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SUCCESS

Strategic Use of Competitiveness towards Consolidating the Economic Sustainability of the European Seafood sector

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Recommendation for the development of strategies and policies for EU fishing industry and aquaculture

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OBJECTIVES AND EXECUTIVE SUMMARY

OBJECTIVE OF REPORT

The report compiles and synthesizes the results of the various SUCCESS case studies and value-chain analyses with the objective to gain insight in the best practices of innovations in production processes and the value chain from production to consumption. Based on a various kinds of analysis in deliverable 5.1 and 5.2, the report provides recommendations in terms of development strategies and public policies.

DELIVERABLES IN WORK PACKAGE 5

The main objective of Work Package 5 is to synthesize, and build upon work from Work Packages 1 to 4. The following three deliverables from Work Package 5 tackle different issues and have different aims.

Deliverable 5.1 contains an impact assessment of technological and regulatory innovations and is further divided into these three parts:

- Part I provides definitions and discussions regarding technological and regulatory innovations found in the SUCCESS project and how to measure the impacts.
- Part II lists the main technological and regulatory innovations reported in the SUCCESS project.
- Part III summarizes the main results and concludes.

Deliverable 5.2 contains a cost-benefit analysis of different policy options and discussion on socio-economic effects of different policies. This deliverable is composed of the following six parts:

- Part I summarizes the main aim of EU fisheries and aquaculture policy
- Part II summarizes the main challenges found in the case studies and other deliverables.

- Part III introduces possible policy options, based on those same case studies and deliverables, as well as on the challenges in part II.

- Part IV uses the tools developed in work package I to analyze different scenarios and compare them to the baseline scenarios developed in deliverable 1.4. Many of the scenarios are based on possible policy options, others are based on possible future scenarios

- Part V provides an overview SWOT analysis for case studies, based on their groupings in deliverable 5.1, as well as a short cost benefit analysis based on the scenarios in part IV.

- Part VI concludes

This **Deliverable 5.3** specifically provides policy recommendations concerning EU fisheries based on results from the SUCCESS project.

EXECUTIVE SUMMARY

SUCCESS is a European research project is financed for 3 years (2015-2018). It is part of the H2020 Strategy, which is the EU Research and Innovation Programme for the period 2014-2020. The aim of H2020 is to raise the level of excellence in Europe's science base, encourage important achievements, discoveries and "world-firsts" by taking great ideas from the lab to the market.

This deliverable presents policy recommendations for the development of strategies and policies for EU fishing industry and aquaculture in order to improve the competitiveness these industries.

Chapter 1 introduces the main tools and methods that have been used in the SUCCESS project and on which the policy recommendations are based. Then, there is a short overview on the aims of the EU fisheries and aquaculture policies.

The policy options are presented in chapter 2. They can be divided into policy three categories, knowledge, regulation and economic. Each policy options includes a concrete example on either relevant case studies or other SUCCESS research. These are the policy recommendations of the SUCCESS project:

1. Simplify and improve the regulations and regulatory framework

2. Remove barriers to competition
3. Incite and make use of co-management measures
4. Integrate market issues into management
5. Promote product differentiation
6. Remunerate multi-functionality
7. Make use of short supply chains
8. Ban or limit fuel subsidies
9. Support the adaption and development of informational technologies
10. Fund research in technical innovations

In addition, the SUCCESS project has come up with suggestions and solutions regarding how the availability and accessibility of data may be improved.

The policy recommendations are based on various analysis throughout the success projects.[1]

Chapter 3 concludes and discusses possible actions taken by policy makers.

[1] See e.g. deliverable 3.4, 5.1 and 5.2.

1 INTRODUCTION

The aim of the SUCCESS project is to find ways for policy makers to enhance competitiveness of the EU fisheries and aquaculture sectors. This report summarizes the main findings from the project in this regard and provides guidlines for policy makers.

The SUCCESS project has identified and analysed the main issues, barriers and opportunities regarding the competitiveness of European fisheries and aquaculture industries.

