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² PU: Public, PP: Restricted to other programme participants (including the Commission Services), RE: Restricted to a group specified by the consortium (including the Commission Services), CO: Confidential, only for members of the consortium (including the Commission Services)

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Report on

Simulated “in situ” pilot tests of RFMS with selected stakeholders

January 2014

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Abstract

The aim of this report is to summarize the stakeholder insights obtained through “in situ” pilot test of the RFMS. Hence, the result of these testing meetings is included in the first section of the report, explaining the outcomes of the four EcoFishMan case studies and verifying the viability of the RFMS. The main conclusions are detailed in the second section, highlighting the strengths and opportunities as well as some critical points regarding the RFMS in general and, each developed management plan in particular. Furthermore, this document provides a constructive support to the elaboration of the roadmap for the implementation the RFMS in the European fisheries.

STAKEHOLDER ASSESSMENT OF CASE STUDIES

Stakeholder engagement in fisheries management has been gaining momentum in the policy agenda. Participatory research, stakeholder engagement (Mackinson et al., 2010) or even co-production of knowledge (Pohl, 2008; Berkes, 2012) are oriented to improve governance in European fisheries⁴. The literature has pointed out four categories of reasons for undertaking participation (van Vliet et al, 2010): normative reasons related to democratic principles and the link between decisions and the values of the public; instrumental arguments, to legitimate final decisions and increase stakeholders buy-in; substantive reasons point out to the integration of local knowledge; and, finally, social learning allows for the generation of useful insights.

Within this general framework, in order to evaluate the feasibility of the RFMS an iterative process based on prototyping-in-stages has been designed, combining advantages of top-down and bottom-up concepts (Fig 1). The development, evaluation, and adaptation of the RFMS in the EcoFishMan project takes place in an iterative process to ensure that the RFMS will be appropriate for different types of fisheries and ecosystems (Deliverable 4.4). The spiral design allowed the integration of stakeholder input from different sources: meetings, workshops, personnel interviews as well as informal conversations along the lifespan of the project.

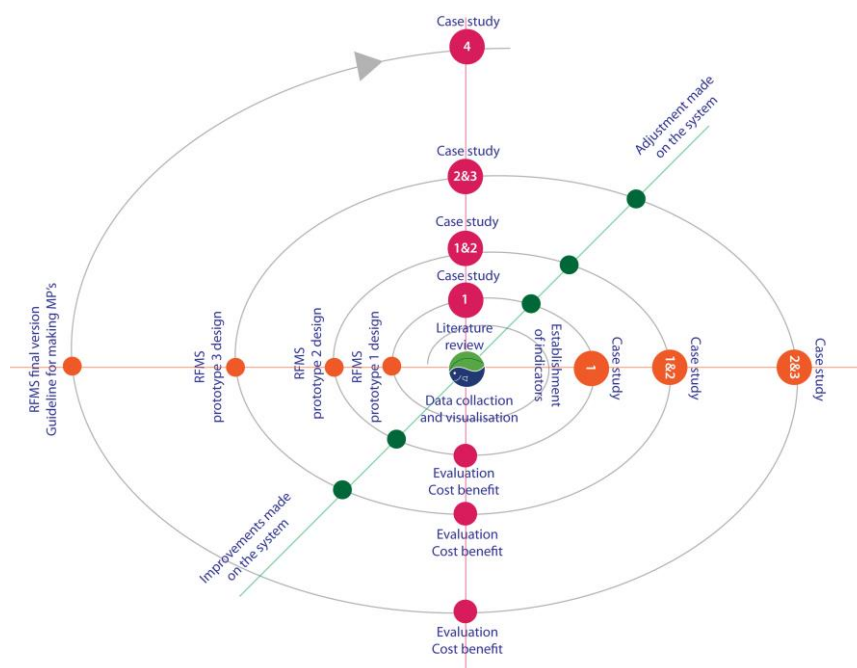


Figure 1: The spiral development model used for developing the RFMS.

This document highlights the strengths and weakness of the project outputs, assessing the stakeholders' insights into the management objectives, outcome targets and management strategies described in the MPs. In addition, their perceptions on the overall applicability of the RFMS are described in the following sections, according to each case study:

⁴ For further explanations on stakeholder interaction, please see Deliverable 7.1 7.2, 7.4, 5.4 or 5.5.

ICELANDIC

The overall objective of this task is to ensure adequate feedback from relevant stakeholders on the process, progress and results of the case study 1 (CS1). Considerable efforts were awarded to this in CS1 - the Icelandic mixed demersal fishery- throughout the whole project, as stakeholders were given numerous opportunities to effect the process. These efforts include for example lectures at the University of Iceland, presentations at 13 introduction meetings in fishing villages all over Iceland, presentations for specially invited stakeholder representatives, media coverage where feedback was requested from everyone that had interest in the project, introductions and questionnaires at national seafood exhibitions (www.icefish.is and www.sjavarutvegsradstefnan.is), the pre-invitation meeting and at the public hearing. All these have been reported on in previous deliverables of WP5 and WP7.

Even though all of this effort has been awarded to ensuring as extensive stakeholder involvement as possible during the project, the task reported on in this document is to get feedback on the overall process and results when the case studies have been concluded.

