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# STAGES

## Science and Technology Advancing Governance of Good Environmental Status

**Final Publishable summary report**

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## 1 Executive summary

Scientific knowledge is at the heart of successful implementation of the Marine Strategy Framework Directive (MSFD), forming a key component of the wider knowledge-base underpinning decision making. However, whilst there has been a high investment in MSFD-relevant research across Europe and at regional and national levels, there remains a significant deficit in the transfer of the knowledge generated through such research to policy makers and wider stakeholders. Whilst many structures and initiatives either directly or indirectly support MSFD implementation through knowledge production, knowledge-use and working at the science-policy interface, the European Commission identified the need to take stock from existing initiatives and develop a strategic long-term Science-Policy Interface (SPI) to support implementation of the MSFD.

This need was addressed by the EU STAGES project (September 2012-August 2014) which had three high level objectives: i) to identify and synthesize the knowledge generated through EU and nationally-funded research activities with relevance to MSFD objectives and make it widely accessible to policy and decision makers and to MSFD stakeholders, ii) to identify the needs for further research to improve the scientific underpinning for the implementation of the MSFD, and iii) to provide concrete, pragmatic and ready-to-use recommendations for an effective European science policy platform to support the implementation of MSFD.

Through coordinated activities and wide interaction with MSFD stakeholders, STAGES produced a number of resources and tools to access MSFD relevant knowledge and demonstrated and recommended ways to improve the structural aspects of harnessing existing knowledge, identifying new knowledge and transferring knowledge from science to inform policy and decision making in support of MSFD.

The knowledge harnessing exercise turned out in two innovative user friendly tools: the MSFD component of the Marine Knowledge gate that represents the most extensive look today into MSFD related research and the STAGES clustering tool, a visualization tool that allows the users to search for projects and research surveyed by STAGES by GES descriptor and marine regions. Moreover, a statistical overview of potentially relevant MSFD EU and national research and an insight into country participation in such research, were also delivered together with recommendations on the research harnessing process, as STAGES publications.

As a result of a structured MSFD research evaluation and synthesis exercise, State of the Art reports corresponding to the five MSFD themes were produced to provide a comprehensive overview of the current research being undertaken at EU and Member State level which has relevance for the MSFD and its implementation. A web application allowing further updating of the reports beyond STAGES lifetime was also developed.

Through expert foresight and consultation activities, knowledge gaps and needs for further research on monitoring programmes, pressures and their impacts on marine ecosystems and socio-economic analysis under the MSFD were identified, reported and further synthesized in a Science Policy brief.

Finally, based on the results above and an extensive stakeholder consultation and assessment of good practice, a proposal has been delivered for an effective MSFD long-term Science Policy

Interface Platform including key components and recommendations for stepwise implementation of a fully functional SPI to support MSFD. Together with other key STAGES outputs and recommendations, this has been disseminated and presented to a wide range of MSFD stakeholders to enhance MSFD implementation into the future.

## **2 Summary description of project context and objectives**

The driver of the STAGES (*Science and Technology Advancing Governance on Good Environmental Status*) project is the Marine Strategy Framework Directive (MSFD), which came into force in July 2008. The MSFD is the environmental pillar of the EU integrated maritime policy and was set based on the recognition that the marine environment is fragile and under increasing pressure from human activities, pollution and climate change.

The MSFD was designed to deliver Good Environmental Status (GES) in European marine waters by 2020. It requires that Member States with marine territories put in place a series of measures to achieve and maintain GES within a defined timeframe and according to eleven key descriptors of environmental status. The implementation of the MSFD has two sequential phases: the first phase involves MSFD preparatory actions required to 1) Assess the environmental status of EU waters; 2) Determine the nature of GES across a range of marine regions and sub-regions identified in the Directive; 3) Establish appropriate environmental targets; and 4) Establish monitoring programmes. Member States had to meet the first three targets by 2012 and the latter one by 2014. The second phase concerns the Programmes of Measures (PoM) which must be put in place by 2015. The period between 2015 and 2020 will see the first full phase of MSFD implementation. Beyond 2020, MSFD implementation will enter multi-annual cycles.

MSFD is a continuous effort, cyclic in nature and demands new knowledge and insight. Scientific Knowledge is at the heart of successful implementation of the Marine Strategy Framework Directive (MSFD) forming a key component of the wider knowledge-base underpinning decision making. However, this knowledge must be relevant and delivered at the right time to maximize uptake into policy. There is a need to maximize the interplay between the research (longer-term) and policy (shorter-term) time-frames both to optimize knowledge uptake throughout the full research cycle and to ensure new research is addressing knowledge gaps relevant to policy needs.

The packaging of information and level of detail provided should also be appropriate to the target user to maximize uptake into the decision-making process. Furthermore, finding efficient ways to defining research needs through a science advisory process is also key to driving new knowledge that is relevant to policy going forward. These are major components of a Science-Policy-Interface (SPI) and the European Commission identified a need to take stock of existing initiatives and develop a long-term science-policy interface (SPI) to support implementation of the MSFD.

In this scenario, the STAGES project was designed to directly address the knowledge deficit and the transference of such knowledge to Member States and MSFD Stakeholders through efficient and sustainable channels to underpin the fully implementation of the Directive.

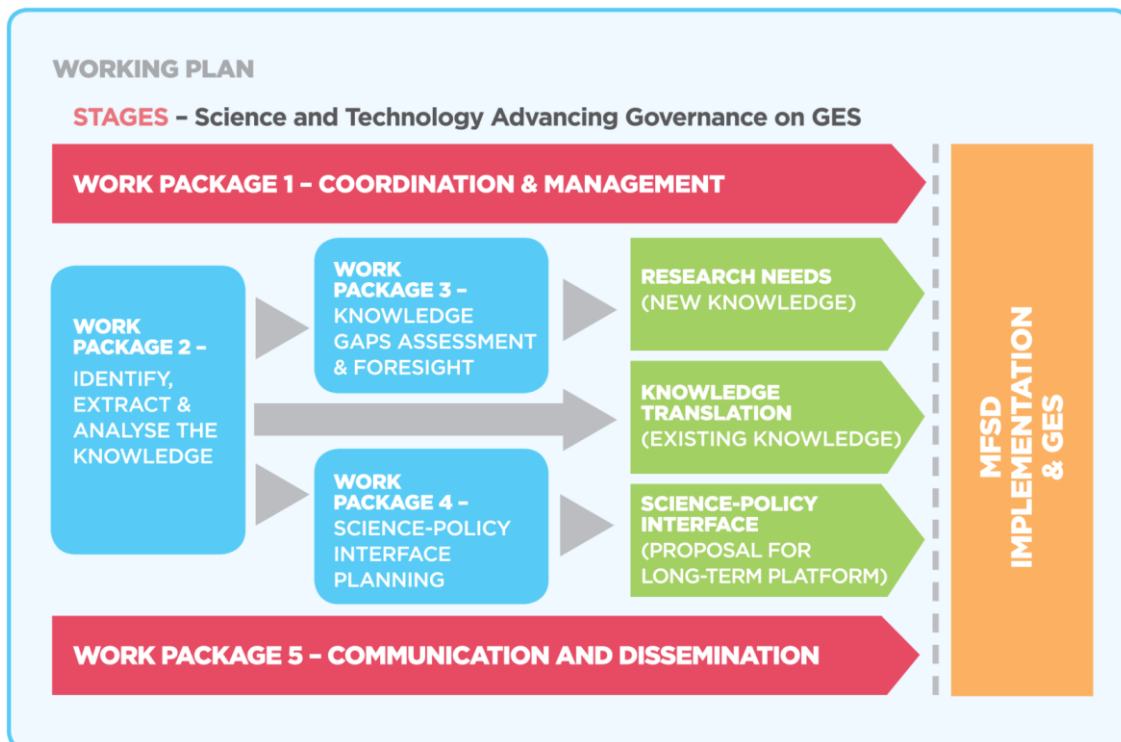
The STAGES project had two overarching goals: to identify and synthesize the information from national and European MSFD relevant research projects and to develop a long term Science-

Policy platform to ensure that the knowledge generated through European science and technology can be channeled effectively to policy and decision-makers to inform and facilitate the implementation of the MSFD and the achievement of GES.

In order to have such an impact, STAGES proposed three high level objectives:

- 1) Identify and synthesize the knowledge generated through EU and national research funded activities with relevance to MSFD objectives and make it widely accessible to policy and decision makers and to MSFD stakeholders
- 2) To identify needs for further research to improve the scientific underpinning for the implementation of the MSFD
- 3) Provide concrete, pragmatic and ready to use recommendations of an effective European science policy platform to support the implementation of MSFD

The objectives described were addressed by a range of coordinated tasks under the STAGES core work packages (Figure 1): Work package 2 (Objective 1), WP3 (Objective 2) and WP4 (Objective 3). These core work packages were supported by the work packages on management and coordination (WP1), and communication and dissemination (WP5). They were designed in an integrated way, to ensure that WPs, where relevant, both inform and take into account the outputs of other WPs.



**Figure 1.** STAGES Working Plan

The partnership of the project was specifically constructed to include a combination of European and international organizations representing a broad constituency of MSFD stakeholders, and national organizations with responsibility to support research and provide

advice on MSFD implementation at Member State level. Crucially, the partnership included both ICES and JRC, which were jointly mandated to run the original MSFD scientific Task Groups and who brought that experience to bear on the STAGES MSFD scientific foresight activities (WP3). The partnership also included EurOcean and AquaTT, which have strong experience in marine science information management and exchange, and translation of knowledge generated through research to targeted end-users (WPs 2 and 5, respectively). The Marine Board-ESF is Europe's primary marine science policy think-tank with expertise in marine science foresight and strategy and which worked to bridge the gap between science and policy, a key objective of STAGES (WP4). Three national organizations made up the consortium, including CETMAR (ES; STAGES Coordinator), IFREMER (FR) and IMR (NO), all of which have strong experience in scientific needs in support of MSFD at Member State level.

Thus, with a partnership of relevant and experienced organizations, and a well integrated suite of tasks and work packages, the STAGES project was designed to bridge the MSFD science-policy gap and to ensure that the future implementation of the MSFD is guided by the best scientific knowledge and advice. The STAGES Advisory Board integrated by key European, regional and national MSFD stakeholders has also provided valuable advice and guidance to the consortium on the project activities and feedback on main project outcomes.

### **3 Description of the main Science and Technology results/foregrounds**

The following sections describe the main results/foregrounds of STAGES project organized by Work Packages.

#### **➤ 3.1. WP1: Coordination and management**

Work Package 1 had two main objectives:

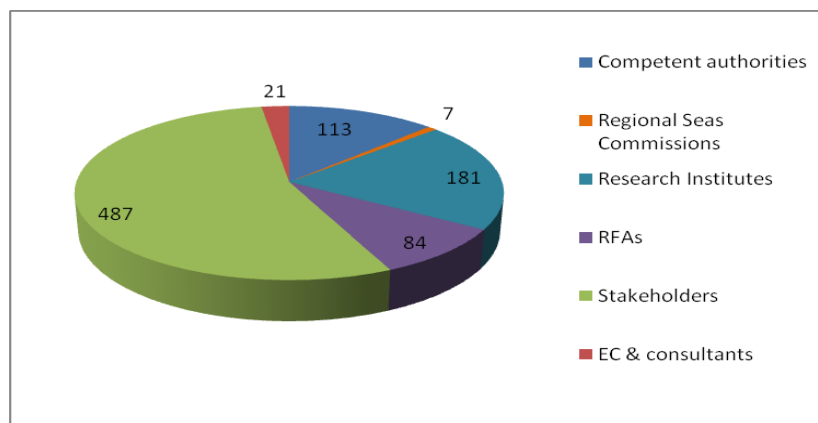
1. To put in place mechanisms to ensure that STAGES met its objectives and delivered its results and outputs on time, keeping an efficient communication flow between the partners, keeping liaison with key MSFD stakeholders at EU and national level and ensuring that robust financial management systems are put in place.
2. To document project development and execution by providing reports contractually required by the EC and by acting as intermediary between the EC and the consortium.

WP1 comprised the following Tasks:

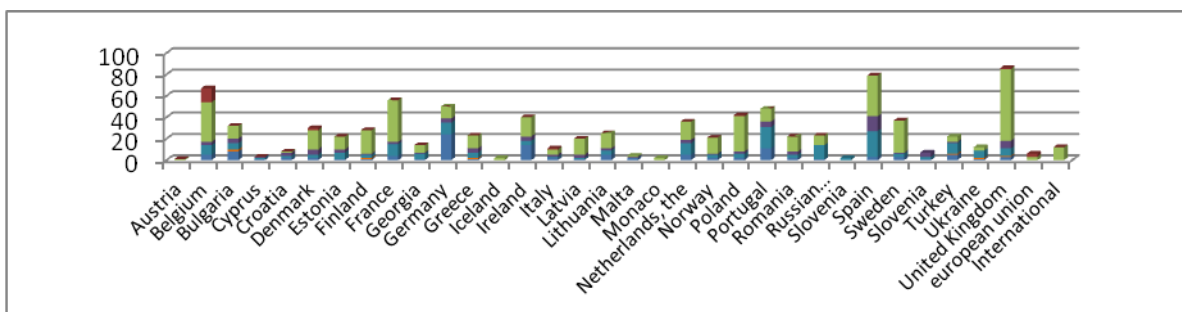
- Task 1.1: Development and implementation of management structure and tools.
- Task 1.2. Communication among partners
- Task 1.3. Elaboration of an inventory of relevant MSFD organisations at National and EU level
- Task 1.4. Financial and administrative management
- Task 1.5: Communication and reporting to the EC

➤ **Inventory of MSFD stakeholders**

In addition to the management and coordination activities, WP1 delivered an inventory of MSFD stakeholders at National and EU level in the format of a user-friendly database. This included basic information on relevant research organisations, national governmental agencies with responsibility for MSFD research and implementation and stakeholders involved in the MDSF implementation at National, Regional and European level. The inventory was intended to be used by STAGES partners to ease the identification and approach to key MSFD organizations and classified organisations into 5 categories: 1) government agencies (competent authorities for MSFD implementation), 2) research institutions, 3) research funding agencies, 4) NGOs and industry stakeholders and 5) European Commission and Consultants. It currently lists information from 31 countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Monaco, Norway, the Netherlands, Poland, Portugal, Romania, Russian Federation, Slovenia, Spain, Sweden, Turkey, Ukraine, and United Kingdom) and includes 891 organisations and 1343 contact persons from competent authorities, Regional Seas Commissions, research institutions, research funding agencies, NGOs and industry stakeholders, European Commission and Consultants (fig 2 & fig 3).



