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Evaluation of National Research Programs

Deliverable 5.4

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Executive Summary

The evaluation of national marine fisheries research programs revealed that some countries do not have any national research programs in place but carry out research projects. Altogether the 18 MariFish partners fund 22 national research programs – including ongoing research projects – that grant over 190 million Euro to marine fisheries research.

The present report evaluates 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 evaluation report is designed to be a snapshot of the current database status.

Nearly two third of the MariFish partners have national research programs in place of which the majority are long-term programs. Only half of the MariFish partners are able to make minor changes in ongoing national research programs. Particularly noticeable is that virtually all MariFish partners are able to allocate funds to a virtual common pot. Nevertheless, for half of the MariFish partner countries the Flexibility Index indicates that they might have problems to engage in future joint research activities.

Almost all MariFish partners except one are conducting marine fisheries research in sea areas of interest to other partners. Most of the partners cover more than six research fields, thus are well equipped to participate in a joint call. However, some partners remain with a very narrow scope of research, which may impede future collaborative research activities within MariFish.

The most prospectus research fields for a future joint research program – covered by a majority of MariFish partners – are:

- Fisheries Management
- Aquaculture
- Marine Ecosystem Studies
- Fisheries Biology & Ecology
- Anthropogenic Impacts on Fisheries & Aquaculture

Potential gaps – covered only by few MariFish partners – include:

- Marine Biogeochemistry
- Marine Geosciences
- Networking & Research Collaboration
- Physical Oceanography
- Effects of Climate Change on Fisheries

The main sea areas covered by MariFish partners are the North Sea, Subarea VII, the Northeast Atlantic, the Northwest Atlantic and the Baltic Sea. Other sea areas are covered by few partners only, due to their remote geographical location. Despite low Mediterranean coverage, this sea area has a strong potential when taking future MariFish partners such as Italy, Slovenia and Malta into consideration.

¹ You can access the database via the MariFish website under: <http://www.marifish.net>

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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

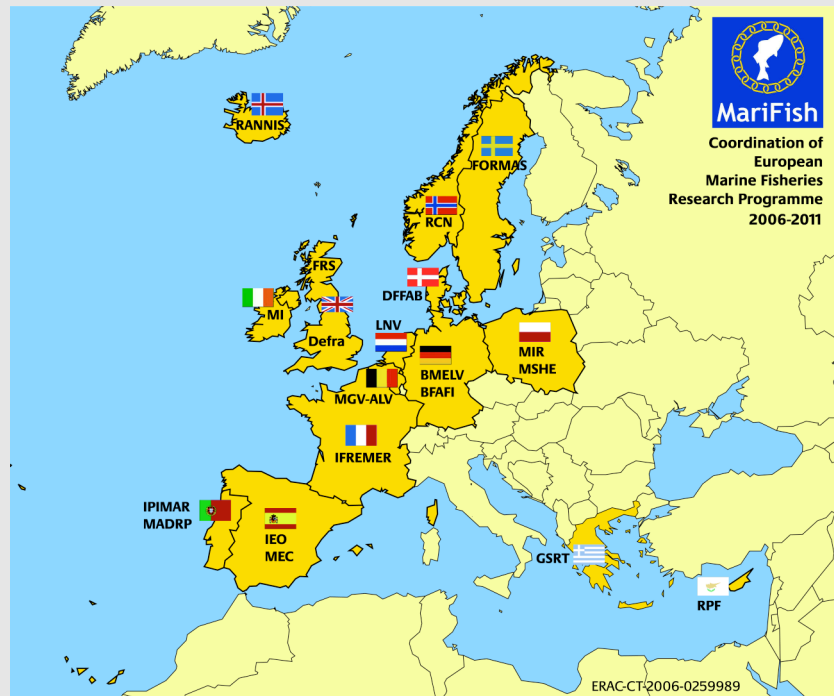


Figure 1: Associates and countries in the ERA-Net project MariFish

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 the present evaluation report was written. The evaluation report 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, in the last step, the national research programs are evaluated using the previously developed 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 carried out in 2006 visiting the majority of MariFish partners, 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 evaluation process was carried out during two working meetings with the co-leader of WP 5, the Sea Fisheries Institute in Gdynia (MIR).