Case study 1 had two iterations in the EcoFishMan project i.e. RFMS prototype 1 tested on the Icelandic lumpfish fishery (see deliverable 5.2) and RFMS prototype 2 tested on the Icelandic mixed demersal fishery (see deliverable 5.3). After both of these runs, a number of stakeholders were asked to review the results and give feedback, but on both occasions, only the official operators (NASBO⁵) provided constructive feedback worth reporting on.

On August 24th 2012, Matís representatives met with Arthur Bogason the chairperson of NASBO and Örn Pálsson the managing director of NASBO to present and get feedback on the overall process and results of RFMS prototype 1 tested in the Icelandic lumpfish fishery. Both of the NASBO representatives had been actively involved throughout the whole process and therefore needed little introduction on the process and the Management Plan developed for the fishery. They had however not seen the simulated implementation (model results) before. They were very pleased with the results and felt that the process had been logical and easy to follow. The results from the simulation were also in line with what they had expected. They concluded that the RFMS could be applicable as a management method for the lumpfish fishery in real life.

Main feedback in regards to potential improvements when moving on to the next iteration was to suggest if the model could give the results in more graphic output, so the results would be more easily understood by the fishermen. Otherwise, there was little that NASBO could criticise or comment on. The minutes from the meeting can be seen in Appendix I.

On December 13th 2013 Matís representatives met again with the chairman and the managing director of NASBO to present and get feedback on the overall process and results of RFMS prototype 2 tested in the Icelandic mixed demersal fishery (hook and line fishery) and to present some additional work that had been done on the lumpfish case. Arthur Bogason had then recently been replaced by Halldór Ármannsson as the chairperson of NASBO. Halldór knew therefore little about the work previously done by NASBO in EcoFishMan, but Örn had been actively involved in the whole process for about two years. The whole process was reviewed by Jónas and Sigríður, including both the work done on the lumpfish fishery and on the mixed demersal fishery.

⁵ National Association of Small Boat Owners

Örn was well up to date on the work and was able to address issues as such, whilst Halldór came with a clean slate and was therefore able to give feedback as a fisherman learning about the RFMS for the first time.

Örn and Halldór commented that the Icelandic lumpfish fishery served well as a first pilot case, since it is a relatively simple fishery and the management of the fishery already has some elements of adaptive co-management i.e. NASBO has a strong influence on the management measures issued by the authorities. Matis and NASBO representatives agreed that the development of MP1 suffered slightly from being the first pilot case in EcoFishMan and regretted not to have had an opportunity to improve the MP in a second round. Another run (according to the spiral development model as presented in the DOW) would have given room for improvement on the simulation model for the fishery. They concurred that with a little bit more work the RFMS approach could be applied to the fishery in real life.

The main changes that the new MP developed in the project involved were a discard ban that was also imposed in reality in the fishery in 2012. The fish itself that previously had only been caught for its roes was now obligatory to land as well. The simulation results showed that the MP was viable and that all identified outcome targets (OTs) would be reached. When the MP and the model were now revisited over a year later the outcome still indicated that most of the OTs would hold, but it did however fail to incorporate market changes. The model had not foreseen that the market for roes would collapse in 2013, due to overflow in supply after the 2012 lumpfish season. The price for roes had fallen drastically from the initial RFMS implementation (simulation model runs) while profitable markets in Asia had been developed for the fish itself, thus increasing the importance of previously discarded catch. That is something the simulation model did not predict. Sigríður however commented that by expanding the model boundaries and simulating more extreme scenarios, the effects of changed market condition might be predictable.

Both Örn and Halldór were very positive towards the work carried out in the lumpfish case and felt that the RFMS approach could undoubtedly be used for managing the fishery. They showed interest in pursuing that further with the authorities.

When testing the RFMS prototype 2 in case study 1 the focus was placed on the entire Icelandic mixed demersal fishery. Attempts were made to get all operators involved, but without success. Again, it was NASBO that were prepared to explore the applicability of the RFMS approach and they committed to developing a MP for their members. NASBO represents about one thousand small coastal vessels that collectively catch around 17% of the demersal catches. Örn had been involved in the MP development, but Halldór had little knowledge about the process. The main change from current management system was in the distribution of quotas. MP proposed that 17% of the total allowable catch of the target species were to be allocated to the fleet segment, partly through permanent quota shares and partly through a quota bank where only vessels from the fleet segment could bid on quota, given that they met with requirements stated in the MP. The simulation results indicated that almost all OTs would be reached, given that all assumptions would hold.

Both Örn and Halldór felt that the results from simulating implementation of the MP were probable and they had no major comments on the approach. They however stressed that they felt that the RFMS approach would not be realistic in the fishery if only a small part of the operators were subjected to it. The MP developed in this case study only involves 17% of the total demersal catches, so efforts made by NASBO

representatives are unlikely to have major effects on stock size or ecological indicators for the Icelandic mixed demersal fishery as a whole. The minutes from the meeting can be seen in Annex 1.

Main results from both stakeholder assessments given by NASBO are that they are positive towards the methodology applied in the project and feel that the simulation results look probable. They are interested in applying RFMS in the lumpfish fishery, but feel that it is not a realistic approach for the demersal hook and line fishery.

