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Inventory of National Research Programs

Deliverable 5.3

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in collaboration with

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Executive Summary

Assessing the national research programs revealed that some countries do not have any national research programs in place but carry out research projects.

To identify the existing national marine fisheries research programs a survey was carried out visiting the majority of MariFish partners. During questionnaires and desk-based studies the national marine fisheries research programs or equivalent national research programs with a marine fisheries component were identified. The assessment also revealed that there was no common understanding of a research program. While some countries equate research programs with research projects other countries have national research programs tailored to marine fisheries research. Then again other countries have broad national research and development programs that cover a wide range of topics with only a few sections dealing with marine fisheries at all. As such the adoption of a working definition proved helpful to carry out the assigned task. Pointing out what constitutes a research program is likely to help when setting up a joint research program and agreeing on a common priority setting process.

The present report gives an overview of the existing national marine fisheries research programs or equivalent national research programs with a marine fisheries component and resembles the status at the end of 2007. The information in the tables can also be found in the MariFish database¹. It should be noted that the information in this document is subject to change and that this inventory report is designed to be a snapshot of the current database status.

Altogether the 18 MariFish partners in 16 European countries fund 22 national research programs – including ongoing research projects – that grant over 190 million Euro to marine fisheries research. The duration of national research programs varies between annually scheduled programs and programs scheduled up to 10 years. In the Scandinavian countries Norway, Sweden and Iceland there are secondary national funders of marine fisheries research next to the MariFish partners. In order to provide a comprehensive picture of marine fisheries research in the Scandinavian countries, these so-called non-partners were contacted and asked to fill out questionnaires.

Although changes in the national research programs constantly occur – not only affecting research fields but the entire information in the database – it is argued that the established scientific expertise represented by the national institute's scientific staff is of relative stability. Since scientific staff at national research institutes does not change when new national research programs are implemented they provide the means and long-term perspective to tackle future scientific needs and priorities within a joint transnational research program. As such, the information in the database provides the basis for decision-making concerning the identification of research priorities according to the existing scientific expertise and qualification.

¹ You can access the database through the following internet address: <http://195.10.221.186/index.php>

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The ERA-Net-Project MariFish

MariFish is an ERA-Net-Project funded by the European Commission's Sixth Framework Program to coordinate the European marine fisheries research programs.

The strength of European fisheries research is the well-established cooperation on the research institutes and scientist level supported and encouraged by European research projects. The current weakness of this system is that research priorities are largely determined on the individual basis of the member states and there are no formal mechanisms for the coordination of research funding. In other words: Although intensive working collaboration across national borders

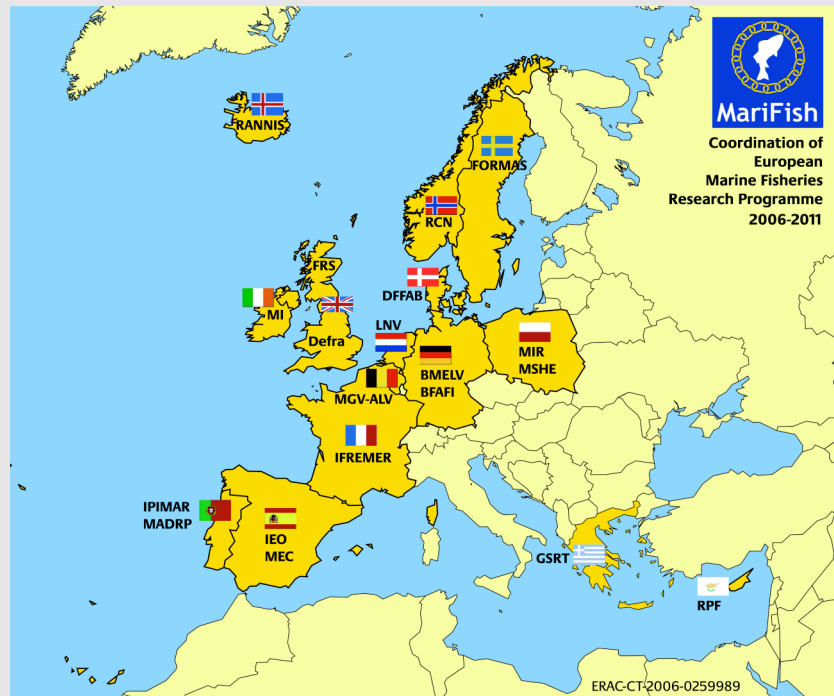


Figure 1: Associates and countries in the ERA-Net project MariFish

exists, there is virtually no collaboration of national funders.

The aim of MariFish is to bring together the national funders of marine fisheries research in Europe to encourage the development of lasting working partnerships between the organizations. The long-term aim is to jointly develop, coordinate and fund important marine fisheries research programs. Thereby the concept of building a European Research Area (ERA) in the field of marine fisheries research is implemented.

In total 19 partners from

15 European countries are participating (Figure 1). MariFish has a project budget just under 3 million Euro and a duration of 5 years until January 2011.

MariFish Partners	
BFAFI	Federal Research Centre for Fisheries
BMELV	Federal Ministry of Food, Agriculture and Consumer Protection
Defra	Department for Environment, Food and Rural Affairs
DFFAB	Directorate for Food, Fisheries and Agri Business
FORMAS	Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning
FRS	Fisheries Research Services
GSRT	General Secretariat for Research and Technology
IEO	Spanish Institute for Oceanography
IFREMER	French Research Institute for the Exploitation of the Sea
IPIMAR	National Institute of Fisheries Research
LNV	Ministry of Agriculture, Nature and Food Quality
MADRP	Ministry of Agriculture, Rural Development and Fisheries
MEC	Ministry of Education and Science
MGV-ALV	Ministry of the Flemish Community-Department for Agriculture, Fisheries and Rural Development
MI	Marine Institute
MIR	Sea Fisheries Institute in Gdynia
MSHE	Ministry of Science and Higher Education
RANNIS	Icelandic Centre for Research
RCN	Research Council of Norway
RPF	Research Promotion Foundation

What is an ERA-Net?

