projects	Innovation projects	2002	15. June	15. October	2003	15. June	15. October	2004		16.02 & 14.10	2005	1. September	13. October	2006	15. March and 31. August	15.03 & 12.10
Year	Competence building projects	Innovation projects																	
2002	15. June	15. October																	
2003	15. June	15. October																	
2004		16.02 & 14.10																	
2005	1. September	13. October																	
2006	15. March and 31. August	15.03 & 12.10																	
Project information	http://www.forskningsradet.no/maroff																		
List of completed projects																			
Funded types of activities	R&D projects: (fundamental research, industrial research) Human Resources: (Scholarships (Research)) Special actions: (Assistance in proposal preparation, Dissemination & Exploitation of Results (Publications))																		
Funded disciplines	Shipbuilding, maritime equipment and services, ship operation, inland water transport, intermodal transport, offshore industry, offshore structures for renewable energy, port operation, Fishing/aquaculture, environmental impact, polar research																		
Funded institutions	Universities: 10 % Public research institutes: 20 % Regulatory bodies: 5 % Companies: 65 % (All figures are approximately)																		
Annual programme budget	2001: - Mio. € 2002: 3,0 Mio. € 2003: 2,9 Mio. € 2004: 3,4 Mio. € 2005: 4,6 Mio. € 2006: 8,4 Mio. € 2007: 10,8 Mio. €																		
Funding type	Grant																		
Funded cost items	Direct costs 50 % for innovation projects, 80% for competence building projects (human resources, equipment, travel expenses, materials, subcontracting) Indirect costs: 50 % for innovation projects, 80% for competence building projects (overhead)																		
Lowest funding rate	Innovation projects: 24 % Competence building projects: 67 %																		
Highest funding rate	Innovation projects: 40 % Competence building projects: 80 %																		

7.1.7 Poland

7.1.7.1 National policies

There is only one institution financing the research and development activities and projects in Poland, i.e. Ministry of Science and Higher Education. Some R&D projects are executed at the request of particular ministry or cross-sector/cross-ministerial working groups; however the funds are received from the Ministry. The principles of financing of the scientific research are based on the act from the 8th October 2004 and further relative regulation from 2005.

There is no special research program devoted to the maritime industry in Poland. In general the project proposals have to be in line with the priority areas stated by the Ministry in the National Framework Programme (NFP) and might be submitted for the evaluation during the entire year. However the projects (so called “special projects”) aiming at the participation in the international research programme have to be submitted not later than the 30th September, if their conduction is planned to start in particular year.

The foreign organisations might participate as well in the following forms of research activities: “requested applied projects”, scientific networks and in activities launched on the basis of mutual agreements between Poland and other countries.

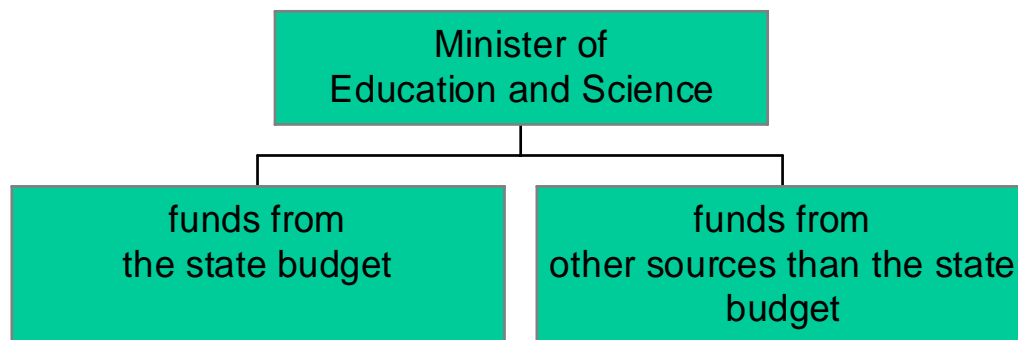


Figure 2: Program initiation - Poland

Ministry appoints an interdisciplinary team which prepares the proposals of the topics and terms for the ordered projects under the NFP. The ordered project serves as one of the numerous financial instruments that are defined by the act of financing scientific research. When selecting the topics of the projects, the team adheres to the priority directions of scientific research and their selection criteria specified in NFP. Before the call for a particular research topic or a group of topics is announced, the Ministry may ask the entitled entities to submit proposals of the topics of projects along with a justification and information for about the estimated cost of the projects and the anticipated results. Based on the opinion of the interdisciplinary team, the Minister publicly announces the calls, at least once a year for the realisation of the ordered projects in a nationwide journal and on the Ministry’s website. Bids placed by entities for the realization of the ordered projects are assessed in the mode applicable to the assessment of research projects.

7.1.7.2 Priority areas

The Ministry supports the research & development from funds ear-marked for that purpose in the budget and in accordance with agreed financing streams:

- financing statutory tasks of scientific institutions depending on the achievements of these institutions in research and development domains;
- financing of construction investments, purchase of equipment and infrastructure for projects necessary to facilitate research;
- financing of research projects selected in peer reviewed project competitions held bi-annually;
- co-financing of goal orientated projects pursued jointly by research teams and future users;

- financing of international scientific co-operation stipulated by intergovernmental agreements;

Past, current situation and prospects

In the past years, there were the special targeted research & development programs aimed at the particular sector of national economy. The official name of those programs was the Central Research and Development Programmes shortly called as CPBR. However the CPBR 9.2 and CPBR 9.5 were devoted to the maritime industry. The mentioned programs were very important for the development of the maritime industry, especially that their priorities were based on the detailed domestic and foreign market analyses and possessed resources potential. The initiative of industry sectors orientated research and development programs was given up in 90-ties. Consequently the financial policy of the Ministry connected these priorities with four special sections of research – INFO, BIO, TECHNO, EDU. The intention is that these sections are to cover special areas of Polish science and have to be extended in future. These priorities refer also to preferences of the European Commission confirmed by funds for Framework Programs as well as to opinions expresses in the European Commission’s periodic report on Poland’s progress in aiming at the EU membership. The maritime research-development and technological activities being undertaken by companies, research institutes, universities etc. match partly to the above indicated more general priorities.

Nowadays there are no specific R&D programs for the maritime industry being launched in Poland. The government’s economic strategy defines clearly the preferred fields of scientific research & development. in accordance with NFP as follows:

- health
- environment
- agriculture and food
- state and society
- security
- new materials and technologies
- information technologies
- energy and resources
- transport infrastructure

The huge part of the applied research projects that CTO executed and participated in are related to designing new types of ships, e.g. classical merchant ships, speed boats and vessels for Cost Guard, tugboats, in-land ships, as well as new generation of Ro-Ro ships. The final result of the particular applied research projects is implemented, i.e. presented as a prototype. A lot of the mentioned applied research projects were devoted to study of the new production and assembling technologies as well as to the modernization of the existing technologies of inside equipment (e.g. windows, doors, ceilings, coverings, and other), and deck equipment (e.g. winches, cranes). Few of the applied research projects pay attention to necessity of a hull optimization as well adaptation of a hull shape to the loads that this ship carries. Some of them were also devoted to the protection of the maritime environment: e.g. oiled sewages from ships, ecological and safe tankers, and the appropriate rules preventing ecological catastrophes as well amendment of the rules of the Classification Societies and the international rules.

7.1.7.3 Funding organisations

The political turn of 1989 in Poland initiated changes in all spheres of public life, including science and technology. The State Committee for Scientific Research was established in 1991 as a central organ of state administration. Currently the Ministry of Science and Higher Education is responsible for the science and technology policy of the state. The main tasks of the Ministry are:

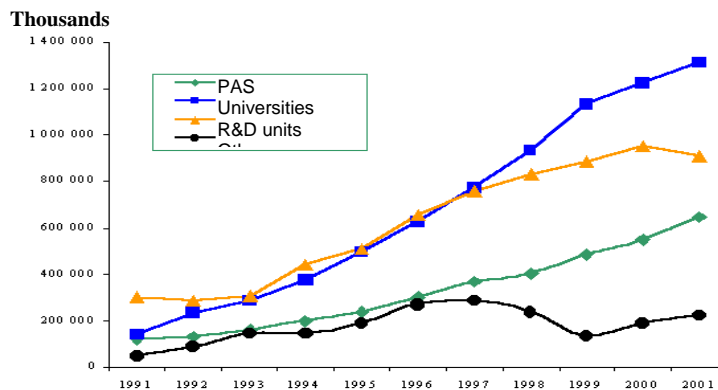
1. to present to the government and the parliament guidelines for the country’s scientific policy,
2. to submit to the government plans for budgetary expenditure in the area of research in science and technology,
3. to distribute funds among institutions and research teams and to control their spending,
4. to sign international agreements on cooperation in the field of science and technology.

The State Committee for Scientific Research (KBN) consisted of the following thematic units:

- Humanities
- Social, Economic and Legal Sciences
- Mathematical, Physical and Astronomical Sciences
- Biological, Earth Sciences and Environment Protection
- Medical Sciences
- Agricultural and Forestral Sciences
- Mechanics, Construction and Architecture
- Materials Engineering and Materials Technology
- Electrotechnics, Energy and Metrology
- Chemical Sciences, Technical Chemistry, Process Engineering and Environmental Protection
- Electronics, Automatics and Robotics, Computer Science and Telecommunications
- Mining, Geodesy and Transport

Currently the function of the KBN is taken by the Council of Science and its Committees like Committee for the Industrial Research

The descriptions of the above databases are presented in the section on databases and sources of information. It should be stressed that they are in Polish but the process of transforming them into English is under execution currently.



PAS – Polish Academy of Sciences

5

Figure 2: Funding of R&D units activity in 1991-2001 years - Poland

There is no statistical information regarding expenditure within maritime industry. That is because the maritime related R&D activities are distributed among other, more general priority areas

7.1.7.4 Programme information

POLISH FRAMEWORK PROGRAMME (since 2005) is the first attempt in Poland to focus significant contribution towards scientific research crucial to socio-economic development of the country. It shall serve as a fundamental instrument of the country's research policy outlined in the governmental strategy documents such as:

- National Development Plan (2007-2013)
- Operational Programme "Research, new technologies and information society" (2007-2013)
- Principles of the country's scientific research and innovation Policy until 2020.

Polish Framework Programme consists of 3 elements:

- strategic research fields are defined for 10 year periods on the basis of the country's long-term research policy. The extensive public consultation indicated the following 9 strategic research fields, valid/binding since mid-2005: Health, Environment, Agriculture and food, Country and society, Safety, New materials and Technologies, Informative Technologies, Energy sources, Transportation infrastructure.

- research priorities comprise a more focused and interdisciplinary approach towards the above-mentioned strategic research fields, referring to a shorter-term periods. They will be constantly monitored and analyzed and modified annually or more often, according to current needs.
- contracted projects are to be accepted on the basis of ministerial calls for proposers within previously set research priorities. Each call shall have defined preferences with regard to the following 4 development activities: new ideas, technologies, scientific staff and scientific equipment.

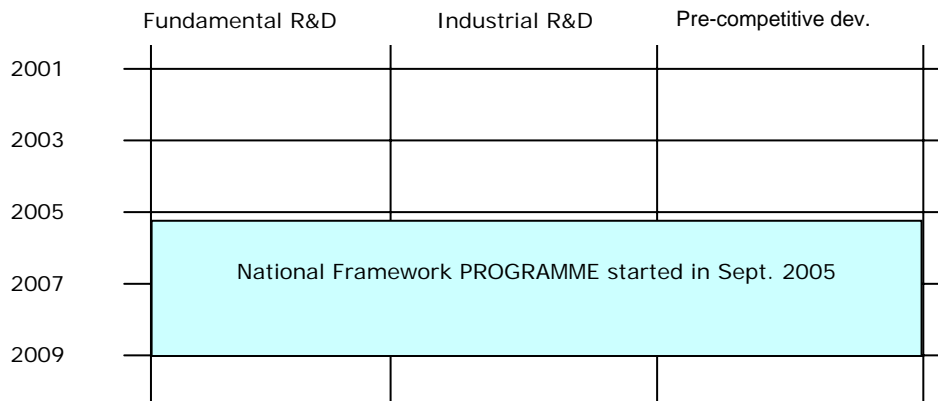


Figure 3: Funded types of activities – National Framework Programme - Poland

In order to get funds, the unit or entity shall submit the application/proposal to the Ministry according with guidelines and forms. Such application is checked for its formal eligibility. If all formal requirements are fulfilled the application goes forward for evaluation. When the evaluation process is finished, the mover or the formal representative of the consortium is informed about the final results and marks given by evaluators. In case of positive decision, the mover has to fulfil the further administrative steps indicated in the official letter issued by the Ministry of Science and Higher Education.

Generally speaking, the following documents have to be covered by the project proposal application:

1. project description with the detailed indication of applied and research works as well as implementation works
2. relevance of the research problems, accordance with NFP priorities
3. financial and tasks breakdown
4. project execution schedule
5. information on mover
6. commitment of own funds assurance (when the project is partially financed by Committee)
7. description of the project expected results and implementation plan
8. feasibility study along with market analysis – if applied
9. administrative and legal documents related to mover such as: balance sheet, account statement issued by bank, note confirming no due to taxes and social securities fees.

The project proposal applications are evaluated under the following criteria:

- content-related value of the project proposal
- possibility of implementation of the project results
- expected added value of the project results
- socio-economical impacts
- experience, resources and research potential of executor
- state-of-art in the research domain covered by the project

There is an official National Information System related to research and development projects commonly called SYNABA and implemented in 1991 All units and companies that receive funds for their R&D activities are obliged to send projects related information to the data base in order to control the way of using funds and to avoid the projects overlapping.

7.1.7.5 Example projects

- POSTPANAMAX container vessels of drought over-standard limits and increased number of refrigerated containers
- Multi-purpose, universal RO-RO ship that is cheap related to building and operation for the Levantine line serving
- AHTS ship for drilling platforms operation

National Framework Programme facts:

Programme name	Krajowy Program Ramowy - National Framework Programme
Programme owner	Ministry of Science and Higher Education
Web site	www.mnisw.gov.pl (Search: Krajowy Program Ramowy)
Brochures	
Programme manager	Ministry(s)
Web site	
Year of programme start	2005
Year of programme end	ASSUMED CONTINUOUS DURATION
Next programme update	2006
Calls and all deadlines of national programme	not fixed
Project information	www.mnisw.gov.pl (Search: Krajowy Program Ramowy)
List of completed projects	
Funded types of activities	R&D projects: (Fundamental research, Industrial research, Pre-competitive development) Human Resources: (Scholarships: (Research), Researchers recruitment (Public and private R&D centres)) Scientific-technical infrastructures: (Construction or extension of R&D centres, Acquisition and installation of equipment) Special actions: (Scientific cooperation, Scientific-technological nets)
Funded disciplines	Transport and transport infrastructure including: Shipbuilding, maritime equipment and services, ship operation, inland water transport, intermodal transport, offshore industry, offshore structures for renewable energy, port operation, Fishing/aquaculture , environmental impact
Funded institutions	Universities: Public research institutes: Private research institutes:
Annual programme budget	2005: 19 Mio. € (for all nine research priorities) 2006: 21 Mio. € (for all nine research priorities) 2007 (expected): - €
Funding type	grant
Funded cost items	Direct costs: 100 % (human resources, equipment, travel expenses, materials, subcontracting, intellectual property protection) Indirect costs: 100 % (overhead)
Lowest funding rate	
Highest funding rate	

7.1.8 Spain

7.1.8.1 National policies

Law 13/1986 of Promotion and Coordination of the Scientific and Technical research establish the R&D National Plan (R&D&I NP) as fundamental instrument entrusted to complete the constitutional mandate.

