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¹ Document will be a draft until it was approved by the coordinator

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)

³ The initials of the revising individual in capital letters

Deliverable D6.6

Visualisation materials and tools available for MR2 development

28/05/2020



Executive Summary

Development of visualisation materials and other visualisation tools that allow stakeholders to easily understand otherwise complicate data on e.g. biological, ecological, economic, social and political issues relevant for the six FarFish case studies is an important component of the FarFish project. These visualisation materials and tools have the purpose of assisting stakeholders within the case studies when developing Management Recommendations (MRs), by showing in a simple manner historic data and forecasts. The forecasts are in particular intended to provide stakeholders with most likely scenarios or effects of MR implementation (what if? scenarios). The visualisation materials and other visualisation tools do also have an important purpose for overall aim of the FarFish project, when it comes to advancing knowledge on fisheries in the case studies, both for internal use within the project and for stakeholders outside of the project.

The FarFish project is run in an iterative process, which amongst other things means that MRs will be developed, tested/validated and audited/valuated twice during the lifetime of the project. The second MRs (MR2) are to be developed and audited in the second half of the project. The visualisation materials and other visualisation tools are also expected to go through similar iterative process, where first and second versions are intended to assist stakeholders with developing MR1 and MR2. This deliverable reports on the progress and current status of the visualisation materials and visualisation tools that have been, or are intended to be, made available within the FarFish project to support MR2 development. In this deliverable we list visualisation materials that are available within the FarFish project.

Table of contents

1	INTRODUCTION	6
2	VISUALISATION MATERIALS	7
3	VISUALISATION TOOLS	11
4	WORKPLAN FOR DEVELOPMENT OF VISUALISATION MATERIALS AND TOOLS	12
5	CONCLUSIONS AND DISCUSSIONS	13



Abbreviations & concepts/definitions

CFP	Common Fisheries Policy
FFDB	The FarFish Data Base
GIS	Geographic Information Systems
MMSI	Maritime Mobile Service Identity
MR	Management Recommendations
MSY	Maximum Sustainable Yield
RFMO	Regional Fisheries Management Organisations
SFPA	Sustainable Fisheries Partnership Agreements
VMEs	Vulnerable Marine Ecosystems

1 Introduction

FarFish aims to provide knowledge, tools and methods to support responsible, sustainable and profitable EU fisheries outside European waters, compatible with MSY. To achieve this, FarFish will develop practical, achievable and cost-effective fisheries management tools and advice which can be applied immediately. The work is to be done in collaboration of scientists, policy makers, resource users and other stakeholders aimed to improve fisheries management competences. FarFish aims at providing a better knowledge base of these fisheries and encourage resource users to actively take part in the management, thus empowering them, generating a sense of ownership and enhancing compliance.

FarFish focuses on six selected case studies, all of which contain fisheries that are important for the fishing fleets of multiple EU countries or respond to the priorities of Regional Fisheries Management Organisations (RFMOs) and the Common Fisheries Policy (CFP). In order to increase variability and applicability of the project results, FarFish focuses on two different types of case studies i.e. high-seas fisheries in the southwest Atlantic (FAO area 41) and southeast Atlantic (FAO area 47); and the fisheries under Sustainable Fisheries Partnership Agreements (SFPAs) in Cape Verde, Senegal, Mauritania and Seychelles (see Figure 1).



Figure 1: The six FarFish case studies

Development of visualisation materials and other visualisation tools that allow stakeholders to easily understand otherwise complicate data on e.g. biological, ecological, economic, social and political issues relevant for the six FarFish case studies is an important component of the FarFish project. These visualisation materials and tools have the purpose of assisting stakeholders within the case studies when developing Management Recommendations (MRs), by sowing in a simple manner historic data and forecasts. The forecasts are in particular intended to provide stakeholders with most likely scenarios or effects of MR implementation (what if? scenarios). The visualisation materials and other visualisation tools do also have an important purpose for overall aim of the FarFish project, when it comes to advancing knowledge on fisheries in the case studies, both for internal use within the project and for stakeholders outside of the project.