European Research Area Networks (ERA-Nets) were launched as one of the strategic goals, during the Sixth Framework Program (FP6), as part of an overall agenda to pool the scientific resources in Europe to overcome the traditional fragmentation of research efforts at the national level. This involves the coordination and cooperation of the national research programs. For this reason, ministries and national funding agencies are asked to collaborate in order to develop and commission joint research. The ERA-Net scheme is the principal means of the EU Commission to finance networking activities and mutual opening up of national research programs, such as, for example, the systematic exchange of information to improve communication between partners, the commissioning of joint research to the point of developing joint research programs.

Glossary

BFAFI	Federal Research Centre for Fisheries (Germany)
BMELV	Federal Ministry of Food, Agriculture and Consumer Protection (Germany)
CFP	Common Fisheries Policy
DCR	Data Collection Regulation
DEFRA	Department for the Environment, Food and Rural Affairs (United Kingdom)
DFFAB	Directorate for Food, Fisheries and Agri Business (Denmark)
DG	Directorate General
ERA	European Research Area
FAO	Food and Agriculture Organization
FORMAS	Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning
FRS	Fisheries Research Services (UK, Scotland)
GSRT	Ministry of Development – General Secretariat for Research and Technology (Greece)
HCMR	Hellenic Centre for Marine Research (Greece)
HELCOM	Helsinki Commission – Baltic Marine Environment Protection Commission
ICES	International Council for the Exploration of the Sea
IEO	Spanish Institute of Oceanography
IFREMER	French Research Institute for the Exploitation of the Sea
IMR	Institute of Marine Research (Norway)
IPIMAR	Research Institute for Marine Fisheries (Portugal)
LNV	Ministry of Agriculture, Nature and Food Quality (Netherlands)
MADRP	Ministry of Agriculture, Rural Development and Fisheries (Portugal)
MariFish	Coordination of European Marine Fisheries Research
MarinERA	Facilitating the Coordination of National and Regional Marine RTD Programmes in Europe
MEC	Ministry of Education and Science (Spain)
MGV-ALV	Ministry of the Flemish Community (Belgium)
MI	Marine Institute (Ireland)
MIR	Sea Fisheries Institute (Poland)
MRI	Marine Research Institute (Iceland)
MSHE	Ministry of Science and Higher Education (Poland)
NAFO	Northwest Atlantic Fisheries Organization
NGU	Geological Survey of Norway
OSF	Institute of Baltic Sea Fisheries (Germany)
R&D	Research and Development
RANNIS	Icelandic Centre for Research
RCM	Regional Cooperation Meeting
RCN	Research Council of Norway
RPF	Research Promotion Foundation (Cyprus)
SBF	Swedish Board of Fisheries
SKSK	Norwegian Hydrographic Service
VTI	Johann Heinrich von Thünen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries (Germany)
WP	Work Package

1 Introduction

1.1 Marine Fisheries Research Programs

Generally speaking, marine fisheries research in individual countries is organized in national research programs.

The national marine fisheries research programs of the MariFish partners define the objectives of marine fisheries and aquaculture research. Examples for research objectives are: sound fisheries management based on scientific evidence, support of the local fishing communities and industry and/or working towards a more effective common fisheries policy (CFP), only to name a few.

Usually these national research programs are divided into sub-categories that set out the priority guidelines to be followed. The priority setting process – in which these priority guidelines are formulated – is often largely influenced by the national policy makers, i.e. the respective ministries. This may be an informal or formal structured process, involving research users such as the above named policy makers, research providers such as scientists and other stakeholders to a lesser or higher degree (cf. WP 2: Identifying national commissioning and managing of fisheries research programs). National fisheries research programs usually run for a fixed period of time before new programs are drafted and subsequently adopted. Next to setting out the research strategies the national research programs specify the research budgets and allocate funds to the responsible national fisheries research organizations performing the actual research.

1.2 Scope of the study

The overall goal of the ERA-Net project MariFish – funded by the European Commission's Sixth Framework Program – is to develop a network and bring together major European national funders of fisheries research to form an effective working partnership. The ERA-Net Scheme is the principal means of the European Commission to support the cooperation and coordination of national and regional bodies that finance or manage research activities in an attempt to bring together available resources and improve the efficiency of the European Research Area (ERA). The relevant research objective of the MariFish work package 5 (WP 5) to accomplish this goal is to assess and analyze the national funded research programs to identify where there are areas of common interest, gaps and possible duplications. Thereby the MariFish proposal highlights that the analysis focuses on the 'package' or program level and not the project level. Furthermore it is not the intention to evaluate the content in terms of scientific quality and output of national research programs but to perform a process evaluation, focusing on those criteria that provide information about the feasibility of national research programs against the final aim of MariFish to establish a joint research program with joint calls.

The outcome is a number of tables to display the current status. Further information is in descriptive form. On the basis of this information an evaluation report will be written with concrete recommendations and conclusions. The matrix and the structured approach will further stimulate MariFish partners and induce awareness building.

The work is divided into three steps and carried out in collaboration with the co-leader of WP 5, the Sea Fisheries Institute in Gdynia (MIR) in Poland. In the first step a

criteria matrix was developed to compare the content of national research programs. In the next step a categorized inventory of the national research programs is created with the help of a web-based database. Finally the national research programs will be evaluated using the criteria matrix, to identify key areas, major gaps or obstacles for the future collaboration and coordination. The necessary information is based on questionnaires and personal visits, which reveal the degree of overlap and already existing coordination on regional and international scale. The collected information is stored in a web-based interactive database for further verification and updating by the individual MariFish partners.