**Figure 2.** Current MSFD organisations in the database (total of 891 organisations)



**Figure 3.** Number of MSFD organisations per country included in the database

The database allows performing searches filtering by country, type of organization, MSFD activity (when included) and typing free text on the search engine. The “email manager”, which it is included in the database, allows listing and managing contacts, perform searches

and keep contact records. This deliverable is eventually intended to be transferred to DG ENV and may be further used as a tool to be updated under the MSDF SPI structure.

➤ **3.2. WP2: Identify, Extract, Analyse and Synthesize the Knowledge**

The overall goal of Work Package 2 was to make widely accessible the knowledge generated in EU and National research funded activities in the scope of the implementation of the MSFD. Work Package 2 comprised four tasks:

Task 2.1 Scope and Methodology

Task 2.2 Identify and Collect

Task 2.3 Analyse and Classify

Task 2.4 Production of RTD “State of the Art” Synthesis Reports on Major MSFD Themes

➤ **Scope and Methodology**

A “Methodology Document” was developed in close cooperation with all STAGES consortium. It outlined the knowledge harnessing methodology based on solid principles/criteria to: ensure the coherence, transparency and replication of the process; align WP2 with the information requirements from DG ENV as well as the rest of the Work Packages of the STAGES project; and guaranteeing that the main WP2 objectives were met considering the available resources. The document provided a description of the main steps and timeline to accomplish WP2 contractual tasks, including the interactions with the other Work Packages, and contingency measures for different steps of WP2.

➤ **Identify and collect**

In order to address Objective 1 and using the agreed methodology, knowledge from publicly funded marine research with a focus on MSFD implementation (from 2005 onwards) was gathered at the European, regional and national levels (including 25 European coastal countries).

Around 1,600 marine projects were extracted from the official repositories of European Funding Programmes. Standard information and contacts from ~1,900 marine projects with national funding was collected from RFPOs and ~1,500 were extracted from official repositories of major marine Research Institutes. After a thorough assessment of the projects almost 4.000 were catalogued as marine projects (~1,500 with European Funding and ~2,500 with National & Regional funding).

An online questionnaire was the main tool used to collect knowledge and validate extracted information from the identified projects. The questionnaire was launched in February 2013 and the collection process lasted until the end of May 2013.

The 19% of the ~1.500 European funded projects surveyed indicated relevance to MSFD (responses received from 33% of the projects contacted). Similarly, regarding the ~2.500 projects gathered from National and Regional sources, the 20% indicated relevance to the MSFD; in this case, responses were received from the 31% of all contacted projects. In



summary, the STAGES survey considered ~4,000 projects from which the 20% showed relevance for MSFD (total response rate 32%, with more than 1.200 responses).

In order to make this information widely accessible, the MSFD relevant projects and results were included as a new Marine Strategy component of the EurOcean Marine Knowledge Gate (<http://www.kg.eurocean.org/>), a major repository of public funded marine research projects. This process is further described in WP5 section. Additionally, the system was modified to include projects from new European Funding Programmes as well as with National and Regional funding.

Almost 800 MSFD-relevant projects (328 European and 459 National) are currently searchable by GES Descriptors and Marine Regions according to coordinator replies to the STAGES survey. These projects were also included in the analysis and synthesis process.

### ➤ Analyse and classify

**Desk-top Study:** All general information for a project (funding, coordinator, etc.), project summaries and project objectives were checked for clarity and edited to ensure presentation in a harmonised format. Surveyed projects were assigned to a MSFD Theme (or multiple Themes) based on the GES Descriptor relevance as indicated by the project coordinator.

An internal synthesis report produced in the frame of WP3 was reviewed in order to form the basis of the categorisation of projects for the analysis phase. A categorisation document was developed to make reviewers aware of issues where knowledge is currently lacking and to recognise projects that could assist in adding to the current knowledge base in these less well-documented areas or research.

The Desk-top study was conducted remotely by means of an online database developed specifically for the STAGES project which sorted the survey responses into the five MSFD themes and which allowed reviewers to comment on projects, and to highlight those they considered to have the greatest potential to inform MSFD and its implementation, based on the information provided by the survey responses. STAGES partners involved in the Desk-top Study were provided with Notes and Instructions on how to complete the review process, together with a manual on using the online database. The Desk-top Study was completed by October 2013 followed by an Analysis Discussion (Skype meeting).

**Table 1: Number of projects and partners in charge of the desktop study**

<b>Theme</b>	<b>Descriptor</b>	<b>Lead Partner</b>	<b>Support Partners</b>	<b>No projects</b>
<i>Biodiversity</i>	1, 2, 4, 6	JRC	ICES & IFREMER	467
<i>Contaminants &amp; Nutrients</i>	5, 8, 9	IMR	IFREMER	344
<i>Disturbances</i>	10, 11	IFREMER	EMB	103
<i>Commercially exploited fish</i>	3	ICES	IMR	162
<i>Hydrographical conditions</i>	7	EMB	JRC	142
<i>Total</i>				<b>1218 (763)</b>

**In-depth Analysis:** From October to December 2013, the In-depth Analysis of high potential MSFD-related projects and results took place. Reviewers investigated projects identified as having high potential relevance to MSFD in more detail. Table 2 shows the number of projects considered of high potential per MSFD theme.

Where reviewers required more information on the outcome of the project, coordinators were contacted and requested to address any questions or issues arising from the Desk-top study. Partners responsible for SoA reports conducted this in-depth analysis to ensure that a comprehensive description of the project and its relevance to MSFD was reported in the SoA.

**Table 2: Number of project considered of high potential per MSFD theme**

<b>Theme</b>	<b>Descriptor</b>	<b>No projects</b>	<b>High Potential projects</b>	<b>% High Potential</b>
<i>Biodiversity</i>	1, 2, 4, 6	467	79	16.90%
<i>Contaminants &amp; Nutrients</i>	5, 8, 9	344	77	22.40%
<i>Disturbances</i>	10, 11	103	35	33.90%
<i>Commercially exploited fish</i>	3	162	29	17.90%
<i>Hydrographical conditions</i>	7	142	40	28.20%
<i>Total</i>		1218 (763)	260	21.30%

Once the Desk-top study was completed, review partners re-evaluated the outcomes of their desk top study by SKYPE conference. The aim of these Theme consultations was to:

- Collectively review the projects and research results;
- Identify projects with high potential for MSFD implementation
- Identify projects where more information was needed to assess relevance to MSFD;
- Signalling gaps in knowledge and future research needs

Specifically, projects were analysed in relation to their significant potential to relate to the following:

- MSFD Theme: Prioritisation of Descriptors by region
- Funding sources and research effort by region
- Prioritisation for Initial Assessment across regional projects
- Project Relevance for Monitoring Approaches
- Prioritisation for monitoring approaches across regional projects
- Breakdown per descriptor within each MSFD theme:
  - By number of projects per region
  - Project funding sources per region

➤ **Production of State of the Art Synthesis reports on major MSFD themes**

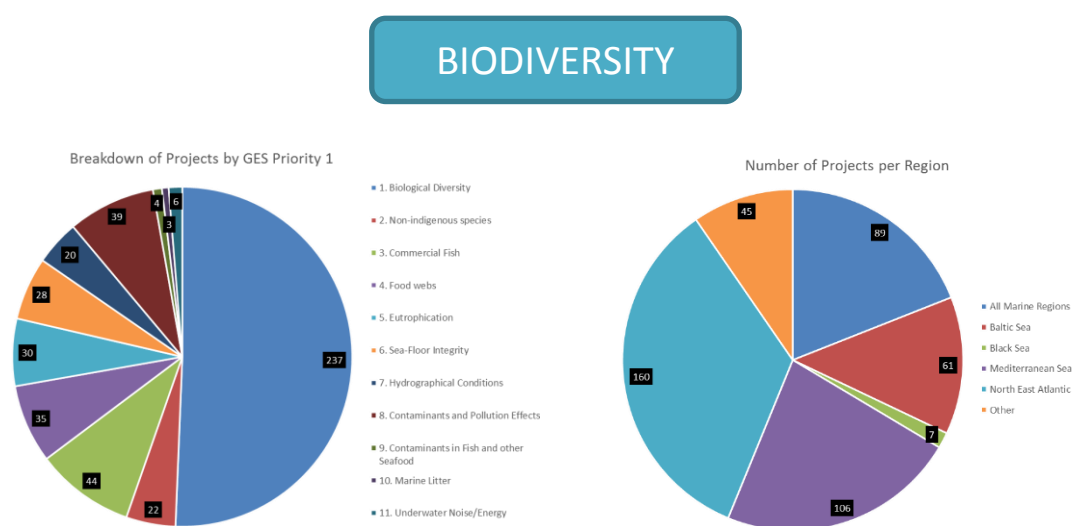
The production of the SoA Synthesis Reports was assigned to each participating partner, as reflected in the table 1. Each report tackled a MSFD Theme or grouping of GES Descriptors, as required by DG ENV, including a total of 5 Themes:

- Biodiversity Group with Descriptors 1, 2, 4 and 6;
- Contaminants & Nutrients Group with Descriptors 5, 8 and 9;
- Disturbances Group with Descriptors 10 and 11;
- Commercially exploited fish Group for Descriptor 3; and
- Hydrographical conditions Group for Descriptor 7.

A State of the Art report has been generated for each of these five themes based on the information gathered through the survey and subject to the classification and analysis of projects. The SoA Theme reports aim to serve several purposes including:

- Provide an overview of RTD effort at MS and EU level in the MSFD major themes;
- Discuss findings of the survey in the scope of WP3;
- Provide a baseline to support the design of the science-policy interface platform

An example of the information provided in the SoA reports is shown in figure 4:



**Figure 4.** Example taken from the Biodiversity SoA report: breakdown of projects by GES Priority 1 and number of projects per region.

Large varieties of scientific and technical projects have been, or are being, conducted at European and national scales in relation to the MSFD theme descriptors. The SoAs highlight many important issues about the available knowledge including where there is a clear imbalance in the amount of selected projects observed at regional and sub-regional level, though this is possibly reflected in the difficulty in getting replies from project coordinators or any other national authorities at the start of this survey.

### ➤ Additional activities

In the framework of WP2 an extra non-contractual task was carried out with the aim to promote the STAGES methodology for identification and collection of MSFD related projects, as well as the Marine Knowledge Gate as a major repository of the information gathered. The

deliverable objective was to emphasize the relevance and advantages of information sharing, and to encourage major information holders (Research Funding and Performing Organisations) in providing the required information allowing systematic analysis of research needs for MSFD implementation in the future. As a result, 3 different publications (fig.5) were delivered:

- An statistical overview of potentially relevant European and National research;
- A statistical insight into country participation in potentially relevant European and national research across 25 European coastal countries;
- A set of recommendations to enhance access to European and National public funded research with relevance for MSFD implementation.



**Figure 5.** WP2 publications on the harnessing of MSFD-relevant research at National and European Level.

The publications statistics were based on the combination of results from direct survey of projects coordinators and additional project search based on keywords to mitigate the impact of non-replies, which resulted in circa 1,300 projects with potential relevance to MSFD implementation out of the circa 4,000 marine projects surveyed by STAGES.

In August 2014, the WP2 publications were disseminated among MSFD stakeholders identified/engaged by STAGES. 250 printed copies were posted to those actors actively participating in the STAGES process (RFPOs and FP7 projects; STAGES Advisory Board Members; DG ENV & RTD involved in the STAGES process) as well as to other key stakeholders (MSFD representatives from Coordination and Working Groups engaged by STAGES; MSFD nominated reporters; participants in STAGES workshops from WP3 & 4). In addition electronic versions of the publications were made publicly available at the STAGES website (<http://www.stagesproject.eu/stages-results/stages-key-outcomes>). The link to the WP2 publications was also e-mailed to all the stakeholders identified by STAGES (almost 800 contacts).

### ➤ 3.3. WP3: Knowledge Assessment & gap/need identification - foresight

The main objective of WP3 was to identify the needs for further research to improve the scientific underpinning for the implementation of the MSFD. WP3 was organized in five tasks:

Task 3.1. Synthesis of incoming recommendations

Task 3.2. Identification of research needs with regard to the pressures and their impacts on marine ecosystems

Task 3.3. Identification of research needs with regard to the implementation of monitoring programmes

Task 3.4. Identification of research needs with regard to socio-economic analysis

Task 3.5. Presentation of Needs for further research

With the aim of identifying gaps and needs for further research to support MSFD implementation (Objective 2), three workshops were organised during the project lifetime. The first Workshop dealt with the identification of further research on monitoring programmes, the second one was focused on pressures and their impacts on the marine environment and the third one, on socio-economic analysis. The schedule of the Workshops was aligned with the MSFD targets and associated works and with the schedule of the Common Implementation Strategy (CIS) programme.

➤ **Synthesis of incoming recommendations**

As a preparatory task, a synthesis report on research recommendations was elaborated based on previous reports by JRC, ICES, DG ENVIRONMENT, Regional Sea conventions (OSPAR, UNEP-MAP) and scientific publications. This report was used as baseline document to inform the development of the three Workshops.