PORTUGAL

The overall objective of this task is to ensure adequate feedback from relevant stakeholders on the process, progress and results of each case study. Considerable efforts were awarded to this in case study 2 (the Portuguese Crustacean Bottom trawl fishery) throughout the whole project, as stakeholders were given numerous opportunities to effect the process. These efforts include for example presentations and stakeholders dialogue at the University of Algarve, presentations for specially invited stakeholder representatives, questionnaires. All these have been reported on in previous deliverables of WP5 and WP7.

Even though all of this effort has been awarded to ensuring as extensive stakeholder involvement as possible during the project, the task reported on in this document is to get feedback on the overall process and results when the case studies have been concluded.

Case study 2 had three iterations in the EcoFishMan project. In the first iteration, MP1 was produced with little contribution from the stakeholders. Although MP1 was supposed to be developed according RFMS prototype 2, due to delay in the prototype delivery, prototype 1 was used instead. So, RFMS prototype 1 was tested on the first iteration of the Portuguese Crustacean fishery (see deliverable 5.3) and prototypes 3 and 4 were tested on the second and third iterations (see deliverables 5.4 and 5.5). After these runs, a number of stakeholders were asked to review the results and give feedback, and the two main Operators' Associations (ADAPI & Asociación Punta del Moral) provided constructive feedback worth reporting on.

On April 15th, EcoFishMan CS2 representatives (CCMAR, IPMA and CETMAR) met with Portuguese and Spanish operators and representative, at the University of Algarve, in Faro. The RFMS prototype was presented and discussed together with the Outcome Targets (OTs) and MP1 developed in the first iteration. From this interaction, the following conclusions were drawn:

- All the operators must follow the same rules. Note that, at present, Spanish operators fishing under bilateral agreement do not follow the same rules as the national operators.
- The closed season set for January each year must be kept.
- The operators were open to receive scientific observers onboard their vessels to improve the data collection for stock assessment. IPMA referred that the assessments were based only on Portuguese data due to unavailability of Spanish information. The Spanish association said that they could provide data on Spanish landings.

- IPMA presented the experimental results from previous projects aimed to reduce by-catch and minimize discards. The use of grids and different mesh configurations were presented and discussed as well as incentives to the introduction of these selective devices in the fishery.
- Other measures to increase the fishery profitability were proposed by the operators as e.g. the assignment of quotas by vessel and the creation of a common Portuguese and Spanish producers' organization to battle for better prices and transportation costs reduction.
- No comments were received in what concerns the social OTs.

On November 20th, EcoFishMan CS2 partners met again with the Portuguese and Spanish Operators' Associations, at IPMA, in Lisbon. The case study fishery had arrived to the final Management Plan (MP3) based on the RFMS prototype 4. The main conclusions from the meeting were included in the MP3, but some relevant discussions are summarized here:

- The ecological OTs for the Norway lobster and rose shrimp target species were discussed and referred by the stakeholders as being too conservative. The OT levels could be revised for the MP3 if the operators provide data from the fishery that support this revision.
- The remainder economic and social OT were seen as appropriate.
- Market based alternatives were discussed to further improve discard reduction and fleet profitability, including valorisation strategies for discarded species and a joint Producers' Organisation with all operators from this fishery (Portuguese and Spanish) to control distribution and species value in the auction market.
- As stressed in the April meeting, in the context of RFMS, the same rules must be applied for Portuguese and Spanish operators, including biological closure of the fishery, technical measures and fishing areas.

NORTH SEA

On September 9th 2013, Paul Fernandes and Alan Baudron met with fisheries managers at Marine Scotland in Victoria Quay, Edinburgh to discuss a draft of a management plan (MP) for a Responsive Fisheries Management System (RFMS) applied to the North Sea mixed demersal fishery. Present from Marine Scotland were Allan Gibb, Mike Palmer, Sasha McGuire and Louise Cunningham. The aim of the meeting was to get feedback on the feasibility of the MP and advice on the management strategies proposed. After introducing the EcoFishMan project, the simulation model for the North Sea case study was briefly presented before the MP was discussed point by point.

One of the concerns raised about the simulation model is that it is parameterised using diet data that is over 20 years old. The reliability of the model can be questioned in regards to potential changes in diet composition of the considered species. The model is also limited in mimicking the RFMS by the inability to simulate fishermen's behaviour.

While the ecological outcome targets (OTs) did not raise concern, the economic and social ones were criticised. It was emphasised that the economic OTs should aim at achieving sustainable economic growth for Scottish fisheries, in accordance with the Scottish government economic strategy. Coherence is needed between social and economic OTs so that reaching social OTs will result from reaching economic ones. For instance, aiming towards a productive fishery with fewer vessels catching more fish might result in fewer jobs than a fishery not as productive but employing more people. A large part of jobs in fishery come from the processing of fish. However, the OT stating that 15% of vessels catches should be landed locally is unrealistic as local processors in Scotland sometimes do not exist. It may be possible to encourage local landings when applicable. Following the horse meat scandal, people now want food which is sourced locally without a long chain of processing for the sake of transparency. Nowadays, the amount of fish landed into Scotland is about 50%, with 50% of those done in Peterhead and Aberdeen, but it is unsure whether or not it is processed locally. The OT stating that the number of jobs should not decrease by more than 5% per year is not appropriate since it is currently decreasing by 2% per year. Finally, the OT about limiting the variability in landings will always depend in the variability in Total Allowable Catch (TAC): the 2 years lag between stock assessment and decision on TAC is the real issue here.