National plans have, usually, a duration of four years, being in force at present The National R&D&I Plan 2004-2007 (R&D&I NP)

The National R&D&I Plan 2004-2007 plans the actions to be financed by the National Budgets aimed at optimizing available resources by strengthening cooperation and coordination with the Autonomous Communities (Spanish regional governments), articulation of the important international dimension and design of the financial instruments and modes of participation needed to stimulate and foster R&D&I activities.

The design and preparation of the National Plan (including National maritime program) has drawn on the efforts of various executive offices of the general State Administration and of the regional administrations, public research centers and authorities, technological centers and interface units, enterprises and business groups and a large number of experts from the science and technology community.

A set of strategic objectives was formulated for this R&D&I NP, classified into the following groups:

- Strategic objectives relating to the STE (Science-Technology-Enterprise) system
- Strategic objectives relating to coordination of the STE system
- Strategic objectives relating to business competitiveness

The structural elements of the NP are:

- Priority areas, which include the priority areas deemed of strategic importance for the Spanish STE system. The actions in each of the areas are set in motion by means of **national programs**. The thematic breadth of those programs requires the establishment, where appropriate, of subprograms with specific management structures.
- Modes of participation that channel the activities of the different executing agents.
- Financing instruments associated with each mode of participation.
- Monitoring, evaluation and management procedures, providing for procedures at the micro level (for individual proposals and concrete actions) and macro level (for strategic programs and objectives), and for criteria for assigning management of the different NP actions to the appropriate executive bodies.

A NP priority area is defined as a collection of interrelated subjects, grouped around national programs, in which certain S&T objectives related to the NP's strategic objectives are raised. Some of these subjects are grouped into subprograms.

The process of identifying the priority areas making up the NP has involved both a sartorial focus (associated with technological interests and needs of strategic business sectors or with public policy interests) and a thematic focus (having more to do with certain scientific and technical areas or disciplines that produce applications in the near, medium and long term). Identifying the NP areas and programs has been done balancing different types of criteria: scientific, technological, sartorial and public interest.

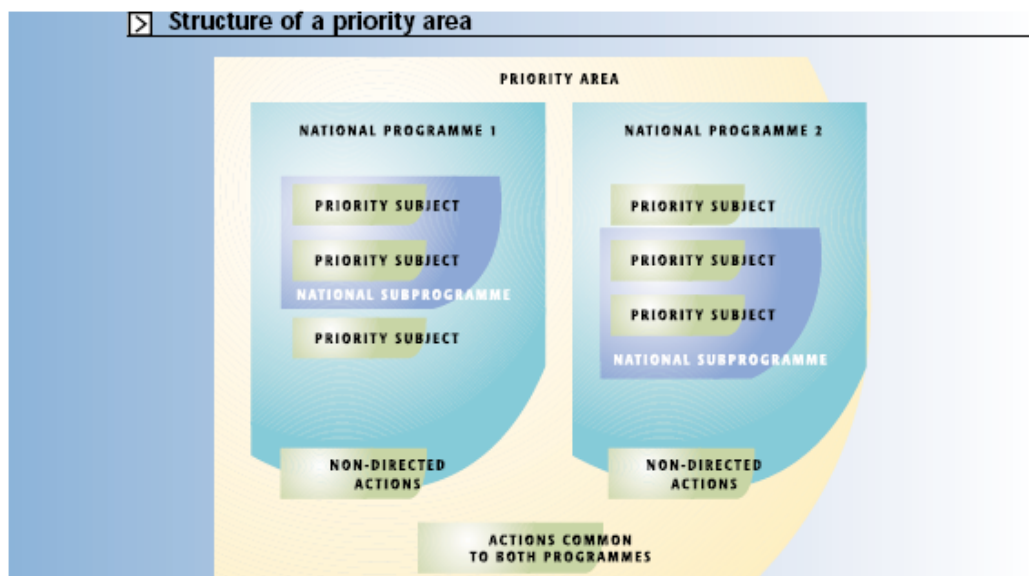


Figure 3: Structure of a priority area - Spain

A distinction is made between two types of areas:

- Thematic areas with a clearly defined scientific-technological domain;
- Horizontal areas open to all scientific-technological domains.

The horizontal areas include generic NP actions that span all the other areas and programs, although their application must be adapted on a case-by-case basis to the particularities of each area and program. Some of these areas are International cooperation, Human resources, Support for business competitiveness, Equipment and infrastructure and Promotion of scientific and technological culture

7.1.8.2 Priority areas

Within this subprogram, the following thematic priorities have been defined for its development in the PN of I+D+I 2004-2007

- Increase of the competitiveness and profitability of the maritime Spanish transport and its companies.
- Development of new, technologically advanced ships to meet strong short and medium term demand.
- Improvement of the design and construction process of ships and their components
- New developments for the use of existing liquid and gaseous hydrocarbons in the maritime sector
- Developments of platforms and devices for making better use of marine resources
- Improvements in port services
- Improvements in maritime safety
- Pollution prevention and environmental protection at sea and coastal areas.
- Development of short sea shipping
- Establishment of sheltered areas

7.1.8.3 Funding organisations

Until year 2004, the PROFIT programme was entirely managed by the former Ministry of Science and Technology. From that date, the Ministry of Science and technology was split into two new departments; Industry, Tourism and Trade Ministry (MITYC) and Education and Science Ministry (MEC), which manage in a joint way the program. MITYC finance, mainly, the R&D projects with participation of private entities and the MEC the projects with participation, principally, of R&D public organizations.

Education and Science Ministry (MEC) has, among other, the following functions entrusted:

- The encouragement of actions for fulfil scientific and technological policy, especially of the national Plan of R&D
- The encouragement of the participation of both sectors the public and private in activities of scientific research, Technological development and technological innovation national and international level.
- Boosting the projects and programs of cooperation with entities of research dependent on other ministries, autonomous communities and on other public institutions.

Industry, Tourism and Trade Ministry (MITYC) is the department of the State General Administration entrusted of the execution of the development and industrial innovation policy as well as the trade policy, of the small and medium company, energetic and miner, of tourism, of telecommunications, audio-visual means and of development of the society of the information of the Government.

Within the MITYC, the General Secretariat of Industry has the following functions entrusted:

- The management and follow-up of supporting programs of textile - confection and naval sectors.
- The elaboration, management and follow-up of programs of industrial development.
- The elaboration, management and follow-up of strategic programs of high technological and industrial content.
- The elaboration, management and follow-up of programs of promotion of the industrial innovation.
- The elaboration, management and follow-up of programs of promotion of infrastructures for the industrial innovation.
- Those derivatives of the Law 1432/2003, of November 21, being the only competent department for the issue of motivated reports binding on the tax Authorities, on reducing tax by investments in R&D.
- The administrative and financial management of programs of public aids that are entrusted to this department, as well as the follow-up and control of the fulfilment of the obligations for the beneficiaries of the helps.

The main programme of support to the industrial Innovation, managed from the MITYC is the PROFIT, which finances actions of numerous thematic priorities established in the National Plan of R&D, among them those of the national maritime subprogram.

As autonomous organisation dependent on the MITYC, stands the Centre for the Development of Industrial Technology (CDTI), whose objective is to help Spanish companies to increase their technological profile.

The main function of CDTI is to evaluate and finance technological development, innovation and modernization projects developed by Spanish companies with a bottom up approach with no thematic priorities.

In addition, CDTI is an external evaluator of the projects presented to MITYC within the PROFIT Program, with the exception of those belonging to the National Maritime Program, which are evaluated by the FOUNDATION INNOVAMAR, exclusively.

7.1.8.4 Programme information

The program is explicitly focused on maritime research and development. The following chart shows the structure.

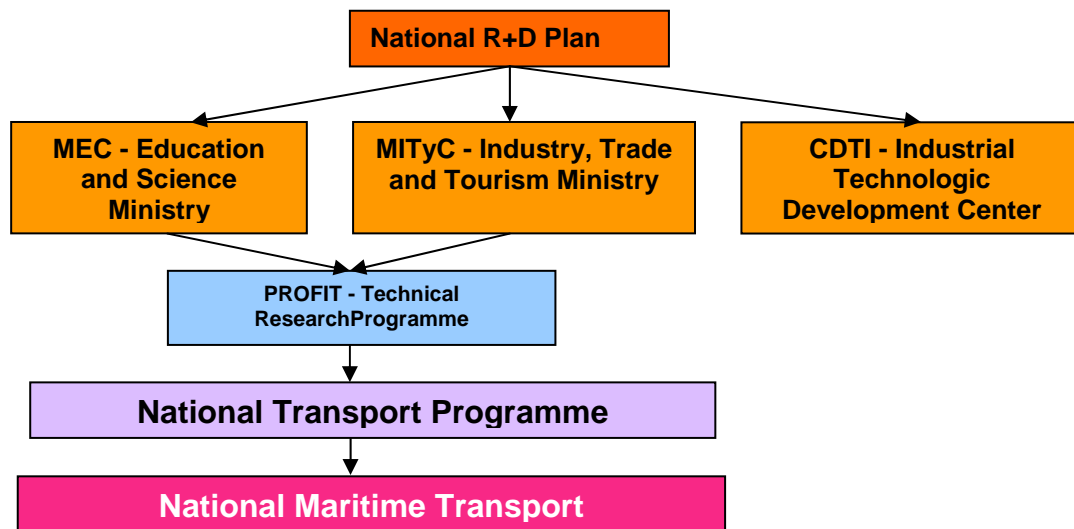


Figure 4: Chart of National Maritime Transport Programme in National R+D Plan - Spain

National subprogram on the maritime sector

The maritime sector is considered comprised, concerning to this programme, for the shipping companies, the shipyards, naval repair of all kinds of ships and oceanic appliances, including the sport and recreational crafts, the port services, the fishing developments and aquaculture and the auxiliary industry dedicated to the manufacture of goods of equipment, components, sets and services.

For the definition of the program, there have been born in mind a series of criteria as follow:

Criteria of public interest, related to the efficiency of the persons' transport and goods which keys of performance must be the following ones: Concern for the safety, Respect for the environment, Improvement of the quality and the availability, Maximize the Intermodality

Sectorial criteria. The activities of the Maritime sector are justified by the extension of the Spanish littoral, which exceed 8.000 Km, with a large number of ports placed in an area of great strategic importance. In the Spanish ports, annually, more than 120.000 ships make stopovers and 90 % of the imports as well as 72 % of the exports are carried out by sea route.

The Maritime sector is intensive in the use of new technologies, with high investments in capital and R+D, being simultaneously diffuser and receiver of technological developments in other sectors.

A high degree of interrelationship exists among the different maritime sub sectors. It is necessary to mention, for example, that the fact that ports work with efficiency and with limited times of operation it will have a favourable repercussion in the maritime transport, reducing its costs and promoting its development, which will generate a demand of naval construction to the shipyards and the auxiliary industry.

Technological criteria: It suit giving viability to the activities of a sector that, beside being very active in the activities of own R+D , is driving and apply technologies developed in other fields of the industry, multiplier effect that always has distinguished the sector. Existence in Spain of technological

Centres, Departments of R+D, technical offices of recognized capacity of R+D. Throughout these centres, technology is transferred to the PYMES, which constitute 95 % of the companies of the sector, improving its competitiveness.

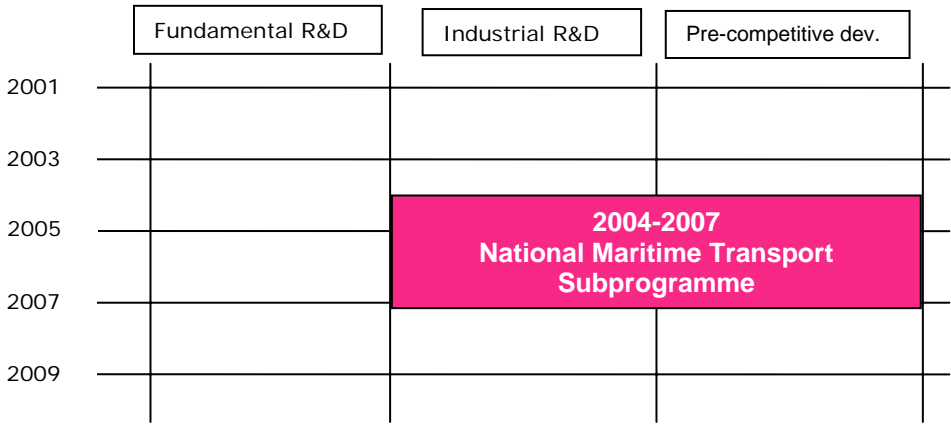


Table 4: Funded types of activities – National Maritime Transport Subprogramme – Spain

National Maritime Transport Sub-Programme facts:

Programme name	PROFIT-National Maritime Transport Sub-Programme
Programme owner	Industry, Trade & Tourism Ministry (MITyC) Science & Education Ministry (MEC)
Web site	www.micyt.es/profit www.mec.es/ciencia/jsp/plantilla.jsp?area=fomento&id=214
Brochures	
Programme manager	General Direction of Industrial Development (MICyT) General Direction of Technology Policy (MEC)
Web site	www.micyt.es/profit www.mec.es/ciencia/jsp/plantilla.jsp?area=fomento&id=214
Year of programme start	2004
Year of programme end	2007
Next programme update	2007
Calls and all deadlines of national programme	No. of calls: one each year Dates of deadlines: December (usually)
Project information	
List of completed projects	
Funded types of activities	R&D projects: (industrial research, pre-competitive development) Special actions: (International Cooperation, Dissemination & Exploitation of Results (Publications, Organization of congresses and seminars, International promotion and technology transfer, Intellectual Property Protection (only for PYMES)))
Funded disciplines	Shipbuilding, maritime equipment and services, ship operation, human elements, intermodal transport, offshore industry, offshore structures for renewable energy, port operation, fishing & aquaculture, environmental impact
Funded institutions	Universities: Public and private research institutes: Companies: Other: non-profit organizations, technologic centres and associations
Annual programme budget	2001: - Mio. € 2002: - Mio. € 2003: - Mio. € 2004: - Mio. € 2005: 4,6 Mio. € 2006: 6,8 Mio. € 2007 (expected): - Mio. €
Funding type	loans, grant, mixed (loan + grant)
Funded cost items	Direct costs (human resources, equipment, travel expenses, materials, subcontracting (up to 50% of the budget except non-profit organizations=95%, up to 15% in case of subcontracting public centres or universities), intellectual property protection (only for PYMES) Indirect costs: up to 15% of human resources
Lowest funding rate	
Highest funding rate	75 % / 95 % (in case of non-profit organisation)

7.1.9 United Kingdom

7.1.9.1 National policies

A number of possibilities to build on and extend the existing co-operation can be proposed to increase research cooperation. These include:

- Building on the numerous existing co-operation mechanisms, such as funding for visiting fellowships, overseas travel, person-to-person meetings, networks etc.
- Utilising the high importance already given (for example by the EPSRC) to international collaboration
- Harnessing the recognition already given (for example by the EPSRC and NERC) to the need for international collaboration to support large-scale facilities and projects
- The need to take account of and reflect the extent of the existing complementarity with EC Framework Programme research, when selecting areas for further co-operation
- The BTIA programme of the DTI does explicitly allow access to UK research funds for non-UK organisations. At present, none of the projects funded is directly relevant to the maritime sector, but this would certainly be possible.
- There is a new scheme which has just been launched by the UK Department of Trade & Industry (DTI), called Global Watch secondment. This is aimed at SMEs with a proposed project requiring the acquisition of advanced skills and/or knowledge, primarily scientific or technological in nature, and which is not readily available in the UK. Projects should meet the following definition: "A project requiring the acquisition of advanced skills and/or knowledge primarily scientific or technological in nature, not readily available in the UK, needed for the development or improvement of a product, process or service by a UK-based SME and which has the potential to generate commercial returns."
- The UK bodies that require research to assist in their statutory responsibilities (MCA and HSE) do sometimes commission non-UK organisations to undertake this research. Although the research projects are usually carried out by a single contractor, they are often part of research programmes (e.g. high-speed craft safety, FPSO design and operation etc) that are of wider interest. Indeed, the end result of many of the MCA's research projects is in the form of a UK submission to the International Maritime Organization.