The policy options presented here are linked to the work done in the SUCCESS project in mainly three ways:

1. Many have been identified in case studies, or elsewhere in the deliverables of the SUCCESS project.[2]
2. Others are derived from the challenges identified in the case studies, or elsewhere in the deliverables of the SUCCESS project.[3]
3. Some are analysed using tools in developed in the SUCCESS toolbox.[4]

The case studies are built upon comprehensive research conducted with several different methods. A summary and analysis of all the case studies can be found in deliverable 3.4.

The SUCCESS toolbox includes three models for European fisheries and aquaculture:

- The marginal cost (MC) model is a compact and highly flexible model, that can be implemented for different scales in production and effort levels.
- AGMEMOD is a larger model for all EU commodities markets. It accounts for interactions between different markets and can therefore be used to answer deeper and more complex questions, such as the effects of Brexit on different markets.

[2] See Deliverable 3.4.
[3] See Deliverable 3.4 and Deliverable 5.1.
[4] See Deliverable 5.2.

- MAGNET is a model for global commodities for countries and world regions. It can therefore be used to answer questions that have to do with international trends in seafood and aquaculture markets.

These models are described in detail in Deliverable 1.3 and their potentials are demonstrated for numerous scenario analysis examples in deliverable 5.2. These models can be used to complement quantitative analyses (i.e. theoretical exercises) and provide estimations regarding the magnitude of possible effects of different policies.

Other tools in the toolbox include the identification of initiatives and Room For Improvements (RFI) in Deliverable 3.4, and the SUCCESS documentaries in Deliverable 7.3.[5]

1.1 AIMS OF THE EU FISHERIES AND AQUACULTURE POLICY

The CFP aims to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for EU citizens. The CFPs objectives are to foster a dynamic fishing industry and ensure a fair standard of living for fishing communities.

The management of stocks (officially 'conservation policy') is the central objective of the CFP. Maximum Sustainable Yield is the management target since the last reform of the CFP in 2014. In 2020 all stocks shall be managed targeting MSY, which would, if properly implemented, maximize catches. There is no automatism that this also means a fishing sector that is economically and social sustainability but it's for sure a very good condition to achieve it. While the MSY is a biological objective the sector needs additional framework conditions (policies) in place to be able to deliver desired economic and social outcomes.

To this day, the impact of fishing on the fragile marine environment is not fully understood. For this reason, the CFP adopts a cautious approach, which recognizes the impact of human activity on all components of the ecosystem. Among other, the CFP seeks to make fishing fleets more selective in what they catch, and to phase out the practice of discarding unwanted fish.

Grouping together the main aims of the CFP is the following:

[5] http://www.success-h2020.eu/outputs/documentary/

1. Environmentally, socially sustainable fisheries and aquaculture
2. Source of healthy food for EU citizens.
3. Foster a dynamic fishing industry
4. Ensure a fair standard of living for fishing communities

If these aims are to be met, the European fisheries and aquaculture industries have to be economically competitive. Looking for ways to improve the competitiveness of these industries in the EU is the core of the SUCCESS project.

Below, we present the main challenges to further improving the competitiveness of these industries in the EU and thereby help in achieving the aims of the CFP.

2 POLICY OPTIONS

Both the qualitative and quantitative analysis performed in the SUCCESS project underline the heterogeneity of fisheries and aquaculture industries in Europe.[6]

There are, however, both general and specific lessons to be learned. The general lessons include the importance of streamlining and increasing the efficiency of the regulatory framework, helping small producers differentiate their products and create a level playing ground in international and intra-EU trade. The more specific lessons include the importance of empowering the fishermen and aquaculture producers, e.g. by using current mechanisms, to still find innovative solutions to improve their competitiveness.

The policy recommendations can be categorized into the following four categories

- Lack of knowledge
- Regulatory policy options
- Economic policy options
- Technical policy options

First, we discuss some overarching issues, which concern data availability and general knowledge. Secondly, we discuss more specific types of policy options, i.e. regulatory policy options.

2.1 DATA AVAILABILITY

Access to accurate and reliable data is a basic input both for research and evidence-based policymaking. Under the current Data Collection Framework (DFC), there is useful data available from 2000, but time-series are in most cases only available from 2008. Data covers almost all EU countries, is yearly updated and focuses on the economic performance of specific fleet segments.