2 Visualisation materials

In order to encourage interest and willingness to commit to a positive change, tools for dissemination need to be easy to engaging and easy to understand. It is said that a picture is worth a thousand words so images, static maps and charts, as well as simple geographic information system (**GIS**) can be extremely valuable within the context of the FarFish project.

The project has gathered data on current status of fisheries in the case studies areas, such as data from DG MARE that contain data on the fishing efforts of EU vessels in the case study areas from 2014 to 2018. FarFish has produced maps from this dataset, showing EU fisheries in the CS areas. Example of this is shown in Figure 2.

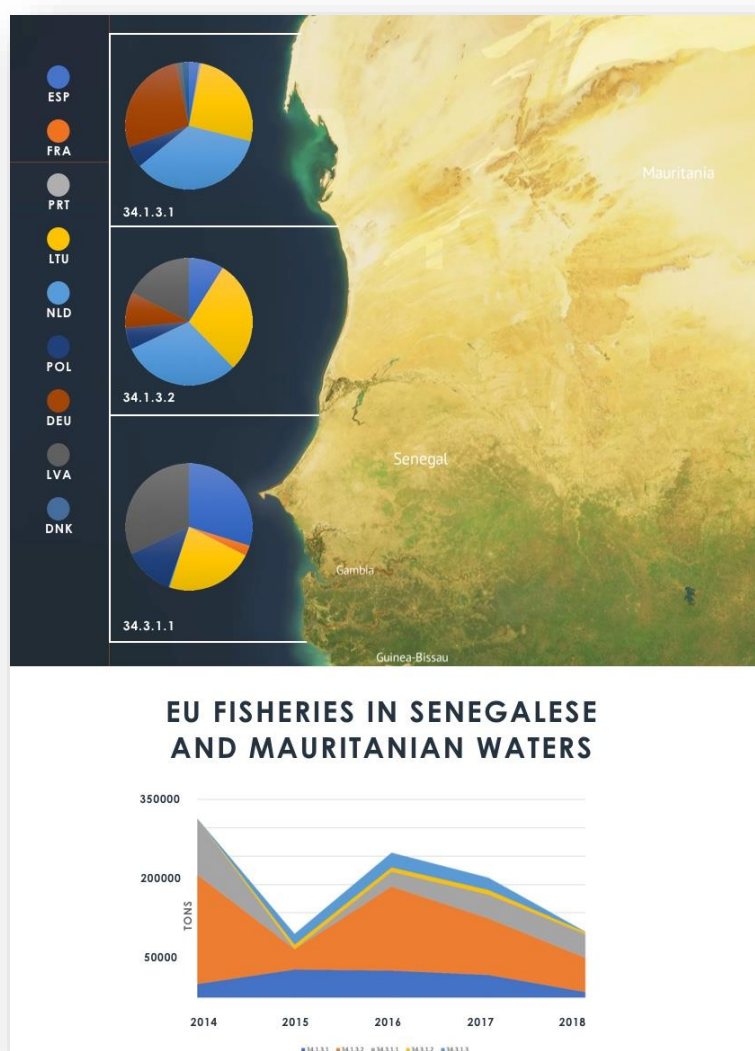


Figure 2: Map showing EU fisheries in FAO Major Fishing Area 37.

A map on Vulnerable Marine Ecosystem (VMEs) within the southwest Atlantic (FAO area 41) case study has been produced. This map is believed to be important to contribute to increased understanding of management measures in place for vessels operating in that area. The aim of FarFish is to contribute to encouraging other fleets (non-EU) to make use of this information for developing their own regulations on protection of VMEs from bottom fishing in the high seas.

The FarFish project has developed a map showing VMEs in the SW Atlantic using data from *Estudio de los ecosistemas marinos vulnerables en aguas internacionales del Atlántico sudoccidental Espanol de Oceanografía* published by Instituto Espanol de Oceanografía, Figure 3.