The proposed management strategy about the requisition of the quotas attributed to slipper skippers (non-active skippers who sell their quotas to the highest bidder) was strongly criticised. First of all, slipper skippers are estimated to constitute only 6% of all skippers. Secondly, identifying slipper skippers will prove difficult as a lot of them are actually active skippers with too much quota. Thirdly, slipper skippers could easily register themselves as active skippers in order to by-pass the regulation. Finally, such management strategy would only re-distribute quotas already existing instead of providing additional quota, thus limiting the incentive for skippers to join the MP.

The proposition of spreading the use of quotas uniformly across the whole year in order to monitor compliance with the OTs was regarded as not feasible due to the seasonality of the species involved, such as high catches of cod in winter and hake in summer for instance. Instead, it was proposed that skippers should agree on a fishing plan with the operator at the start of the year. Such plans would allow managing catches in accordance with available quotas while foreseeing difficulties such as potential discards and/or bycatches. It was thus suggested that Producers Organisations (POs) should act as operator instead of the Scottish White Fish Producers Association (SWFPA) as they are already managing quotas for skippers in need. In case of non-compliance, sanctions need to be appropriate and efficient. For instance, reducing the quota of a vessel struggling to reduce discards might worsen the situation rather than solving it.

The statement that the profit made by the operator when selling extra quota in the MP could be employed to help skippers in need equip their vessel with Remote Electronic Monitoring (REM) to meet the MP requirement was well received as it helps moving away from subsidies. There are currently 24 TR1 vessels equipped with REM. The limit on purchase of additional quota to 5% of the total quota available by vessel by purchase also got positive views as it avoids speculation from skippers buying quota to resell. In addition, it was suggested that the operator should put a price cap of quotas below market price for skippers in the MP.

In conclusion, while being freed from days at sea restrictions is an incentive it was highlighted that regulations on access and planning are still needed. Shifting the burden of proof onto skippers is a major step towards stakeholders involvement and self-management. It was suggested that the MP could be

developed for the whole demersal mixed fishery at the scale of the North Sea region, then adapted specifically at the scale of operators, then fleets, metiers, etc.

On September 19th 2013, Paul Fernandes and Alan Baudron met with invited Stakeholders to discuss a draft of a management plan (MP) for a Responsive Fisheries Management System (RFMS) applied to the North Sea mixed demersal fishery. Present were Mike Park from the Scottish White Fish Producers' Association (SWFPA) and Robert Stevenson from the North East of Scotland Fishermen's Organisation (NESFO). The aim of the meeting was to get feedback on the feasibility of the MP and advice on the management strategies proposed. After introducing the EcoFishMan project, the simulation model for the North Sea case study was briefly presented before the MP was discussed point by point.

The first impression from both stakeholders was that most of the elements proposed in the MP are already in place, thus suggesting an easy implementation. However, concern was raised about the incentive of the MP, and both stakeholders felt like the MP should be compulsory otherwise fishermen will not take part in it.

A suggestion to create incentive was that the MP should first be applied to a trial with a small number of vessels in order to demonstrate vessels within the MP are achieving higher profits than outside the MP. This would then attract other fishermen to join in. It was estimated that a 20% uplift for fishermen within the MP is needed in order to attract outsiders.

The importance of establishing self-regulation rules for the industry in the MP was highlighted as there is a risk that, once in a RFMS and freed from strict regulations, fishermen might start overfishing, leading to an increase in fishing mortality.

According to Mike Park, the social engineering part of the MP designed to maximise the number of jobs will not work. In order to maximise the socio-economic benefits of the MP, he suggested a vertical integration, where there is a profit to be made at each step of the ladder: vessels, fishermen's cooperatives, processing, etc.

The outcome target stating 0% of discards and bycatches was considered unrealistic by both stakeholders. Instead, they suggested that the lowest possible level of discards and bycatches should be targeted as it is inevitable that both discards and bycatches will always occur.

Both stakeholders suggested that the formal rights of quotas, which are determined at the start of the year, should remain stable over a certain period of time (10 years for instance) within the MP in order to provide stability.

The attribution of extra quota within the year was criticised. Skippers profile their catches in order to maximise their economic yield according to the temporal differences in species' abundance, such as targeting cod in winter and hake in summer for instance. If extra quotas are to be distributed during the year, and skippers do not know how much extra quota they will get nor when they will get it, then how can skippers plan their catches for the fishing year? Quotas should all be attributed at the start of the year

for skippers to plan their catches accordingly in order to account for the seasonality of the different species targeted and minimise discards.