With regards to DCF data for aquaculture, it exists since 2008, for different segments. It has only been updated twice, i.e. in 2014 and 2016, with still some missing or unreliable data for some aquaculture segments and countries.

[6] See deliverable 1.4, deliverable 3.4 and deliverable 4.4 for examples.

This data for fisheries and aquaculture is very helpful, but to assess all the different dimensions for the sustainability of fisheries and aquaculture, additional indicators are needed.

The SUCCESS project has specifically identified possible improvements to the DCF data, notably; [7]

- Indicators for the whole supply chain in fisheries and aquaculture, including information on labor, capital and ownership structure.
- Market and environmental indicators at the production level. One of the issue here is that the biological scale or level of aggregation does not always match that of the available economic data.
- More disaggregated data that provide a clearer picture of the specialization and diversification, as well as the geographical variability of some production systems is needed. It should be noted that such data exists at member states level, but is not easily accessible at the EU level for researchers and policymakers.

DATA ON NTM'S

The analysis on non-tariff measures (NTM) has noticed data shortcoming (Deliverable 1.2). NTM data should also be expanded to include trade between EU members. TRAINS NTMs, the global non-tariff measures database, provides comprehensive and systematic information on a broad range of policy instruments that can influence international trade in goods. The information includes traditional trade policy instruments, such as quotas or price controls, as well as regulatory and technical measures that stem from important non-trade objectives related to health and environmental protection (Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT)). The objective of the database is to increase transparency and understanding about trade regulations and trade control measures. Currently, data collection on NTMs in TRAINS is restricted to 59 countries/regions, in which the EU28 countries are captured as a whole. The reason is that the EU28 is regarded as a region with one harmonized policy and regulation system, i.e. all member states deal with a similar set of NTMs when importing or exporting within the EU. However, in practice this is not the case as there are examples that specific 'one-

[7] Especially in Work Package 3.

direction' NTMs are in place for fish trade between two member states. In order to get a good picture of the increasing role that NTMs play in trade between EU and third countries, and in trade among EU member states, NTM data collection needs to be extended for more countries in the world, as well as for separate EU member states. Secondly, we recommend to extend data collection to include information about whether specific NTM regulations are enforced and implemented in practice. This data should be collected for each seafood product and each country in question.

Third, NTMs are influencing the trade volumes and costs between countries (filling in forms; waiting at the border; ban or limitation of trade of specific products). Current sources only provide ad hoc estimates of the NTM effects on trade. However, setting up a database with economic data on NTMS would help industry stakeholders and policymakers to understand the economic effects of a specific NTM.

SUCCESS EXAMPLE – A DATA TOOL

In deliverable 3.3 (and task 3.4), a specific data tool was developed to give better overview and quick summaries on different fisheries. This data includes data for fleet structures, employment, landings, trade, economics and other variables, landings, economics, employment and trade. The data is presented in the form of three pivot tables.[8] In addition, deliverable 3.6 provides an overview on a whole range of indicators, related to different subsectors of the European fisheries and aquaculture. In addition,

2.2 KNOWLEDGE IMPROVEMENT

Considerable efforts have been directed to increasing consumers' knowledge of seafood in the EU, both at national and EU level. Despite these efforts, the overall knowledge of seafood products and seafood production is still inadequate, both at the consumer level and at the retailer level in the value-chain.

[8] This tool is based on combined data from two sources, fleet economics data in the EU is collected by is the Scientific, Technical and Economic Committee for Fisheries (STECF) as part of the Annual Economic Report (AER), and the AER dataset is one component of the Data Collection Framework (DCF) that collects data annually by member states and reported to the EU.

RECOMMENDATION 1: SUPPORT EFFORTS TO INCREASE KNOWLEDGE

This situation creates challenges, not least for strategies that aim for product differentiation. This calls for either more communication campaigns or different tools and uses of these tools to convey information about seafood and seafood production in the EU. Several ways forward have been proposed in the SUCCESS project, such as:

- Introducing training programs for retailing staff.
- Increase ocean literacy, not least through school curricula.
- Promote local seafood in school canteens.
- Continue and emphasize the work under the Atlantic Ocean Research Alliance / Galway Statement cooperative work (EU, USA, Canada) about “public perception and public acceptance of aquaculture products”.
- Increase knowledge of fishermen and producers on marketing, management and other business-related issues.