➤ **Identification of research needs with regard to the implementation of monitoring programmes**

The Workshop “Needs for further research to support improved and more efficient Monitoring Programmes under MSFD” took place on the 13-15 May in the premises of DG Research and Innovation in Brussels. It was organised by IMR, supported by CETMAR, Ifremer, JRC and ICES. It was chaired by Kjell Nedreaas (IMR) and Nicolas Hoepffner (JRC) and attended by 30 experts. The objectives of this Workshop included:

- To share the state-of-the-art knowledge on monitoring programmes for the MSFD;
- To identify knowledge gaps and associated uncertainties of monitoring programmes;
- To assess what would be necessary to adapt/upgrade monitoring programmes design to emerging knowledge and new technologies;
- To produce a list of needs for further research and methodological development to inform future research programmes manager and/or decision makers.

By using a questionnaire, experts were asked in advance to identify gaps and research needs regarding monitoring programmes for each group of descriptors. The outcome of this consultation process was used in each Workshop session to orientate discussions.

A number of gaps on knowledge that affect the accuracy of GES definition and the subsequent monitoring programmes to assess GES were identified: e.g. lack of definitions of habitats/biotopes/landscapes and lack of information of certain habitats, particularly deep-sea habitats. Long time series are also generally lacking, and the understanding of the natural dynamics of the environment is therefore limited. The establishment and maintenance of such

time series is desirable and therefore, a need for establishing and maintaining long time-series was a main conclusion.

Needs for further research were also discussed. Additional efforts are needed regarding the development of metagenomics, molecular-based methods for routine implementation of population and species diversity assessment, next generation sequencing technologies and genetic or isotopic based research. The need for taxonomic expertise remains, and is essential, to capitalise on the methodology development. A strong need to develop innovative monitoring tools was also highlighted especially in cases of non-indigenous species, where innovative tools to provide real time information could improve our ability to take action. Advances are also needed in the technological development and miniaturization of sensors to increase automatic data collection. New passive samplers and new phytoplankton assessment tools that account for shifts in species composition and frequency of blooms in the status assessment scoring are also required. Potential benefits from further development of remote sensing and satellite modelling were also stated.

Offshore and deep-sea monitoring related issues were deemed to require special attention as the coverage in monitoring of open sea and deep sea environments is generally less dense than in the coastal environment. Research focused on the development of cost-effective off shore and deep sea sampling, observation, monitoring and data transmission methodologies and devices is needed as well as a monitoring strategies.

The importance of making the better use of existing monitoring efforts and resources was emphasized. Co-utilisation/optimization of monitoring efforts (e.g. cruises), should be developed/encouraged across the different Member States and regions as well as efforts/strategies to collect physical, chemical and biological data that can feed the different GES descriptors. Support to evolving monitoring strategies aimed at optimal integration of various monitoring tools is desirable as well as the promotion and development of opportunistic data acquisition (ferry boxes, ships of opportunity) especially for deep areas/canyon that would allow a long term cost efficient monitoring.

A report has been produced including objectives, participants, methodology, results and conclusions regarding gaps and needs for further research and the participants' presentations.



The workshop report is available on the STAGES website in the link below, [http://www.stagesproject.eu/images/STAGES/deliverables/STAGES\\_Monitoring%20WorkshopReport\\_v3\\_04%2002%2013.pdf](http://www.stagesproject.eu/images/STAGES/deliverables/STAGES_Monitoring%20WorkshopReport_v3_04%2002%2013.pdf)

**Figure 6.** The workshop report “Needs for further research to support improved and more efficient Monitoring Programmes under MSFD“

➤ **Identification of research needs with regard to the pressures and their impacts on marine ecosystems under MSFD**

The Workshop “Needs for further research with regard to the pressures and their impacts on marine ecosystems under MSFD” took place in Rome on 4-5 September 2013. It was organized by ICES and was chaired by Eugene Nixon (Marine Institute Ireland) and Yvonne Walther (Swedish University of Agricultural Sciences, Aquatic Resources Department). The objectives of the workshop included:

- To share the state-of-the-art knowledge on pressure-impact relations and on assessing cumulating pressures and subsequent impacts;
- To identify where there is sufficient knowledge to monitor and assess cumulative pressures and impacts and potential measures that could be taken to achieve or maintain GES
- To identify knowledge gaps and uncertainties in the monitoring and assessment of cumulative pressures and impacts and potential measures that could be taken to achieve or maintain GES
- To make recommendations on how these gaps and uncertainties of cumulative impacts could be addressed
- To produce a prioritized list of research questions to inform future research programmes manager and/or decision makers.

Prior to the Workshop a set of criteria to identify research needs was distributed in the form of a questionnaire to each participant. The criteria followed the Driver-Pressure-State-Impact-Response (DPSIR) model, the Risk Assessment framework (see report of the European Marine Board, Boyd et al., 2008<sup>1</sup>) and the draft OSPAR Science Agenda<sup>2</sup>. In total there were 73 responses and these were used as the basis for discussion at the Workshop, both in terms of science needs and to structure the prioritization process.

Both in the questionnaire and during the workshop every effort was made to identify research needs that were cross-cutting and covered more than one of the Descriptors.

Twenty-four experts involved in the MSFD process attended to this workshop. Gaps were identified in relation to pressures and anthropogenic impacts, in particular the synergies among different impacts. The different impacts may be well studied and understood individually, whereas the combined and cumulative effects are poorly understood.

Among the research needs identified, the following were deemed important; identifying the pathways of non-indigenous species (NIS), supporting and improving the development of preventative measures, and analysing the extent of environmental impacts once NIS have been established. Another research priority focused on the development of modelling spatial pressures of fishing in relation to ecosystem sensitivities and the structure of stocks.

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<sup>1</sup> European Marine Board, 2008. The effects of anthropogenic sound on marine mammals A draft research strategy. Position Paper 13 of the European Marine Board, Ostend, Belgium, 94pp.

<sup>2</sup> OSPAR (2014). OSPAR Science Agenda, Initial version 1.0, approved by the OSPAR Commission, 27 June 2014

Disentangling the effects of human activities from those of climate change was also considered necessary.

Taking into account point and diffuse sources, ocean boundaries, and atmospheric contributions, the development/application of land-ocean models could improve knowledge of natural background nutrient enrichment compared to human-related sources.

There is also a necessity to identify permanent alteration of the state of hydrographic conditions or species and habitats due to pressure caused by major infrastructure developments, especially where there are likely to be transboundary implications. This is needed to ensure consistency in assessing the spatial extent of the hydrographical alterations of habitats and their functioning.

Research needs to be further developed on pathways of contamination, toxicokinetics and ecotoxicology with an emphasis on substances for which limits are set (i.e. mercury, cadmium and PCBs). Concerning Marine litter, research should support the development of a GIS platform and a large scale EU Wide model for river/surface/water column/sea floor litter currents transportation to enable to locate/evaluate sources, the destinations (accumulation areas) and the backtracking of litter. This will enable the development of a pan-European tool to better understand the relationships between sources/effects and strongly support adequate measures and management schemes. Such a tool could also contribute to a better understanding of the transport of alien/invasive/pathogen species that use litter as vectors.

A report has been produced including objectives, participants, methodology, results and conclusions regarding gaps and needs for further research and the participant presentations.



The report is available on the STAGES website, in the link below:  
([http://stagesproject.eu/images/STAGES/deliverables/STAGES%20Pressures%20Impacts\\_Workshop%20Report\\_v5\\_04%2002%2014.pdf](http://stagesproject.eu/images/STAGES/deliverables/STAGES%20Pressures%20Impacts_Workshop%20Report_v5_04%2002%2014.pdf)).

**Figure 7.** The workshop report “Needs for further research with regard to the pressures and their impacts on marine ecosystems under MSFD.”

➤ **Identification of research needs with regard to socio-economic analysis**

The Workshop “Needs for further research with regard to socio-economic analysis” was organised by JRC in Ispra (Italy) on October 9-11, 2013. It was chaired by Wojciech Wawrzynski (ICES) and Manuel Lago (Ecologic Institute).

The objectives of this Workshop included:



- Share the state-of-the-art knowledge on socio-economic analysis (specifically in relation with the two MSFD ‘human constructs’: environmental targets and programmes of measures);
- Identify knowledge gaps and research needs (incl. cost-benefit analysis) that would improve the assessment of the social and economic impacts of reaching Good Environmental Status under MSFD;

Prior to the Workshop a set of questions that would help identification and prioritization of knowledge gaps and research needs was distributed to each of the invited experts, including those who couldn’t attend the meeting. The outcome of this consultation process was used to orientate the workshop discussions.

Twenty-five participants attended the workshop. Both in the questionnaire and during the workshop, effort was made to identify gaps and research needs from a scientific perspective, as well as Member States’ perceptions after completing their initial assessment. Due to the timing of the EC-established WG ESA meeting a week after the workshop, a number of Member State representatives couldn’t attend to contribute their national experience. One of the participants, however, volunteered to present a preliminary draft of the STAGES workshop outcomes (i.e., list of research needs) to the WG ESA meeting and to collect feedbacks from additional MS representatives. These additional comments were integrated in the workshop report, together with the objectives of the workshop, list of participants, methodology, results and conclusions regarding gaps and needs for further research and all the participant’s presentations.

A main conclusion of the workshop was the acknowledgement of a clear knowledge gap for several descriptors with respect to the effectiveness or impacts of measures, reflecting a poor understanding of the ecosystem functioning and the proper linkages between economic sectors – pressures – impacts – state, and how changes in an ecosystem (and its services) affect human welfare. Research on this topic within large multi-disciplinary projects was deemed as being unquestionably necessary to support any quantitative economic analysis.

Research would also be needed to investigate potential harmonization of the different methods to assess the cost of degradation and their associated protocols, as well as the development, application and communication of alternative (less quantitative) methods used when monetary valuation is not possible or appropriate. More investments in socio-economic research specific to maritime activities (statistics, methodology development) would be essential for Member States in the next phase of MSFD reporting.



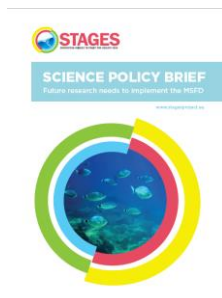
The report is available on the STAGES website, in the link below:  
([http://stagesproject.eu/images/STAGES/deliverables/STAGES\\_Socio-Economic%20Workshop%20Report\\_v3\\_05%2002%2014.pdf](http://stagesproject.eu/images/STAGES/deliverables/STAGES_Socio-Economic%20Workshop%20Report_v3_05%2002%2014.pdf)).

**Figure 8.** The workshop report “Needs for further research with regard to socio-economic analysis “

➤ **Science policy report on needs for further research**

The three workshops described above served as the basis for a science policy report on needs for further research for the implementation of MSFD that is intended to inform future research programme managers/decision makers. The document incorporates the knowledge gaps and the research needs for the effective implementation of the MSFD as highlighted during the workshops as well as other relevant project outcomes. The content is structured as follows:

- A brief description of the work conducted in WP2 and WP4, i.e. the survey of existing knowledge generated through EU and national research activities, and the harnessing and improved access to the Marine Knowledge Gate which is a key component of a successful Science Policy Interface (SPI).
- The synthesis of the research needs to improve knowledge on the pressures and their impacts on marine ecosystems and the monitoring programme considering each GES descriptor
- The needs for further research related to the socio-economic aspects.



The science policy report on needs for further research for the implementation of MSFD is available in the link below  
([http://stagesproject.eu/images/STAGES/deliverables/STAGES\\_D3.4\\_Science\\_Policy\\_Brief.pdf](http://stagesproject.eu/images/STAGES/deliverables/STAGES_D3.4_Science_Policy_Brief.pdf))

**Figure 9.** Policy briefing

➤ **Baltic Sea pilot study**

As an additional task to provide support to the implementation of the MSFD, a study coordinated by ICES was conducted with the aim to provide advice on the development of Programmes of Measures that must be implemented by MS by 2015: “Towards management of multiple stressors in the context of the Marine Strategy Framework Directive: a Baltic Sea pilot study”. The aim of this pilot study was to test complementary approaches in modelling and assessing the impact of concurrent and cumulative pressures in order to address the need to develop tools to select the most appropriate management measure when facing trade-offs between different targets and measures. The study report is available at: (<http://www.stagesproject.eu/images/STAGES/deliverables/STAGES%20MSFD%20Programme%20of%20Measures%20Pilot%20Study.pdf>)

➤ **3.4. WP4: Building a Science-Policy Interface to Support MSFD Implementation**

The main aim of WP4 was to propose concrete, pragmatic and ready-to-use recommendations on the development of an effective European science-policy platform to support implementation of the Marine Strategy Framework Directive (MSFD).

The specific objectives and tasks of this Work Package were:

1. Stakeholder analysis: Identify relevant MSFD stakeholders at national, regional, and pan-European level. Implement a structured stakeholder consultation to seek ideas and guidance on principles underlying the development of an effective MSFD science-policy interface platform. Identify platform deliverables to policy makers in line with timing of MSFD implementation
2. Proposal for a Science-Policy Interface Platform: Deliver a concrete proposal with recommendations and a roadmap on building and implementing an effective and fit-for-purpose science policy interface platform.

➤ **Stakeholder analysis**

The key objective of this task was to identify MSFD stakeholders and to design and implement a structured stakeholder consultation to seek perceptions, views and expectations on the current and future SPI for MSFD. The stakeholder analysis and consultation on the MSFD SPI was conducted in a three-step process:

- a Stakeholder identification: Identify relevant MSFD stakeholders at national, regional, and pan-European level (achieved in reporting period 1).
- b Online survey: Design, implementation and analysis. (Launched on 31 May 2013 during reporting period 1; analysis completed during reporting period 2)
- c Stakeholder workshop: Design, delivery, reporting. (Workshop on 12 February 2014)



Based on the results obtained following these processes, STAGES WP4 produced a report on “Stakeholder views and expectations for an effective MSFD- Science-Policy Interface (SPI) Platform” (Figure 10). This report is the main output for STAGES WP4 Task 4.1 (STAGES Deliverable D4.1).