In conclusion, the MP was well received by both stakeholders since:

- they found most of the proposed management strategies sensible
- most of the measures proposed in the MP are already in place and easily enforceable
- Such MP, by applying a RFMS to the fishery, will facilitate the implementation of the future discards ban

MEDITERRANEAN

The involvement of relevant stakeholders for Case study 4 has been pursued throughout the whole project. As Case study 4 addresses the demersal fishery in GSA17 (Northern and Central Adriatic Sea), it has involved stakeholders from both the Italian and the Croatian side. A first meeting with stakeholders was held in Ancona, on 21st March 2013 (the agenda and the report are reported in Annex 1). Different stakeholders representing Italian fishery sector attended the meeting: fisheries association, NGOs, fishermen, fish market and fishing industry representatives, scientist from FAO and IREPA and a member of the Croatian parliament. The first goal of this meeting was to explain the main RFMS concepts and ideas to the relevant stakeholders. The second step was intended to frame the Case Study 4 by showing stock assessment data and general status of Mediterranean fisheries. The meeting gave the opportunity to the stakeholders to debate about the current management system, favours and limitations in the Mediterranean area, focusing on GSA17.

Taking into account that a MP for Case study 4 was not already developed at the time of the meeting, stakeholders in the Ancona meeting presented and discussed fisheries that have different levels of self-management and that may resemble RFMS in some aspects. It emerged that the Pelagic Management Plan (a proposal was presented to the Italian ministry but it is not yet implemented) can be considered a “benchmark” for the development of a new management systems in the area. It was described as an example of stakeholders’ involvement, accountability and burden of proof. However, it was highlighted that the Pelagic Management Plan has a weak point if assessed against the RFMS principles. Indeed, the Pelagic Plan system includes a Commission/Committee to follow-up on the implementation of the MP, playing the role of the auditor in RFMS terms. This auditor is a joint group of representatives from the authority and the operators. Although this institutional arrangement guarantees feedback and reinforces the legitimacy of the system, it was highlighted that the auditor not only lacks independence but is dominated by conflict of interest and imbalanced power relations that jeopardize its assessment capabilities. This conflict has been, somehow, solved by the RFMS prototype 3 (replaced by the most recent prototype 4) that ensures certain level of independence for the auditor. Indeed, the current definition for the auditor states: “However, a relevant non-independent agency [...] can be used as auditor provided it is trusted by both parties”. In this sense it allows permissiveness based on trust for both operators and authority. Therefore, the Italian agency that follows the implementation could be permitted by the RFMS because fishermen and the Government always trust in themselves.

It should be highlighted that Case study 4 is by far the most complicated ones of the Ecofishman project as it involves a fishery that is not managed under a TAC quota and is affected by a large number of nations, some of which became EU members only in the most recent months. For this reasons Case study 4 has not

been run in an iterative process as the other three case studies. As already written in the proposal, it represents, for the EcoFishMan project, an overall simulation of the effect of the RFMS and an acceptance test of the associated management tools. To facilitate this, a simulation workshop has been arranged in Italy in December 2013. The aim of this workshop has been to verify that the final version of the RFMS (Prototype 4) can be adapted to all the fisheries. Case study 4 (Adriatic demersal mixed fisheries) is perfectly suited for this type of simulation as the fisheries management is in some way complicated, and there are several conflicting interests and stakeholders to take into consideration when defining and implementing a new MP.

In the December meeting the EcoFishMan RFMS system has been presented to Case study 4 relevant stakeholders and the tools have been applied in a real-life scenario by mean of a role play, considered one of the most effective tool to ensure a creative and structured ways of linking scientists and stakeholders opinions. The role play approach has previously been successfully employed in multi-stakeholder natural resource managements.

Italian stakeholders and a Croatian representative have been involved in the role play, held in Rome, at the CNR premises, on 12nd December (the agenda is reported in Annex 3, for information related to the report of the meeting see the D5.6), in order to identify how fishers and managers from the area (Mediterranean) would act under the new regime. To be effective the role play has been designed in a way to have sufficient details to challenge and engage the stakeholders, to contain an underlying conflict and in a way that could strongly appeal the actors.

The Rome role play has provided the opportunity for EcoFishMan to gain new knowledge and appreciate different points of view and perspectives. Through the role play method, EcoFishMan has proposed the opportunity to evaluate the fishers, managers and other stakeholders' reactions and responses on the new RFMS using a different point of view and come up with a final evaluation on the applicability of the RFMS in one of the most complicated areas in EU fisheries.

By a preliminary evaluation of the role play, it resulted that all the participants showed great interest in this new approach, actively participating and enjoying in the game. They were also happy to play the role they were assigned even if some of them also highlighted that it's not always easy to immerse themselves in a role far from their skills and knowledge, but the experience was constructive and interesting. It was suggested that an added value to the results of the game could be to play again the game with participants assuming their real role and check the differences. Some of them found that the role play it's not properly a "game" but a good tool allowing, with appropriate timing and actors, to put on the table real and serious problems, with a more constructive perspective.

CONCLUSIONS

Stakeholder interaction has been a strategic approach for the EcoFishMan project. Active and continuous participation from plural stakeholders at multiple level has generated input that enriched project deliverables and feed the RFMS prototypes (for a detailed overview of each and all the case studies, the reader is referred to deliverables from WP5, especially 5.3 and 5.5.).

This report summarizes the final assessment of the case studies by stakeholders, which will support the elaboration of the roadmap for the implementation of the RFMS in European fisheries.