The present report resembles the second step in this work process, an inventory of national research programs. The inventory gives an overview of the existing national marine fisheries research programs or equivalent national research programs with a marine fisheries component and resembles the status at the end of 2007. The information in the tables can also be found in the MariFish database² and provides the basis for the subsequent national research program analysis. It should be noted that the information in this document is subject to change and that this inventory report is designed to be a snapshot of the current database status.

1.3 Report Structure

The report is organized around four chapters. In the first chapter the objectives of work package 5 (WP 5) are depicted and a context for the study provided.

Chapter 2 continues with a definition of national research programs and provides a descriptive overview of national marine fisheries research programs in the MariFish partner countries. The findings are augmented with information from non-MariFish partners in the Scandinavian countries.

In chapter 3 the focus lies on the organizational structure of national research programs before the discussion is expanded to the scientific content, spatial coverage and information from non-partners.

Finally, in chapter 4 the general conclusion is given.

2 Inventory of National Research Programs

The inventory includes the latest information from the MariFish partners and their respective national research programs in the marine fisheries sector (status: end of 2007). In the Scandinavian countries this information is supplemented with data from the national research programs of the so-called non-partners.

2.1 Definition of National Research Programs

In preparation for this work the question arose what constitutes a research program and what not. The background was that some countries have national research programs in place while other countries have not. Moreover the terminology varies from country to country. Some countries have national research programs; some research strategies and other countries call them thematic actions. While in some countries these national research programs are tailored to marine fisheries research other countries have broad

² You can access the database through the following internet address: <http://195.10.221.186/index.php>

national research and development programs that cover a wide range of topics with only a few sections dealing with marine fisheries at all. Nevertheless some countries have no national research program or something equivalent in place. In these cases individual research projects are set up in close collaboration with national policy makers in order to fulfill policy needs. As a result, some MariFish partners equate research projects with research programs. However, according to the MariFish proposal the analysis is to be carried out at the program and not the project level. Therefore a simple working definition was adopted. According to this national research programs are made up of a number of research projects and follow overarching objectives, thus operate at an abstract and aggregated level. In order to further specify what to subsume under a research program and what not, a recent definition by the European Commission's Directorate-General for Research (DG Research) was adopted. Thereby research programs carried out at national or regional level should have all of the following characteristics:

1. Be strategically planned, i.e. be composed of a number of research projects focused on a defined subject area or set of problems, scheduled to run for a set period of time and have coordinated management;
2. carried out at national or regional level and
3. financed or managed directly by national or regional public bodies, or by structures (e.g. agencies) closely related to or mandated by public authorities.

2.2 National Funders of Research Programs

National funders of marine fisheries research belong to the following funder types:


- Ministry
- Government Agency
- Governmental Research Institute
- Research Council
- Research Foundation

The reason for this diversity in the national funding structure is that the arrangements and responsibilities of major funders are not consistent and vary considerably from country to country. In order to acquire all relevant organizations with decision-making functions in the field of funding marine fisheries research, a simple definition was adopted. Therefore all organizations were treated as funders that have virtually all control over their research budget. This applies for such organizations that are financed via lump sum or government grants and to a large extent allocate funds to their individual research projects independently. The underlying assumption for the work of WP 5 is that responsible officials from these organizations have influence on the development of national research programs and their funding. Consequently these organizations were considered as funding bodies. However, it should be noted that these officials are not fully free in budget decisions, especially when additional funds are needed.

Table 1 provides an overview of the major national funders of marine fisheries research and their respective funding mechanisms in place. The respective funding

mechanisms stipulate how funds are allocated to the responsible national fisheries research organizations. This may be done through competitive and/or fixed/allocated funds. Competitive funds are funds researchers/institutes apply for and which are given on the basis of scientific evaluation of applications. Fixed/allocated funds are funds directly earmarked for marine fisheries research and provided to the respective research institutes.

Table 1: Major national funders of marine fisheries research in MariFish countries, their organizational status and respective funding mechanisms.

Acronym ▲▼	Country ▲▼	Funder type ▲▼	Funding mechanism
+ MVG-ALV	 Belgium	Ministry	fixed/allocated funds
+ RPF	 Cyprus	Research Foundation	competitive funds
+ DFFAB	 Denmark	Government Agency	competitive funds, fixed/allocated funds
+ IFREMER	 France	Governmental Research Institute	competitive funds
+ BMELV	 Germany	Ministry	fixed/allocated funds
+ BFAFI	 Germany	Governmental Research Institute	-
+ GSRT	 Greece	Government Agency	competitive funds, fixed/allocated funds
+ RANNIS	 Iceland	Research Foundation	competitive funds
+ MI	 Ireland	Governmental Research Institute	competitive funds, fixed/allocated funds
+ LNV	 Netherlands	Ministry	competitive funds, fixed/allocated funds
+ RCN	 Norway	Research Council	competitive funds
+ MIR	 Poland	Governmental Research Institute	-
+ MSHE	 Poland	Ministry	fixed/allocated funds
+ MADRP	 Portugal	Ministry	fixed/allocated funds
+ IPIMAR	 Portugal	Governmental Research Institute	fixed/allocated funds
+ MEC	 Spain	Ministry	competitive funds
+ IEO	 Spain	Governmental Research Institute	fixed/allocated funds
+ FORMAS	 Sweden	Research Council	competitive funds
+ DEFRA	 United Kingdom	Ministry	competitive funds, fixed/allocated funds
+ FRS	 United Kingdom	Governmental Research Institute	competitive funds, fixed/allocated funds

Source: database screenshot, January 2008

2.3 National Research Programs: MariFish Partners

As mentioned in the previous chapters, several key criteria constitute a national research program. These are budget, duration, content and geographical coverage. In addition, national marine fisheries research programs comprise of a name. In those cases where neither a specific research program exists nor an explicit name is given, an adequate name was chosen, for example “Polish Research Activities”. While some countries have several marine fisheries research programs in place others only have one.