**KEY FACTS: STAGES WP4 Stakeholder Consultation Survey**

**6 Week Consultation, launched 31 May 2013**

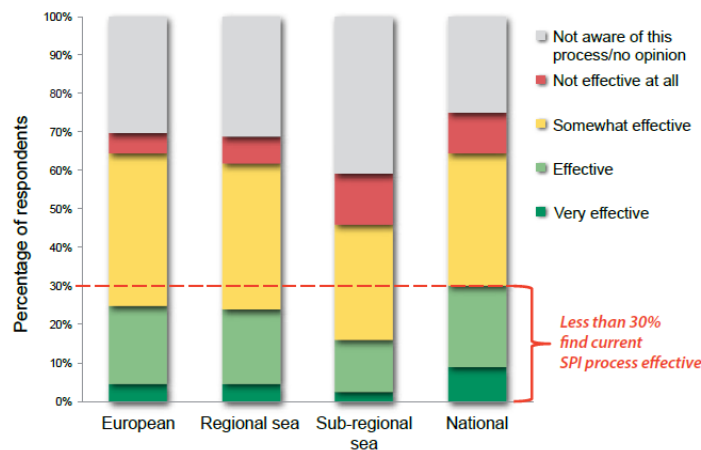
**436 Stakeholders invited from 30 countries**

**113 responses from 23 countries (response rate 25.9%)**

**Figure 10.** Report on Stakeholder views and expectations on an SPI.

In particular, D4.1 details the methodologies and background to stakeholder identification and consultation design. It then provides a full analysis of stakeholder views and expectations from the extensive consultation of national, regional and European MSFD stakeholders through surveys, interviews and an interactive workshop together with best practice with relation to MSFD and wider SPI activities. Stakeholders gave their views and expectations on a number of issues ranging from MSFD knowledge packaging and availability, the current Science-Policy Interface and assessing tools and mechanisms for enhancing the existing Science-Policy

Interface. Specifically, stakeholders were asked to give their opinions on the perceived effectiveness of existing science-policy interface structures across different geographical scales. Results are presented in Figure 11. Less than 30% of Stakeholders perceived any existing SPI to be “Very Effective” or “Effective” (see red line, Figure 11). The sub-regional sea level was perceived by stakeholders to be the least effective existing governance structure, with the largest number of stakeholders (>35%) commenting they were unaware of this process or had no opinion.



**Figure 11.** Perceived effectiveness of the MSFD SPI at European, Regional; Sea, Sub-regional sea and National levels. (Question 9, STAGES WP4 online Consultation on MSFD SPI).

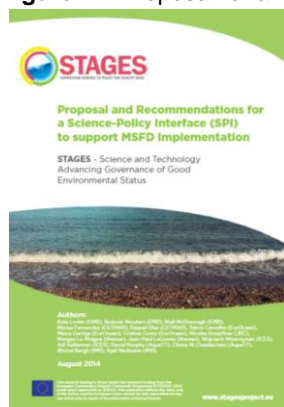
### ➤ Proposal for a Science Policy Interface Platform

As a final result, WP4 developed a proposal for an effective SPI to support MSFD implementation. This was informed by results of stakeholder views and expectations, wider outputs from the STAGES activities (e.g. WP2 and WP3) and ongoing dialogue and feedback from key MSFD stakeholders, e.g. through the STAGES Advisory Board and MSFD Project Coordination Group. On request from DG Environment of the European Commission, WP4 first produced a Concept Paper for the SPI Proposal, led by the European Marine Board together with the Joint Research Centre of the European Commission. This was presented to the MSFD Project Coordination Group on 10 March 2014 and circulated to PCG members for subsequent feedback from key MSFD stakeholders, e.g. National MSFD Competent Authorities, Regional Sea Conventions and European initiatives including JPI-Oceans. The Concept Paper together with results from the Stakeholder consultation, best practice analysis and key outputs from all STAGES WPs informed the development of a full Proposal (D4.2) which underwent internal (project partners) and external (Advisory Board and PCG) review and is further detailed below.

### Proposal and Recommendations for a Science-Policy Interface (SPI) to support MSFD Implementation

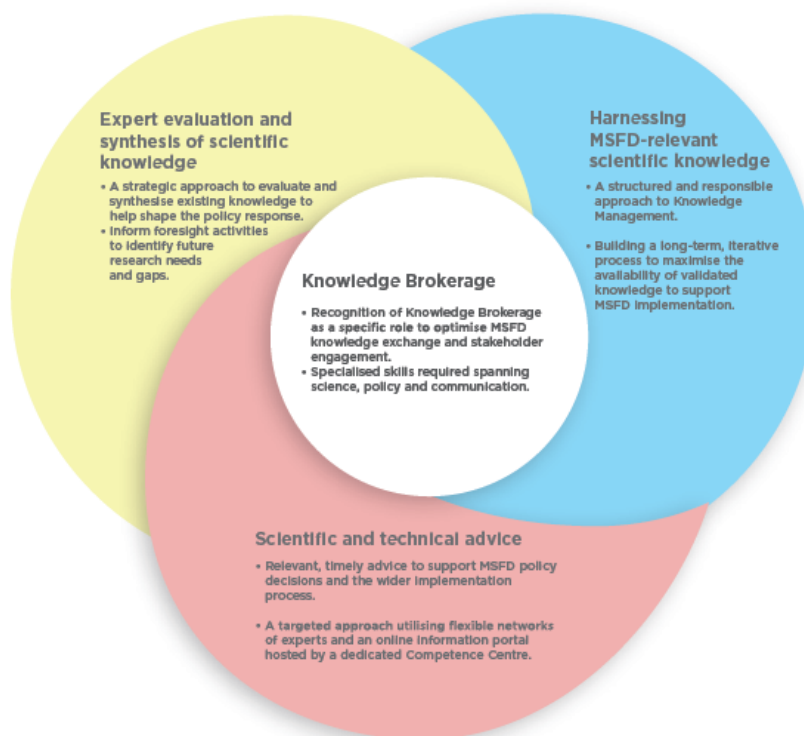
The Proposal is published as STAGES D4.2 and forms the main output of WP4 Task 4.2 (Figure 12). This sets out the key components and recommendations for a SPI, together with a roadmap for its step-wise implementation. It identifies the need for the SPI to build on existing initiatives and to focus on developing four key areas, namely:

**Figure 12.** Proposal for a MSFD SPI.



- Harnessing MSFD-relevant knowledge through a strategic approach to knowledge management;
- Scientific and technical advice to provide relevant and timely advice to policy makers;
- Expert evaluation and synthesis of scientific knowledge to assess research needs and gaps and inform foresight activities and research agendas;
- Knowledge brokerage which lacks recognition and requires specialized skills spanning science, policy and communication.

A summary of key recommendations per component is presented below in Figure 13.

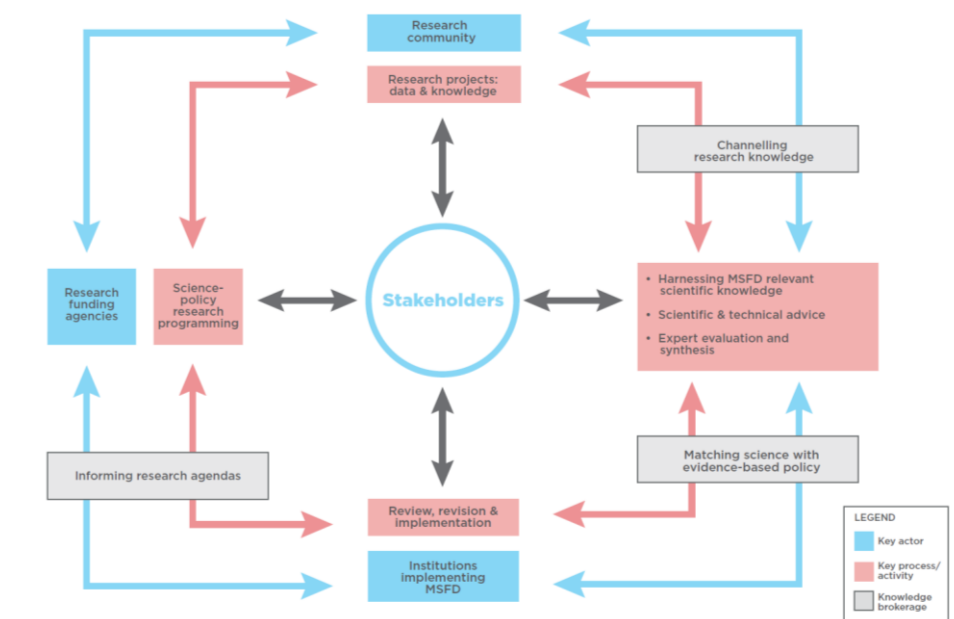


**Figure 13.** Summary of key recommendation per key component of the SPI.

➤ **Architecture of the proposed science-policy interface (SPI) to support MSFD implementation**

The four key components were also presented in the context of an architecture for a fully functional SPI to support MSFD implementation (see figure 14 below). This identifies key actors and a series of inter-linked processes that are cyclical and iterative to optimise MSFD-relevant knowledge management at each stage of the policy cycle. It also stressed the crucial role of knowledge brokerage as an active process, requiring skilled personnel to conduct knowledge transfer, exchange, communication and dissemination to promote a more iterative

dialogue between the science, policy and wider stakeholder arenas. In the diagram, grey boxes indicate where enhanced capacity for active knowledge brokerage is particularly recommended. STAGES highlighted key aspects of the SPI that would benefit from enhanced knowledge brokerage including channeling research knowledge from producers to users, matching science with evidence-based policy and informing research agendas. This could be conducted by a variety of entities and actors, building on existing capabilities and initiatives.



**Figure 14.** Architecture of the proposed science-policy interface (SPI) to support MSFD implementation.

### ➤ 3.5. WP5: Knowledge Transfer and Communication

The overall aim of WP5 was to effectively communicate and disseminate the outputs of the STAGES project to its lead users, key stakeholders and the wider public.

The specific objectives were:

1. To increase relevant stakeholder awareness of the project, its objectives and activities through effective dissemination;
2. To make the knowledge of EU and national research funded activities in the area of marine environment (GES) widely accessible in a usable form for civil society at large, policy and decision makers, industry and SMEs;
3. To determine the most suitable means of dissemination to be used taking into account the type of knowledge to be transferred and the end-users to whom it will be transferred;
4. To ensure a well-informed uptake of project results by the civil society at large, policy and decision makers, industry and SMEs.

In order to achieve the objectives above, WP5 has been organized in the following tasks:

Task 5.1. Development of the detailed “Communication and Dissemination Plan”

Task 5.2 General Dissemination

Task 5.3. Inclusion of the knowledge generated within the project in the EurOcean Knowledge Gate

Task 5.4. Knowledge Transfer of STAGES Outputs

Task 5.5 Final MSFD Workshop

➤ **Development of the “Communication and Dissemination Plan”**

A Communication and Dissemination plan detailing the external communication strategy was developed and finalised in January 2013. The Communication and Dissemination plan outlines strategy regarding press releases distributed through national and international printed trade press, and digital media such as a project website, individual partner websites, and e-newsletters; timing of events, publication of results in scientific and popular publications etc.

➤ **General Dissemination**

A strong brand and identity for the STAGES project with distinctive project logo and colour scheme was established in the first activity period to promote the project, its achievements and results. All communications and outputs from the STAGES projects follow the project brand and headed paper templates and PowerPoint presentation templates have been produced.

A dedicated project website was created together with the STAGES video, factsheet and brochure and the development of promotional material and publication of press release and promotional articles on MSFD.

➤ **Inclusion of the knowledge generated within the project in the EurOcean Knowledge Gate**

The MSFD relevant projects and results gathered through WP2 were included in the EurOcean Marine Knowledge Gate (<http://www.kg.eurocean.org/>), an already existing innovative online tool which provides the major inventory of European and national funded marine research. This required an upgrade of the system with a new Marine Directive Component, which allowed the display of those projects that are relevant for MSFD implementation, categorized by Good Environmental Status (GES) Descriptors and Marine Region(s) and searchable by GES Descriptors. Additionally, the system was modified to include projects from new European Funding Programmes as well as with National and Regional funding. The new system is now in place: EurOcean Marine Knowledge Gate 2.0.

The inclusion of the projects implied a great harmonisation effort in order to properly categorise all the searchable fields.

➤ **STAGES Clustering Tool**

All knowledge captured and analysed by STAGES was categorised according to relevance to Good Environmental Status (GES) and the 11 qualitative descriptors, Initial Assessment (State characteristics, Pressures & Impacts and Socio-economic). Projects were also categorised by relevance to monitoring programmes and sorted by region and sub-region. This categorisation

of grouping of projects and research results provides an overview of the research ongoing for a particular Descriptor, the establishment of Initial Assessment, or monitoring programmes and can be used to inform end users of MSFD developments for a specific region.

These clusters were formed on the basis of the information provided by coordinators of research projects surveyed through STAGES and their identification of the relevance of their research to MSFD and its implementation according to:

- Good Environmental Status -GES (11 Descriptors across 5 Themes)
- Regional Focus (All Marine, Black Sea, Baltic Sea, Mediterranean Sea, North-East Atlantic Ocean, and Others e.g. Arctic).
- Initial Assessments

When used in conjunction with the Marine Knowledge Gate the Visualisation Tool can be used to provide a comprehensive picture of the research (past present and ongoing) with MSFD relevance specific to a region. This can potentially reduce the overlaps, duplications and fragmentation of research so that the highest return on investment in research can be achieved and can assist EU Member States with marine territories in achieving GES. 5 The Visualisation tool is available on the STAGES website<sup>3</sup>.