Figure 3: Map showing vulnerable marine ecosystems (VMEs) in the SW Atlantic.

FarFish has also created infographic visuals with the aim of explaining key concepts of the project, such as the SFPAs for the different case studies, see example in Figure 4. These infographics are designed to sum up complex information in a simple visual format to be displayed on internet platforms, such as the project website and social media channels



Figure 4: Infographs explaining the SFPA in Cape Verde and in Seychelles.

FarFish published an animated infographic early on in the project, which explains in a visual manner what the project is all about. This animated infographic has proven to be extremely important tool for explaining the project to variety of stakeholders. The video is available [here](#).⁴

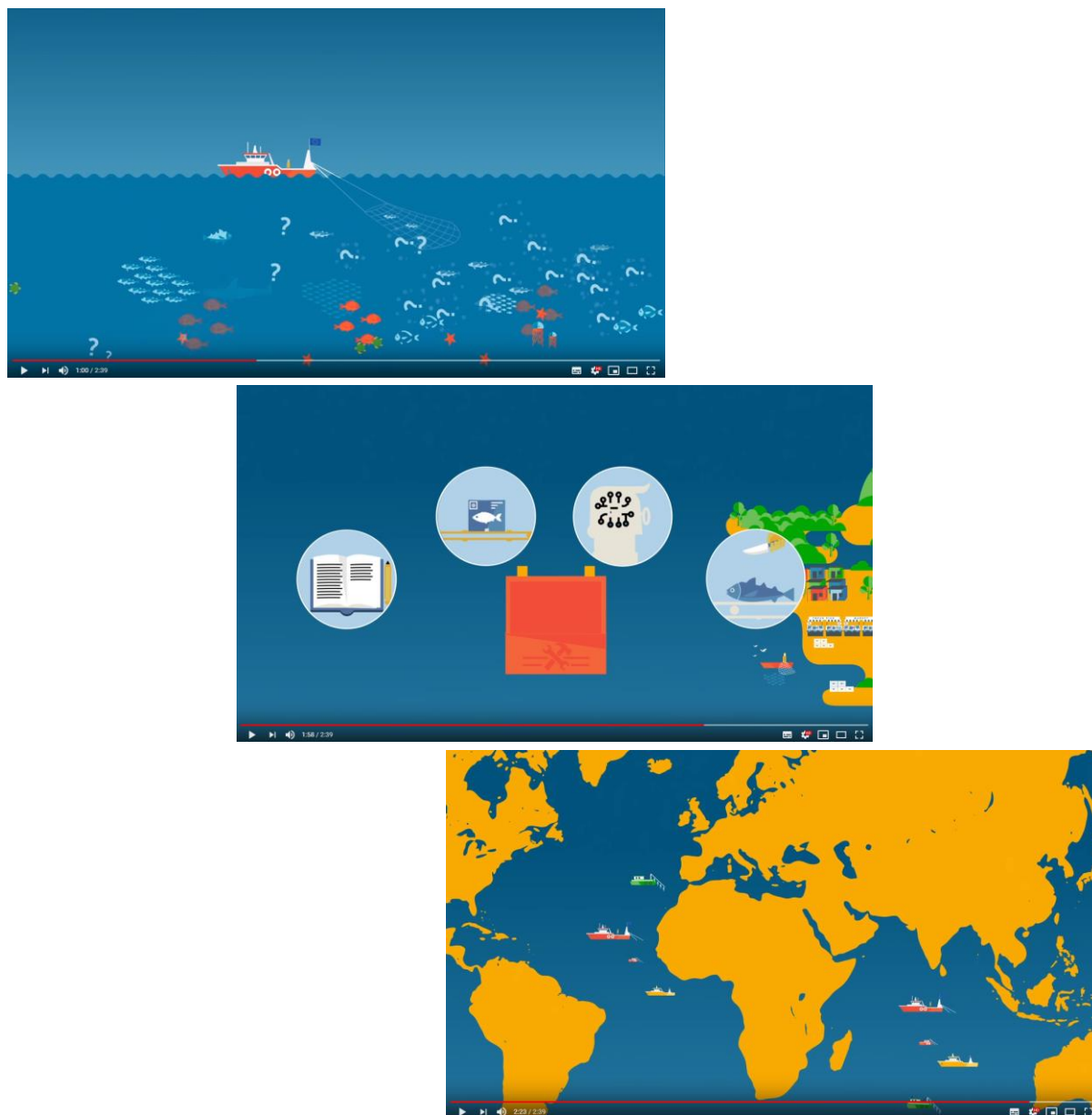


Figure 5: Screenshots of an animated infographic published by FarFish

A second animated infographic will be published at the end of the project, summarizing the project, the main results and findings.

⁴ https://www.youtube.com/watch?time_continue=1&v=ujFOK69X3aw&feature=emb_logo

3 Visualisation tools

FarFish has developed a visualisation tool that is in the form of a map, where the user can move his mouse pointer to any point that indicates a vessel and information relevant for the selected vessel(s) will then be displayed i.e. fishing hours, flag, gear type, length, tonnage, engine power and MMSI. This tool is still under development and can be found at <https://visual.farfish.eu/>



Figure 6: Examples of layered maps (heat map and fishing hours) that have been created for visualisation (screenshots from www.visual.farfish.eu).

4 Workplan for development of visualisation materials and tools

Work on developing visualisation materials and visualisation tools is intended to be ongoing all through the FarFish project. This work is however only intended to be reported on in two specific reports i.e. D6.3 “Visualisation materials and tools available for MR1 development” that was published in June 2018; and this report, D6.6 “Visualisation materials and tools available for MR2 development”. A draft workplan has therefore been made that is to guarantee that the tasks progresses as planned and that visualisation materials and tools continue to be produced within the project. Table 1 shows a timeline for most relevant remaining dates for the development of visualisation materials within FarFish.

Table 1: Workplan for development of visualisation materials and tools