The **budget** of a national research program specifies the funds designated for marine fisheries research. Table 2 displays the combined annual marine fisheries research

budgets (competitive and fixed/allocated funds) of the national fisheries research programs. Thereby competitive funds may be open to all research fields (agriculture, food safety, etc.) and not restricted to marine fisheries & aquaculture research, such as, for example in Cyprus. Therefore, the figures provided are often estimates for marine fisheries research and can only give a rough picture.

The same is the case for fixed/allocated funds. Although earmarked for marine fisheries research, the displayed national budgets include funds for R&D and funds dedicated for monitoring and stock assessment within the scope of the EU Data Collection Regulation (DCR).

Altogether the 18 MariFish partners in 16 European countries fund 22 national research programs that grant over 190 million Euro to marine fisheries research (Table 3).

The **duration** covers the start and end dates of a national research program and thus specifies how long the current research program is scheduled. In those cases where MariFish partners update their national research programs annually, the duration does not orient itself according to the start and end dates, but to the actual updating period (see Table 2).

Table 2: National research programs in the field of marine fisheries, their duration and total budgets.

Country ▲▼	Name ▲▼	Start Date ▲▼	End Date ▲▼	Duration ▲▼	Budget ▲▼
Belgium	Belgian Research Activities	-	-	annually	1.90 mio €
Cyprus	Thematic action: Sustainable Development	2003/06	2006/07	3.2 years	0.70 mio €
Denmark	Danish Research Activities	2006	-	annually	18.00 mio €
France	Assessment and evaluation of fishery resources	2005/01	2008/12	4.0 years	2.00 mio €
France	Ecosystemic steps for an integrated management of fishery resources	2005/01	2008/12	4.0 years	2.00 mio €
Germany	Forschungsplan 2002	2002/04	-	annually	9.00 mio €
Greece	Operational Programme for Competitiveness 200-2006	2000	2006	6.0 years	13.40 mio €
Iceland	Icelandic Research Activities	-	-	annually	-
Ireland	Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013	2007	2013	6.0 years	8.10 mio €
Netherlands	Beleidsondersteunend onderzoek	2008/01	2008/12	annually	7.30 mio €
Norway	The Oceans and Coastal Areas (HAVKYST)	2006/01	2015/12	10.0 years	6.00 mio €
Norway	Aquaculture - An Industry in Growth (HAVBRUK)	2006/01	2015/12	10.0 years	12.50 mio €
Poland	Polish Research Activities	-	-	annually	2.25 mio €
Portugal	Portuguese Research Program 2001-2006	2001	2006	annually	6.80 mio €
Portugal	MARE - Fisheries Operational Program	2000	2006	6.0 years	20.00 mio €
Spain	MEC - Spanish National Plan for Scientific Research, Development and Technological Innovation	2004/01	2007/12	4.0 years	2.60 mio €
Spain	IEO Framework Programme	2002	2005	3.0 years	22.00 mio €
Sweden	National Strategy for Fishery R&D	2004	-	annually	0.85 mio €
United Kingdom	Defra - Sustainable Marine Fisheries R&D	2007/04	2012/04	5.1 years	4.50 mio €
United Kingdom	Scottish Science Program	-	-	annually	35.70 mio €
United Kingdom	Defra - Fish Stock Monitoring and Assessments (non R&D)	2007/04	-	annually	14.50 mio €
United Kingdom	Defra - Fisheries Science Partnership	2007/04	-	annually	1.47 mio €
United Kingdom	Defra - Fisheries Challenge Fund	2007/04	-	annually	0.44 mio €

Source: database screenshot, January 2008

On a finer scale the annual combined budgets for marine fisheries research can be split up into **fixed/allocated funds**, **competitive funds** and funds dedicated to collecting data for carrying out the Common Fisheries Policy (CFP) of the EU. Some national research programs allow an even finer specification of competitive funds to either fisheries or aquaculture research. And the DCR³ expenditures can be further specified to the larger expenditure covering the minimum program of the member states and the expenditure in the extended programs. To further complicate and confuse matters the DCR expenditure is not listed for those countries that such as Norway⁴ are not full member of the EU, thus do not participate in the DCR. Moreover, those countries that have independent research councils handling competitive funds for marine fisheries research, such as for example Cyprus and Sweden, are not listed either. In other words, in the majority of MariFish countries the DCR expenditure needs to be subtracted from the national fixed/allocated funds for marine fisheries research. The following Table 3 gives an overview of the specific research funds spent in marine fisheries research in MariFish countries.

³ The Data Collection Regulation is an example, where member states are co-funded by the Community to collaborate in and coordinate multi-annual data collection programs.

⁴ Nevertheless Norway is incorporated and participates as an equal member of the group in Regional Coordination Meetings (RCM's) of the North Sea. Whereby the RCM's are an integral part of the DCR-machinery established to improve the overall quality of the data collected in support of the CFP.

Table 3: Overview of fixed/allocated, competitive funds for marine fisheries research and the respective DCR expenditure in MariFish countries.