#### ➤ **STAGES MSFD Decision Support Resources**

STAGES produced a number of reports and deliverables which aim to support decision making in relation to the implementation of the Marine Strategy Framework Directive (MSFD), in order to help Member States to achieve a Good Environmental Status (GES) in European marine waters by 2020.

A specific section has been developed on the STAGES website where users can easily download all of these STAGES MSFD Decision Support Resources in a convenient e-package (downloadable zip) containing:

1. Research Harnessing Recommendations: A way to enhance access to European and National public funded research with relevance for MSFD implementation
2. Harnessing MSFD-related research: An overview of potentially relevant European and National research by the STAGES project
3. Harnessing MSFD-related research: An insight into country participation in potentially relevant European and National research by the STAGES project
4. STAGES Workshop Reports
  - a. Workshop report on: The identification of research needs with regard to the implementation of Monitoring programmes
  - b. Workshop report on: The identification of research needs with regard to the Pressures and their Impact on Marine Ecosystems
  - c. Workshop report on: The identification of research needs with regard to the socio-economic analysis under the Marine Strategy Framework Directive
  - d. Science policy brief on the needs for further research

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<sup>3</sup> <http://www.stagesproject.eu/stages-cluster>



5. Proposal for an Effective MSFD Science Policy Interface Platform
6. Report on Stakeholder Views and Expectations for an effective MSFD Science-Policy Interface Platform
7. STAGES MSFD Decision support tools factsheet

Alternatively, resources can be downloaded separately using the Individual download links.

#### ➤ **STAGES WIKI**

STAGES has generated five Thematic State of the Art (SoA) reports on Biodiversity, Contaminants & Nutrients, Commercially exploited fish, Disturbances and Alterations to Hydrographics. These SoA reports aim to provide a comprehensive overview (based on the STAGES survey) of the current research being undertaken at EU and Member State level with relevance for the MSFD and its implementation. It is anticipated that these reports will continue to be amended and will evolve and develop past the lifetime of the STAGES project and thus a STAGES wiki has been created. The STAGES wiki is a web application which will allow people to add, modify, or delete content in collaboration with others.

The STAGES partnership will retain some permit control over different functions (levels of access). For example, editing rights access may permit changing, adding or removing material. Others may permit access without enforcing access control. Other rules may also be imposed to organise content. It is hoped that the coordinators who engaged with the STAGES survey will update and add to the content of the STAGES wiki once their projects and results are finalised. The STAGES wiki can be found on the STAGES website.

## **4 Potential impact and main dissemination activities and exploitation of results**

In a keynote address at European Maritime Day EUROMARES Conference in Gijon, Spain on 19 May 2010, EU Commissioner for the Environment, Janez Potočnik noted that “...*during this implementation phase, we are learning that the Directive has a weakness...and that weakness is the lack of knowledge.....*” The address of Commissioner Potočnik highlighted the widely acknowledged fact that there is a significant knowledge deficit, which may hinder full implementation of the MSFD and the achievement of GES in European waters. This was further highlighted in the 2010 Commission Decision on Good environmental Status<sup>4</sup> (GES), a key finding (recital 4) was the substantial need to develop additional scientific understanding for assessing GES in coherent and holistic manner. The STAGES proposal was specifically designed to address these issues, as a VII Framework Coordination and Support Action responding to the call topic ENV.2012.6.2-5 “Improve the scientific knowledge base to support the implementation of the Marine Strategy Framework Directive”. STAGES has delivered a number of outputs which are designed to benefit a broad range of stakeholders and end users and which have been disseminated to reach and inform the full MSFD stakeholder community. These are summarized in the ‘MSFD Decision Support Resources’ Fact Sheet (see Annex I)

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<sup>4</sup> **European Commission (2010)**. Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (COM Dec; 2010/477/EU).

The users of STAGES outputs include, inter alia (table 3):

<b>Project Level</b>	<b>EU level</b>	<b>Other FP projects</b>	<b>Regional Level</b>	<b>National and sub-national Level</b>	<b>Cross-regional</b>
STAGES Expert and Stakeholder groups (WP3 and WP4 workshops)	European Commission, DG Environment	SEAS-ERA	Regional Seas Conventions (HELCOM, OSPAR, UNEP-MAP, Black Sea Commission)	National / sub-national agencies with responsibility for MSFD Implementation	Civil society (general public (e.g. angling federations), NGOs (e.g. environmental protection, tourism))
STAGES Advisory Board	European Commission, DG Research and Innovation	DEVOTES	Conference of Peripheral Maritime Regions (CPMR)	National / sub-national research funding agencies	Private sector (involved in using or benefiting from marine resources (e.g. fisheries, aquaculture, energy, dredging, etc.))
STAGES partners	European Parliament: Intergroup on Seas and Coastal Areas	PERSEUS	BONUS EEIG		
	European Parliament: STOA (Science and Technology Options Assessment)	ODEMM	The Mediterranean Science Commission (CIESM)		
	JPI Oceans	VECTORS			
	Joint Research Centre	Other FP projects			

Representatives of the broad MSFD stakeholder community were involved in the project activities from the very beginning (through stakeholder consultation and project workshops) and can benefit from the project results but it is clear that some of the specific outputs of STAGES are targeted strongly at identified “lead users”. The lead users include, for example, the European Commission Services, specifically DG Research and Innovation and the thematic programme committees that will set the priorities and calls for the Horizon 2020 programme, and whose membership can directly use the research needs identified by the work of WP3 of the STAGES project. Moreover, DG Environment and the Joint Research Centre are lead users as they will drive the building of the European science policy interface platform, which has been designed through WP4. In addition to specific tools and resources to access MSFD research knowledge that are now available to MSFD stakeholders community through STAGES website and the EurOcean Marine Knowledge Gate, STAGES demonstrated a number of activities to enhance knowledge management processes in support of MSFD: from identifying existing knowledge to new knowledge and foresight activities as well as proposing

enhancements to the science-policy interface. Key outputs and impact of these activities are described below and summarized in table 4

Results	Lead User(s)	How the Lead User describes the results	Exploitation / Dissemination Plan	Funding for Exploitation
1. Inventory of relevant EU and national research projects and results	EU Commission and Member States	Access to existing research and knowledge outputs relevant to implementation of MSFD (i.e. to define, assess, monitor and achieve GES in European marine waters)	Information was uploaded on the "Marine Knowledge Gate".	Open and free access through Marine Knowledge Gate and the Visualisation tool in the STAGES website
2. State of the Art Synthesis Reports on Major MSFD Themes	EU researchers and MSFD stakeholders		The on-line infobase was promoted through STAGES dissemination activities (press release, direct communication to stakeholder network developed through STAGES and presentation at final STAGES conference).	
3. Overview of potentially relevant European and National Research;				
4. An insight into country participation on MSFD research				
5. Set of recommendations to enhance access to European and National Public funded research				
6. MSFD Knowledge Gaps. Reports and Science-Policy briefing	EC DG Research & Innovation Horizon 2020 JPI Oceans Regional, national and sub-national research programme managers	Research priorities to be supported by future policy-driven science and technology funding to underpin implementation of MSFD	Delivery of STAGES reports on Research Gaps and Science Policy Briefing	Horizon 2020 National Science and Technology research funding programmes
7. Proposal for a European MSFD science-policy Interface platform	European Commission – JRC – Development of the MSFD Competence Centre (MCC)	In-depth guidelines on development of an effective, long-term, and manageable platform	Report targeted at European Commission Services  Report was posted on the STAGES and EMB websites with wide electronic and targeted hard copy dissemination through STAGES and EMB channels.	European Commission Services, Member and Associated States

Table 4



**Figure 15.** Key figures from WP2.

Science is a crucial component of the wider knowledge base and there is a growing wealth of information available relevant to support implementation of environmental policies such as the MSFD. Harnessing and making the relevant research knowledge available in an appropriate and timely manner to the MSFD implementers is therefore crucial.

There is a wealth of research knowledge already available and constantly being produced across multiple geographical scales: National, Regional & European. However, the first phase of the implementation of the MSFD has displayed a lack of coherence across the Union, with many Member States noting a lack of data preventing full reporting in the initial assessment (COM(2014) 97 final) ref. The process of identifying, collecting, analysing and classifying this MSFD-relevant knowledge is a vital task for maximizing the uptake of existing research knowledge into MSFD policy.

The STAGES project addressed the structural aspects of transferring knowledge from science to policy and decision making in support of MSFD. One key objective, led by EurOcean (Work Package 2), was to identify and collect any public funded research across Europe that can assist MSFD implementation and make it widely available / easily accessible to a wide range of Stakeholders.

Throughout the STAGES research harnessing process a number of issues were found acting as barriers to information exchange for proper analysis/synthesis and preventing full reporting of existing research, reproducing good practices and setting research needs in a coordinated manner among Member and Non-Member States across Europe. A few issues are intrinsic to the process whereas most of them are specific of each type of information holder.

- Discrete timeline of research harnessing process (vs. continuous research process)
- Dissimilar access to research through info-holders

The STAGES project proposes a set of recommendations to overcome the main issues / challenges identified in the research harnessing process, targeting different information holders with different roles: from operational / technical to policy level. It also takes into account the type of information of targeted information holders:

:

1. **Continuity of the research harnessing process:** research projects should include Iterative Knowledge Management Plans
2. **Accessibility to profile information of existing research:** need for a centralised and open access info base with MSFD-related research from EU and national Sources; access through public online repositories
3. **Categorisation of marine related research:** ease identification of projects and target searches

4. **Obtainability of MSFD-related information:** MSFD relevance should be part of project reporting schemes
5. The EC and national research funding agencies should **promote a policy-literate research community.**

STAGES has set the bases for this process by facilitating access to a wealth of existing scientific knowledge and information of relevance for the implementation of the Directive through the Marine Knowledge Gate. STAGES proposed a solid methodology for following the process of harnessing MSFD-related research. The main outcomes of this process are as follows:

- Elaboration of an inventory of MSFD related projects, which provide an insight into the status of public funding with potential relevance to the implementation of the MSFD across Europe: open access through the Marine Knowledge Gate ([www.kg.eurocean.org](http://www.kg.eurocean.org))
- Report aiming at highlighting the need for making scientific knowledge widely available for timely analysis and synthesis to establish further research needs for MSFD implementation to different audiences, namely: EC and national bodies dealing with MSFD implementation, as well as National Research Funding and Performing Organisations (RFPOs) as key information sources of national funding research
- Statistical overview of the MSFD-related research in Europe harnessed by the project based on relevant indicators, such as Funding Sources, Marine regions, and Good Environmental Status Descriptors.
- Country factsheets providing an insight into the participation in MSFD-related research of 25 European Coastal countries.
- Research Harnessing Recommendations: STAGES proposes a set of recommendations to overcome main issues /challenges found throughout the research harnessing process.

In addition, the results made available from STAGES will contribute to improve the state of the art in the field of marine environmental protection. In the framework of the STAGES project and based on the harnessing, analysis and synthesis of existing knowledge, five SoA reports were produced focused in each of the Five MSFD themes: 1) Biodiversity; 2) Contaminants and nutrients; 3) Commercially exploited fish; 4) Disturbances and 5) Hydrographic conditions.

➤ **Identification of gaps and research needs for a better use of public funds**



STAGES has developed a strategic science advisory process to support MSFD implementation and demonstrated the process for expert evaluation to set research needs, gaps and priorities for MSFD. STAGES enabled a consultative process with a broad range of marine stakeholders to produce an in-depth analysis of research needs for further research to improve the scientific underpinning for the implementation of the MSFD. The results of this process are described in four reports.

- Workshop report on the “identification of

**Figure 16.** Key figures from WP3.

- research needs with regard to the pressures and their impact on Marine ecosystems”
- Workshop report of “the identification of research needs with regard to the implementation of Monitoring Programmes”
- Workshop report on “The identification of research needs with regard to the socio-economic analysis under the Marine Strategy Framework Directive”
- Science Policy brief: Future research needs to implement the MSFD.

The engagement of Regional Sea Commissions in the STAGES workshops assisted the development of a more strategic science advisory process at regional level. For instance, on 27 June 2014, OSPAR approved a Science agenda (OSPAR, 2014) setting out a strategic plan for the planning and development of coordinated research needs in the medium and longer-term. This directly references STAGES workshop on pressures and impacts and sets out processes to further engage science providers and science funders in MSFD implementation, it also paves the way for defining research needs and better coordination of national science programmes. Moreover, outcomes of STAGES Workshop on Monitoring Programmes were included in the JRC publication “Technical Guidance on Monitoring for the MSFD”.

It is expected that the outputs of this process will inspire and orientate working programmes of Research Funding Agencies at European and national level in support of MSFD.



**Figure 17.** Key figures from WP4. STAGES project outputs.

#### ➤ **Proposal for an effective MSFD SPI**

STAGES delivered a proposal for an effective, long-term MSFD SPI with recommendations for step-wise implementation of a SPI that is fit for purpose and that can support MSFD implementation in the long-term. This was supported by an extensive consultation of stakeholder views and expectations through online surveys, workshops and informal discussions together with assessment of best practice and input of key recommendations from across the

Analysis showed that many elements of the SPI are already in place, but currently lack the coherence and coordination required for MSFD stakeholders to fully benefit from advances in European science and technology and identification of future research needs.