A comprehensive analysis and multiple case studies on the topic can be found in Deliverable 2.4.

SUCCESS EXAMPLE – CULINARY TELEVISION PROGRAMS

Between 10 and 15% of those who view culinary shows claim that these shows have increased their consumptions off seafood products in the last twelve months, partly due to their viewing. It bears noting though, that most shows feature only few key spices. A wider variety in consumption could potentially be achieved with a support for a greater diversity of species featured in television.

SUCCESS EXAMPLE – TRAINING PROGRAMS IN SPAIN

Spanish government has officially presented the training program for people working at seafood counters at retail sector that we discuss about yesterday. The training course is titled "Professional Expert in Commercialization of Fish and Aquaculture Products"[9], and was decided further to discussions that took place during the

[9] http://www.mispeces.com/nav/actualidad/noticias/noticia-detalle/MAPAMA-FEDEPESCA-y-la-UNED-promueven-un-curso-de-Experto-Profesional-en-Comercializacin-de-Productos-Pesqueros-y-Acucolas/#.WrtJci5ubct

SUCCESS Workshop organized in September 2017 in Santander by University of Cantabria[10]

2.3 REGULATORY POLICY OPTIONS

RECOMMENDATION 2: SIMPLIFY AND IMPROVE THE REGULATIONS AND REGULATORY FRAMEWORK

One of the main outcomes of the SUCCESS project with regards to the regulatory environment of fisheries and aquaculture is that there is need and room to simplify and improve the regulatory framework. Based on the results of the SUCCESS research results the there are several ways to move forward in this regard.

More specifically, stakeholders should be empowered to be able to correctly follow and implement the regulation, e.g. through capacity building programs. This message has come across numerous meetings with both industry and stakeholders. The European Maritime and Fisheries Fund (EMFF) could be used to this end.

It is also necessary to ensure coherence between different policies. An example is that there is sometimes lack of consistency between EU quality schemes and EU organic labeling schemes, e.g. regarding shellfish farming.

Furthermore, coherence between environmental policies and Blue Growth could be enhanced, notably between the revised Environmental Impact Assessment directive.

Initiatives on traceability and transparency along the value-chain could improve control and protect consumers as well as improve their knowledge and information concerning seafood products. This can be done e.g. by;

- Promotion of special checking methods to avoid mislabeling
- Clarification of rules regarding “origin” of products

Tools and methods for creating conditions for social acceptability should be provided, especially with regards to aquaculture developments and the implementation of new production technologies in general.

The call for simplification and improvement of the regulatory framework is especially relevant to the European aquaculture industry, which may call for a specific

[10] http://www.success-h2020.eu/success-workshops/workshop-santander-2017/

regulatory framework for that industry. Among the priorities is a simplification of the administrative licensing procedure.

SUCCESS EXAMPLE – TROUT FARMING IN FINLAND

A common finding in the aquaculture case studies was that a high regulatory burden constrains growth and economic performance. In Finland, the farming is regulated with environmental permits, which determine the location and the scale of the farms. For the past decades, the sizes of the farms have become smaller, preventing farmers to take advantage of economies of scale.

RECOMMENDATION 3: REMOVE BARRIERS TO COMPETITION

The need for better information and data collection non-tariff measures (NTMs) across EU states has already been discussed. On top of that it is important to improve stakeholder's knowledge concerning NTMs that influence trade access of EU to other regions.

Removing barriers to free trade would force producers to become more competitive in financial terms, and thereby increase the competitiveness of EU fisheries and aquaculture. However, there could be other adverse effects to consider, i.e. if EU producers are competing with countries which do not adhere to similar social and environmental norms. In the case of Seabass and Seabream aquaculture for example, a full trade liberalization might result in an increase of imports from Turkey and higher difficulties for some EU producers

A comprehensive analysis, specific policy options and multiple interesting case studies regarding NTM's can be found in Deliverable 1.2.