ICELAND

According to the spiral process for developing the RFMS, the Icelandic case study should be the easiest case. Nevertheless, several challenges have been identified:

- The implication of the stakeholders was limited at the very beginning of the project and further developments were not followed by a broader audience. The need for realistic situations in the implementation of the RFMS demands, as in the other case studies, a wide participation of the fishing sector involved in the target fishery.
- Regarding the discard ban, implemented by 2012, was an innovative outcome target in the EcoFishMan CS1 management plan. Besides, it has been useful for the nowadays-approved CFP, which includes the landing obligation in the European water by 2015.
- Incorporation of market changes into the scenarios modelling due to unexpected oversupply as in 2013.
- The simulation of the MP facilitates the follow-up of the MP and the evaluations of the expected outcomes.

PORTUGAL

This case constitutes the first multinational scenario for testing the RFMS, therefore, adding complexity in the spiral process. The main lessons learned are as follow:

- RFMS requires the same rules (technical measures, fishing areas...) applied to all participants in order to avoid lack of trust and collaboration among operators. This includes the harvesting rules of the management plan, but also those activities regulated by member states like weekly rest. Fair play is a critical issue in fisheries management, as well as for the RFMS.
- There is a window of opportunity through an international Producer Organization for further collaborations:
 - o Sharing efforts in market-based alternatives
 - o Obtaining updated information for research activities

- The current management system within the bilateral agreement will be highly improved by the implementation of RFMS, particularly in terms of the bargaining process.
- Scientific institutions should be ready to abandon their comfort area and assume their new role under RFMS.

NORTH SEA

This case study embraces associations and organisations that are already working on participative management initiatives. In addition, it combines a wide geographical area with a great number of skippers involved. The conclusions of the stakeholders' advice are described as follow:

- The use of current management strategies and technical measures should facilitate the implementation of the RFMS.
- They propose new economic incentives to apply the RFMS. In particular, they mentioned to set price cap for the fishing quotas below market prices to involve skippers. In this sense, and if there are small number of participants in the RFMS, they consider a 20% of economic profitability as the minimum to motivate/stimulate the entrance of newcomers into the management plan.
- They express the concerns regarding the speculation of the fishing quotas; therefore, they request measures and strategies that not enhance these practices.
- The Producer Organizations (POs) were proposed as the best agencies for acting as operators because they can manage the catches in accordance with available quotas, increasing also the efficiency in management, control and enforcement. However, the Producer Association (e.g. Scottish White Fish Producers Association (SWFPA)) represents the interest of more skippers and POs, enabling the implementation in terms of flexibility and cost-effectiveness.
- There is a need of processes that guarantee realistic outcome targets and management strategies avoiding unrealistic situations, e.g. enough local processors for the 15% of Scottish landings or the maintenance of the jobs in sector with a clear decrease trend.
- Suggestions focused on the efficiency were also explored during the stakeholder meetings. Particularly, they express some concerns in relation to the planning period for the extra quota as well as the two years lag between stock assessment and its applicability.
- The ecosystem modelling was well received but they request to update some diet data.

MEDITERRANEAN

The Mediterranean setting represents a highly complex environment with specificities that create real puzzles for the RFMS.

- The current institutional setting allows for the development of management plans; in fact, the Mediterranean is the only CS where an alike RFMS system has been proposed for other fisheries. A


comparative analysis guided the debate on differences and similarities with the EcoFishMan proposal, focused on the assessment and audit phases of the management plan.

- Particularly, stakeholders confirmed the suitability of use current management strategies but also technical measures to enhance and facilitate the implementation of the RFMS.
- The availability of simulation tools for the CS would allow stakeholders to have a better picture of the interaction among OTs, as well as the feasibility of the MP to achieve them.


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Annex 1 – Minutes of the Icelandic meetings


Project: EcoFishMan	 EcoFishMan			Page 17
Meeting no.	Date	Place	Time	Authors
	24.08.2012	Hverfisgötu 105 Reykjavik	9:00 – 10:00 IS	JRV/SS
Participants:	<ul style="list-style-type: none"> • Jónas R. Viðarsson (Matís) • Sigríður Sigurðardóttir (Matís) • Arthur Bogason (Chairman of NASBO) • Örn Pálsson (Managing director of NASBO) 			
Agenda:	<ol style="list-style-type: none"> 1. Introduction on the EcoFishMan project 2. An introduction on the RFMS approach 3. A showcase of how the RFMS approach was adapted to the Icelandic lumpfish fishery. 4. Simulation results presented. 5. Other businesses 			
Regarding	Minutes			Action
1-3	<p>Jonas and Sigríður presented the project in general, the RFMS methodology and approach; and how it was applied and tested on the Icelandic lumpfish fishery</p> <p>Arthur and Örn had been actively involved in the development of the MP from the beginning and were therefore well aware of these background information.</p>			
4.	<p>Sigríður showed how the simulation model works and presented the results from the simulated implementation.</p> <p>The results were in accordance with what Arthur and Örn had expected.</p> <p>They were pleased with the results and thought that the RFMS approach could be successfully applied to the fishery in real life.</p> <p>They pointed out that it would be good to have the model results presented in a more graphic outlook, whether that would be a part of the model itself or just how the results are presented to fishermen.</p>			
5.	No other businesses			