The present report resembles the third step in this work process, a strength and weakness analysis of national research programs. The analysis provides the basis for identifying key areas for improved cooperation, collaboration and coordination of the existing national marine fisheries research programs or equivalent national research programs with a marine fisheries component.

1.3 Report Structure

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

Chapter 2 continues with a definition of national research programs and a brief introduction of the applied evaluation criteria. Then the evaluation of the national marine fisheries research programs is carried out looking at the most apparent comparisons such as research fields (content) and geographical coverage by the individual MariFish partner countries. In a next step, the previously developed criteria matrix is applied to perform a more thorough process evaluation going through the questions step by step.

In chapter 3 the focus lies on the identified research fields and spatial overlaps before the discussion is expanded to organizational issues.

Chapter 4 concludes with the main strengths and deficiencies supporting or/and impeding a future joint research program.

2 Evaluation of National Research Programs

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 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 Evaluation Criteria

The inquiry was carried out using a fixed set of questions. The final measurement occurred using a traffic light system for the actual evaluation. Thereby the following colors stand for:

Red ● = impeding
Blue ● = indifferent
Green ● = supporting

Yes is generally green and encouraging future collaboration and joint research activities. No is generally red and an impediment to future collaboration. It should be noted that analog to the traffic light – that may change color from red (stop) to green (go) – the evaluation of individual national research programs and their criteria does

not confront MariFish partners with a fixed situation but points out future potentials and improvements. For the evaluation of the national marine fisheries research programs or equivalent national research programs with a marine fisheries component the following sub categories were selected:

- **Duration** covers the start and end dates of a national research program. This criterion is easy to detect and very useful to check if national research programs are encouraging or restraining future collaboration. Long durations or short durations only allow conclusions, if viewed in combination with funding mechanisms. For example, competitive funds allow more flexibility despite a long duration of the national research program. Therefore duration and funding mechanisms were combined to a new criterion called '**Flexibility Index**'. In general, long-term research programs are critical in order to achieve compliance because they are less flexible, yet they might offer long-term commitment. In addition, different start dates also act as an impediment for future collaboration. On the other hand, short-term research programs are seen as advantage, although they might allow little commitment for long-term collaboration.
- **Funding mechanisms & Budget** is a useful criterion for evaluation, in particular concerning the joint funding of transnational research activities. But how stable are research budgets if political change happens, e.g. political changes in the ministry? In this respect national funders such as research councils are less susceptible than the responsible ministries or their departments themselves. In general, fixed/allocated funds are seen as an impediment for the establishment of a jointly financed research program, whereas competitive funds are seen as supportive.
- **Geographical coverage**, respectively geographical overlap of sea areas – where different countries are engaging in research activities – may make future collaboration easier. This criterion is relatively easy to detect and to depict. Geographical coverage may be linked with content, i.e. if there is no geographical overlap there might be common interests in research fields. In general, a broad geographical coverage is seen as supporting future collaborative research. Yet, a lack of geographical coverage not necessarily acts as an impediment for future collaborative research, if there are overlapping research fields (content). As a result geographical overlap and content were combined to a new criterion called '**Overlap Index**'.
- **Content** refers to the research fields covered by the different MariFish partner countries. During the first analysis it became clear that it is not sufficient to compare national research programs without going into detail. This also owes to the fact that several countries have no national research program in place but operate research projects. In general, broad research foci are seen as advantage for developing a common research theme, whereas narrow research foci are seen more as disadvantage. Depending on the overlap of narrow research foci with the mean this may be no disadvantage at all. The mean are one or more research fields where the majority of MariFish partners are interested in.

2.3 Content & Geographical Analysis

Research fields that attract the majority of MariFish partners have the greatest potential to foster future joint activities. These so-called overlaps occurred in five of the 17 research fields (Table 1 & 4).