SUCCESS EXAMPLE – THE SCALLOP FISHERY IN THE EASTERN CHANNEL[11]

An example of such trade barriers identified by SUCCESS is a specific shellfish product (*I.* pectin maximus), which cannot enter the potentially important Chinese market under current trade arrangement.

[11] Work Package 3

RECOMMENDATION 4: CO-MANAGEMENT

The SUCCESS project provides several examples where co-management at various levels has proven to improve the competitiveness of industries. This is especially true where different players are using the same space or sharing the same stock.

Improving the coherence between different management policies, e.g. those directed at large scale fisheries on the one hand and small-scale fisheries on the other hand, may foster and support joint management measures in general.

SUCCESS EXAMPLE - THE SCALLOP FISHERY IN THE EASTERN CHANNEL[12]

Recently, a marketing initiative was implemented by the two countries (e.g. MSC for the UK and Label Rouge for France) to differentiate 'local' king scallops (l. *Pecten maximus*) from imported products. A key challenge is to identify the stocks, and their status, as well as to ensure sustainable fishing, which require the development of co-management of the shared stock.

SUCCESS EXAMPLE - FRENCH SEABASS[13]

The French Seabass fishery includes both large-scale and small-scale (i.e. coastal) fisheries and several fishing techniques. Insufficient management or mismanagement creates uncertainty on resource availability and may put some fleet segments at risk, specifically small-scale fleets, those which are usually generating the lowest fish mortalities on the stock and the highest unit ex-vessel price. Moreover, these small-scale fleets are currently pro-active in the implementation of marketing initiatives. An efficient fisheries management is a prerequisite for successful marketing.

RECOMMENDATION 5: INTEGRATION OF MARKET ISSUES INTO MANAGEMENT

The markets for fish and aquaculture production are dynamic. The value-chain is long and in many cases complicated and research has shown that there is great variability between different industries, within and between different countries.[14]

Fishing and aquaculture is in most cases an economic endeavor and improvements can be made in the competitiveness of different industries by taking market issues

[12] Deliverable 3.4
[13] Deliverable 3.4
[14] See Work Package 4.

into consideration in their management at the EU level. This could take into account evolution of demand, consumer wiliness to pay, changes in consumer preferences, product developments, product differentiation, new markets, etc.

Several producer organizations (POs) have been quite successful in adjusting production levels to meet different demand conditions and promote their products in new markets in different seasons. Such initiatives could be strengthened further, e.g. with the use of current funds such as the EMFF.

It is also possible to support specifically small producers in their marketing initiatives, for example by lowering their costs of receiving eco-certification or other labels. Generally, there will be private initiatives if the added income covers the cost of implementation, but small-scale producers are not always able to make such initiatives. A collective initiative to develop marketing strategies could by promoted as part of Priority 4 of EMFF.

SUCCESS EXAMPLE - PLAICE FISHERY IN THE NORTH SEA

There are interesting examples in Europe of the influence of stock management measures across the value chain, such as for the management plan for the plaice fishery in the North Sea and its effect on the processing industry in Germany. The decrease in plaice quota, which was put in place to rebuild the plaice stocks, also resulted in a loss of the market. When the stock of plaice improved after the quota reduction, there was no more demand for plaice, so that the average price dropped considerably.

SUCCESS EXAMPLE – SHELLFISH IN FASOLARI, ITALY

According to an analysis in Deliverable 3.4, PO in Italy is effective in terms of resource, economic and social sustainability and increased market stability. The coordination of different Consortia under the same PO is the key factor of this positive results. A short documentary on the topic is a part of the SUCCESS output.[15]

[15] http://www.success-h2020.eu/outputs/documentary/chioggia-italy/

SUCCESS EXAMPLE – SCALLOPS IN CAMBADOS

Porto Cambados is an example of a successful collaboration between a fishermen organization in Galicia (cofradía) and a little processing company, to produce a higher value added product (scallops).

Instead of selling fresh produce at the fish auction, fishermen sell all the production to this processing company and get a better price. The company for its part guarantees the supply of a high-quality product, highly appreciated in the market and processes it (half shell and frozen). The product has been a success, especially in HORECA.