Areas that may be the most promising from the point of view of greater research collaboration may be those relating to common environmental problems (e.g. maritime pollution) or operational concerns (e.g. passenger ship safety).

7.1.9.2 Priority areas

In the UK research and development in the maritime sector is funded by a number of Government Departments, Agencies and Research Councils. There is no overall body effectively coordinating UK marine RTD across the academic, defence and industrial sectors. Therefore, an analysis of the favoured subject areas must be based on the individual research priorities for each of the funding bodies. However, in very broad terms, the overall research priorities can be summarised in the following table, for the five main sectors of the maritime industries:

Shipbuilding	Shipping	Offshore	Coastal Zone Management	Other marine resources
Ship, submarine design; Shipyard productivity	Ship and other offshore operations; Ro-Ro and high-speed vessel safety; Formal safety assessment	Submersible and offshore marine structure design; Offshore health and safety; Offshore wind wave and tidal energy	Estuarine and coastal zone studies; Physical and chemical ocean environment; Marine ecology and ecotoxicology	Fish stock protection; Aquaculture; Aggregate extraction

Table 5: Research priorities in the UK

There are six EPSRC funded networks in this area:

- Violent interactions of fluids and structures
- Marine systems
- Marine biopress,
- Marine energies technology
- Offshore wind energy network
- Sea wave prediction for civil and defence applications

The NERC conducts marine environmental research to help develop sustainable offshore and coastal industries, to allow the management of natural resources, to assist in conserving marine biodiversity (and its functional integrity) and to help predict the behaviour of marine systems in the context of natural and human driven global change.

NERC research in the marine area includes the following thematic programmes:

Ocean Drilling Programme, Advanced Sensors for Ocean Applications (LINK), Aquaculture (LINK), Development Ecology of Marine Animals (DEMA), Coupled Ocean-Atmosphere Processes and their effect on Climate (COAPEC), Ocean Margins LINK Programme, Marine Productivity: physical controls on ecosystems dynamics, Marine Microbial Biodiversity: Assessment and Exploitation, Autosub under Ice (AUTOSUB), Autosub Science Mission, Integrated Ocean Drilling Programme (IODP) transition

The DTI has funded a number of studies for shipbuilding and the marine equipment industry. The studies have addressed the following themes: Marine Equipment Competitiveness; Human Resources; Marketing Skills; Market Research; Benchmarking – Phases I & II; Internet Scoping Study; Identifying Shipowners. The key priority areas of the Renewable Energy programme are offshore wind, wave energy and tidal stream.

The MCA will be looking to use the following research priorities as a basis for proposals over the next one to five years, subject to change as priorities shift (accident prevention, environmental protection, the human element, risk assessment, maritime security).

7.1.9.3 Funding organisations

Engineering and Physical Sciences Research Council (EPSRC)

The work of the Engineering and Physical Sciences Research Council (EPSRC) is to invest in research and postgraduate training in engineering and physical sciences so that the UK will be prepared for the next generation of technological change. By working in partnership with industry to encourage collaborative research investment between universities and companies, it aims to both drive research forward and to give companies access to the important developments which will assure the continued success of the industry as a whole.

Research in the maritime field comes under the Transport Sector. This sector has a very broad remit comprising all surface transport and infrastructure management. The 'transport sector' includes those concerned with movement of people and goods by all modes including inland and marine shipping, as well as pedestrian, cycle, rail, public and private vehicular transport modes. Research relevant to the Transport sector is currently funded through the following Programmes within EPSRC: Engineering, Innovative Manufacturing, Infrastructure and Environment, IT&CS, Materials and Mathematics.

The EPSRC currently funds 100 projects worth £17M in Marine engineering. It also has over 20 projects under review where funding has not yet been agreed/announced. 15 (£5.3M) of these projects are concerned with renewable energy such as wave power and off shore wind turbines, and 25 (£5.1M) of these are relevant to the oil and gas industry.

Other research support is provided by the EPSRC in respect of training. It supports an MRes course in technology for the marine environment, an IGDS course training in marine technology and an MTP course in offshore technology.

Natural Environment Research Council (NERC)

The NERC is primarily responsible for environmental scientific research, including the marine Science; however, it does support the development of enabling underwater vehicle, survey systems and oceanographic sensors.

Its stated aims are:

The NERC funds UK-centred research, in order to maintain and develop UK academic expertise in the research areas for which it is responsible. Therefore, participation of non-UK organisations in NERC research programmes is not normally possible, and there are no funds accessible to overseas organisations. UK researchers may collaborate with overseas colleagues directly, but NERC doesn't pay funds directly to these collaborating institutions. The NERC does encourage and fund, via fellowship programmes etc., the maintenance and development of links and information exchanges with overseas researchers in similar fields.

Department of Trade & Industry (DTI)

The Department of Trade and Industry works with a wide range of individuals, groups and organisations, to increase UK productivity and competitiveness. It has a number of initiatives to assist engineering industries, including the maritime industries.

There are initiatives to help companies exploit particular new technologies, including:- Computer and communications technologies; Lasers; Controls in manufacturing; and Sensors. Until recently, engineering industries could get help with using information and communication technologies (ICTs) from the ICT Carrier Programme. One project of particular relevance under ICT was Information and Communication Technology in Shipbuilding and Ship repairing (ICTISS).

The DTI Basic Technologies for Industrial Applications (BTIA) Programme provides a framework for supporting applied research programmes and related technology transfer activities. This programme complements the Research Councils' Basic Technology Programme and aims to bring together new and existing technologies to produce the products and processes of the future.

Department for Transport:

The Department for Transport and its agencies have substantive programmes of transport and transport-related research. The research is managed as a series of programmes rather than one single programme - with specific programmes relating primarily to integrated and local transport; vehicle and road safety. The Department's agencies are also responsible for undertaking research on more specific areas, such as aviation, railways, marine transport and the trunk road network. The research programme of the Maritime and Coastguard Agency is outlined separately below.

In addition, the Department for Transport is closely involved with the LINK programme Future Integrated Transport (FIT). The FIT Programme offers a framework for collaboration between the public and the private sectors in support of integrated transport, an area of significant importance to the national economy and quality of life. The main objective is to support research that contributes to developing transport systems that are safe, efficient, clean and fair. In addition the Programme aims to: Provide a framework for collaborative research programmes and projects in key areas of science, technology and engineering; Enable and accelerate the commercial exploitation of science and technology, leading to new products, processes, systems and services; Promote a close interaction between industry and the research base, so that nationally supported programmes of basic research are influenced by awareness of the needs of the industry; Use the research base effectively to increase UK industrial competitiveness; Stimulate industry to increase its own investment in R&D. One of the projects under this scheme is the UK Marine Motorways Study, whose aim is to establish the operational and commercial feasibility of advanced fast freight ferries on UK coastal routes as an alternative to long-distance road transport.

Maritime and Coastguard Agency

The Maritime and Coastguard Agency (MCA) is an agency of the Department of the Environment, Transport and the Regions (DETR). The Maritime and Coastguard Agency is responsible for:

- Developing, promoting and enforcing high standards of marine safety
- Minimising loss of life amongst seafarers and coastal users
- Responding to maritime emergencies 24 hours a day
- Minimising the risk of pollution of the marine environment from ships and where pollution occurs, minimising the impact on UK interests.

The Research Programme is based closely around this statement. The research is broken into two categories; Technical and Environmental. The technical research aims to look at issues such as life saving equipment, Formal Safety Assessments, ship design and evacuation trials. The environmental research looks towards issues such as marine debris analysis, oil spill detection systems, potential effects of oil spills and sand scrubbing technology.

The MCA funds research and technology in support of its policy, statutory, operational, regulatory responsibilities. Some examples of research projects are given below. Its aims are to increase national prosperity and help improve quality of life through playing its part in the sustainable development of an efficient transport system. Wherever possible the MCA involves and cooperate with others – including European Union partners, (and DGVII's Concerted Actions), public sector bodies with statutory responsibilities in shipping safety, industry, and the science and engineering base.

Health and Safety Executive:

The Health and Safety Commission (HSC) and Health and Safety Executive (HSE) are Statutory Bodies whose mission is to ensure that risks to people's health and safety from work activities are properly controlled. The HSC is responsible to appropriate Ministers for the administration of the Health and Safety at Work etc Act 1974. The HSE administers health and safety legislation and submits proposals for new or revised legislation, including safe operation of offshore platforms.

HSC/E develop and apply science and technology to provide a sound, independent knowledge base to evaluate the risks to people's health and safety from work activities and the means to assess and control these risks in order to achieve HSC/E's objectives.

Department for Environment, Food and Rural Affairs (formerly MAFF)

Defra plays an important role in co-ordinating marine environment policy. It is responsible for a £1.5 million research programme which covers work on rivers, estuaries and aspects of the marine environment not covered elsewhere. It also coordinates work for the North Sea Conference and the OSPAR Commission. It contributes information to other organisations covering issues such as pollution from various industrial sectors, and the environmental effects of offshore oil and gas.

The Foresight Marine Panel:

The Foresight Marine Panel has as members leading representatives from academia and industry, drawn from engineering, science and technology and business. Originally formed under the Department of Trade and Industry's Foresight Technology initiative, it now operates as a self-financed Panel of expertise, within the overall framework of the Foresight process, providing an independent assessment of commercial opportunities in world markets to exploit the UK's science & technology base, and identifying R&D requirements, to ensure the UK's growth and competitiveness in this sector. Among its current activities are:

Shipbuilders & Shiprepairers Association (SSA):

SSA is actively involved in R&D in UK and Europe, and can help yards with new technology and investigating whether technology exists to help with a specified issue. It provides a link between academia and industry through its SSA MAST initiative. The objective of this initiative is to increase the application of science, technology and innovation in the shipbuilding industry, and to maximise the take-up of RTD in which UK research agencies, companies and universities are involved. It acts as a focal point for identifying the needs of UK shipyards and the marine supply chain, and for the dissemination of relevant R&D in partnership with UK research agencies, companies and universities.

Inter-Agency Committee on Marine Science and Technology

The Inter-Agency Committee on Marine Science and Technology (IACMST) is a UK Government Committee reporting to the Office of Science and Technology. The IACMST maintains an overview of marine activities across Government. It encourages links between Government and the national marine community, the wider application of marine science and technology, optimum use of major UK marine facilities, training and education and international links.

7.1.9.4 Programme information

The LINK Programmes are shared cost programmes for the participation of industry and universities. The projects that are funded under these programmes respond to the broad objectives of the specific LINK programme, in other words the projects follow a “bottom-up” approach, rather than in response to a particular theme.

LINK programmes function on the same basic premise, that to maintain the competitiveness of British industry, there is a need to "bridge the gap" between the research base (universities, research institutes and agencies etc) and industry, by encouraging collaboration through jointly funded research. A particular aim of the scheme is to provide the means by which small to medium sized companies are encouraged to participate in research.

Recent past collaborative research LINK programmes with marine interest are as follows:

-Advanced Sensors for Ocean Applications programme (SEASENSE), which was a programme designed to support innovative pre-competitive research and development of marine sensors on a collaborative basis (industry and the science base). It was sponsored by Natural Environment Research Council (NERC) and Department of Trade and Industry (DTI) with government funding of up to £1.6m over five years, was launched in early 1996. The programme was targeted on a growing market need for new and improved sensors for monitoring and managing the marine environment. Market areas of interest include ocean monitoring (for national, regional and international strategic needs, such as environmental change, warning of natural hazards, and defence), waste disposal, ocean resource mapping and seabed exploration, inspection and maintenance of subsea structures, cables and pipelines, and environmental data collection for offshore operations.

- The LINK Aquaculture programme, which was sponsored by the Department for the Environment, Food and Rural Affairs (DEFRA), the Scottish Executive, Environment and Rural Affairs Department (SEERAD) and the Natural Environment Research Council (NERC). This provided a considerable investment in the strategic development of the UK's aquaculture sector.
- The Hydrocarbon Reservoirs Programme, jointly sponsored by DTI, Offshore Supplies Office (OSO) and NERC, with Government funding of £6m over five years. It aimed to enhance the UK's position as a major centre for hydrocarbon related research, and to encourage and support collaborative research and partnership between the UK science base, oil companies and UK companies supplying oilfield services
- Oil and Gas Extraction Programme, launched in 1998 and funded by the DTI and EPSRC with an initial budget of £2m/yr over three years. The programme aimed to improve the effectiveness of oil and gas discovery and assessment technologies; improve the effectiveness and economics of oil and gas production technologies; and greatly reduce the environmental impact of these activities.

More recently initiated LINK programmes include the Ocean Margins LINK programme. This LINK programme (announced in September 1999) will support a portfolio of collaborative research projects between industry and research base partners, and aims to improve geological understanding of this important area.

Smart is the Small Business Service (SBS) initiative that provides grants to help individuals and small and medium-sized businesses to make better use of technology and to develop technologically innovative products and processes. The areas covered that are eligible for grants are Technology Reviews, Technology Studies, Micro Projects, Feasibility Studies and Development Projects

Offshore Safety Research Programme

HSE's Offshore Safety Research Programme comprises a portfolio of projects in support of its regulatory responsibilities for the safety of the workforce in the offshore oil and gas industry. Project Handbooks providing a comprehensive listing of all current and recently completed projects were published until 1997. These Handbooks have now been superseded by an on-line Handbook which will include the background, objectives and point of contact for all future projects. It will be regularly updated in order to ensure accuracy.

7.2 ENCOMAR - partner countries

7.2.1 Bulgaria

7.2.1.1 National policies

The bilateral competitions are coordinated by the National Science Fund (NSF) at the Ministry of Education and Science (MES). They promote joint scientific projects in cooperation with other countries in all scientific areas. So far Bulgaria has agreements for joint activities under this programme with Germany, Romania, Greece, the Republic of Macedonia, China, the Slovak Republic, Ukraine, and India.

7.2.1.2 Priority areas

There are applications of modern methods and technologies for design, building and modernisation of river vessels (e.g. Numerical model for river sediments applicable for Danube river; Virtual education on European standards for inland European shipping; Development of pilot Trans European line for containers transportation).

7.2.1.3 Funding organisations

The Ministry of Education and Science implements the national policy and coordinates the activities, related to all education and science issues in Bulgaria. As the main policy-maker it is responsible for the elaboration of programs for the future development of education, and its regional inspectorates implement the control over the work of the education system at local level. The Ministry is also responsible for creating a favourable environment and incentives for the development of science and research.