Table 1: Research fields covered by the majority of MariFish partners.

Research Fields	No. of countries engaged
Fisheries Management	13
Aquaculture	12
Marine Ecosystem Studies	11
Fisheries Biology & Ecology	10
Anthropogenic Impacts on Fisheries & Aquaculture	8

Interesting to note is that the three research fields ‘Fisheries Management’, ‘Marine Ecosystem Studies’ and ‘Fisheries Biology & Ecology’ represent prospectus research areas feeding into ecosystem based fisheries management. Ecosystem-based fisheries management is currently high on the agenda in the context of fisheries management and an inherent part of the European Common Fisheries Policy (CFP). The first pilot-pilot project by MariFish partners in the English Channel is focusing on this research field alike. Moreover the ERA-Net MarinERA has just recently announced a common call on ‘Regional Drivers of Ecosystem Change’ highlighting the role of the MariFish pilot-pilot project.

Although the research field ‘Aquaculture’ has not attracted any specific interest so far it is one of the research fields covered by the majority of national marine fisheries research programs. As such it has the potential to be incorporated in a future jointly funded research program.

Last but not least the research field ‘Anthropogenic Impacts on Fisheries & Aquaculture’ yields significant interest by MariFish partners and may be tied or incorporated to the research field ‘Aquaculture’.

At a second glance those research fields become noticeable that attract the minority of MariFish partners and could be equated with gaps (Table 2 & 4).

Table 2: Research fields covered by the minority of MariFish partners.

Research Fields	No. of countries engaged
Marine Biogeochemistry	3
Marine Geosciences	3
Networking & Research Collaboration	4
Physical Oceanography	6
Effects of Climate Change on Fisheries	6

Similar to the assumption that broad coverage of a certain research field by MariFish partner countries has the prospective to be selected for a future joint research program is the assumption that narrow coverage has the same prospective. In this respect, noteworthy are the research fields ‘Marine Biogeochemistry’, ‘Marine Geosciences’

and ‘Physical Oceanography’ all feeding into another less recognized research field ‘Effects of Climate Change on Fisheries’. This major research field tackles the core problems associated with global change.

The little engagement in the research field ‘Networking & Research Collaboration’ highlights the need for more collaboration, whereby MariFish activities are working within this area to close this gap.

Since the information reflects the aggregated level of national marine fisheries research programs it is impossible to detect current duplication of research.

Sea areas that are covered by a majority of MariFish partners may make future collaboration easier. Nevertheless this information has to be viewed carefully according to the geographical location of countries. Due to the remote location of some countries, these are less likely to perform marine fisheries research in sea areas of interest to other MariFish partner countries. From the 17 identified sea areas where national marine fisheries research programs operate in, there are five main sea areas of interest (Table 3 & 5).

Table 3: Main sea areas covered by the MariFish partners.

Sea Areas	No. of countries engaged
North Sea	10
Subarea VII	7
Northeast Atlantic	6
Northwest Atlantic	5
Baltic Sea	4

Despite low Mediterranean coverage, these sea areas become more interesting when taking future MariFish partners such as Italy, Slovenia and Malta into consideration (Table 5). As mentioned above, other sea areas are covered by few partners only (Table 5).

Table 4: Frequency, distribution and priority 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 ²	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

² Is compulsory for most MariFish partner countries, due to the European Data Collection Regulation (DCR) and the International Council for the Exploration of the Sea (ICES) quota setting procedures and will thus not be considered in the evaluation.