END of Minutes

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Meeting no.	Date	Place	Time	Authors
	13.12.2013	Vínlandsleið 12 Reykjavík	10:00 – 12:00 IS	JRV/SS
Participants:	<ul style="list-style-type: none"> • Halldór Ármannsson (Chairman of NASBO) • Örn Pálsson (Managing director of NASBO) • Jónas R. Viðarsson (Mátís) • Sigríður Sigurðardóttir (Mátís) • Arnljótur Bjarki Bergsson (Mátís) 			
Agenda:	<ol style="list-style-type: none"> 1. A brief introduction on EcoFishMan 2. An introduction on the RFMS approach 3. A showcase of how the RFMS approach was adapted to the Icelandic lumpfish fishery and the demersal hook and line fishery. 4. Simulation results presented. 5. Other businesses 			
Regarding	Minutes	Action		
1-2	<p>The overall aim of the meeting was to present results from simulation of management plan 1 (MP1) for case study 1, and to get their feedback on both the results and the overall process of developing an RMFS and the MPs.</p> <p>After familiarizing attendees with both the EcoFishMan project as a whole and with the RFMS approach applied when developing the MPs. Örn Pálsson, was very much involved in the project during the MP development, but Halldór Ármannsson is a new chairman of NASBO and was learning about the EcoFishMan project for the first time at the meeting. They therefore gave different feedback based on their involvement in the project.</p> <p>Both were positive towards the project and the RFMS approach and thought that NASBOs involvement had been of value to the association.</p>			
3.	<p>Jonas and Sigríður showed how the RFMS had been applied in both the Icelandic lumpfish fishery and the demersal fishery (hook and line).</p> <p>The Icelandic lumpfish fishery served well as a pilot case since it is a relatively simple fishery and the management of the fishery already has some elements of RFMS, as NASBO has a strong influence on the management. The development of MP1 suffered slightly from being the pilot case and not getting a second round in the project development spiral, and there is great room for improvement on the simulation model for the fishery. The main changes that the new MP involved were a discard ban that was also imposed in reality in the fishery. The fish itself that during the years was only caught for its roes was no obligatory to land as well. The simulation results showed that the MP was viable and all outcome targets (OTs) would be reached and while that still is likely to hold, the market for roes collapsed in the following year. Now the</p>			

	<p>price for roes has fallen drastically while profitable markets in Asia have developed for the fish itself. That is something the simulation model, did not predict but by expanding the model boundaries and simulating more extreme scenarios the effects of changed market condition might be predictable.</p> <p>The second fishery within CS1 was the share of hook and line boats under 15 m in the demersal fishery. The change from current management system lies in the distribution of quotas. MP1 proposes that 17% of the total allowable catch of the target species are to be allocated to the fleet segment, partly through permanent quota shares and partly through a quota bank where only vessels from the fleet segment can bid on quota. In reality this would not involve a significant change for most of the operating vessels, as they already get the same amount of quota as proposed in MP1. However, part of that quota goes through a framework for coastal fisheries which are Olympic fisheries that are open during the summer, another part gets allocated due to longline quota discount and finally quotas allocated to vessels in small towns that have suffered quota loss. MP1 proposes to eliminate these three channels of quota allocation. Simulation results indicate that almost all OTs are reached however given that the MP only accounts for 17% of the total catches, it is clear that the operators agreeing on the MP can only influence a small proportion of the stocks at stake.</p>	
<p>4.</p>	<p>Sigríður showed how the simulation model works and presented the results from the simulated implementation.</p> <p>Örn and Halldór felt that the results from simulating MP1 were probable and they had no major comments on the approach. They however stressed that they felt that the RFMS approach would not be realistic in the fishery, especially since only a small part of the fleet harvesting the target stocks were involved in the MP.</p> <p>They pointed out that in order to be a realistic alternative an overwhelming majority of the operators would have to be subjected to the MP.</p>	
<p>5.</p>	<p>NASBO was positive towards the methodology applied in the project and felt that the simulation results looked probable. They are interested in applying the RFMS real life in the lumpfish fishery, but feel that it is not a realistic approach for the demersal hook and line fishery.</p>	

Annex 2 – Minutes of the Portuguese meetings

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Meeting no.	Date	Place	Time	Authors
	15.04.2013	UAlg, Faro	9:00 – 13:00 IS	KE/MR
Participants:	<ul style="list-style-type: none"> – Karim Erzini (CCMAR); – Mafalda Rangel (CCMAR); – Carlos Pombo (CCMAR); – Jairo Altamar Lopez (CCMAR); – Cristina Silva (IPMA); – Aida Campos (IPMA); – Hugo Mendes (IPMA); – Marta Ballesteros (CETMAR); – Jose Luis Santiago (CETMAR); – Valter Duarte (ADAPI); – Joaquim Faleiro (ADAPI associate); – José Maria Gonçalves, shipowner (ADAPI associate); – Albino Monteiro, shipowner (ADAPI associate); – Júlio Pereira, shipowner (ADAPI associate); – Eng.º Luís Martins, shipowner (ADAPI associate); – Alberto Gonçalves, retired skipper (ADAPI associate); – João Inácio, retired skipper and shipowner (ADAPI associate); – José Inácio, retired skipper and shipowner (ADAPI associate); – Hernani Torcato, shipowner (ADAPI associate); – Mário Torcato, skipper (ADAPI associate); – Nico (ADAPI associate); – 3 representatives of Spanish Producers' associations 			
Agenda:	<ul style="list-style-type: none"> – EcoFishMan Project Introduction – By-catch and discards reduction in Crustacean trawlers – MP1 description – Discussion – Stakeholders Interaction: “MP outcome targets and objectives” – Summary and conclusions. 			