#### ➤ **Guiding principles and cross-cutting themes for a science-policy interface to support the MSFD**

The results of the stakeholder consultation and ongoing best practice study informed the production of a set of Guiding Principles for a SPI to support MSFD implementation:

- Effective dialogue and transfer of knowledge
- Enhanced knowledge accessibility
- Promote uptake of relevant and timely knowledge
- Joint Construction and Co-evolution of knowledge
- Building on existing structures and initiatives
- Realistic, achievable, affordable

The proposal was further developed in the context of five cross-cutting themes that are considered crucial to strengthen the MSFD SPI into the second MSFD cycle and beyond. These include the need for SPI processes that foster bottom-up (science-driven) and top-down (policy-driven) dialogues, the need for relevant and timely interaction with wider stakeholders, and to take into account the geographical scales and cyclical nature of the MSFD implementation process. A summary of cross-cutting themes together with recommendations are presented in Table 5.

Balancing bottom-up (science-driven) versus top-down (policy-driven) approaches	<ol style="list-style-type: none"> <li>1. Develop a structured approach to stimulate multi-way dialogues with feedback mechanisms to match policy needs with the latest knowledge and advice.</li> <li>2. Foster dialogue between policy and science to determine the level of detail and optimum packaging required for targeted stakeholder uptake.</li> </ol>
Engagement of MSFD Stakeholders	<ol style="list-style-type: none"> <li>1. Involve wider stakeholders, where appropriate, in the science and technical advisory process e.g. through the flexible expert network and conferences and through regional science agendas.</li> <li>2. Assess how existing and emerging industry and innovation networks could act as a platform for dialogue e.g. Knowledge Innovation Community (KIC) and related Technology Alliances.</li> </ol>
Optimising the SPI alignment to the MSFD policy cycle	<ol style="list-style-type: none"> <li>1. Recognise the multiple time-scales at play and identify where alignment of the longer-term research agenda and MSFD policy cycle could provide windows of opportunity to support MSFD implementation.</li> <li>2. Facilitate top-down communication that can react to short and longer-term policy needs.</li> </ol>
Towards coherence at different geographical scales	<ol style="list-style-type: none"> <li>1. Develop a strategic approach to enhance coherence within and between marine regions e.g. through Regional Sea Conventions and utilising knowledge brokers.</li> <li>2. Support Member States to develop a sub-regional approach e.g. through Regional Sea Conventions, macroregional strategies and through targeted funding.</li> <li>3. Build on existing initiatives to form a structured SPI and dedicated human capacity for Knowledge Brokerage at national level.</li> </ol>
Exchange and alignment with other legislative requirements and agreed standards	<ol style="list-style-type: none"> <li>1. Create a framework for a MSFD Common Implementation Strategy (CIS) SPI activity. This could include a CIS-SPI Working Group with correspondents sourced from existing MSFD stakeholder representatives across sectors and geographical scales.</li> <li>2. Promote dialogue between MSFD and related policies e.g. WFD to recognise best practice and common standards and move towards a more coherent, integrated approach.</li> </ol>

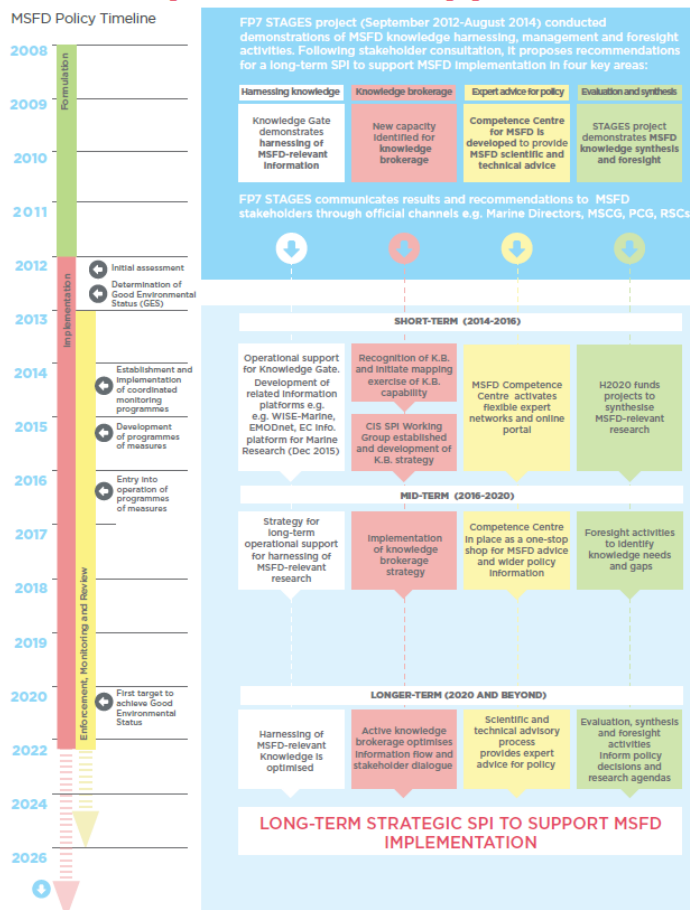
**Table 5.** A summary of recommendations across 5 cross-cutting themes required to build an effective science-policy interface to support MSFD. See Section 3 of this report for further detail.

### ➤ Towards a roadmap for SPI implementation

STAGES took the key recommendations for building a SPI and presented a roadmap (fig. 18) showing how the SPI architecture vision could be implemented in a step-wise approach and building on existing structures and initiatives. Recommendations for action were presented for three time-periods, namely; short-term actions (here 2014-2016) that are considered highly achievable (i.e. components already in development and/or significant new funding is not required); mid-term goals (2016-2020) that move the SPI towards strategic long-term operation; and long-term (beyond 2020) which sets the vision for a strategic SPI that is active and self-sustaining across all four key components. For instance, a key component of a successful SPI is the harnessing of and improved access to marine scientific knowledge. Building on previous initiatives the STAGES project has further demonstrated the potential of the Marine Knowledge Gate ([www.kg.eurocean.org](http://www.kg.eurocean.org)), a major open access repository of marine research in Europe, by developing a specific MSFD search tool to filter by Marine Region and GES descriptor.

The launch of a MSFD Competence Centre on 7 October 2014 is a large step towards enhancement of the scientific and technical advisory process for MSFD. Other aspects e.g. evaluation and synthesis of MSFD relevant knowledge and knowledge brokerage, lack recognition, strategic planning and funding.

## Roadmap for SPI to support MSFD



**Figure 18.** Roadmap for a science-policy interface to support MSFD implementation. Actions for a step-wise implementation are presented in the context of the MSFD policy stages and key milestones in the first MSFD cycle and beyond.

### ➤ MSFD stakeholder involvement and synergies with related initiatives

One main objective of this project was to establish synergies and collaborate with all sectors of MSFD Stakeholders involved in the implementation of the Marine Directive such as European research organisations, Member States competent authorities, industry, NGOs and other MSFD stakeholders with their interdisciplinary skills across Europe in order to form a strong transnational collaboration to identify new approaches that will underpin the implementation of the European legislation.

The STAGES project fostered MSFD stakeholder involvement through the development of several activities:

- Project Survey: consultation addressed to Research Funding and Performing Organisations both at National and European level
- Stakeholder consultation (survey, best practice analysis and workshop to seek views and expectations on the development of an effective MSFD Science Policy Platform.
- Organisation of three workshops to identify research gaps and needs. These were addressed to all relevant sectors of MSFD stakeholders – fostering the dialogue, discussion, etc



A fluent communication and fruitful interaction has been kept with relevant related initiatives and EU projects (SEAS-Era, RSCs, JPI-OCEANS, related FP7 projects such as PERSEUS, DEVOTES and ODEMM, etc). Some examples with links to website news are mentioned below

- Joint stakeholder workshop between STAGES WP4 and DEVOTES (12 February 2014) (<http://www.devotes-project.eu/stages-devotes-stakeholder-consultation-workshop/>)
- Participation of STAGES in PERSEUS Umbrella Workshop & 1ST General Assembly (22-25 January 2013)
- (<http://www.perseus-net.eu/site/content.php?locale=1&sel=419&artid=273>)
- Participation of PERSEUS in STAGES Stakeholders consultation
- [http://www.perseus-net.eu/site/content.php?locale=1&locale\\_j=en&artid=834](http://www.perseus-net.eu/site/content.php?locale=1&locale_j=en&artid=834)
- Collaboration with ODEMM project for stakeholders identification
- exchange and meetings kept among WP4 and JPI-Oceans CSA to discuss areas for collaboration e.g. stakeholder survey development

In addition, the Joint Research Centre played a key role as a STAGES partner and a key MSFD stakeholder. This was particularly pertinent for the development of a SPI proposal to support implementation of MSFD (STAGES WP4) as JRC, together with the EC DG Environment, have developed a Competence Centre to support implementation of the MSFD. This will act as a science-policy interface, facilitating cooperation and information exchange for the successful implementation of the Directive. Throughout the STAGES project, Coordinator CETMAR and partner EMB engaged closely with JRC to ensure the latest available information and stakeholder feedback was available to inform this process. In February 2014 this ongoing dialogue led to EMB and JRC working jointly to produce Concept paper for a SPI to support MSFD implementation. This was presented by EMB at the MSFD Project Coordination Group (PCG) meeting on 10 March 2014 and disseminated to PCG members for review. On 7 October 2014, the Competence Centre was launched at the EuroOCEAN 2014 conference by Maria Betti, JRC Director for Environment and Sustainability<sup>5</sup>. The results of the project and in particular the SPI proposal will contribute to the creation of a European marine knowledge base for Good Environmental Status that JRC will lead. The results of the project will be also largely disseminated to a wide community of researchers and other MSFD stakeholders.

The project outcomes have demonstrated high potential to improve data and knowledge exchange, and capitalize on national and EU investments in research, through enhanced access to marine research project results. The results obtained in the framework of the project provide an excellent opportunity to strengthen the scientific knowledge base to support implementation of the MSFD in a harmonized way at national, regional and EU scale.

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<sup>5</sup> <https://ec.europa.eu/jrc/en/news/jrc-launches-marine-competence-centre?search>

### ➤ Main dissemination activities

A STAGES Communication and Dissemination plan was produced at the beginning of the project detailing the external communication strategy developed by the partnership to raise awareness of the project and promote its results. The Communication and Dissemination plan outlines strategy regarding: press releases distributed through national and international printed trade press, and digital media such as a project website, individual partner websites, and e-newsletters; timing of events; publication of results in scientific and popular publications etc.



**Figure 19.** Key figures from WP5.

A strong brand identity has been developed with distinctive project logo and colour scheme. All communications and outputs from the STAGES projects follow the project brand and headed paper templates and PowerPoint presentation templates have been produced

Three STAGES factsheets were produced. The first factsheet exists in two formats; a two page factsheet and a four page brochure. The two page factsheet provides information on the STAGES challenges and outlines the objectives of the project and provide partner and contact information. The

four page brochure expands on the two page document and contains additional information on the context of the MSFD and GES and timelines for implementation.

During the second 12 months of STAGES a second factsheet was produced. The aim of this factsheet was to communicate the progress, main achievements and outputs of the STAGES work packages in the first year. The factsheet is an infographic which relays information on STAGES “by numbers” i.e. the factsheet outlines the statistics associated with the development of the outputs and products from the STAGES work packages.

A third factsheet was also developed at the end of the project in order to highlight and provide details of the major outcomes of the STAGES project. The STAGES – MSFD Decision Support Factsheet was printed and disseminated through a physical mass dissemination strategy where key stakeholders were identified and targeted through a mailing of the key outputs of the project. The decision support factsheet outlines and describes each of the major STAGES outputs as well as where they can be downloaded on the STAGES website.

To date the first factsheet and brochure have been downloaded 1,866 times from the STAGES website. Partners have disseminated factsheets and brochures with them when representing STAGES at related meetings and events and 785 brochures and factsheet have been distributed at meetings to date.

The STAGES website was launched in February 2013 and provides an overview of the STAGES project and updates on progress. All publicly available Deliverables are available under the Results section of the website – including all fact sheets and workshop reports etc.

In addition, the website provides links to all partner websites, related initiatives (other FP7 projects with relevance to the MSFD) background documentation to the MSFD and GES and links to sources of additional information including (DG Environment and DG Mare).

Between the website launch on 5th February 2013 and 31st August 2014 the website has received 12,836 hits. Over 3,030 different users have visited the site and there have been 9,492 individual page visits. Approximately 67% of these visitors are new visitors while 33% are return visitors. The average visitor to the websites stays for 2 minutes 55 seconds.

Contacts details for the STAGES coordinator are given under the Contact Us footer, while the STAGES data policy and disclaimer are also provided in the footer of the website. The STAGES website also allows partners to access the STAGES intranet developed specifically for sharing of files and for communication between partners. Please refer to Deliverable 5.2 for more details on the content of the website.

A short video was developed to provide general information about the STAGES project, and its objectives and expected results. The wider public is the target audience for the video and as such provides an introduction to the MSFD and concepts such as GES and its 11 Qualitative Descriptors, and the Ecosystem approach. The video was kept deliberately short at 5 minutes and 28 seconds and its aim was to introduce a complex issue, namely MSFD, in a simple way. The video visuals and narrative were developed with the input of the STAGES partnership. The video has been published on the STAGES project website ([www.stagesproject.eu](http://www.stagesproject.eu)) and Vimeo (<https://vimeo.com>) in March 2013. To date the STAGES video has been watched 255 times through the STAGES Vimeo account. Of these views, 201 were through the embedded player on the STAGES website. The video has also been played 32 times through AquaTT's Vimeo account.

This video was subsequently updated in advance of the final event and included all the major results and outputs of the project. Using easy to understand icons and imagery, the video takes the audience on a journey through the project and explains the different key elements generated by the project and their importance. This updated video can also be found on the STAGES Vimeo account.

The STAGES website also includes a visualization tool that, when used in conjunction with the Marine Knowledge Gate, can be used to provide a comprehensive picture of the research (past present and Ongoing) with MSFD relevance specific to a region or a MSFD GES descriptor.