As sub-units the Ministry has the National Council for Scientific Research (NCSR), and the National Science Fund (NSF). The Scientific Research Department (SR Department) is one on the 16 departments in the specialized administration of the Ministry. The National Science Fund (NSF) is supportive body of Ministry of Education and Science (MES). It promotes the increase of the science and research initiatives effect on national, regional and international level, as well as the development of a prosperous society and economy through basic and applied research. The National Science Fund (NSF) organizes activities and promotes the international scientific cooperation, stimulates, finances and facilitates the science and applied research through competitions and assesses the results.

7.2.1.4 Programme information

National topics for programs in shipbuilding funded by Ministry of Education and Science are:

- Development of technologies for survey and class approval of the vessels and Internet system for management of the classification activities
- Development of integrated systems (monitoring of ship sea-going and strength characteristics)
- Methodology for design of maritime structures and systems
- Modern methods and technologies in ship design, building and modernisation of river vessels Euro integration of Bulgaria on Danube shipping – investigation and development of modern technologies for sustainable development, qualification and for effective river transport

The Ministry of Transport and its specialized structures prepare programs for the operation on basic priorities. It's expediently to form purposeful kind of activities and directions as follows:

- structure of sea and river fleet for cargo and passenger transport;
- development of shipbuilding and ship repair powers;
- modernization, reconstruction and extension of sea and river ports;
- protective equipments, cleaning and protection of the aqueducts of the ports from pollution;
- construction of intermodal transport chains through the Black Sea and river-channel
- system Rein-Main-Danube, with the participation of motor and railway transport with using of transeuropean corridors

7.2.2 Croatia

7.2.2.1 National policies

The main challenges for research policy are laid down in the *Science and technology policy of the Republic of Croatia 2006-2010* accepted by the Croatian government in June 2006. The main challenge of science policy is to stimulate scientific excellence and enable the transfer of knowledge and results of scientific discoveries to industry and business in order to increase competitiveness and generate sustainable growth and productivity.

7.2.2.2 Priority areas

Croatian maritime strategy considers that safety of navigation and pollution prevention is the most important aspects of its responsibility for Croatian maritime sector. Due to an increased volume of the maritime traffic in the Adriatic Sea, and particularly due to increased volumes of mineral oils and other dangerous and harmful substances carried by ships, the likelihood of maritime accidents in the Adriatic area will become more pronounced. It has to be emphasized that, because of natural and geomorphologic features of the Adriatic Sea, any maritime accident, involving harmful substances, may result in catastrophic consequences for all the countries in the region.

7.2.2.3 Funding organisations

Ministry of Economic, Labour and Entrepreneurship

The Shipbuilding Department carries out professional activities related to shipbuilders, ship equipment manufacturers and shipping companies in the Republic of Croatia. The Shipbuilding Department carries out administrative operations related to allocation of funds from the State Budget apportioned for subventions, provides opinions in the procedure of granting state guarantees, oversees the operations of state owned shipyards; carries out other activities within its scope.

Ministry of the Sea, Tourism, Transport and Development

A maritime transport strategy of the Republic of Croatia is based on the maritime transport sector gap analysis relative to the EU legal and economic inheritance and takes into account the European Commission Opinion of Croatia's Application for Membership of the European Union in the field of Maritime transport (COM (2004) 257 final) as well as the Council Decision on the principles, priorities and conditions contained in the European Partnership with Croatia (COM(2004) 275 final).

Ministry of Science and Technology

The Ministry finances the procurement of program support for universities and public research institutes to be applied in teaching and scientific research. Program support is bought with the academic discount and in not to be used commercially. The Ministry finances the operation of Documentation of Reference Center which distributes the procured program support and provides assistance to the users.

7.2.2.4 Programme information

The National Science and Research Programme (1996-2000) listed a number of general and special research priorities, implemented within the framework of six scientific fields: natural sciences, technical sciences, biomedicine, biotechnology, social sciences and humanities. There were 15 such priorities, among others information and communication technologies, maritime research and the use of the sea and the other natural resources. Some of the priorities are not related to any scientific specialisation, while others supported R&D activities in certain fields. The Programme was never fully implemented. Past practice of setting numerous priorities showed that priorities should be redefined in a more rational and systematic manner.

7.2.3 Hungary

7.2.3.1 National policies

The economic policy efforts of the Ministry of Economy and Transport (GKM) are focused on creating and supporting conditions for rapid and balanced growth and convergence of the Hungarian economy. In 2004, the Hungarian Parliament passed the new Hungarian transport policy for the period from 2003 to 2015. This is in harmony with the common transport policy of the European Union, and highlights the direction for the development of transport in Hungary up to 2015. The aims of the Hungarian transport policy are to create a transport system which is economically efficient, modern, safe, increasingly friendly to the environment, and meets the requirements of society.

The Shipping Division contributes to the more efficient usage of the economic resources by the development of the shipping infrastructure and technologies and to the protection of the natural and built environment. The opening of the waterway tourism provides the possibilities for the people to meet the Hungarian natural and cultural values. The creation of the possibilities is carried out for the ship building industry to increase the professional reputation. The availability of the maritime connections and maritime transport services in proper quality belongs to the priority of the activities. By the development of the ports Hungary can become a logistical service centre in the Central-European area. An intention is to increase the social support of the environment friendly waterway transport.

7.2.3.2 Priority areas

The main tasks of Shipping Division are the following:

- define the technical and security regulations of the inland and maritime navigation,
- definition of the requirements of skipper and sailor certificates, creation of framework conditions of the training,
- management of the development of shipping infrastructure and technology,
- elaboration of the operational framework conditions of port economy and ship building,
- Analysis and development of market conditions of the economical activities belonging to the waterway transport.

7.2.3.3 Funding organisations

Most tasks concerning macroeconomic policy, regulation and analysis within the Ministry of Economy and Transport belong to the Economics Department, which operates in the framework of Deputy State Secretariat for Economic Co-ordination and Finance. The Ministry of Economy and Transport represents Hungary in international meetings, is responsible for the development and maintenance of national public ports and cooperates with other ministries in issues related to inland navigation.

The General Inspectorate of Transport is structured in General Director - Deputy General Director - Department for Road, Rail and Waterway Transport - Inland Navigation and Maritime Department.

Responsibilities are mainly in administration of waterways, the registers crew's professional examination and certification, issues national technical regulations for construction, maintenance and repair of Ships, search and rescue operations for people, vessels in danger in national territorial waterways, controls the pollution caused by vessels sailing on the national waterways, issues various licenses to Hungarian skippers, issues or revokes the right to sail under Hungarian flag, supervises and controls vessel traffic on Hungarian waterways and ports, investigates navigation incidents, issues notices to skippers, plans setting of traffic signs.

7.2.3.4 Programme information

There is no information on maritime research programmes available of Hungary. On the internet page of the Ministry of Economy and Transport are some information available under the headline infrastructure (e.g. Transport Infrastructure Development in Hungary; Hungarian intermodal logistics development conception).

7.2.4 Latvia

7.2.4.1 National policies

Approximately half of the total R&D funding in Latvia comes from the government. Public funding of R&D is distributed mostly by the Ministry of Education and Science, but recently the Ministry of Economics also has started to distribute funds to support co-operation between research organisations and the business sector.

Possibly the most remarkable characteristic of the Latvian research funding system is the recent considerable increase of funding. This increase is due to two reasons: an increase in GERD financed by government and the inflow of EU Structural Funds. In 2003, the government expenditure on R&D was approximately 16 million EUR (Source: Ministry of Education and Science (2005) "Research and Development in the Republic of Latvia"). Three years later it was more than doubled with approximately 38 million EUR. Due to the Structural Funds it can be expected that further increases will be realised. According to the Law on Research Activity (2005), government research funding has to increase by 0.15% annually until it reaches 1% of GDP. In 2003, public R&D expenditure was 0.25% of GDP (Source: European Innovation Scoreboard 2005).

7.2.4.2 Priority areas

There are some innovative method transfers for production of maritime related products for industry. Marine related education network, R&D training and scientific cooperation were organised for universities and research organisations.

7.2.4.3 Funding organisations

The Ministry of Transport and Communications

The Ministry of Transport and Communications of Republic of Latvia supervises very significant fields of the national economy - transport (road, rail, sea and air transport), communications (telecommunications and post) and information technologies. The main tasks of the Ministry include the issues of strategic policies, finance and regulation.

LIDA - Latvian Investment and Development Agency

LIDA is the main public financing and expert organization for investment and technological development in Latvia. LIDA finances industrial R&D projects as well as projects in research institutes. The objective of the Latvian Investment and Development Agency (LIDA) is to promote business development by facilitating more foreign investment, in parallel increasing the competitiveness of Latvian entrepreneurs in both domestic and foreign markets. LIDA funds come from the state budget via the Ministry of Transport and Communications.

MAL - Latvian Maritime Administration

Maritime Administration of Latvia is a supervisory authority of the Ministry of Transport which through the Maritime Administration and Marine Safety Law has delegated to supervising the different issues related with marine safety.

7.2.4.4 Programme information

Milestones of the former National innovation programme (2003 – 2006) are the harmonization and coordination for development of enabling environment for innovation actions in Latvia.

In 2005, five national research programmes were launched in conformity with the stated priorities. The national research programmes are supposed to be the main tool for implementation of these research priorities.

On 30 May 2006, the Cabinet of Ministers approved the thematic priorities for 2006-2009. New priorities include five previous priority fields as well as four new ones: agro-biotechnology, energy, and environment and health sciences. State research programmes in four new priority fields will be launched.

The new draft Guidelines for Development of Science and Technology 2006-2013 envisage the establishment of a new consultative and co-ordinating institution – the Council of Science and Technology Development Strategy chaired by the Prime Minister.

7.2.5 Lithuania

7.2.5.1 National policies

Although according long-term development Strategy of the State (28/11/02) Lithuanian shipbuilding yards are classified as enterprises with a good prospect for growth and significant impact on country's economy. Shipbuilding and ship repair sectors are not supported by State. The analysis of Lithuanian Shipbuilding and Ship repair according 8 key areas mentioned in LeaderSHIP 2015 has shown that all problems are topical for Lithuania. Implementation of the recommendations of EU programme LeaderSHIP 2015 is the key factor to develop Lithuanian Shipbuilding and Ship repair industry.

7.2.5.2 Priority areas

At the beginning of 2005 Lithuanian Ministry of Science and Education renewed an initiative to coordinate state scientific programme for R&D on Baltic Sea and coastal zone. Scientists of Klaipeda University have suggested planning of some researching on Short Sea Shipping; implementation of Marco Polo programme; Bottlenecks of waterborne; new ships design; safety and quality of shipping; environmental "friendly" technologies in shipbuilding, dredging, etc. Another direction of R&D on Baltic Sea and coastline zone could be Sea and Coastline ecology.

7.2.5.3 Funding organisations

Ministry of Transport and Communications was re-established in 1990. The most important tasks of the Ministry includes taking over of the transport sector, implementation of new transport strategy and legal system, integration of the Lithuanian transport sector into the European transport network.

Ministry of Economy, of the Republic of Lithuania its main activities are to vouchsafe the development of Lithuanian economy and increasing of welfare of population and implement the Long-term Development Strategy of the State.

The Fisheries Department under the Ministry of Agriculture implements the State fishery policy; prepares strategies, drafts of legal and normative acts and development programs in pursuance to redevelopment of fish recourses, regulation of fishing, fish breeding and growing, processing industries and trade in fish and fishery products; supervises the implementation of the aforementioned programs; develops integration into the international fishery market.

LIC (The Public Institution Lithuanian Innovation Centre) is a non-profit organisation founded in 1996. LIC provides innovation support services to enterprises, research institutions and business support organisations.

CPMA (The Central Project Management Agency) is an institution, established by the Ministry of Finance of Republic of Lithuania which seeks to ensure efficient management of sovereign loans, financial assistance funds and other funds provided by the European Union, international financial institutions and other international and local donors. The agency provides services and assistance to a wide range of Lithuanian public and private entities: Ministries and other governmental institutions; Municipalities and municipal enterprises; Homeowners and homeowners associations; Private businesses; Research and training institutions.

7.2.5.4 Programme information

The Lithuanian Science and Technology White Paper Implementation Programme was prepared followed by such official documents: Long-Term Strategy for Lithuanian Economic Development in 2001-2015, Information and Knowledge Society Development, White Paper of Lithuanian Science and Technology, Measures for implementing the government programme for 2001-2004. This programme is the first step in implementation of the Lithuania Long -Term Strategy for R&D. *The main goal* of the Lithuanian Science and Technology White Paper Implementation Programme is to promote the sustainable country development: to ensure a systematic long-term research and technological development, and to create the society, in which the importance of developing R&D and innovations are emphasizing as a key driver of economic growth and competitiveness of the country.

7.2.6 Romania

7.2.6.1 National policies

In Romania, the efforts of ship builders should be higher, taking into account the gap which is still high between Romanian shipyards and the competitiveness of those in EU. Taking into account the fact that in any other industry branch, the development of new products, including prototypes, are usually considered to be a pre-competitive development activity, allowed to be supported up to 25%, it is necessary that the shipbuilding sector should benefit of the same facilities.

The amount of the subsidies must reflect the actual technological risks existing in every phase, including design, technologies/development and production. There have to be established new definitions regarding the innovation. The absence of a legal frame that could be effectively applied, does not give the possibility of implementing some improved technological solutions. Therefore is necessary receiving the right support for increased investments in engineering, know-how and technological development, which will lead to new commercial opportunities.

7.2.6.2 Priority areas

In the Romanian shipbuilding sector it is necessary to develop a consistent program in order to solve problems of human resources training. In this action is necessary to involve the education institutions and to implement the idea of "life long learning strategies".

In the field of environmental protection are necessary improvements in the most of the industrial units of the sector like modernizing the neutralization units of processing solutions. In all the regulations issued by EU and OECD the activities related to environment protection are eligible for state subsidies.

The strategies to support the development of the potential of the area are influenced and driven by the market demands and EU policies, the OECD Shipbuilding Agreement, Black Sea MOU for Port State Control and supported by the Black Sea Economic Cooperation (BSEC). The BSEC formulated a maritime transport action plan, which covers endowment with VTMS (Vessel Traffic Management System) of all the ports of the BSEC Member States relevant in line with international standards. Attention should be paid to the development of means and services for the maritime transport in the BSEC region.

7.2.6.3 Funding organisations

The Ministry of Education and Research - National Authority for Scientific Research (ANCS) is the specialised organisation of central public administration, under direct subordination of the Romanian Government. ANCS applies the strategy and the governmental programme in the field of scientific research. ANCS leads the national system of research, applying its tasks set up by laws and other official documents in its field of activity, is coordinating the main national R&D funding programmes supported by public funds.

Ministry of Economy and Commerce is the public authority proposing and implementing the national policy in the field of industry and commerce, including shipbuilding and ship repairing.

The Ministry of Transports, Constructions and Tourism is the public authority for programs on transportation including waterborne transportation and port operations.

7.2.6.4 Programme information

National programme: Excellency in Research

- Programme duration 2005-2007
- Funded by Romanian Ministry of Education and Research
- Budget 206 million EUR (covering all research fields, maritime share not known)
- This is the main national program for research grants having the aim of preparing the Romanian research institutions for integration in the EU RTD Programs.