2.4 ECONOMIC POLICY OPTIONS

The SUCCESS project has identified numerous economic policy options that could improve the competitiveness of European fisheries and aquaculture.

RECOMMENDATION 6: PRODUCT DIFFERENTIATION

One of the main opportunities is to increase and enable small scale producers to differentiate their products on the market to receive higher prices. Examples include initiatives by Seabass liners in France and Coastal fisheries in Sicily. Such initiatives can be further supported, for example by establishing programs that inform customers about differentiated products, e.g. locally produced or produced with specific methods, but also by lowering costs for the small-scale production units for e.g. acquiring eco-labels. Eco-labels as such are not perfect in purveying important production differentiation attributes, such as quality, freshness, origin of production and various social dimensions (e.g. traditional fishing methods and local produce). Helping small-scale producers differentiating their products on the market therefore requires more than one action.

The current funding programs of the EU (especially the EMFF) support producers in their marketing effort but these need to be further promoted to help them in their efforts to diversify their production on the market.

SUCCESS EXAMPLE – PRICE TRANSMISSION ANALYSIS

Deliverable 4.4 contains a database that provides comprehensive analysis about the price transmission mechanism in fisheries throughout Europe. Some of the chief

findings are that producers can more easily pass along increased cost down to wholesalers, or other parties along the value-chain, with higher producer prices, if, and only if, the product in question is differentiated.

SUCCESS EXAMPLE – GREEK MUSSELS

Only few (18%-26%) consumers in Greece are aware of the most common

sustainability labels for seafood and even fewer consumers (6.5%-14%) are aware of the meaning of these sustainability labels. Despite that, over 30% of Greek consumers seem to be willing to buy and pay price premiums for mussels certified for sustainability

RECOMMENDATION 7: REMUNERATION OF MULTI-FUNCTIONALITY

Fisheries and aquaculture activities provide numerous external benefits apart from the benefits that are provided through the production itself. Fishing activity is often an important part of the social and cultural landscape and is important for other local activities such as tourism. In addition, aquaculture can have numerous benefits for the surroundings, landscaping and feeding and maintenance of protected bird populations. A better understanding of the image of towns and regions and the role that fisheries and aquaculture play in this regard could be the subject of further investigation. Further cooperation between fisheries and aquaculture and other sectors, such as tourism should be encouraged.

An important lesson is that remunerating producers for the multi-functional services they provide would certainly increase their competitiveness while at the same time help in achieving other environmental, economic and social goals.

These measures would fall well within the 2nd pillar of the common agricultural policy (CAP), which obligates all member states to include in their programs the following items (among others):

- Basic services and revitalization of villages in rural areas (broadband, cultural activities, tourist facilities, etc.);
- Payments linked to Natura 2000 and the Water Framework Directive;
- Payments for areas facing natural or other specific constraints;

SUCCESS EXAMPLE – CARP FARMING IN GERMANY AND POLAND

The SUCCESS project has shed a light on interesting positive externalities that arise from fish farming, e.g. for the carp farming in Germany and Poland, where the farming activity provides important ecosystem services which are not reflected in the income of the farmers. Were the farming to be reduced further or eliminated, these services would have to be provided for in a different way, with cost to society, because some of them are safeguarded by law. In addition, Non-Market Values also occur in same fishing and aquaculture area through tourism attractiveness, which benefits to the community as a whole.

RECOMMENDATION 8: SHORT SUPPLY CHAINS

There is evidence that short supply chains can improve competitiveness, especially for small producers. For example, special sales arrangements between French small-scale fishermen near the city of Nantes are an interesting marketing innovation, which at the same time enables fishermen to receive higher prices for their products and the consumers to have a reliable access to local quality products. Such attempts to differentiate products could be encouraged.

SUCCESS EXAMPLE – COASTAL FISHERIES IN TRAPANI

In the Gulf of Salerno, as well as in other Italian harbors, there is a tradition of direct sales. Recently, new initiatives have been launched by local fisher's organizations. These initiatives have been supported by the Fisheries Local Action Group (FLAG) and by European structural funds. One initiative is the digital marketplace, where technology solutions are suggested to help in promoting and selling local seafood produce. The other initiative is "Fish Basket Schemes" aimed at shortening the value chain through the use of contractual agreements between local fishers and buyers. These initiatives have not been taken into consideration by the fishers in the region, who are more concerned about the reduction of landings due to over exploitation and degrading marine habitat. This shows that marketing innovations are not always well received by stakeholders, despite potential benefits, if other concerns weigh heavier.