Country	MariFish Partner	Fixed/allocated funds incl. EU money for DCR	Competitive funds		DCR expenditure ⁵	
			Fisheries	Aquaculture	Minimum program	Extended program
Belgium	MGV-ALV	1.9 mio €			1 mio €	
Cyprus	RPF		0.7 mio € ⁶			
Denmark	DFFAB	12 mio €	6 mio €		4.3 mio €	
France	IFREMER		4 mio €		6.2 mio €	0.3 mio €
Germany	BMELV BFAFI	9 mio €			2.4 mio €	0.5 mio €
Greece	GSRT	10.1 mio €	1.5 mio €	1.8 mio €	1.4 mio €	0.2 mio €
Iceland	RANNIS		small amount ⁷			
Ireland	MI	6 mio €	2.1 mio €		4.5 mio €	0.4 mio €
Netherlands	LNV	5.8 mio €	0.5 mio €	1.0 mio €	3 mio €	0.4 mio €
Norway	RCN		6 mio € ⁸	12.5 mio €		
Poland	MSHE MIR	2.25 mio €			0.6 mio €	
Portugal	MADRP IPIMAR	26.8 mio €			2.6 mio €	0.4 mio €
Spain	MEC IEO	22 mio € ⁹	2.6 mio €		6.3 mio €	1.8 mio €
Sweden	FORMAS		0.85 mio €			
UK	DEFRA	18.2 mio € ¹⁰	2.7 mio €		6.2 mio € ¹¹	2.1 mio € ¹¹
UK	FRS	31.25 mio €	4.45 mio €			
Sub-total:		145.3 mio €	46.7 mio €		38.5 mio €	6.1 mio €
Total:			192 mio €		44.6 mio €	

Table 3 illustrates that roughly three quarters of the total funds allocated for marine fisheries research are fixed/allocated funds, whereas one quarter are competitive funds.

Content, respectively research fields represent the priority areas in which research activities – of the respective national research program – take place. The following Table 4 provides a selective overview of these research activities on the highest aggregated level.

⁵ Financial contribution of MariFish countries in collecting data for carrying out the National Programs for data collection in 2006. Minimum and extended program figures consist of the planned and eligible expenditure by Member States and the maximum contribution from the EU Commission. All figures have been rounded.

⁶ For thematic action “Sustainable Development” in general.

⁷ The majority of governmental R&D expenditure (20 million Euro) in marine fisheries research is allocated directly to the Icelandic Marine Research Institute (MRI). Only a small amount of funds are allocated through the competitive funds managed by RANNIS.

⁸ 12 mio € for the whole marine & coastal program, roughly 50% for fisheries oriented research.

⁹ Total budget executed for fisheries research – approximated figure for 2005.

¹⁰ 4.5 mio € R&D funds from which 3.7 mio € are committed (fixed) to CEFAS and 0.8 mio € are available for competition. 14.5 mio € are fixed for the conservation of stocks.

¹¹ This figure is for the entire United Kingdom (UK Defra + UK FRS).

Table 4: Frequency and distribution of research fields covered by the national marine fisheries research programs.

Funder		Country															
		Belgium	Cyprus	Denmark	France	Germany	Greece	Iceland	Ireland	Netherlands	Norway	Poland	Portugal	Spain	Sweden	UK	UK
Research Fields	No.	MGV-ALV	RPF	DFFAB	IFREMER	BMELV BFAFI	GSRT	RANNIS	MI	LNV	RCN	MSHE MIR	MADRP IPIMAR	MEC IEO	FORMAS	DEFRA	FRS
Anthropogenic Impacts on Fisheries & Aquaculture	8				x	x			x	x	x			x	x	x	
Aquaculture	12	x	x	x	x	x	x		x	x	x		x		x		x
Economics & Socioeconomics	7			x		x				x	x	x			x	x	
Effects of Climate Change on Fisheries	6					x			x					x	x	x	x
Fisheries (Gear) Technology	8				x	x	x			x	x	x		x		x	
Fisheries Biology & Ecology	10			x		x		x	x		x	x	x	x	x	x	
Fisheries Management	13	x		x	x	x	x	x			x	x	x	x	x	x	x
Fishing Impacts on Marine Ecosystems	8	x		x		x				x	x	x			x	x	
Genetics and Biotechnology	8				x	x	x		x		x			x	x	x	
Marine Biogeochemistry	3								x		x				x		
Marine Ecosystem Studies	11			x	x	x	x	x		x	x		x	x	x		x
Marine Geosciences	3				x									x	x		
Modeling and Data Analysis	8		x	x	x	x					x			x	x	x	
Networking & Research Collaboration	4										x	x			x	x	
Physical Oceanography	6				x			x	x		x			x	x		
Seafood Quality & Processing	8	x				x			x		x	x	x		x		x
Stock Assessment and Monitoring	13	x	x	x	x	x		x	x	x		x	x	x		x	x
No. of Research Fields covered		5	3	8	10	13	5	5	9	7	14	8	6	11	15	11	6

Geographical coverage, respectively sea areas illustrate where different countries engage in marine fisheries research. Table 5 provides an overview of the relevant sea areas covered by the national research programs of MariFish countries. This includes the number of national funders, the number of national research programs and the number of research fields in the respective sea areas.

Table 5: Number of funders, research programs and research fields in the sea areas covered by the national research programs of MariFish countries.

Name ▲▼	No. of funder ▲▼	No. of research programs ▲▼	No. of research fields ▲▼
+ Antarctic Ocean	1	1	13
+ Arctic Sea	2	2	15
+ Baltic Sea	4	4	17
+ Barents Sea	1	1	10
+ Greenland Sea	3	3	16
+ Iceland and Faeroes Grounds	1	1	12
+ Mediterranean - Central	2	2	7
+ Mediterranean - Eastern	2	2	7
+ Mediterranean - Western	3	3	15
+ North Sea	11	14	17
+ Northeast Atlantic	8	8	17
+ Northwest Atlantic	6	6	16
+ Norwegian Sea	1	2	14
+ Other Sea Areas	6	6	17
+ Rockall, Northwest Coast of Scotland and North Ireland	2	2	15
+ Skagerrak and Kattegat	3	3	17
+ Subarea VII	9	13	17

Source: database screenshot, January 2008

On a more detailed level Table 6 illustrates the sea areas national funder of marine fisheries research and their equivalent national research programs are active in.