Table 5: Total and priority 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 ³		X				X										
Mediterranean - Eastern ⁴		X				X										
Mediterranean - Western ⁵				X									X			
North Sea	X		X	X	X				X	X		X	X		X	X
Northeast Atlantic ⁶			X				X		X		X	X	X			X
Northwest Atlantic ⁷					X		X				X	X	X			
Norwegian Sea										X						
Other Sea Areas ⁸				X					X			X	X	X		
Rockall, Northwest Coast of Scotland and North Ireland								X								X
Skagerrak and Kattegat			X		X											
Subarea VII ⁹	X			X				X	X			X	X		X	X

³ Subarea 37.2 (Adriatic and Ionian)

⁴ Subarea 37.3 (Aegean and Levant)

⁵ Subarea 37.1 (Balearic, Gulf of Lions and Sardinia)

⁶ Subarea X and XII

⁷ Subarea 0-6 (NAFO Convention Area/FAO Major Fishing Area 21)

⁸ This category often relates to sea areas associated with overseas departments and territories and will thus not be considered for further evaluation.

⁹ 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 Structural Analysis

The structural analysis follows the systematics of Table 6. At first, the questions are reviewed and the details of the evaluation procedure are given. Next the interpretation of the results is briefly discussed. The final results of the evaluation are displayed in Table 6. It is not the intent to point out individual MariFish partners to denominate if their national marine fisheries research programs are impeding or supporting a future joint research program. Rather, the intent is to point out 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 following questions were used to determine the collaborative developed evaluation criteria:

- **Does a national research program exist?**
The question if a national research program encourages or impedes future funding of joint research activities remains unsolved, since countries with no formalized research programs are just as likely to contribute to a joint program than countries having a national research program. Therefore this question has not been used for evaluation.
- **Are the research programs short-term (≤ 3 years)?**
Assuming that short-term national research programs, in particular identified research areas are easier to merge into a common transnational research program. This question has only been asked for those countries with an existing national marine fisheries research program. The majority of national research programs are short-term with only a few exceptions.
- **Is it possible to make minor changes in the program while running?**
The possibility to make minor changes in running programs facilitates the possibility to contribute to future joint research activities within MariFish. These changes apply to both content and funding within national research programs. In case there is no national research program we assume that minor changes in national research activities are possible. This question has only been asked for those countries with an existing national research program.
- **Are competitive funds part of your funding mechanisms?**
Since the aim of MariFish is to set up a joint call to encourage research activities competing for funding, those countries with competitive funds as part of their research funding mechanism are more likely to contribute funds to a virtual common pot.
- **Is the partner able to allocate funds to a virtual common pot?**
This question was answered on the basis of existing participation from MariFish partners in other ERA-Net calls (virtual common pots), for example, Scotland (SEERAD) & Spain (MEC) in CRUE or Poland (MSHE) in Martec. Grey shaded boxes indicate that the information for those countries was unavailable for sound decision-making.

- **Flexibility Index**

The 'Flexibility Index' is a way to try and combine several evaluation criteria in order to compare the different partners and their ability to engage in future joint research activities. However the traffic light system highlights that these criteria are not manifest but may be improved and the color changed.

(short term + competitive + virtual pot) ==> high

The killing criteria: "Is the partner able to allocate funds to a virtual common pot?" has a strong influence on the 'Flexibility Index', if the partner is unable to allocate funds to a common pot the 'Flexibility Index' cannot be high.

(long term + no competitive + no changes) ==> low

In those cases where competitive funds are not part of the partners funding mechanisms the 'Flexibility Index' is low.

- **Is the partner researching in sea areas of interest to the other partners?**

The overlap in geographical research areas might encourage the organization of joint calls.

- **How many research areas are covered?**

Of the 17 identified broad research fields the number covered by the national research programs are counted. This indicator is used to check for each partner how many of the 17 research fields are covered. The more research fields covered the higher the possibility to participate in joint research activities. Overlap is thus seen in a positive way and has no negative connotation. In contrast, when we talk about duplication we see this in the most negative way possible, i.e. wasting taxpayers money. However, working only on the program-level we have not been able to detect any duplication, because this can only be done on project level or even finer scales.

- **Are the research fields overlapping with the mean interest?**

With general interest we mean those research fields covered by eight or more partners. The calculation is based on 16 MariFish partner countries, whereby the threshold is eight, i.e. every research field covered by eight or more partners (eight research fields fulfill this criteria). In a second step, it was checked in how many of these identified eight research fields a national research program is operating.