In order to access and provide sustainability and continuity to the information contained in the five Thematic State of the Art (SoA) reports elaborated in the framework of STAGES WP2, a Wiki site has been generated in the STAGES website. These SoA reports aim to provide a comprehensive overview (based on the STAGES survey) of the current research being undertaken at EU and Member State level which has relevance for the MSFD and its implementation. This wiki site will allow these reports to continually be amended, evolve and develop past the lifetime of the STAGES project.

A new section has been created in the STAGES website "STAGES MSFD support decision resources" that contains an "e-package" with the most relevant outcomes generated during the STAGES lifetime.

The STAGES project was continually disseminated throughout its lifetime through both press releases and presentations and attendance at several relevant and advantageous events. For a

full listing, please see deliverables D5.7 General Dissemination report and D5.8 General Dissemination report 2.

➤ **Post-STAGES dissemination, uptake and Impact**

In a recent report of the President's Science and Technology Advisory Council (STAC) called 'The Future of Science is Europe' (October 2014), José Manuel Barroso, President of the European Commission stated ".....we cannot simply generate knowledge; we must translate this knowledge advantage into new products and services and we must use that knowledge for the benefit of Europe and its citizens, to develop a knowledge-guided society." This shows that there is a real need to now implement the recommendations of the STAGES project to enhance relevant knowledge harnessing, foresight activities and create a long-term strategic science-policy interface platform to support implementation of the MSFD.

Since the end of the project, STAGES partners have continued communicating and disseminating the key messages and outputs of STAGES project.

**Presentation of the final proposal and recommendations for a science-policy interface to support implementation of the MSFD.**

STAGES partner EMB was invited by the European Commission (DG ENV) to present STAGES and the final SPI proposal at a meeting of the Project Coordination Group (PCG) for the implementation of the MSFD on 23 September 2013. Brussels, Belgium. This led to further discussion amongst MSFD stakeholders with a view to discussing key STAGES recommendations at further MSFD CIS fora , e.g. the Marine Strategy Coordination Group.



**EuroOCEAN 2014 Connecting Science, Policy and People**

On 7-9 October 2014, STAGES partners CETMAR, EMB, AquaTT, EurOcean, ICES joined representatives from the European Commission and some 340 European scientists, policymakers and other experts in Rome for the EuroOCEAN 2014<sup>6</sup> science-policy conference, setting agendas for seas and oceans

research. STAGES had a Project exhibition stand and **Coordinator Marisa Fernandez presented STAGES** in a session on Good Environmental Status together with presentations by the European Commission DG Research and Innovation, DG Environment, the Joint Research Centre and the OSPAR Regional Sea Convention. In a Plenary session, **Maria Betti** (Director, Institute for Environment and Sustainability, EC-JRC) **launched the [MSFD Competence Centre](#)** which will act as a science-policy interface for supporting implementation of the Marine Strategy Framework Directive into the future. In the same opening session, **Marianne Wenning**, Director, Directorate C: Quality of Life, Water & Air, European Commission DG

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<sup>6</sup> [www.eurocean2014.eu](http://www.eurocean2014.eu)

Environment, presented on ‘Marine ecosystems in Europe - policy objectives for healthy oceans’.

**Photo: STAGES partners and representatives of the European Commission at EurOCEAN 2014 in Rome, 7-9 October 2014.** From Left to Right: Telmo Carvalho (EurOcean), Anna Cheilari (EC, DG Environment), Ana-Teresa Caetano (EC, *DG Research and Innovation, Marine Unit*), Sigi Gruber (EC, *DG Research and Innovation, Head of Marine Unit*), David Murphy (AquaTT), Kate Larkin (European Marine Board).

EurOCEAN 2014 produced a Rome Declaration setting agendas for seas and ocean science. Two key calls for action are particularly relevant to MSFD and in part influenced by STAGES outputs and the raised profile on the need for a strategic approach to harnessing relevant knowledge and science-policy interfaces to enhance environmental decision making:

Advancing Ocean Knowledge

**Goal: Building a greater knowledge base through ocean observation and fundamental and applied research**

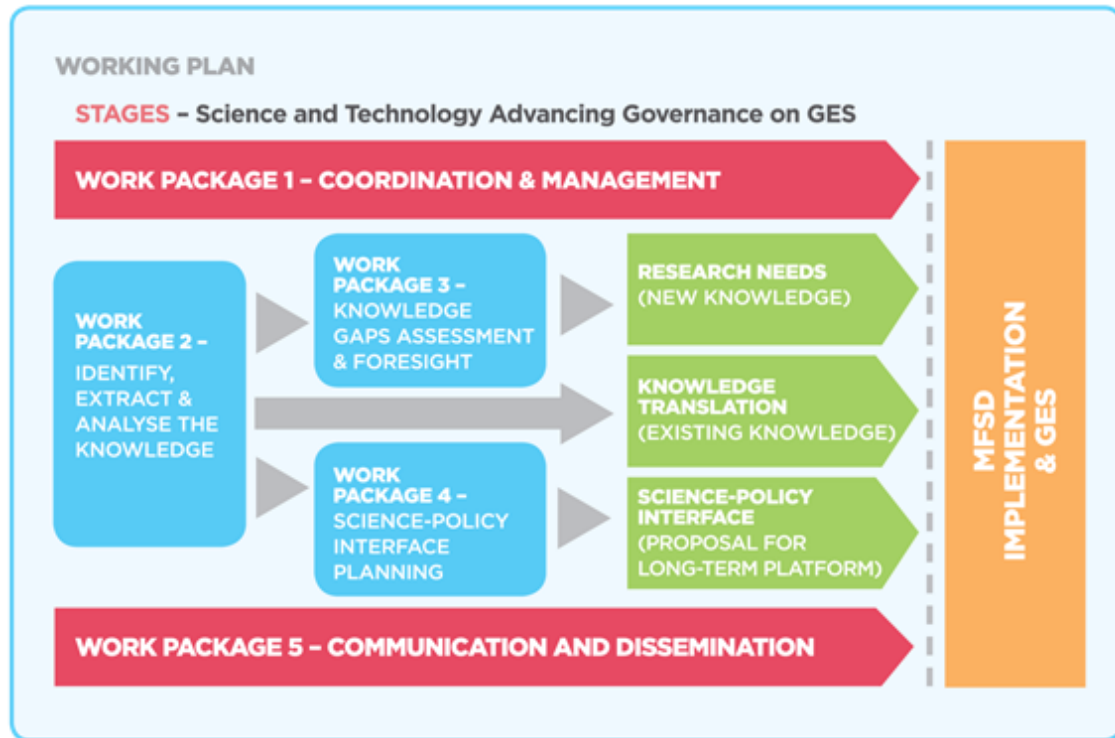
“...Moreover, actions are needed to address the rapidly-growing opportunities and challenges in advanced ocean measurement technology and effective management of increasing volumes and diversity of information and physical, chemical and biological data from marine observing systems that are fit for purpose including being capable of **informing assessments of good environmental status...**”

Breaking barriers

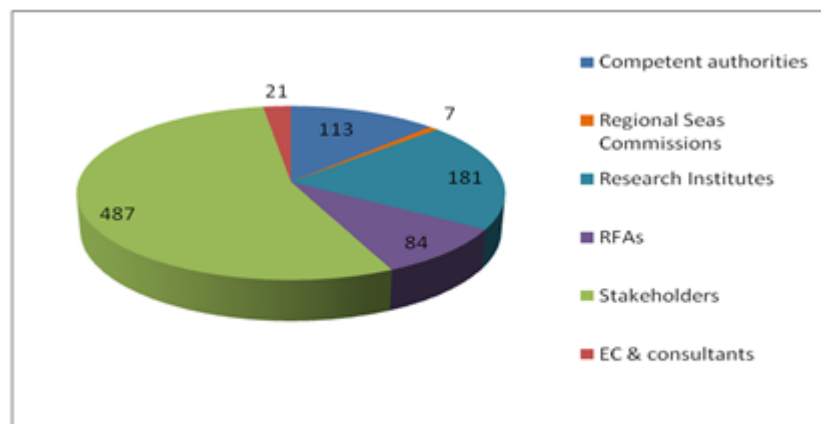
**Goal: Addressing the complex challenges of blue growth and ocean sustainability by combining expertise and drawing from a range of scientific disciplines and stakeholders.**

“...Education and training to encompass and foster cross-disciplinary training, the ability to work across **science-policy interfaces**, team-based approaches, entrepreneurship, and the broad range of specialist technical and ICT skills needed to underpin modern marine science.”

## FIGURES AND TABLES



**Figure 1.** STAGES Working Plan



**Figure-2.** Current MSFD organisations in the database (total of 891 organisations)

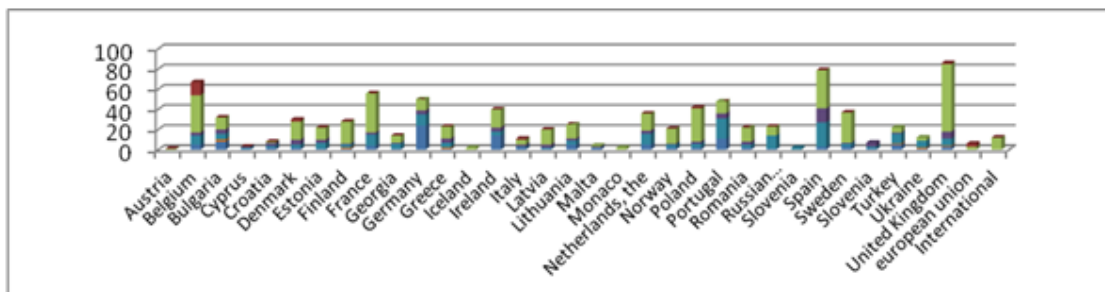


Figure 3. Number of MSFD organisations per country included in the database

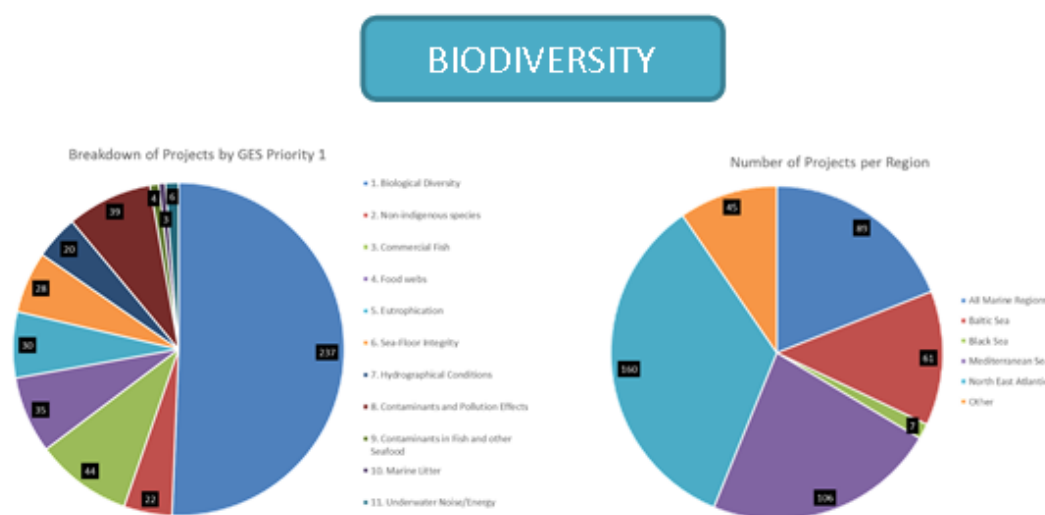


Figure 4. Example taken from the Biodiversity SoA report: breakdown of projects by GES Priority 1 and number of projects per region.



Figure 5. WP2 publications on the harnessing of MSFD-relevant research at National and European Level.



  
www.stagesproject.eu

**STAGES - Science and Technology Advancing Governance of Good Environmental Status**  
**WORKSHOP REPORT**  
Further Research Needs on Pressures and their Impact on the Marine Ecosystem under MSFD  
Rome, 4-5 September 2013



 [www.stagesproject.eu](http://www.stagesproject.eu)

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019718.



  
www.stagesproject.eu

**STAGES - Science and Technology Advancing Governance of Good Environmental Status**  
**WORKSHOP REPORT**  
Needs for further research to support improved and more efficient monitoring programmes under MSFD  
Brussels, 13-15 May 2013



 [www.stagesproject.eu](http://www.stagesproject.eu)

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019718.



  
www.stagesproject.eu

**STAGES - Science and Technology Advancing Governance of Good Environmental Status**  
**WORKSHOP REPORT**  
Workshop on research needs with regard to the socio-economic analysis under MSFD  
Joint Research Centre of the European Commission  
9-8 October 2013



 [www.stagesproject.eu](http://www.stagesproject.eu)

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019718.





Based on the results obtained following these processes, STAGES WP4 produced a report on “Stakeholders views and expectations for an effective MSFD- Science-Policy Interface (SPI) Platform”. This report is the main output for STAGES WP4 Task 4.1 (STAGES Deliverable D4.1).