Table 6: Sea areas covered by the national research programs of MariFish countries.

Funder	Country															
	Belgium	Cyprus	Denmark	France	Germany	Greece	Iceland	Ireland	Netherlands	Norway	Poland	Portugal	Spain	Sweden	UK	UK
Geographical coverage	MGV-ALV	RPF	DFFAB	IFREMER	BMELV BFAFI	GSRT	RANNIS	MI	LNV	RCN	MSHE MIR	MADRP IPIMAR	MEC IEO	FORMAS	DEFRA	FRS
Antarctic Ocean					X											
Arctic Sea										X			X			
Baltic Sea			X		X						X			X		
Barents Sea										X						
Greenland Sea			X		X		X									
Iceland and Faeroes Grounds							X									
Mediterranean - Central ¹²		X				X										
Mediterranean - Eastern ¹³		X				X										
Mediterranean - Western ¹⁴				X									X			
North Sea	X		X	X	X				X	X		X	X		X	X
Northeast Atlantic ¹⁵			X				X		X		X	X	X			X
Northwest Atlantic ¹⁶					X		X				X	X	X			
Norwegian Sea										X						
Other Sea Areas				X					X			X	X	X		
Rockall, Northwest Coast of Scotland and North Ireland								X								X
Skagerrak and Kattegat			X		X											
Subarea VII ¹⁷	X			X				X	X			X	X		X	X

¹² Subarea 37.2 (Adriatic and Ionian)

¹³ Subarea 37.3 (Aegean and Levant)

¹⁴ Subarea 37.1 (Balearic, Gulf of Lions and Sardinia)

¹⁵ Subarea X and XII

¹⁶ Subarea 0-6 (NAFO Convention Area/FAO Major Fishing Area 21)

¹⁷ Irish Sea, West of Ireland, Porcupine Bank, Eastern and Western English Channel, Bristol Channel, Celtic Sea North and South, and Southwest of Ireland - East and West

2.4 National Research Programs: Non-Partners

In the Scandinavian countries Iceland, Norway and Sweden, a special situation prevails. Next to the MariFish partners there are secondary national funders of marine fisheries research of equal magnitude. In the case of Sweden for example, the Ministry of Agriculture, Food and Consumer Affairs covers fisheries policy and acts as second major funder of marine fisheries research via the Swedish Board of Fisheries. But neither the Ministry of Agriculture, Food and Consumer Affairs nor the Swedish Board of Fisheries are partners of MariFish.

In order to provide a comprehensive picture of marine fisheries research in the Scandinavian countries these so-called non-partners were contacted and asked to fill out questionnaires. This information is vital, because it will provide the basis for negotiations concerning thematic research areas, budgets and geographical coverage once the first MariFish calls are developed. Since the information does not match the formal requirements of the MariFish database it is depicted in descriptive form.

Sweden

As mentioned above, the Swedish Board of Fisheries¹⁸ (SBF) is directly responsible to the Ministry of Agriculture, Food and Consumer Affairs. The main objective of the current research program is to provide advice for fisheries management, thus focusing on data collection and assessment. As a result, about half of the research activities relate to the Data Collection Regulation, the International Council for the Exploitation of the Sea (ICES) and HELCOM¹⁹ (Helsinki Commission). There is no start and end date for the national research program, since the Swedish Board of Fisheries has a standing commission from the government to pursue data collection, analysis and scientific advice for fisheries management. However it is updated yearly. Its geographical coverage encompasses the Baltic Sea, Skagerrak, Kattegat and the inland waters of Sweden. The annual budget for the whole marine fisheries research program, including salaries, research vessels and Data Collection Regulation is approximately 10.5 million €. The current advisory programs cover:

- Baltic Sea
- Skagerrak/Kattegat (including the Sound)
- The Great Lakes (Freshwater Program)
- Diadromous fish (Fresh and Marine)
- Fishing gear development (Marine/Coastal fisheries)
- Restoration measures (Fresh and Marine), stocking and aquaculture

In the near future more emphasis will be given to the research fields: Ecosystem Approach and Climate Change.

¹⁸ <http://www.fiskeriverket.se>

¹⁹ The Helsinki Commission, or Baltic Marine Environment Protection Commission, works to protect the marine environment of the Baltic Sea from all sources of pollution through intergovernmental co-operation between Denmark, Estonia, the European Community, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden.

Norway

The Institute of Marine Research (IMR) is the main adviser to the Ministry of Fisheries and Coastal Affairs. The overall objective of the research activities is to ensure that Norway's marine resources are harvested in a sustainable way. Funding from the Ministry of Fisheries and Coastal Affairs is primarily in the form of earmarked advisory contracts and accounts for 50 percent of the institute's total revenue. The geographical coverage of the Institute of Marine Research encompasses the Barents Sea, the Norwegian Sea and the North Sea. About half of the work deals with management-oriented research and monitoring for the Ministry of Fisheries and Coastal Affairs that is organized in four advisory programs:

- Monitoring and condition assessment of the Barents Sea ecosystem
- Monitoring and condition assessment of the ecosystems of the Norwegian Sea and the North Sea
- Monitoring and condition assessment of the coastal zone
- Aquaculture

The same thematic issues recur in the following ten research programs that organize all other research activities:

- **The Barents Sea Ecosystem Program**
The overarching objective of this program is to generate knowledge that will provide a basis for developing advice for the authorities in all areas that concern marine resources and the environment in the Barents Sea.
- **The Norwegian Sea Ecosystem Program**
The overarching objective of this program is to generate knowledge that will provide a basis for developing advice for the authorities in all areas that concern marine resources and the environment in the Norwegian Sea.
- **The North Sea Ecosystem Program**
The overarching objective of this program is to generate knowledge that will provide a basis for developing advice for the authorities in all areas that concern marine resources and the environment in the North Sea.
- **The Coastal Zone Ecosystem Program**
The overarching objective of this program is to generate knowledge that will provide a basis for developing advice for the authorities in all areas that concern marine resources and the environment in the Norwegian coastal zone.
- **The Aquaculture Program**
The overarching objective of this program is to provide a foundation of knowledge for research-based advice in the field of aquaculture.
- **The Climate – Fish Program**
The overarching objectives of this program are to warn of changes in the climate, and to understand and quantify the importance of such changes for production, distribution and behavior in marine organisms.