Yes = 6 or all are covered

Partly = 3-5 of these are covered

No = anything below 3

- **Overlap Index**

(research areas and spatial overlap) ==> high

(no overlap, narrow scope) ==> low

Even though an overlap in research areas and research fields might look like a duplication of work one needs to consider that these overlaps occur on a broad program level and do not imply that there is a duplication of work on project level. However, this might apply for work conducted outside transnational

projects in contrast to joint work conducted and coordinated in an international research project.

- **Is the partner safe from short-term political interference?**

Political changes may affect national research objectives and subsequently the willingness to contribute to a joint program. As qualitative indicator to answer this delicate question objectively the organizational structure of the respective national funding organization was used. It was assumed that ministries or departments within ministries are more susceptible to political changes, whereas National Research Councils are not.

- **Will the budget be stable or increase over the next 5 years?**

A stable or increasing national research budget raises the possibility that the partner is able to allocate funds to a common pot.

Nearly two third of the MariFish partners have national marine fisheries research programs in place. The majority of those research programs are long-term programs, i.e. scheduled for more than three years. Only half of the MariFish partners are able to make minor changes in running national research programs. Striking is that the vast majority of MariFish partners use competitive funds for commissioning research. Particularly noticeable is that all MariFish partners – where sound information was available – are able to allocate funds to a virtual common pot. This prerequisite for a common call encompasses nearly all MariFish partners. Nevertheless, for half of the MariFish partner countries (8) the Flexibility Index is only medium indicating that those partner countries might have problems to engage in future joint research activities. One partner country has a low Flexibility Index and seven partner countries are rated high.

All MariFish partners except one are conducting marine fisheries research in sea areas of interest to other partners. Most of the partners cover more than six research fields thus are well equipped to participate in a joint call. However, four partners remain with a very narrow scope of research, which may impede future collaborative research activities within MariFish. After all, in those countries the research fields partly overlap with the mean interest. In total, from 16 MariFish partner countries 11 MariFish partners are conducting research that overlaps with the mean interest. This finding is also reflected in the Overlap Index, which combines the scientific scope and spatial coverage. Only four countries have a medium Overlap Index and one no overlap and a narrow research scope. Exactly 50 percent of MariFish partners are susceptible to short-term political interference based on the fact that these partners are ministries or ministerial departments. The other half is largely exempted from political interference. For the majority of partners the research budget is stable over time and may even increase. However, five partners anticipate decreasing national research funds.

Table 6: Evaluation matrix of MariFish partner countries and their national marine fisheries research programs.

Questions	Evaluation	BE	CY	DK	FR	DE	EL	IS	IE	NL	NO	PL	PT	ES	SE	UK DEFRA	UK FRS
Do national research programs exist?		no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	yes	no	yes	yes
Are the research programs short-term (<= 3 years)?	yes		•											•			•
	no				•		•		•		•		•			•	
Is it possible to make minor changes in the programs while running?	yes								•		•		•			•	•
	no		•		•		•							•			
Are competitive funds part of your funding mechanisms?	yes		•	•		(•)	•	•	•	•	•	(•)	•	•	•	•	•
	no	•			•												
Is the partner able to allocate funds to a virtual common pot?	yes			•	•	•	•	•		•	•	•		•	•	•	•
	no																
FLEXIBILITY Index																	
<i>short term + competitive + virtual pot</i>	high		•	•				•		•				•	•		•
	medium				•	•	•		•		•	•	•			•	
<i>long term + no competitive + no</i>	low	•															
Is the partner researching in sea areas of interest to the other partners?	yes	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	no		•														
How many research fields are covered? Scope is...	broad (>=10)				•	•					•			•	•	•	
	medium (6-9)			•					•	•		•	•				•
	narrow (1-5)	•	•				•	•									
Are the research fields overlapping with the mean interest?	yes			•	•	•			•	•	•		•	•	•	•	•
	partly	•	•				•	•				•					
	no																
OVERLAP Index																	
<i>research field and spatial overlap</i>	high			•	•	•			•	•	•		•	•	•	•	•
	medium	•					•	•				•					
<i>no overlap, narrow scope</i>	low		•														
Is the partner safe from short-term interference?	yes		•		•		•	•	•		•			•			•
	no	•		•		•				•		•	•		•	•	
Will the budget be stable or increase over the next 5 years?	yes	•	•				•	•	•	•	•			•	•		
	probably			•	•												
	no					•						•	•			•	•