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Meeting no.	Date	Place	Time	Authors
	20.11.2013	IPMA, Lisboa	14:30 – 17:00	MFB/HM
Participants:	<ul style="list-style-type: none"> ○ Fátima Borges (IPMA) ○ Aida Campos (IPMA) ○ Hugo Mendes (IPMA) ○ Irineu Batista (IPMA) ○ Laura Wise (IPMA) ○ Mafalda Rangel (CCMAR) ○ Marta Ballesteros (CETMAR) ○ Alonso Lozano (Ass. Armadores de Punta del Moral) ○ Valter Duarte (ADAPI) 			
Agenda:	<p>14:30- Welcome and EcoFishMan context – Maria de Fatima Borges (IPMA)</p> <p>14:35- Introduction of participants - name and institution</p> <p>14:40- Objective of 2nd project consultations on MP3 – Marta Ballesteros (CETMAR)</p> <p>14:45- Overview of Management Plan 3 Outcome Targets (OTs) – Hugo Mendes (IPMA)</p> <p>15:00- Coffee-break</p> <p>15:15- Scenarios and simulations for the OTs – Laura Wise (IPMA)</p> <p>15:20- Debate – (20 minutes)</p> <p>15:45- New issues: market-based alternatives (CETMAR)</p> <p>15:55- Discussion: strategies to achieve OTs and final comments</p> <p>17:00- Closure</p>			

Annex 3 – Minutes of the Mediterranean meetings

a) Ancona stakeholder meeting, 21st March 2013

VENUE: Auditorium Mantovani, Largo fieria della pesca, 2 - Ancona (Italy). Agenda:

Hour	Description
10:00-10:15	Welcome (CNR-ISMAR. Antonello Sala) & Opening Speech: The EcoFishMan project (MATIS. Anna Danielsdottir)
10:15-10:30	Introduction by participants (Stakeholders and project partners)
10:30-10:35	Goals and tools (CNR-ISMAR. Antonello Sala)
THE RESPONSIVE FISHERIES MANAGEMENT SYSTEM	
10:35-11:00	Introduction to Result-based Management Systems (UiT. Michaela Aschan) <ul style="list-style-type: none"> - Concept and remarks - Prototypes I and II - Management Plan
11:00-11:15	Debate. Antonello Sala
11:15-11:30	Group Work (I). Identifying who's Group Work (CETMAR. Rosa Chapela)
11:30-11:45	Coffee break
11:45-12:00	Evaluation and cost-benefit analysis (SYNTESA. Olavur Gregersen)
THE ADRIATIC CASE STUDY	
12:00-12:30	Status of Mediterranean resources (CNR-ISMAR. Antonello Sala)
12:30-12:45	Overview of the Croatian demersal fisheries. (UNIST. Jure Brcić)
12:45-13:15	Group Work. Interaction Dynamic (II): state of the art in the fishery, boundaries and opportunities. (CETMAR. Rosa Chapela)
13:15-13:20	Main remarks and framework for the afternoon session (CNR-ISMAR. Antonello Sala)
13:20-15:15	Lunch Restaurant - Il Lazzaretto (lunch buffet)
15:15-16:00	Group Work. Interaction Dynamics (III): identifying desirable objectives and outcome targets for the Adriatic (CETMAR. Rosa Chapela)
16:00-16:15	Debate (CNR-ISMAR. Antonello Sala)
16:15-16:30	Next steps in the Management Plan (CNR-ISMAR. Antonello Sala)
16:30-16:45	Coffee break

Hour	Description
16:45-17:30	Interaction Dynamics (IV). Discussion rounds filling the gaps. CETMAR: <ul style="list-style-type: none"> - Components of the prototype II - Potential, obstacles and limits of the RFMS - The multinational context (Italy – Croatia)
17:30-17:45	Dissemination and next steps in the Adriatic Case-Study (CNR-ISMAR. Antonello Sala) – Introduction to the Role Play.
17:45-18:00	Closing. (MATIS. Anna Danielsdottir)

b) Rome “Role-play”, 12nd December 2013. Agenda:

Hour	Description
10:00-10:10	Welcome (CNR-ISMAR) & Opening Speech: The EcoFishMan project (University of Tromso)
10:10-10:30	Presentation of the game (University of Tromso)
ROLE GAME	
10:30-12:00	Role Game (Part 1)
12:00-12:15	Coffee break
12:15-13:00	Role Game (Part 2)
13:00-13:30	Game debrief (University of Tromso)
13:30-14:00	What if I had my own role?
14:00	Lunch