There are some studies for preparing the national or sector strategies. Most of the activities are funded by industry. In universities the research programs are developed based on research grants.

7.2.7 Russia

7.2.7.1 National policies

The basic strategic document for R&D at the present time is the Basic Principles of the Policy of the Russian Federation in the Field of Development of Science and Technologies for the Period up to 2010 and further, approved by the President of the Russian Federation on March 30, 2002 (Pr-576). It states that S&T development is one of the highest priorities and should ensure social and economic progress in Russia. The strategic goal is the transition to the path of innovative economic development of Russia based on certain priorities. But the state policy directions are defined in a very vague manner for basic research and the most important applied research and development and the creation of the national innovation system.

7.2.7.2 Priority areas

Russia's national interests at seas and oceans, which historically evolved in all main spheres of activity political, economic, scientific, and military also extend to inland waters, territorial seas, the exclusive economic zone, and the continental shelf as well as areas at seas and oceans that are outside the jurisdiction of littoral states. Technologies and technical means of developing many new natural resources (hydrocarbons and minerals of the seabed, the energy potential of tides and waves, etc.) are so important and so specific that R&D projects and appropriate production facilities are keys to national economic development as a whole. Furthermore, organization of ongoing and future maritime activity did not factor in the possibility of a sharp change in the country's geopolitical situation, international conditions in and around the world oceans, and other factors.

7.2.7.3 Funding organisations

Russian Ministry of Education and Science (Ministry for Science and Technological Policy)

Multilateral cooperation occupies an ever greater place in the international relations system of the Russian Ministry of Education and Science since it is the main body which coordinates on a permanent basis the interaction in education and science. The Ministry carried out multilateral programmes with the participation of Russian research organisations.

Russian Foundation for Technological Development (RFTD)

Established in 1992, this Foundation was funded through an R&D financing tax. The RFTD mainly financed R&D and innovation projects on a competitive and reimbursable basis thus ensuring additional inflow of funds. Since 2002 due to the change in the taxation system and the de facto elimination of the "R&D financing tax" this source of financing has disappeared and a legal vacuum ensued as regards the activities of this Foundation. From 2003 competitions stopped and at present the Foundation mainly deals with returning back the funds it had provided. So far its future is unclear. Altogether during 1992-2002 the RFTD financed 805 projects.

7.2.7.4 Programme information

The Federal Goal-Oriented Programmes, elaborated and financed by branch ministries and agencies, contain also some funds for R&D within the respective programme. The main directions of the Federal Goal-Oriented Programmes are: infrastructure development; the promotion of young scientists (new generation); judicial system reform; safety of life and protection of the environment; new economy; regional parity. The list of programmes involving R&D and the respective agencies responsible for its financing is given on the web-site http://www.programsgov.ru/cgi-bin/fcp_nir.cgi?mod=nir (only in Russian). The S&T policymaking body has its own additional special Federal Goal-Oriented S&T Programme "R&D on Priority Directions of S&T Progress in 2002-2006." The goals of the Programme are: to obtain new knowledge; to provide a scientific and technological support in the transition of the industries to qualitatively new technological levels; entering the domestic and world high technologies markets; to develop the scientific and technical intellectual potential of Russia; to preserve the leading scientific schools and collectives; to preserve Russia's priority in a number of important areas of science and technology.

7.2.8 Slovakia

7.2.8.1 National policies

In 2005 the Slovak Government changed its priorities, which states that the objective is to develop a knowledge based economy and that research and development is a major priority. In support of this the Slovak Government launched a program called MINERVA. Within this context the government also decided that research and development will be one of the priority areas which should be financially supported by the structural funds for the period 2007-2013. During 2005 the State budget allocated higher support to the R&D sector and the government decided to carry out an administrative reform of its research and technology policies as well as to reform the public R&D sector.

7.2.8.2 Priority areas

The R&D thematic program trends are Economy competitiveness; Human resources development; Internal and external state security; R&D integration into the European Research Area. These priorities created State programs of research and development and were financed in competitive form. The priority areas in maritime transport for future joint European R&D are New technology for Sea/River ships – especially for container transport: Study case - Comparison between road/railway and sea/river transport; Extension of information systems on shipbuilding technology; Improvement of technical safety on ships; Increasing of requirements for crew qualification; New Ro/Ro ships for European inland waterways; Transformation of river ports to the multimodal logistic centre; Improvement of PSC-Port state control.

7.2.8.3 Funding organisations

The action plan for research, development and innovation was approved by the government and Ministry of Education was given the responsibility of implementing it. A Slovak Research and Development Agency which is the only research and development grant agency in the Slovak Republic was established.

According to the new law on inland navigation, the Water Transport Section of the Ministry of Transport, Posts and Telecommunications (it has 9 employees) grants and withdraws authorisations to foreign carriers for participation in domestic inland waterway transport. The Ministry cooperates with the Ministries of the Environment, Finances, Economy, foreign Affairs, Interior, Education, Labour and Social Affairs and Transport Research Institute.

The State Navigation Administration was established in 1964 (it has 80 employees) and is currently a state administration body under the Ministry of Transport, Posts and Telecommunications. In line with the new draft inland navigation act, it performs state administration functions and state professional supervision in inland navigation.

7.2.8.4 Programme information

There is no special research program for maritime applications. Specific tasks are formulated which will successively create conditions for the implementation of the global objective and specific aims in the priority areas defined in the Transport policy until 2015 (e.g. the concentration of research and development to safe, environment-friendly and operationally reliable transport.).

In January 2000, the Government approved the 'Update and Specification of the Principles of the State Transport Policy of the Slovak Republic' as the basic systemic document for the transport sector. The main strategic goal of the Slovak Republic's transport policy, arising from the principles of the European Transport Policy, is to secure conditions for long-term development aiming at sustainable mobility in the integrated use of all modes of transport. Special emphasis is placed on intermodality and support for more ecological modes of transport, i.e. rail transport, inland waterway transport and combined transport, as well as public transport, and for the creation of conditions to secure the accessibility of the Slovak Republic by air.

7.2.9 Turkey

7.2.9.1 National policies

TUBITAK allocated €56 million for the programs implemented by the Research Support Programs Directorate (in particular to the Scientific and Technological Research Projects Support Program, Rapid Support Program and National Young Researcher Career Development Program).

Approximately 28 percent of TUBITAK funds were allocated to the Technology and Innovation Support Programs Directorate which supports R&D and innovation projects of the private sector companies. They also implement the program International R&D Projects with the Participation of Industry from these resources.

TUBITAK allocated €44 million to its research institutes (particularly to the Marmara Research Centre (MAM), Space Technologies Research Institute (UZAY), National Electronics and Cryptology Research Institute (UEKAE) and Genetic Engineering & Biotechnology Research Institute (GEMBAE)).

€31 million was allocated to the Public Research Group which mainly implements the Support Program for Public Institutions Research Projects. The rest of the funds were used by the Scientist Support Directorate (€16 million) to encourage research as a career path and by the Science and Society Group (€9 million) to create awareness on science and technology.

7.2.9.2 Priority areas

There is no specific programme for maritime transport. General priority areas regarding the Turkish Science and technology policy are: Information and communication; Flexible manufacturing and automation; Transportation with particular interest in rail transport; Aeronautics, space and defence; Genetic engineering and biotechnology with particular emphasis on the agricultural; applications in relation with the “South Anatolian Project”; Environment friendly technologies and renewable energy systems; Advanced materials; Earthquake related problems and risk management.

7.2.9.3 Funding organisations

Scientific and Technological Research Council of Turkey (TUBITAK)

The public funding for research and innovation is provided through the Scientific and Technological Research Council of Turkey (TUBITAK), State Planning Organisation (DPT), the Under-secretariat of Foreign Trade (DTM), Small and Medium Industry Development Organisation (KOSGEB) and Technology Development Foundation of Turkey (TTGV). Direct funding is provided to the universities for their scientific research projects. The highest share of resources is used by TUBITAK to finance research and innovation projects.

TUBITAK develops national science and technology policies of Turkey and proposes them to the Supreme Council of Science and Technology (BTYK) which makes the final decision on the policies and follows up their implementation. TUBITAK's president and one of the vice president are also members of the BTYK which is chaired by the Prime Minister and composed of related ministries, high level representatives of the government bodies, universities and NGOs.

Ministry of Transport, Undersecretariat for Maritime Affairs:

In Turkey transport research is sometimes financed by the Ministry of Transport, Undersecretaries for Maritime Affairs. Current interest is to establish a market research, competitiveness analysis of Turkish shipbuilding, ship repair, ship scrapping, marine equipment and yacht building sectors. Additionally there is interest on short sea shipping mainly in territorial waters.

7.2.9.4 Programme information

There is no specific programme for maritime transport. Turkish Scientific and Research Council awards some maritime transport related projects. Other activities include a master plan for Turkish shipbuilding industry and Turkish coaster fleet renewal (TUTERMAP).

7.2.10 Ukraine

7.2.10.1 National policies

Maritime transport plays a very important political role for Ukraine. That is why there are specialized science-researching institutes and several higher educational establishments in the country that prepare specialists for working in maritime field.

7.2.10.2 Priority areas

A large group of shipbuilding research and design organizations is based in Sevastopol. These are the Black Sea Scientific and Research Institute of Shipbuilding, the Black Sea Scientific and Research Institute of Shipbuilding Technology, Central Design Office “Chornomorets”, Central Design Office “Tavria”. Design Office “Sudokompozit” is based in Feodosiya.

Furthermore there are some maritime training institutes in the Odessa area: Odessa National Maritime University (ONMU), Ukraine, Training & Certifying Centre of Seafarers (TCCS) and Odessa Maritime Training Centre (OMTC).

7.2.10.3 Funding organisations

There is no common Ukraine maritime funding organisation. The Ministry of transport is responsible for shipping. The Ministry of Transport and Communications of Ukraine was established on July 24, 2004 by Presidential Decree “On establishment of Ministry of Transport and Communications of Ukraine”. Ministry of industrial policy is responsible for shipbuilding.

7.2.10.4 Programme information

There is no present approved maritime research program in the field of maritime transport, shipping or shipbuilding in Ukraine.

Different projects for national programs of maritime transport development are being prepared in Ukraine. The Odessa National Maritime University will participate in working out such program in the nearest future.

7.3 Other European Union member and candidate countries

7.3.1 Austria

7.3.1.1 National policies

The agreement of Barcelona from the year 1921 secures the right for the states without seacoast to exercise sea-going vessel travel under their own flag. Presently the only open sea shipping company in Austria is the Austrian group of Lloyd which is located in Vienna. It operates trading vessels under Austrian sea-flag, predominantly for the transport of dry bulk goods. The larger part of the fleet (ships with a load-carrying capacity between 4.000 and 6.000 tons) operates in the sea-areas approximately around Europe, some also world-wide. The most strongly represented nations in the crews are Germany, Poland, Croatia and Lithuania. The Danube river flows through the country on over 350 kilometres and is the most important water route of the Austrian inland navigation. Before the countries of the former Eastern Bloc opened economically and politically, national societies with a monopoly character dominated shipping on the Danube. Austria had only few shipping lines apart from the national "Danube steam shipping company (DDSG)" until the 90's of the previous century. With retreat of the state, private enterprises could take over the ships of the DDSG and are successful at the free market. The opening of the Rhine Main Danube channel provided Austria the entrance to the net of the water routes of Western Europe. It opened the possibility for clear increase of the offer of different traffic capacities.

7.3.1.2 Priority areas

ICT based river information systems are important for official and commercial use. Environmental issues (e.g. the increase the safety of inland navigation) and the launch of a training offensive is necessary.

New Markets provide logistics advice in the field of Danube navigation, stimulate cooperation between inland navigation and reload/ rail, support the construction of scheduled liner services on the Danube, push the foundation of national inland navigation development agencies in the Danube countries. Funds are important for flexible and competitive transshipment facilities, for an environmentally friendly and market orientated Austrian fleet, for the development of scheduled container liner services and new multimodal transport, and for an innovative use of technology in Danube navigation. International activities push the development and implementation of the European action plan, contribute to the harmonization of legislative and institutional framework conditions, improve the image of European inland navigation.

7.3.1.3 Funding organisations

Ministry of Education and Science

Federal ministry is funding and overseeing, among other institutions, all public universities in Austria. Site provides a reasonable first overview on the nation's system of public education.

Federal Ministry of Transport, Innovation and Technology

The Federal Ministry of Transport, Innovation and Technology has the following mission: to create and develop an intelligent and efficient infrastructure; to shape and promote innovative initiatives.

7.3.1.4 Programme information

National Action Plan Danube Navigation

This program is the national conversion of the European action program for inland waterway transport NAIADES. The Program converted through "via Donau"- Österreichische Wasserstraßen-Gesellschaft mbH was founded on 1 January 2005 by the Austrian Federal Ministry of Transport, Innovation and Technology for the preservation and development of the Danube waterway.

7.3.2 Belgium

7.3.2.1 National policies

Within the Belgian Federal Government's jurisdictional framework, the Federal Science Policy Office implements national and international multiannual research actions with a view to consolidate Belgium's scientific and technological potential.

7.3.2.2 Priority areas

There are different actions within the context of the "Science for Sustainable Development" programme of the Belgian Science Policy Office. Example projects within action Global change, ecosystems and biodiversity SPSD 2 are:

- EV/43: Monitoring programme on air pollution from sea-going vessels (MOPSEA)
- EV/44: Emissions of CO₂, SO₂ and NO_x from ships (ECOSONOS)

Example projects within action Sustainable production and consumption patterns SPSD 2 are:

- CP/36: Assessment of quality differences between freight transport modes
- CP/41 Spatial analysis and modelling based on activities (SAMBA)

7.3.2.3 Funding organisations

The Belgian Federal Science Policy Office is responsible for the preparation, execution and evaluation of science policy and its extensions. In particular, on Belgian Government's instructions, implementation of scientific and technical means in support of Federal Authority competences (notably giving authorisations for tax deductions for R&D). The office developed a permanent knowledge resource within scientific and technical spheres at the service of the Federal Authority. Federal Ministry of Economy, Energy, External Trade and Scientific Policy

7.3.2.4 Programme information

Belgium has no specific Maritime Research programme as such. There are "Marine Research" action lines embedded in the context of the "Science for Sustainable Development" programme of the Belgian Science Policy Office (www.belspo.be). There is a database available called FEDRA, which is a database of research actions funded by the Federal Office. FEDRA offers various options for consulting the database.

There is not that much marine technology research done in Belgium, and this is mostly done by some research groups at universities. Most of this information can be found on the www.vliz.be website from Flanders Marine Institute (VLIZ).

7.3.3 Cyprus

7.3.3.1 National policies

The basic elements of the system are headed by the Ministry of Finance while the plans for funding and encouraging research are formulated by the Planning Bureau. The main means of disbursing research funding is through the Research Promotion Foundation (RPF). Another expression of that policy is in the establishment of research institutes, the University of Cyprus and the Cyprus University of Technology.

7.3.3.2 Priority areas

Since Cyprus is such a small country, no special regional aspect is developed in R&D policy. Instead, more collaboration between different areas is supported. Moreover the style of governance is a unitary one, again leading to a national kind of research policy.