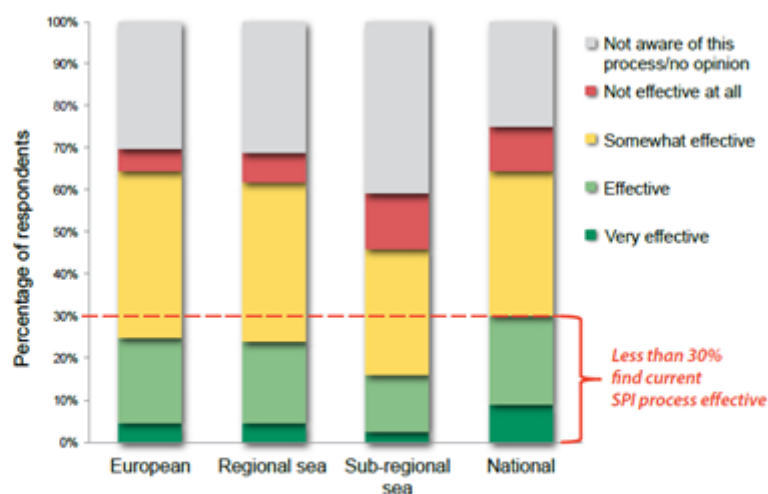
**KEY FACTS: STAGES WP4 Stakeholder Consultation Survey**

6 Week Consultation, launched 31 May 2013

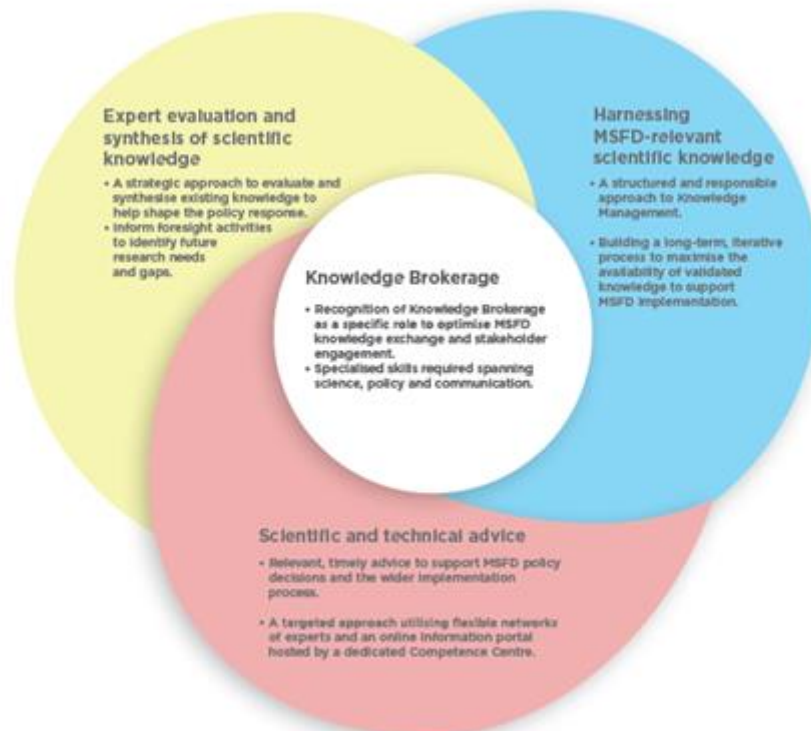
436 Stakeholders invited from 30 countries

113 responses from 23 countries (response rate 25.9%)

**Figure 10.** Report on Stakeholder views and expectations on an SPI.



**Figure 11.** Perceived effectiveness of the MSFD Science-Policy Interface at European, Regional; Sea, Sub-regional sea and National levels. (Question 9, STAGES WP4 online Consultation on MSFD SPI).



**Figure 13.** Summary of key recommendation per key component of the SPI.

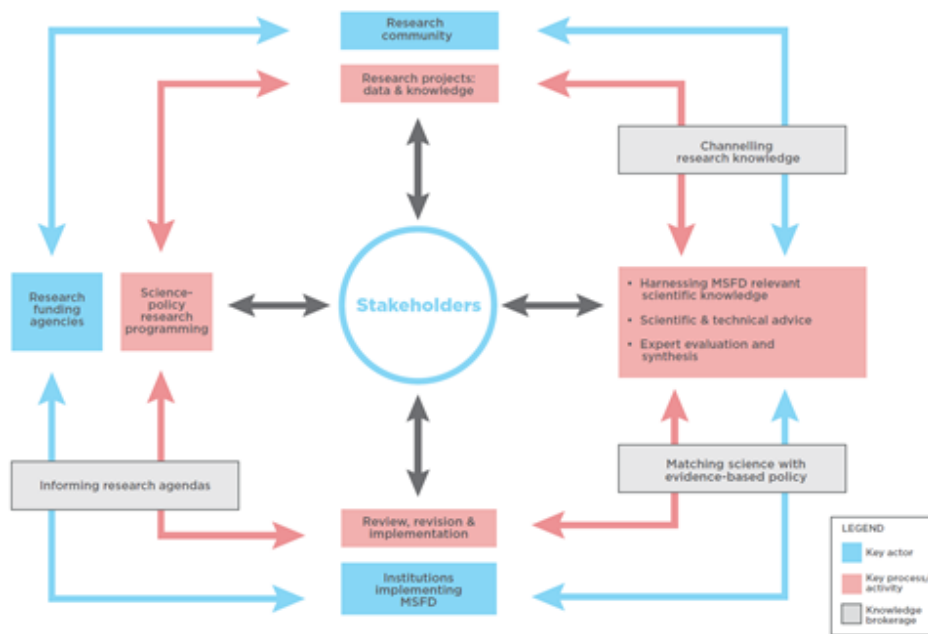


Figure 14. Architecture of the proposed science-policy interface (SPI) to support MSFD implementation.



Figure 15. Key figures from WP2.



Figure 16. Key figures from WP3.



Figure 17. Key figures from WP4.

## Roadmap for SPI to support MSFD

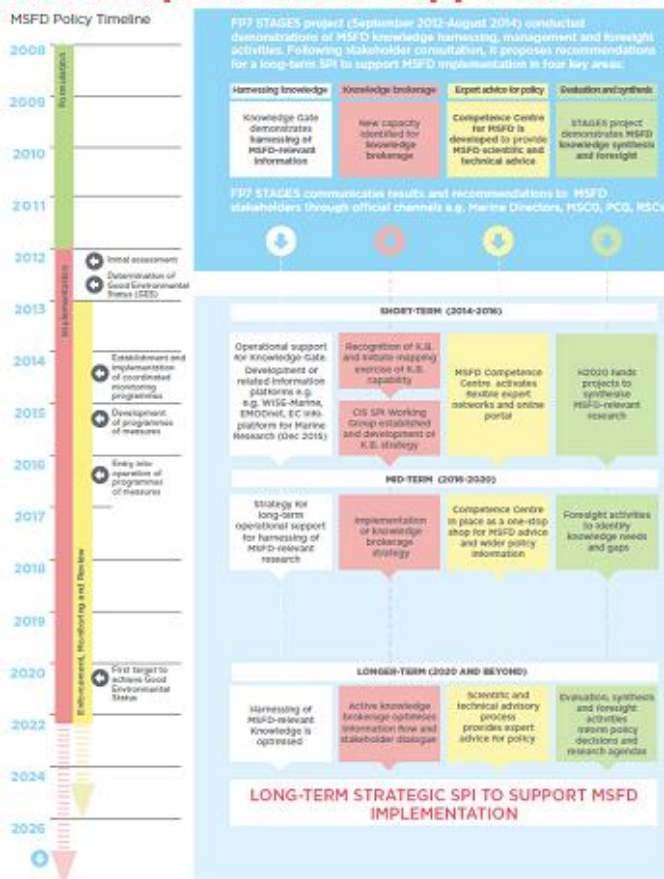


Figure 18. Roadmap for a science-policy interface to support MSFD implementation. Actions for a step-wise implementation are presented in the context of the MSFD policy stages and key milestones in the first MSFD cycle and beyond.



**Figure 19.** Key figures from WP5.



**Table 1: Number of projects and partners in charge of the desktop study**

<b>Theme</b>	<b>Descriptor</b>	<b>Lead Partner</b>	<b>Support Partners</b>	<b>No projects</b>
<i>Biodiversity</i>	1, 2, 4, 6	JRC	ICES & IFREMER	467
<i>Contaminants &amp; Nutrients</i>	5, 8, 9	IMR	IFREMER	344
<i>Disturbances</i>	10, 11	IFREMER	EMB	103
<i>Commercially exploited fish</i>	3	ICES	IMR	162
<i>Hydrographical conditions</i>	7	EMB	JRC	142
<b>Total</b>				<b>1218 (763)</b>

**Table 2: Number of project considered of high potential per MSFD theme**

<b>Theme</b>	<b>Descriptor</b>	<b>No projects</b>	<b>High Potential projects</b>	<b>% High Potential</b>
<i>Biodiversity</i>	1, 2, 4, 6	467	79	16.90%
<i>Contaminants &amp; Nutrients</i>	5, 8, 9	344	77	22.40%
<i>Disturbances</i>	10, 11	103	35	33.90%
<i>Commercially exploited fish</i>	3	162	29	17.90%
<i>Hydrographical conditions</i>	7	142	40	28.20%
<i>Total</i>		1218 (763)	260	21.30%

<b>Project Level</b>	<b>EU level</b>	<b>Other FP projects</b>	<b>Regional Level</b>	<b>National and sub-national Level</b>	<b>Cross-regional</b>
STAGES Expert and Stakeholder groups (WPs and WPs workshops)	European Commission, DG Environment	SEAS-ERA	Regional Seas Conventions (HELCOM, OSPAR, UNEP-MAP, Black Sea Commission)	National / sub-national agencies with responsibility for MSFD Implementation	Civil society (general public (e.g. angling federations), NGOs (e.g. environmental protection, tourism))
STAGES Advisory Board	European Commission, DG Research and Innovation	DEVOTES	Conference of Peripheral Maritime Regions (CPMR)	National / sub-national research funding agencies	Private sector (involved in using or benefiting from marine resources (e.g. fisheries, aquaculture, energy, dredging, etc.))
STAGES partners	European Parliament: Intergroup on Seas and Coastal Areas	PERSEUS	BONUS EEIG		
	European Parliament: STOA (Science and Technology Options Assessment)	ODEMM	The Mediterranean Science Commission (CIESM)		
	JPI Oceans	VECTORS			
	Joint Research Centre	Other FP projects			

Results	Lead User(s)	How the Lead User describes the results	Exploitation / Dissemination Plan	Funding for Exploitation
<p>1. Inventory of relevant EU and national research projects and results</p> <p>2. State of the Art Synthesis Reports on Major MSFD Themes</p> <p>3. Overview of potentially relevant European and National Research;</p> <p>4. An insight into country participation on MSFD research</p> <p>5. Set of recommendations to enhance access to European and National Public funded research</p>	<p>EU Commission and Member States</p> <p>EU researchers and MSFD stakeholders</p>	<p>Access to existing research and knowledge outputs relevant to implementation of MSFD (i.e. to define, assess, monitor and achieve GES in European marine waters)</p>	<p>Information was uploaded on the "Marine Knowledge Gate".</p> <p>The on-line infobase was promoted through STAGES dissemination activities (press release, direct communication to stakeholder network developed through STAGES and presentation at final STAGES conference).</p>	<p>Open and free access through Marine Knowledge Gate and the Visualisation tool in the STAGES website</p>
<p>3. MSFD Knowledge Gaps. Reports and Science-Policy briefing</p>	<p>EC DG Research &amp; Innovation Horizon 2020 JPI Oceans Regional, national and sub-national research programme managers</p>	<p>Research priorities to be supported by future policy-driven science and technology funding to underpin implementation of MSFD</p>	<p>Delivery of STAGES reports on Research Gaps and Science Policy Briefing</p>	<p>Horizon 2020 National Science and Technology research funding programmes</p>
<p>4. Proposal for a European science-policy Interface platform</p>	<p>European Commission – JRC – Development of the GES Competence Centre</p>	<p>In-depth guidelines on development of an effective, long-term, and manageable platform</p>	<p>Report targeted at European Commission Services</p>	<p>European Commission Services, Member and Associated States</p>

<p><b>Balancing bottom-up (science-driven) versus top-down (policy-driven) approaches</b></p>	<ol style="list-style-type: none"> <li>1. Develop a structured approach to stimulate multi-way dialogues with feedback mechanisms to match policy needs with the latest knowledge and advice.</li> <li>2. Foster dialogue between policy and science to determine the level of detail and optimum packaging required for targeted stakeholder uptake.</li> </ol>
<p><b>Engagement of MSFD Stakeholders</b></p>	<ol style="list-style-type: none"> <li>1. Involve wider stakeholders, where appropriate, in the science and technical advisory process e.g. through the flexible expert network and conferences and through regional science agendas.</li> <li>2. Assess how existing and emerging industry and innovation networks could act as a platform for dialogue e.g. Knowledge Innovation Community (KIC) and related Technology Alliances.</li> </ol>
<p><b>Optimising the SPI alignment to the MSFD policy cycle</b></p>	<ol style="list-style-type: none"> <li>1. Recognise the multiple time-scales at play and identify where alignment of the longer-term research agenda and MSFD policy cycle could provide windows of opportunity to support MSFD implementation.</li> <li>2. Facilitate top-down communication that can react to short and longer-term policy needs.</li> </ol>
<p><b>Towards coherence at different geographical scales</b></p>	<ol style="list-style-type: none"> <li>1. Develop a strategic approach to enhance coherence within and between marine regions e.g. through Regional Sea Conventions and utilising knowledge brokers.</li> <li>2. Support Member States to develop a sub-regional approach e.g. through Regional Sea Conventions, macroregional strategies and through targeted funding.</li> <li>3. Build on existing initiatives to form a structured SPI and dedicated human capacity for Knowledge Brokerage at national level.</li> </ol>
<p><b>Exchange and alignment with other legislative requirements and agreed standards</b></p>	<ol style="list-style-type: none"> <li>1. Create a framework for a MSFD Common Implementation Strategy (CIS) SPI activity. This could include a CIS-SPI Working Group with correspondents sourced from existing MSFD stakeholder representatives across sectors and geographical scales.</li> <li>2. Promote dialogue between MSFD and related policies e.g. WFD to recognise best practice and common standards and move towards a more coherent, integrated approach.</li> </ol>

**Table 5.** A summary of recommendations across 5 cross-cutting themes required to build an effective science-policy interface to support MSFD. See Section 3 of this report for further detail.