- **The Oil – Fish Program**
The overarching objective of this program is to generate new knowledge about the acute and long-term effects on fish and other marine organisms of discharges of oil to the sea, chemicals used in drilling and production, and produced water, as well as to obtain new knowledge about the effects of seismic studies on fish and other marine organisms.
- **The Ecosystems and Population Dynamics Program**
The overarching objective of this program is to develop and apply new methods and tools that will improve our understanding of, and to quantify the variability in, marine ecosystems, with special reference to the dynamics of fish stocks, and to contribute to an ecosystem approach.
- **The Biological Mechanisms Program**
The overarching objective of this program is to generate knowledge of biological mechanisms and interactions in key aquaculture species and species in the marine ecosystem, as a long-term basis for sustainable resource utilization and aquaculture.
- **MAREANO**
The MAREANO program is a joint project that is led by the Institute of Marine Research and also involves the Norwegian Hydrographic Service (SKSK) and the Geological Survey of Norway (NGU). The overarching objectives of this project are to chart benthic habitats and to disseminate all available information about Norwegian marine regions via MAREANO's Internet site.

Iceland

The Marine Research Institute²⁰ (MRI) is a government institute under the auspices of the Ministry of Fisheries. It is the most important funder of marine fisheries research in Iceland, whereas RANNIS funds marine fisheries research only to a very limited extent. The main objective of the current research program is to gather scientific knowledge on the marine environment and the marine ecosystem around Iceland in order to support a long-term sustainable exploitation of Icelandic marine resources. Striking is that there is very little differentiation between basic and applied research. Moreover, basic and applied research is undertaken side by side and is considered supporting each other to acquire a holistic picture, necessary to approach new challenges such as the ecosystem approach to fisheries management. The Marine Research Institute does not have a single, current research program. Instead research is planned through a 5-year strategic plan. The current plan applies for the year 2007 until 2011. Nevertheless, progressive revision on the different themes may be made annually. The geographical coverage encompasses Icelandic waters, the Greenland Sea and the Norwegian Sea. The total annual budget for the marine fisheries research is 21.3 million €. From this total budget overheads and housing account for approximately 1.5 million € and research vessels for 7.2 million €. Most of these funds are allocated by direct commissioning. However, this procedure is based on prioritization from project evaluation (see box). The main research emphasis or research fields of the current strategic plan are:

²⁰ <http://www.hafro.is>

- Sustainable exploitation of major stocks
- Studies underpinning the ecosystem approach to fisheries management
- Underutilized species
- Fishing gear, gear selectivity and behavior
- Mapping of seabed and benthic habitats
- Mariculture
- Climatic variations and effects on ecosystems
- Research facilities and other aspects

Currently missing research fields identified for future coverage are modeling related activities, e.g. predator-prey interactions in a multi-species and ecosystem approach to fisheries management.

The Marine Research Institute runs its research on a „project basis“, i.e. each research project is carried out according to a predetermined project proposal and cost plan under the supervision of an appointed project leader or a project steering committee for the larger projects.

Milestones for certain project stages and completion are mandatory in project planning. Follow-up is done by section leaders twice a year to ensure the project progresses according to the previously set out progress stages and according to budgeted costs.

In recent years the management board has aimed towards utilizing the research plans purposefully in implementing formulated research policy, for follow-up as well as for ensuring the best possible utilization of funding.

The evaluation process of research proposals and preparation of annual operating plans begins in August of previous years when scientists are notified of the deadline (15th of October 2006 for 2007 proposals) for the submission of research proposals, i.e. both new research proposals and up-dated status reports for ongoing research, which is going to be continued.

After the submission of research proposals an evaluation committee consisting of two deputy directors and three heads of sections evaluate the research proposals. In recent years the total number of proposals have been around 150 of which 30 have been selected.

The evaluation is based on scores given for:

- Scientific and/or practical value
- Practicability
- Efficient utilization of manpower, ship time, costs and equipment

In addition, an effort is made to evaluate whether the scientist leading the project is likely to complete the work, including presenting and publishing the findings in an appropriate forum.

In connection with the annual call for proposals the management board usually holds a meeting together with scientists where they are informed and/or reminded of the priority issues that the board would like to see addressed. Usually the priority issues are related to issues that have been outlined in the institutes' 5-year strategic plan but at times they may also be related to issues that call for immediate action in connection with developments in the marine environment or the fishery.

The scientists usually act upon the requests for priority issues. However, because large parts of the institutes activities and budget are tightly fixed in routine activities related to the assessment work this may sometimes be difficult. In the case of prioritization, projects related to assessment work are considered first.

3 Discussion

Assessing the national research programs revealed that some countries do not have any national research programs in place. The assessment also revealed that there was no common understanding of a research program. As such the adoption of a working definition proved helpful to carry out the assigned task. Pointing out what constitutes a research program is likely to help when setting up a joint research program and agreeing on a common priority setting process.

The number of national marine fisheries research programs in each country allows no general assertion about the significance or importance of marine fisheries research in individual countries. This might have practical reasons such as for example grouping thematic research priorities or political reasons, e.g. labeling policies for certain interest groups. What can be noticed, however, is that countries with a historic and traditional strong fisheries sector, such as for example Norway, Ireland, the UK or France, have national research programs in place that are specifically tailored to marine fisheries research.