7.3.3.3 Funding organisations

The Research Promotion Foundation (RPF) was established in 1996 by the Government of the Republic of Cyprus to serve as a national institute for the promotion of scientific and technological research. Although the Foundation is a relatively newly established organisation, it has developed a wide range of activities. Among RPF's main activities is the development of national competitive programmes for financing of research projects and support of research activities. Moreover, RPF has developed several activities to facilitate the creation of networks between Cypriot and foreign scientists. Most of these activities relate to the involvement of Cypriot scientists in European research programmes (Coordination of Cyprus in the Framework Programmes, COST, EUREKA), the cooperation with international organisations (European Science Foundation) supporting research activities and the preparation and implementation of bilateral agreements between Cyprus and other countries in the field of research and technological development (Greece, France, Slovenia, Italy, Egypt).

The Cyprus Institute of Technology is not a research funding agency. Its activities relate to technology transfer but they do not fund research and technological development activities.

7.3.3.4 Programme information

Cyprus has no specific Maritime Research programme but it is active in various European programmes.

7.3.4 Czech Republic

7.3.4.1 National policies

The National Innovation Policy for the years 2005-2010 emphasizes R&D as the main source of innovation, cooperation between the public and private sector, human resources and the need for a more effective state administration. Specific programs will be launched where applicable.

In the Czech Republic research and development is supported from public funds through targeted and institutional financing. The National Research Programme (2004-2009, 2006-2011) concentrates a significant part of the targeted support to research and development. The remaining part is to be provided by the Grant Agency of the Czech Republic and the Grant Agency of the Academy of Sciences of the Czech Republic, especially to projects on fundamental research, further through specific sectorised programmes which are not part of the National Research Programme.

7.3.4.2 Priority areas

The national research programme consists of five thematic programmes and their sub-programmes:

- Quality of Life
- Information Society
- Competitiveness at Sustainable Development
- Energy for Economy and Society
- Modern Society and Its Transformation

It also consists of three Cross-Sectional programmes and their sub-programmes:

- Human Resources for Research
- Integrated Research
- Regional and International Cooperation in Research

7.3.4.3 Funding organisations

Ministry of Transport

The Ministry of Transport was responsible for the transportation policy of the Czech Republic for 2005 – 2013. The Department for Navigation and Waterways is divided into three divisions (Division for Inland Navigation, Division for Maritime Navigation, Division for Conceptual Planning and Investments).

7.3.4.4 Programme information

There is no specific programme for maritime transport, shipbuilding or maritime technology research.

7.3.5 Estonia

7.3.5.1 National policies

Policy mix to increase private investment in R&D; Grants to public sector research institutions; Strengthen and create centres/networks of excellence; Developing public-private partnerships for R&D; Improving R&D co-operation and technology transfer; Promotion of R&D services to enterprises(esp. SMEs);Grants to support business R&D, and R&D collaboration; R&D related services to enterprises; Promoting regional research-driven clusters; Raise interest of the young in science and technology; Enhancing the mobility of researchers.

7.3.5.2 Priority areas

No research priority areas are set for the bulk funding, but are sometimes determined separately within the individual measures. RTDI measures are based on the principles worked out in the Estonian Research and Development Strategy 'Knowledge-based Estonia' 2002-2006 where three priority research areas are presented as follows: user-friendly information technologies and development of the information society, biomedicine, materials technologies. No specific research priorities are established individually by Enterprise Estonia.

7.3.5.3 Funding organisations

The two central organisations in Estonian R&D policy are the Ministry of Economic Affairs and Communications, and the Ministry of Education and Research. They are responsible for nearly all research funding streams and horizontal policies. Both Ministries have special Divisions working on innovation policy and research policy, respectively. These Divisions are fairly small (employing about 4-6 people each) and face frequent staff turnover like most of the public sector in Estonia. At the same time, the scope of their responsibilities is extensive, which is why they are happy to include their implementing agencies and other experts into any process or project they work on.

Both Ministries have their advisory committees for policy development - Science Policy Committee for the Ministry of Education and Research, and Innovation Policy Committee for the Ministry of Economic Affairs and Communications. These Committees include experts from academic sector, industry and public sector. The Committees meet on an ad hoc basis upon the invitation of the respective Ministers. The Committees usually advise the respective policy Divisions of the Ministries on strategic issues, where the Ministries want some expert opinion. The actual workload of the Committees depends largely on the preferences of the specific Minister and the policy Division. The administering agency is Enterprise Estonia. The monitoring agency is the Ministry of Economic Affairs and Communications.

7.3.5.4 Programme information

Prior to the R&D financing programme the R&D projects financing activities were ongoing by the former Innovation Foundation (existed until 2000). The principles and financing criteria of the activities were thoroughly analysed by local and foreign experts and the new programme document with amendments was designed in 2001. There was no clear system or set out criteria designed for the preliminary programme. Enterprises were mostly given loans and R&D institutions got mostly grants. Presently loans are not provided, support for feasibility studies, applied R&D and product development projects are offered to both R&D institutions and enterprises. Ca 2/3 of the programme funding is given to enterprises.

7.3.6 Greece

7.3.6.1 National policies

The horizontal (general or trans-sectored) component of the national RTD policy is much stronger than the vertical (sectored or industry and discipline specific) one. Increase in both public and private funding, establishment of sustainable linkages between research and industry and enhancement of excellence are some fundamental concerns of the policy makers.

The increase of the spending for RTD from 0,6% of the GDP to 1,5% by 2010 has been adopted and included in the National Reform Programme of Greece. In the frame of these general goals, the General Secretariat for Research and Technology (GSRT) prepared the “research and innovation” component of the Operational Programme for Competitiveness 2000-2006. The GSRT has also led the Greek Presidencies of EUREKA 2001-02 and of the European Union in the first semester 2003, and applied for membership in the European Space Agency (member since 2004). The GSRT is supporting the participation of public researchers into the Framework Programme of the EU with matching funds.

7.3.6.2 Priority areas

The General Secretariat for Research and Technology, as the main competent body for RTD policy, summarises the priorities since 2001 as follows:

- Growth of the demand for new knowledge and for RTD results
- Reorganisation of the research system
- Further opening to the international cooperation
- Development of research and technological infrastructures
- Focusing of the RTD effort on private-public collaboration and on areas of public interest.

In practice, these priorities are translated into emphasising industrial RTD, demonstration, innovation and exploitation of research results, which could enhance the demand for research services both in firms and the civil service. There is also an increasing need to improve the impact of RTD on the socio-economic development, which leads to merging efforts and activities of the very small research units into larger cooperative projects.

7.3.6.3 Funding organisations

The funding system in Greece does not provide for intermediary organisations for the allocation of funds. The GSRT of the Ministry of Development and the Ministry of Education are funding directly institutions and projects by the “ordinary” and “investments” budgets. Limited funds to private firms are also provided by the Ministry of Economy and Finance as subsidies to investors in research laboratories and similar facilities.

7.3.6.4 Programme information

The General Secretariat for Research and Technology (GSRT) of the Ministry, of Development has co-funded the project "Development of an integrated methodology for the design of RoRo-passenger ships and application to the design of a feeder RoRo-passenger ship for the needs of the Greek short sea shipping" (Concerted Program, code SP-MET 04) together with the E.C. under the Operational Program "COMPETITIVENESS". Participating Structural Fund is the European Regional Development Fund (ERDF).

The ministries of defence and development in 2001 inaugurated a cooperative effort for maritime research via the "Posidon" system, used by the National Center of Maritime Research (EKTHE).

Defence Minister Akis Tsohatzopoulos and Development Minister Nikos Christodoulakis jointly inaugurated the program, which would allow the defence ministry to use the "Posidon" system for research in sea-surface, below surface and measurement research that is conducted by the research vessel "Aegean" and the bathyscaph "Thetis".

7.3.7 Ireland

7.3.7.1 National policies

One of the main aims of Irish government policy is to position Ireland as a leading knowledge-based economy. The action plan goes on to set targets by which the objective can be realised. The most important of these are: Gross Expenditure on Research and Development should increase from 1.4% of GNP in 2001 to 2.5% by 2010; Business expenditure on R&D should increase from €917 million in 2001 to €2.5 billion by 2010; R&D investment in the higher education and government sectors should increase from €422 million in 2001 to €1.1 billion by 2010. The number of researchers should increase from 5.1 per thousand of total employment in 2001 to 9.3 by 2010.

7.3.7.2 Priority areas

High-priority research fields are: Industrial production and technology, Biotechnology, food and agriculture, Nanotechnology, materials and new production technologies, Socio-economic sciences and the humanities.

7.3.7.3 Funding organisations

Department of Transport

The Department is responsible for implementing an integrated transport policy, as called for in the Programme for Government.

Irish Maritime Development Office - Irish Marine Institute

The Marine Institute is a state Agency responsible for researching the potential of Ireland's vast marine resources.

7.3.7.4 Programme information

The Marine Measure is one of six measures on Research Technology Development and Innovation (RTDI) and supported under the Productive Sector Operational Program of the National Development Plan 2000- 2006.

Sub-Measure 1: Provision of Research Vessel Capacity: Under Sub-Measure 1 the priority is to improve research vessel capacity to cover outer Continental Shelf activities. The Marine Institute took delivery of the 65 metre multi-purpose Celtic Explorer in December 2002 and since then the vessel has been involved in a broad range of research activity in Irish waters.

Sub-Measure 2: Marine RTDI Infrastructure : This funding strand of the programme provides grant-aid for the upgrade of key national marine laboratories and facilities to provide the necessary capacity and infrastructure to support priority research activities.

Sub-Measure 3: Marine RTDI Fund: The Marine RTDI Fund supports project based RTDI in targeted areas. Sub-Measure 3 is divided into two programmes - Applied Industry and Strategic Projects. There are also a number of supporting initiatives such as Desk Studies, Fellowships (Post-Doctorals and Post Graduate) and Networking/Technology Transfer.

7.3.8 Italy

7.3.8.1 National policies

2005, the Italian Council of Ministers approved the programme for the Innovation, Growth and Employment (PICO), on proposal of the Ministry for the communitarian politics. PICO stresses what the Italian government intends to do in order to improve the economic and social environment of the country, stimulating growth and employment. Above all, the plan aims at extending individuals freedom of choice, supporting scientific research and technological innovation, developing new infrastructures, improving education and training systems and protecting the environment. These are the features are indicated in the plan as the major goals to be achieved.

Main specific plan's projects related to research and development issues refer to implementation of 12 strategic research programmes settled by National Research Program (PNR) in several sectors: health, pharmaceutical and bio-medical industries, manufacturing systems, automotive, shipbuilding and aircraft, etc...;

The total amount of public funds available for the purposes of the Plan, for the 2005-2008 period as a whole, is of 46 billion euros. Funds for Research and Development activities amount to 9,3 billion euros. The combination of general measures and projects proposed with PICO should enable Italy to approach the goal of 3% of GDP spending for research and development proposed by the European Commission.

7.3.8.2 Priority areas

The main areas for research and development of the National Industrial Programme are reflected in the research programmes undertaken and these are as follows: Programme of Research at CETENA 1994-96. Mathematical models, design methodologies, production technologies, and ship operation. The project objectives are to improve the degree of competitiveness of the National shipbuilding industry. Important achievements were obtained in hydrodynamics, structural beam laser welding technology and ship-land interfaces.

7.3.8.3 Funding organisations

Since its foundation in 1962, CETENA has been regularly awarded funding for research in the maritime field by the Italian Government (Ministry of Transport and Infrastructures, Ministry of Productive Activities, Ministry of University and Research). Until 2002, the funding was provided to support comprehensive three-year research programmes covering a number of different ship and sea related topics. The programmes were ultimately meant to increase the competitiveness of the Italian maritime sector as a whole, and for this reason University and various Italian maritime institutions were involved by CETENA in the programmes through specific research contracts. Since 2002, funding has been provided in a different form, through support to a number of independent research projects each covering a relevant issue, such as safety and the environmental impact of navigation.

Amongst the recently closed national research programmes, it is important to mention the special programme on the 'Enhancement of Short Sea Shipping and Inland Navigation', jointly developed by CETENA and COFIR (Consorzio Confitarma – Finmare per la Ricerca) in the years 1999-2001, with a follow-up in 2002-2004. Sea transport and safety are the subject of the ongoing project 'Trasporto Marittimo Sicuro' (2003 - 2005).

7.3.8.4 Programme information

Italy has a National Industrial Programme for research in the area of shipbuilding. The most relevant companies for maritime research involve CETENA (Italian Ship Research Centre), Fincantieri (Shipyard), Conns. A.R., Istituto per studi ed esperienze di architettura navale (National Institute for Naval Architecture Studies and Experiences), RINA (Classification Society), CNR (National Research Centre), and to a lesser extent the Italian universities of Naval Architecture. Many National research projects are funded by Ministry of Transports such as INSEAN research programme and CETENA maritime research programme.

7.3.9 Luxembourg

7.3.9.1 National policies

There are investments and fundamental research, industrial research and pre-competitive development activities and related activities as laid down by law and carried out by companies and research centres that fall within the scope of application of the law. There are the following pre-competitive development activities:

- investments, operations, programs or projects aimed at identifying, defining, studying, designing, developing, perfecting or testing new, amended or improved products, services, techniques or processes that may lead to subsequent marketing or to industrial or commercial application;
- pilot projects or demonstration projects carried out with a view to testing or confirming new theoretical or practical knowledge or results connected to new, amended or improved products, services, techniques or processes;
- definition or feasibility studies, monitoring technological development, gaining increased knowledge or circulating knowledge or know-how in the form of the transfer of techniques, patents or other intellectual property rights, training, the temporary exchange or employment of researchers, provided that these researchers work full-time on R&D in companies or research centres.

7.3.9.2 Priority areas

Luxembourg has a maritime shipping register and a register of inland vessels. The legislation is contained in the Law of 9 November 1990 (as amended), and secondary regulations of 24 December 1990. The Luxembourg maritime register is not a "flag of convenience". It is a serious, respectable flag that offers specific benefits to ship owners, including business and fiscal advantages; Favourable and flexible employment/labour laws; Favourable social security rules; Respectability as a financial centre; Minimal bureaucracy; and Possible evolution into an EC flag.

7.3.9.3 Funding organisations

The governance structure is composed of The Ministry of the Economy and Foreign Trade responsible for the research in the private sector and the Ministry of Culture, Higher Education and Research in charge of the research in the public sector. The Ministry of Middle Classes, Tourism and Housing, is going to have an increased role in the next years since it is responsible since 2003 for the management of a new innovation and R&D incentive scheme aimed at financing projects of small and medium-sized companies. The Ministry of Finance, the Ministry of State, Media and Communication Service, the Ministry of Health, the Ministry of Agriculture, the Ministry of Environment are also playing a role but in a more peripheral way. The inter-ministerial coordination committee for technological research and development has the mission to coordinate research policy.

The National Research Fund (FNR) co-finances projects in the field of industrial technologies via its multi-annual programmes "Innovative materials and nanotechnologies"(NANO), "Surface Treatment" (TRASU) and "Food safety" (SECAL).

7.3.9.4 Programme information

There is no maritime program in Luxembourg. Some research will be performed in the following topics:

- International technology transfer in Luxembourg: the IRC network
- EUREKA in Luxembourg: a network for market-oriented industrial R&D and innovation
- Starting an innovative business in Luxembourg
- European Framework Programme for Research & Technological Development in Luxembourg
- Technology clusters in Luxembourg: AeroSpace, InfoCom & SurfMat
- Luxembourg in space with ESA: European Space Agency

7.3.10 Malta

7.3.10.1 National policies

The Maltese Government is highly committed to making research and innovation a reality for Malta and is investing more public funds in research infrastructure and human capacity building and in tying closer links between academia and the industry. The National Strategic Research & Innovation Plan was launched last July 2006 and provides a number of measures towards enhancing Malta's R&I capacity. The MCST is responsible for implementing this Strategic Plan.