3 Discussion

Some of the identified research fields (overlaps & gaps) such as Networking & Research Collaboration are neither site specific nor bound to certain geographical areas, whereas other research fields such as Physical Oceanography are site specific and constricted to geographical areas. The restriction is, however, never so strong that research fields disqualify for future priority research within a transnational research program. As mentioned before, it is impossible to identify any duplication of research on the program level. Duplication of research needs to be analyzed on a much finer scale looking at research content and processes.

The content analysis does not imply that every partner needs to be engaged in potential joint research activities. These research activities may just as well be tailored to regional requirements. However, when doing so, one needs to be aware that focusing on geographical areas such as the North Sea, for example, excludes partners like Greece. Other sea areas are already covered by other ERA-Nets, such as for example the Baltic Sea by BONUS. The Mediterranean coverage becomes more interesting when taking future MariFish partners such as Italy, Slovenia and Malta into consideration. Other areas are only covered by few partners due to their location. In this respect analyzing national research programs on geographical scale is misleading. The necessity that content and/or spatial coverage of research need to overlap plays only a minor role, since it is not about shared stocks and subsequently research carried out in those areas but about shared problems.

The different timelines of the national research programs are likely to act as an impediment against the final aim of MariFish to establish a joint research program with joint calls. The background is that parts of the funds that will be newly allocated to a joint research programs will either come from the already existing marine fisheries budget and even if not, they will be most likely negotiated when the total national budget for marine fisheries research is negotiated. That means, during the periods where national funds are tied up, it is difficult to allocate money to a joint research program unless it is “fresh” money. For example, a research program scheduled for three years and another program scheduled for six years will only allow decision-making every six years, if no formal mechanism exists that allows annually or continues updating of a national research program, thus reallocating funds to a transnational research program.

4 Conclusion

The evaluation of national marine fisheries research programs is based on the WP 5 report D 5.3 “Inventory of National Research Programs” and resembles the status at the end of 2007.

The most prospectus research fields – covered by a majority of MariFish partners – for a future joint research program are:

- Fisheries Management
- Aquaculture
- Marine Ecosystem Studies
- Fisheries Biology & Ecology
- Anthropogenic Impacts on Fisheries & Aquaculture

Potential gaps for future joint research activities – covered only by few MariFish partners – include:

- Marine Biogeochemistry
- Marine Geosciences
- Networking & Research Collaboration
- Physical Oceanography
- Effects of Climate Change on Fisheries

The main sea areas covered by MariFish partners are the North Sea, Subarea VII, the Northeast Atlantic, the Northwest Atlantic and the Baltic Sea. Other sea areas are covered by few partners only, due to their remote geographical location. Despite low Mediterranean coverage, this sea area has a strong potential when taking future MariFish partners such as Italy, Slovenia and Malta into consideration.

Strengths

- Virtually all MariFish partners are able to allocate funds to a virtual common pot.
- Nearly all MariFish partners are conducting marine fisheries research in sea areas of interest to other partners.
- Most of the partners cover more than six research fields, thus are well equipped to participate in a joint call.
- In total, from 16 MariFish partner countries 11 MariFish partner countries are conducting research that overlaps with the mean interest.

Deficiencies

- Only half of the MariFish partners are able to make minor changes in ongoing national research programs.
- Some partners remain with a very narrow scope of research, which may impede future collaborative research activities within MariFish. After all, in those countries the research fields partly overlap with the mean interest.
- Few partners cover remote sea areas only.
- Half of the MariFish partners are susceptible to political changes.