The total fixed and competitive annual funds allocated through the national research programs to marine fisheries research amount to 192 million Euro. This exceeds the total amount of 160 million Euro estimated in the MariFish project proposal and may be ascribed to budget changes in the past years. Although Table 3 gives a very detailed overview of how funds are appropriated the exact national budget remains vague and cannot be calculated through subtracting DCR expenditure. The main explanation for this is that some national budgets include DCR expenditure, whereas others do not.

National budgets from MariFish partners vary quite substantially. However, the conclusion that larger budgets may allocate larger sums to a joint research program cannot be supported, since this depends largely on the national funding mechanisms in place, i.e. funds distributed on a competitive or fixed/allocated basis.

The duration of national research programs varies between annually scheduled programs and programs scheduled up to 10 years. However, long-term programs are not necessarily unchangeable but allow certain adjustments to be made. In those cases where no national research program exists, the duration was set to annually to reflect continuously launching of new research projects.

Similar to the number of research programs per country, the frequency and distribution of research fields covered by each of the national fisheries research programs allows no general assertion about the scientific quality and output of marine fisheries research in individual countries. In addition, the displayed research fields are too broad to allow the identification of marine fisheries research projects individual countries are involved in.²¹ A very general allegation concerning the entire database and not only affecting the content respectively research fields is that one could argue that the information in the database, and hence in this report is constantly changing and thus insufficient to draw reliable conclusions. Although this statement cannot be refuted changes in the entire marine fisheries research system are minimal. It is argued that research fields constitute a proxy indicator for the existing scientific expertise, i.e. scientists who hold the same disciplinary expertise. Since scientific staff at national

²¹ In a next step, the evaluation of the content of national research programs will be extended to a more detailed level leading towards but not necessarily going down to project level.

research institutes are relatively stable and do not change when new national research programs are implemented they provide the means and long-term prospective to tackle future scientific needs and priorities within a joint transnational research program. As such, the information in the database provides the basis for decision-making concerning the identification of research priorities according to the existing scientific expertise and qualification. However, this might not always and necessarily be the case in countries where the number of scientist has been and still is reduced.

The number of research fields and the research fields carried out in the respective sea areas can somewhat be misleading. This is attributed to the database design where research fields are specified for each national research program, which in turn is linked to the respective sea areas. As a result, all research fields belonging to a specific national research program automatically show up for any sea area covered by that national research program. For example, a research program containing ‘aquaculture’ as research field and operating in the Antarctic Ocean and the North Sea will indicate that aquaculture is a research field carried out in the Antarctic Ocean whether this is true or not and irrespective of its practicality.

The main purpose of the category ‘geographical coverage’ or ‘sea areas’ as named in the database is, to illustrate where different countries engage in marine fisheries research. In addition to the information above, which research areas are covered by whom, this help to determine the sea areas covered by national research programs. Thereby, both content and spatial coverage are accessible means to initiate future collaboration.

The national research programs of non-partners in the Scandinavian countries have very different implications. In Norway, both the MariFish partner and non-partner are of equal importance for the national funding of marine fisheries research. Responsibilities are clearly defined, i.e. the Research Council of Norway (MariFish partner) is responsible for the distribution of competitive funds, whereas the Ministry of Fisheries and Coastal Affairs (non-partner) allocates earmarked funds to the Institute of Marine Research for assessment and monitoring activities. Unfortunately there was no questionnaire from the Institute of Marine Research available, so that the information relies on the available online-resources only. Nevertheless, the implication for the general consideration is negligible, since the two national research programs from the Norwegian MariFish partner listed in the database cover virtually the same research fields and sea areas.

In Sweden and Iceland, the MariFish partners are only minor national funders of marine fisheries research. In Sweden this circumstance may be neglected, since the national research program of the Swedish MariFish partner is broadly based, covering many research areas and with wide geographical coverage as starting points for future collaboration. In Iceland, however, the inclusion of the MariFish non-partner’s national research program is a necessity to mirror reality of the Icelandic marine fisheries research system. Consequently, several research fields not covered by the Icelandic MariFish partner are suddenly covered reflecting the national expertise in marine fisheries research. Furthermore the total annual budget of the MariFish non-partner reflects the importance of the Icelandic marine fisheries sector and potential interest to solve transnational issues in marine fisheries science. The internal

formalized process of research prioritization in the Marine Research Institute is further a great example how to organize the commissioning of joint research activities.

4 Conclusion

The inventory of national research programs provides a unique overview of the organization and funding of marine fisheries research in Europe and resembles the status at the end of 2007. Assessing the national research programs revealed that some countries do not have any national research programs in place. The assessment also revealed that there was no common understanding of a research program.

Altogether the 18 MariFish partners in 16 European countries fund 22 national research programs that grant over 190 million Euro to marine fisheries research.

National budgets from the MariFish partners vary between 'a small amount' up to 35.7 million Euro and are distributed via competitive and/or fixed/allocated funding mechanisms. The national research programs are differently scheduled. Some are annually reviewed and revised and others are scheduled for 10 years. The research activities financed through these funds were categorized in 17 research fields ranging from 'Anthropogenic Impacts on Fisheries & Aquaculture' to 'Stock Assessment and Monitoring'. The spatial coverage encompassed 17 sea areas from the Antarctic Ocean to Subarea VII.

The inclusion of information from the so-called non-partners in the Scandinavian countries provides a comprehensive picture of the marine fisheries research and its organization and funding mechanisms. The most important insights gained in this context apply to Iceland. In Sweden and Norway the differences are somewhat minor. Critics may argue that the presented information is constantly changing, thus insufficient to draw any reliable conclusions. Although changes in the national research programs constantly occur, it is argued that the established scientific expertise represented by the national institute's scientific staff is of relative stability. As such the information from the database provides a snapshot for the subsequent evaluation of national research programs.