In this regard, and keeping in mind Malta's limited resources, the strategy has identified four sectors in which to target funds for research. These include ICT, High Value added Manufacturing Services including in the Health and Biotech Sectors, Energy and the Environment, which includes a MARINE aspect.

7.3.10.2 Priority areas

Research efforts focus on monitoring the quality of the coastal and marine environments, with little R&D investment in industrial applications. Moreover, a limited capacity, both in infrastructure and human capital, allows for growth in a restricted number of research areas.

The Program allows for funding research in Marine thematic areas with a focus on water, desalination, waste rehabilitation technologies, marine management and marine biotechnology.

7.3.10.3 Funding organisations

Malta Council for Science & Technology (MCST) is an agency that has recently been relocated within the Office of the Prime Minister and has thus gained quite an important political profile in this sense. Its main roles currently include implementing the National Strategic Plan for Malta for Research and Innovation and also co-ordinating participation of Malta in the EU's Framework Programme. It also is partner in a number of FP projects.

The MCST is partner to an ERANET Project entitled *Marinera* (<http://www.marinera.net>); this project has mapped marine research programmes in the 13 partner countries and is now working towards a joint call for proposals in the marine. Malta participates in this project by providing its experience with running national funding programmes.

7.3.10.4 Programme information

Malta does not have a dedicated Marine Research Programme where government specifically allocates public funds for research in the marine environment. In 2004, Government launched the RTDI Funding Programme with a budget that funded around 14 projects. Only one project out of those selected for funding has a marine theme (it address aspects of shrimp aquaculture). More recently in 2006, Government launched the R&I Funding Programme; this programme allocates funds for research projects through a competitive open call for proposals. Proposals that fall within the above-mentioned priority areas are given precedence over the rest. At the moment the proposals are being evaluated and the results of such evaluation should soon be announced.

7.3.11 Portugal

7.3.11.1 National policies

The research policy over the last decade in Portugal has been guided by two main priorities: stimulate the Portuguese research system so that the levels of scientific excellence of the leading groups of the international research community are reached; stimulate the internationalization of the national research community. In this context academic science has been prioritized, while strategic or applied research efforts have been given less emphasis.

7.3.11.2 Priority areas

The Technological Plan is addressed to three main issues: (1) Knowledge, with a view to increase the skills of the population for the knowledge society, by increasing the average educational levels, and promoting lifelong learning; (2) Technology, overcoming scientific and technological backwardness; the following objectives were stressed: accelerating scientific and technological development; improving national competencies in science and technology; encouraging scientific employment; and promoting business enterprises' R&D activities; and (3) Innovation, recognising that companies are key actors in the innovation process, and mobilising the actors of the national innovation system around a national innovation strategy, involving the development of differentiation factors (R&D, marketing and design, for instance), the strengthening of company R&D capabilities as well as of technology transfer processes, and the inflow of foreign investment.

7.3.11.3 Funding organisations

The most relevant ministries for innovation policy are the Ministry for the Economy and Innovation (MEI), and the Ministry for Science, Technology and Higher Education (MCTES). The MCTES is responsible for two OPs: (1) POCI 2010, the Operational Programme Science and Innovation 2010, which replaced POCTI (the Operational Programme on Science, Technology and Innovation; and (2) POS_C, the Operational Programme on the Knowledge Society, the successor of the former POSI (the Operational Programme on the Information Society). The centre-left government has widened the responsibilities of the MCTES to include policies regarding the information society. The MCTES has two advisory bodies: the Higher Council on Science, Technology and Innovation (CSCTI) and the Higher Council on Education. CSCTI's activities are, after a very active stance in 2004. CSCTI will be subject to changes introduced by the PRACE initiative, in the context of which it will be being relabelled as Conselho Coordenador de Ciência e Tecnologia (CCCT), the coordinating council for science and technology. Available information suggests that the minister intends to modify the composition of the Council, thereby increasing the representation of the research community. The main agencies under the MCTES are the FCT (Science and Technology Foundation), the UMIC (Agency for Innovation and knowledge), and the Innovation Agency AdI. The FCT mainly promotes and finances scientific research programmes and projects carried out by universities and Associated Laboratories. The UMIC mainly focuses on information society issues, leaving innovation matters aside. AdI, a joint-venture between the MCTES and the MEI, is the agency in charge of the management of most public programmes supporting research, development, technology transfer and the creation of new technology based enterprises.

7.3.11.4 Programme information

The Integrated Programme for Innovation (PROINOV) was aimed at launching a coordinated innovation policy, managed at the Prime Minister's office level, to overcome the traditional divide between research and enterprises policies in Portugal. PROINOV was short lived. The launching of a Technological Plan has been among the key commitments of the winning Socialist Party in the last 2005 elections. The Technological Plan is therefore a response to such commitment. It includes a wide set of measures in those fields, as well as the definition of quantitative goals to be reached by 2010 such as increasing the ratio of business enterprise R&D expenditures to GDP to 0.8%, high and medium technology intensive industries share of 4.7% in total employment or a 50% increase in overall R&D employment.

7.3.12 Slovenia

7.3.12.1 National policies

Yet one could not talk about a specific regional research policy. In the preparation of the National Development Program for the next financial perspective (2007-2013), the government proposes a development of several regional business- infrastructure- technology poles, where besides the development of necessary business infrastructure also development of R&D and innovation facilitators is envisaged. This corresponds with the planned decentralisation of higher education and also decentralisation of R&D resources.

7.3.12.2 Priority areas

The National Research and Development Program has no specific regional focus. On the other hand, the Slovenian development strategy sees a need for a more coherent regional development, which would decrease the differences in development levels currently existing.

7.3.12.3 Funding organisations

The Ministry of Higher Education, Science and Technology presents its program in the government budget negotiations. The budget is first approved at the level of the Government. Government then submits the Bi-annual budget proposal for the procedure in the National Assembly. Once the R&D budget gets approved, most of the public research funds are then channelled through the Slovenian Research Agency. The Agency is the main implementation body for public R&D and distributes the resources according to the main programs it runs.

7.3.12.4 Programme information

Few specific programs in the directorate for technology at the Ministry of Higher Education, Science and Technology are still coordinated by the Ministry itself. In 2006, these include the following measures: the support to technology centres, support to innovation organisations and support to development projects. The implementation of these programs should go to the Slovenian Technology Agency, once the Agency becomes fully operational.

7.3.13 Sweden

7.3.13.1 National policies

The objective of research policy is that Sweden should be a leading research nation, where research of a high scientific standard is conducted. Research must maintain high quality and research initiatives should provide scope for both breadth and specialisation.

7.3.13.2 Priority areas

High-priority research fields are life science, engineering and sustainable development Inter- and multidisciplinary research. Maritime research is a vital component of the Swedish Maritime Administration's sector role, particularly within the areas of maritime safety and the environment. The Administration's own research is limited, but it supports the activities of researchers in the field. The research budget for 2006 was SEK 5 million. One area in which the State promoted research was that of behavioural science in the maritime environment, concentrating on the behaviour of persons on board and in the ancillary organisations connected to maritime transport. Another area was that of the ability of a ship to survive collisions, running aground or fires, which together are the most common causes of accidents at sea. When the Estonia sank, it was also noted that the ability to rescue passengers from the sinking ship and to use the life-saving equipment on the vessels that came to its aid was not good enough. These areas, too, were included in the research programme. Shipping is, by its nature, international, as are maritime safety rules. The fifth area of research that was identified was that of training and the effect of regulations. Research has achieved recognition at the international level. ERA-Net Transport is at present discussing a Swedish initiative for work on the survival of vessels.

7.3.13.3 Funding organisations

Swedish Maritime Administration

Works to keep the sea lanes open and safe and strive to make shipping safe for people and for the environment.

VINNOVA (Swedish Governmental Agency for Innovation Systems) is a state authority that aims to promote growth and prosperity throughout Sweden. The particular area of responsibility comprises innovations linked to research and development. Primary tasks are to fund the needs-driven research required by a competitive business and industrial sector, and to strengthen the networks.

SSPA Sweden AB is an independent, limited company owned by the Foundation Chalmers University of Technology. The department SSPA Research is responsible for the initiation and management of Research Projects and includes today (January 2007) nine experts and PhD students.

Transport research in Sweden is coordinated through TRANSAM, which coordinates initiatives, follow-up and communication of new initiatives.

7.3.13.4 Programme information

The State made available SEK 25 million to start research in several areas, aimed at improving safety at sea. VINNOVA was instructed to administer the programme and to commission research. Two major projects in progress are concerned with the development of new types of lifeboats and with the design of ships that can withstand various types of accidents without capsizing. The Government has, to date, invested SEK 70 million in this safety at sea programme, of which about SEK 55 million have been allocated.

7.3.14 Macedonia

7.3.14.1 National policies

The national transport policy declares that the Republic of Macedonia does not have maritime transport, due to which there is no maritime registry, and its launching is currently not envisaged.

Regular and special lake passenger transport exist on natural and artificial lakes in the Republic of Macedonia. The river transport and other types of transport on natural and artificial lakes are not of relevance.

The Port Authority, a body within the Ministry of Transport and Communications, performs registration and control of boats and vessels, upon a previously determined sailing capacity of the vessels (boats) by the inspection committee for determining the sailing capacity of the vessels of the Republic of Macedonia, established by the Ministry of Transport and Communications. The inspection and certification that the vessels have the sailing capacity is carried out in accordance with the technical regulations established by the International Association of Classification Societies IACS.

The Port Authority, a body within the Ministry of Transport and Communications, is responsible for the enforcement of legal regulations and conditions within the frames of the inland waterways navigation sector.

7.3.14.2 Priority areas

The national transport research priorities follow the findings and recommendations included in the Transport Infrastructure Regional Study (TIRS) and the Regional Balkans Infrastructure Project (REBIS - Transport).

7.3.14.3 Funding organisations

Ministry of Transport and Communications

A limited amount of funds, foreseen for specific infrastructure projects, are being used for research programmes on the state level. The Ministry of Transport and Communications carries out activities that refer to domestic water traffic.

7.3.14.4 Programme information

There are several development studies on a regional level which deal with transport research. The TIRS, REBIS and SBDI studies were prepared in the previous period.

On the local level, transport research programmes are prepared only for the development of specific projects that are to be implemented. One of the legal obligations of the fund for national and regional roads is to calculate the traffic on the national and regional roads, which represents the basis for preparation of diverse studies for development and financing. So far, traffic was tallied with obsolete automatic counters that did not have the capacity to perform classification of vehicles. In 2004, with credit funds from the World Bank, modern counters were procured, which will provide for the improvement of the transport database quality.

The research programmes (in the part referring to provision of services in aviation) are financed with donations from international institutions which the Republic of Macedonia is a member of (ICAO, EUROCONTROL), as well as the CARDS Programme I and II phase (Project for Aviation Safety and Air Traffic Control in the Western Balkans).

7.4 Other European Union countries

7.4.1 Albania

7.4.1.1 National policies

The government wants to improve the road safety programs and establish an Albanian Maritime Administration.

7.4.1.2 Priority areas

Improvement of the maritime transport system: This will include completion of civil works in Durres Port according to a development master plan rehabilitation of the quays, construction of the ferry terminal and of the transit sheds; establishment of port authority and the customs controlled area, completion of the civil works in the port of Vlore, rehabilitation of the quays and mechanization of the port; implementation of the proposed interventions and civil works according to the secondary ports master plan of Sarande and Shengjin; establishment of the Albanian Maritime Administration.

7.4.1.3 Funding organisations

Department of R T D Projects Management

This department was established in 1999. The aim is the coordination, monitoring, management of all the projects in the network of institutions of the Academy of Sciences on the framework of the different programmes, local, regional, national and international.

7.4.1.4 Programme information

The Durres Port Project: The objective of the Durres Port Project is to improve the efficiency and effective capacity of the Port of Durres, taking environmental considerations into account by: (a) increasing the commercial orientation of the Port of Durres through establishing an autonomous port, privatizing operations, improving Customs procedures, and improving operations and safety; and (b) rehabilitating port infrastructure to accommodate anticipated traffic demand and attract transit traffic. The project components include: civil works, navigation aids, lighting, warehouses, cranes and spares, anti-pollution, customs modernization, miscellaneous equipment, studies, technical assistance, and training.

There exist two other projects with maritime aspects: Fishery Development Project and the Integrated Coastal Zone Management & Clean-Up Project.

7.4.2 Belarus

7.4.2.1 National policies

The water transport is an integral component of the transportation sector of the Republic of Belarus providing freight and passenger traffic through domestic waterways (nearly 2 thousand km in length) to riverside settlements and cargo handling in 10 river ports located in the basins of all navigable rivers of Belarus, namely, the rivers of Pripyat, Dnieper, Sozh, Berezina, Neman and West Dvina.

The international waterway Bug - Pripyat - Dnieper - Black Sea runs through Belarus to transport diversified cargo. The river ports of Gomel, Bobruisk, Brest and Mozyr are provided with a rail access and are equipped to handle the general cargo. The current Belarusian river fleet operates modern transport and special-purpose vessels.

7.4.2.2 Priority areas

The ports are equipped with high-performance floating and gantry cranes and cargo mechanized lines for operational cargo handling. The water transport companies operate a sizeable fleet and are ready to cooperate in the sphere of freight traffic on the rivers of Europe.

The water transport structure comprises shipbuilding enterprises building and repairing vessels and other floating vehicles. Shipyards operating modern production facilities produce as follows: steel vessels of different designation, dead-weight up to 3,000 t; aluminium hydrofoil passenger boats with capacity of 53 passengers; non self-propelled vessels for transportation of heavy machinery and equipment, bulk and other cargo to difficult-of-access areas.

Since 1999, the Rechitsa shipbuilding yard and shipyard has been building the first Belarusian seagoing craft. The Republic of Belarus, being a landlocked country, develops its own merchant marine with an aim of exporting goods to CIS and foreign countries.

7.4.2.3 Funding organisations

Ministry of Education (Minobrazovaniya)

www.minedu.unibel.by

Ministry of Industry (Minprom)

www.minprom.gov.by

Ministry of Transport and Transportation Links (Mintrans)

www.mintrans.by

Ministry of Economy (Minekonomiki)

www.economy.gov.by

State Committee for Science and Technologies (GKNT)

www.gknt.org.by

7.4.2.4 Programme information

There is no information available for research in maritime transport, shipbuilding or maritime technology research.

7.4.3 Bosnia-Herzegovina

7.4.3.1 National policies

A Study “Establishment of basis for founding Bosnian maritime administration”, which was designed by the experts of the Ministry of Public Works of the Kingdom of Spain, Bosnian Ministry of Communications and Transport, and FBiH Entity Ministry of Traffic and Communications, was presented on December 2006. Bosnia is a Mediterranean country and due to the specific position it had in the former Yugoslavia, there was no development strategy in this sector.

7.4.3.2 Priority areas

The Study “Establishment of basis for founding Bosnian maritime administration”, which will have a positive impact on the transport of passengers and goods and on creating new services and jobs, which supports country’s development and faster integration in the EU, was funded by the Government of the Kingdom of Spain.