April 2020	- Infographs explaining different SFPA's to support D4.4
July 2020	- Visualisation for each CS (maps and other visualisation tools) with D4.4.
April 2021	- Maps and other visualisation tolls to support D7.12 and D7.13

This workplan is only to provide indications on when concrete input that include visualisation materials and tools are expected. This is however a task that is expected to be ongoing throughout the project and project partners, such as case study leaders and WP leaders, can always request for visualisation to be developed; as the visualisation team within the project is to be available to provide services upon request.

5 Conclusions and discussions

The objective of FarFish is to improve knowledge on and management of EU fisheries outside Europe, while contributing to sustainability and long-term profitability. About 21% of EU catches originate from non-EU waters. These fisheries are often poorly regulated, management decisions are sometimes based on limited knowledge and enforcement capabilities, compliance and trust between stakeholders tend to lack.

The FarFish project is designed around six case study areas in which the European operators are actively engaged in fishing activities, including Cape Verde, Mauritania, Senegal and Seychelles, as well as the international seas in the southeast and southwest Atlantic. In this context of geographic, economic and cultural diversity, the project will gain insights into the sustainability of commercially important species such as tuna, hake, mackerel, sardines, octopus, shrimp, and other relevant fisheries. Visualisation materials, and other tools, that can assist operators and other stakeholders in developing MRs, are an important part of each case study in the FarFish project, as well as for the outcome of the project. The visualisation materials and tools developed within the project have already proven to be important for raising interest and assist partners with contributing to discussions development of MRs. This work will continue throughout the lifetime of the project.

Among the next steps in this work is to develop a Shiny app as a visualization tool. The app will enable FarFish to present the main project outputs in each of the Case Study Areas in a highly visual manner. It will also allow the user to access to the already available background information of the area e.g. international agreements such as SFPAs, main species targeted by fisheries, market information etc.