7.4.3.3 Funding organisations

Ministry of Communications and Transport, Department for air, water and pipe transport

The Ministry of Communications and Transport of the Federation of Bosnia and Herzegovina plays a key role in launching initiatives and development projects.

7.4.3.4 Programme information

No national research programs within the range of maritime research in shipbuilding, shipping transport or maritime technology could be found. But a study “Establishment of basis for founding Bosnian maritime administration” was presented on December 2006.

7.4.4 Iceland

7.4.4.1 National policies

Iceland has a large R&D supply system: the country hosts one major university, the University of Iceland several smaller university institutions, specialised governmental research institutes, and innovation support institutions including risk capital funds.

A dominant characteristic of the Icelandic research system is its internationalisation. Students coming back from their studies abroad offer the country the opportunity to rely on a strong global network. Most of the private R&D activities are also in the hands of internationalised companies, both Icelandic companies with global activities and foreign companies carrying out R&D activities in affiliate companies located in Iceland. The third-level education and research institutes are involved in numerous international research programmes, notably under the EU framework programmes, in a Nordic context, and with US partners. Recently major grants of US origin have been allocated to Icelandic R&D performers.

7.4.4.2 Priority areas

High-priority fields of maritime research are safety of ships and crews (see program information for more detailed description).

7.4.4.3 Funding organisations

The Icelandic Maritime Administration administrates the implementation of the programme. The project management board, consisting of representatives of the Ministry of Transport and Communications and interested parties, is responsible for monitoring the implementation of the programme and contributes to the co-operation of the parties concerned. The department of Research and Development is working on a program in the field of Maritime Safety, Naval Architecture and Harbour and Coastal Research.

7.4.4.4 Programme information

Research programme relating to the safety of ships and crews

Watertight integrity of ships, security assessment of smaller fishing vessels in a dangerous wave environment, utilisation of anti rolling tanks, loading and overloading of small vessels, flow of air to ships main engines, noise levels on board ships, air quality on board ships, education and training of seafarers to be enhanced in various ways, a safety campaign for passenger boats, education and promotion campaigns, development of educational material and guidelines, the gathering and distribution of information between seafarers and on-shore parties, improvements in the stability of ships and boats, publication of laws and regulations on safety matters and increased control.

The Maritime Safety Program is supported by the Icelandic Government through the Ministry of Transport. The Maritime Safety Program is subdivided in four main parts:

- (1) Education and Training of Seafarers,
- (2) Instruction Materials and Dissemination of Information,
- (3) Safety Management and Quality System on Board Fishing Vessels and
- (4) Research and Development Projects.

Also in the field of Naval Architecture we are at the moment working on projects among

- (a) Watertight Integrity of Fishing Vessels (main report was issued in December 2006)
- (b) Stability of Fishing Vessels in a dangerous wave environment
- (c) Loading and Overloading of Small Fishing Vessels
- (d) Noise Levels on Board Ships (report will be issued in March 2007)
- (e) Air quality on Board Ships

7.4.5 Moldova

7.4.5.1 National policies

The research work is coined of the lack of financial means. For engaged scientists therefore the close contact to foreign research establishments and international organizations is very important to use the existing potential.

7.4.5.2 Priority areas

The fundamental and applied scientific researches cover the following fields: mathematics and informatics, theoretical physics, micro- and optoelectronics, geophysics and geologic processes, physical and technical processes in energetic, bioinorganic chemistry, ecological and analytical chemistry, bioorganic chemistry, theoretical chemistry, physiology and biochemistry, zoology, microbiology, botanic, geography, ecology, renewable and rational utilization of flora and fauna, stress's physiology, genetics, medicine, history, linguistics and literature, philosophy, sociology, economy, politology, archaeology, ethnography and art.

7.4.5.3 Funding organisations

Academy of Science of Moldova (ASM) is the highest forum of science in the whole country; it is a state institution having independent status and auto administration management.

7.4.5.4 Programme information

No maritime research program in shipbuilding, shipping transport or maritime technology could be found.

7.4.6 Monaco

7.4.6.1 National policies

Monaco, as small country, takes part in research primarily in co-operation with other countries, in particular France. It exists an award for the promotion of outstanding research results of European researchers; the European grand prix for innovation award.

7.4.6.2 Priority areas

Some research programs are running at the International University of Monaco, in the following topic-order: mathematics, economics and information technology.

7.4.6.3 Funding organisations

Department of Facilities, Urban Planning and Environment

The function of the Department of Facilities, the Environment and Town Planning covers the following areas: public facilities, urban development, property development, environment, parks and local amenities, maintenance of state-owned property, land, sea and air transport, Community public services.

7.4.6.4 Programme information

Some research programs are running at the International University of Monaco (IUM). No maritime research program in shipbuilding, shipping transport or maritime technology could be found.

7.4.7 Serbia and Montenegro

7.4.7.1 National policies

With the Ministry of Science and Environmental Protection (MSEP) having the only political and operative responsibility in the field of Science and Technology in the Republics of Serbia and Montenegro, MSEP is also responsible for the design and implementation of R&D programmes.

7.4.7.2 Priority areas

There are research activities running at the Institute for Transport & Traffic Engineering at the University of Belgrade, which include waterway topics.

7.4.7.3 Funding organisations

The main ambition of the Ministry of Science and Environmental Protection of Republic of Serbia (MSEP) is to provide the strongest and the best influence of a research work on economy and society.

7.4.7.4 Programme information

The Basic Research Programme funds projects in all fields of sciences. Project duration is about 3-4 years with a yearly financing up to 100% of project costs. In total, about 1,34 billion Serbian Dinar (about 18.5 Mio. €) are allocated to this programme (2003).

The Technological Development Programme funds projects in the fields of ICT, materials and chemical technologies, mechanical engineering and industrial software, traffic engineering and civil construction, energy technologies, and biotechnologies. Project duration is about 2-3 years with a yearly financing up to 70% of project costs. For this programme the MSEP has provided about 0.91 billion Serbian Dinar (about 12,6 Mio. €) in 2003. Both programmes are organised as open public calls by the MSEP.

7.4.8 Switzerland

7.4.8.1 National policies

The Swiss Federal Constitution (article 64) obliges the Confederation to promote scientific research. In carrying out this task the Confederation supports independent basic research by financing the Swiss National Science Foundation and scientific academies as so-called National institutions promoting science.

7.4.8.2 Priority areas

In 2000, the Confederation allotted approximately CHF 230 million for research in government departments. The funds required for 2004–2007 in the 12 research areas are presented for information purposes in the government's message to parliament on the promotion of education, research and technology 2004–2007. Thematic research priorities: Humanities and social sciences 10,7 %, Natural and exact sciences 7 %, Biology and medicine 52,1 %, Engineering and applied sciences 30,2 %

7.4.8.3 Funding organisations

The Government commissions the Swiss National Science Foundation to carry out programme research in areas where structural weaknesses in the scientific system call for a concentrated approach or where economic and social requirements demand specific scientific solutions: National Centres of Competence in Research NCCR; National Research Programmes (NRP).

The Confederation grants funds to independent research institutions outside the university sphere. The federal administration finances numerous research proposals in the framework of departmental research. The Confederation supports international cooperation in research by the public and private sectors in international research programmes and international research organisations. The Confederation manages and finances the Commission for Technology and Innovation (CTI) as an agency for the promotion of research of economic interest.

EURESEARCH

The association Euresearch informs about and supports your participation in the European Research and Development Programmes (FP7, COST) mandated by the State Secretariat for Education and Research.

State Secretariat for Education and Research

The State Secretariat for Education and Research SER within the Federal Department of Home Affairs is the federal government's specialised agency for national and international matters concerning general and university education, research and space.

7.4.8.4 Programme information

Actually are no relevant national research programs running. Switzerland's signing of an agreement on Research Framework Programme with the European Union enables Swiss researchers to make full use of the opportunities arising from the programme and to benefit from direct funding from the European Commission. The agreement also gives Switzerland a say in the implementation of European research policy.

7.5 *European countries without any information*

No national research programs in any kind of maritime research could be found in Andorra, Liechtenstein, San Marino and Vatican City. Some research programs are running at the University of Liechtenstein, in the following topic-order: Law, Politics, Economics and History. In San Marino there is the Università degli Studi della Repubblica di San Marino.

Annex I – Addresses of Programme Owner, Programme Manager or Maritime Contact

Country	Organisation	Short Name (Function)
Germany	<p>Federal Ministry of Economics and Technology Unit Marine Technology, shipping (Referat IV B6) Villemombler Straße 76 D-53123 Bonn</p> <p>Dr. Werner Kolbe Tel: +49 - 228 - 615 – 2542 Fax: +49 - 228 - 615 - 30 – 2542 Email: Werner.Kolbe@bmwi.bund.de URL: http://www.bmwi.de/BMWi/Navigation/Technologie-und-Innovation/Technologiepolitik/schifffahrt.html</p>	BMWi (Programme Owner)
Germany	<p>Research Centre Juelich GmbH Project Management Organisation Juelich (PtJ) Division MGS Seestraße 15 D - 18119 Rostock</p> <p>Dr. Ralf Fiedler Tel: +49 381 5197-282 Fax: +49 381 51509 Email: r.fiedler@fz-juelich.de URL: http://www.fz-juelich.de/ptj/schifffahrt-meerestechnik/</p>	PtJ (Programme Manager)
Norway	<p>The Research Council of Norway Division for Innovation Stensberggt. 27 N-0131 Oslo</p> <p>Dr. Sigurd Falch Tel: +47 2203 7302 Fax: +47 2203 7307 Email: SF@RCN.NO URL: www.forskningsradet.no/english/</p>	RCN (Programme Owner) (Programme Manager)
France	<p>Ministère des transports, de l'équipement, du tourisme et de la mer - Direction de la recherche et de l'animation scientifique et technique Tour Pascal B F-92055 La Défense</p> <p>Ms. Anne Charreyron-Perchet Tel: +33 1 40 81 63 36 Fax: +33 1 40 81 63 03 Email: anne.charreyron-perchet@equipement.gouv.fr URL: www.equipement.gouv.fr/recherche</p>	MTETM (Programme Owner)

France	<p>Centre d'Etudes Techniques Maritimes et Fluviales 2, Boulevard Gambetta F-60321 Compiègne</p> <p>Dr. Bruno Lemaire Tel: +33 3 44 92 60 21 Fax: +33 3 44 92 60 75 Email: bruno-j.lemaire@equipement.gouv.fr URL: www.cetmef.equipement.gouv.fr</p>	CETMEF (supporting MTETM within ERA-NET MARTEC)
Finland	<p>Tekes, the National Technology Agency of Finland Kyllikinportti 2 FIN 00101 Helsinki</p> <p>Mr. Esa Lindqvist Tel: +358 1060 22535 Fax: +358 1060 22537 Email: Esa.Lindqvist@tekes.fi URL: www.tekes.fi</p>	Tekes (Programme Owner)
Finland	<p>Association of Finnish Marine Industries Eteläranta 10 FIN 00131 Helsinki</p> <p>Ms. Merja Salmi-Lindgren Tel: +358 91923385 Fax: +358 9 624 462 Email: firstname.lastname@techind.fi URL: www.marineindustries.fi</p>	AFMI (Programme Manager)
Poland	<p>Ministry of Science and Higher Education Department of European Integration 1/3 Wspólna 00-529 Warsaw 53</p> <p>Ms. Magdalena Powierza Tel: +48 52 92 296 Fax: +48 628 35 34 Email: magdalena.powierza@mnisw.gov.pl URL: www.mnisw.gov.pl</p>	MSHE (Programme Owner)
Poland	<p>Centrum Techniki Okretowej S.A. - Ship Design and Research Centre S.A. Research and Development Department Rzeczpospolitej 8 80-369 Gdansk</p> <p>Dr. Leszek Wilczynski Tel: +48 5830 74214 Fax: +48 5830 74212 Email: leszek.wilczynski@cto.gda.pl URL: http://www.cto.gda.pl</p>	CTO (supporting MSHE within ERA-NET MARTEC)

Spain	<p>Instituto Tecnológico para el Desarrollo de las Industrias Maritimas Trespaderne 29 28042 Madrid</p> <p>Mr. Carlos Sánchez Lafuente Tel: +34 91 747 21 16 Fax: +34 91 329 07 13 Email: csanchez@innovamar.org URL: http://www.innovamar.es/</p>	INNOVAMAR (Programme Manager)
Denmark	<p>Danish Maritime Authority Vermundsgade 38 C 2100 Copenhagen</p> <p>Mr. Mogens Schrøder Bech Tel: +45 39 17 45 01 Fax: +45 39 17 44 19 Email: MB@DMA.DK URL: http://www.dma.dk/</p>	DMA (Programme Owner)
Netherlands	<p>Ministry for Economic Affairs Bezuidenhoutseweg 30 2500 EC Den Haag Dr. Wolter Leiseboer Tel: +31 70 379 7967 Fax: +31 70 379 6508 Email: w.leiseboer@minez.nl URL: www.ez.nl</p>	MinEZ (Programme Owner)
United Kingdom	<p>Department of Trade and Industry Response Centre 1 Victoria Street London SW1H 0ET</p> <p>Mr. Nick Heyes Tel: +44 20 7215 1083 Fax: +44 20 7215 0105 Email: nick.heyes@dti.gsi.gov.uk URL: http://www.dti.gov.uk/</p>	DTI (Programme Owner)
Bulgaria	<p>National Science Fund - Bulgaria (Ministry of Education and Science) 1000 Sofia, 2 A "Dondukov" Blvd. +359 2 980 89 88; 848 547 +359 2 981 27 04 URL: http://www.minedu.government.bg/opencms/opencms/</p> <p>ESF-Representative (ESF Marine Board) Dr. Niamh Connolly Tel: +33 (0)3 88 76 71 44 Fax: +33 (0)3 88 25 19 54 Email: http://www.esf.org/esf_contacts_form.php?unit=4&contact=86</p>	NSF

Bulgaria	<p>Ministry of Education and Science 2A Kniaz Dondukov Boulevard 1000 Sofia</p> <p>Prof. Peter Kolev (Technical University of Varna) Tel: +359 888 435125 Fax: +359 52 303726 Email: peterkolev@mnet.bg URL: http://www.minedu.government.bg/</p>	<p>MES</p> <p>(Waterborne)</p>
Croatia	<p>Ministry of the Sea, Tourism, Transport and Development Prisavlje 14 HR-10000 Zagreb</p> <p>Directorate for Inland Waterway Navigation Directorate for Seafaring Safety and Sea Protection Directorate for Maritime Traffic, Maritime Domain and Ports Mario Babić (Assistant Minister) Tel: 385 1 6169-070 Fax: 385 1 6195-956 Email: mario.babic@mmtpr.hr Duška Grubišić Administrative assistant Email: duska.grubisic@mmtpr.hr URL: http://www.mmtpr.hr/default.asp?id=777</p>	
Croatia	<p>Ministry of Economic, Labour and Entrepreneurship Ulica grada Vukovara 78 10 000 Zagreb Republic of Croatia Tel.: +385 1 6106 950 Email: info@mingorp.hr URL: http://www.mingo.hr/cacheeng.aspx?pg=defaulteng.asp&cache=1&id=9&glink=</p> <p>Directorate for Science Research Programs and Projects Department Development Department Andrea Tomljenović, Ph. D. Administrative assistant: Martina Jakšić Trg hrvatskih velikana 6 10000 Zagreb Tel: +385 1 4594 421 Fax: +385 1 4594 429 Email: office@mzos.hr</p>	

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