RECOMMENDATION 9: BAN OR LIMIT FUEL SUBSIDIES

Direct and indirect fuel subsidies are common in European fisheries. Such subsidies are very important for the livelihood of many fishers but at the same time they run counter to other policy goals, such as reduction of CO_2 emissions and pollution, a clear example of policy incoherence. Reduction or elimination of fuel subsidies in fisheries further incites the industries to find new more energy efficient ways of production. We will come back to fuel reducing technologies when we discuss technical recommendations below.

SUCCESS EXAMPLE – SPANISH DEMERSAL TRAWLERS IN THE MARGINAL COST MODEL

According to the analysis done in deliverable 5.2, a removal of fuel subsidies would decrease the maximum attainable profit of the Spanish demersal trawler fleet by about 18% and decrease the optimal level of harvest by about 28%. However, if the ban would be universal across European fisheries, these effects might be somewhat alleviated, not least because that would probably result in a higher equilibrium prices from producers.

2.5 TECHNICAL POLICY OPTIONS

RECOMMENDATION 10: SUPPORT THE ADAPTION AND DEVELOPMENT OF INFORMATIONAL TECHNOLOGIES

Great strides have been made in recent years with regards to the use of information technology, data science and artificial intelligence (the so-called 4th industrial revolution). Such innovations provide opportunities all along the value chain for fisheries and aquaculture. They may decrease transaction cost, reduce overcapitalization, help with traceability and increase information flows in general.

Technologies that help with traceability and information dissemination along the market chain should be promoted. This can also help producers shortening their value-chain.

This can go hand-in-hand with training and educational programs for people working along the whole value-chain, from producers to consumers. At the same time, the

use of such technologies will probably alter the job opportunities in fisheries and may require more technically trained people to be engaged in the industry.

RECOMMENDATION 11: FUND RESEARCH IN TECHNICAL INNOVATIONS

There are various technical innovations that the SUCCESS project has analyzed that have the potential to increase the competitiveness of EU fisheries. These include new harvesting technologies have to be further analyzed as they may pose a threat to the environment. Other technological innovations in the SUCCESS project include innovative gear design which show the potential of drastically reducing energy consumption of the vessels and thereby simultaneously increase competitiveness of the fleet and reduce negative effects of fuel use such as pollution and greenhouse gas emissions.

However, as is disused in Part II in deliverable 5.1, it is extremely challenging, even impossible, for policy makers to predict what kind of innovation is likely to have a high impact. Any support of innovation should therefore be available for all those who fulfill certain conditions rather than being selected based on subjective measures.

SUCCESS EXAMPLE – SOLE FLEETS IN THE UK AND FRANCE

The SUCCESS project has highlighted two technological innovations that show that energy consumption can be reduced considerably, i.e. the Dutch SumWing trawl and the so-called Pulse-fishing technology. Whether and if such innovations should be encouraged depends not only on economic considerations, i.e. the monetary costs and benefits of such techniques, but also on environmental considerations, both the short- and long-term effects on the environment and the ecosystem. Due to such considerations, the European parliament has decided to ban pulse fishing. The SUCCESS project has not compared the externalities of pulse fishing to that of beam trawler, which is an alternative technique to lower fuel use.

3 CONCLUSIONS

As discussed above, when it comes to fisheries and aquaculture, there is tremendous heterogeneity between species, technologies and countries. Additionally, when subsectors are examined in detail, many nuances arise. This has been discovered in the many case studies in the SUCCESS project. There are however a few general conclusions that many of case studies and analysis has in common.

The main policy recommendations that the SUCCESS project has identified as being important to improve the competitiveness of European fisheries and aquaculture. These are:

1. Support efforts to improve knowledge
2. Simplify and improve the regulations and regulatory framework
3. Remove barriers to competition
4. Incite and make use of co-management measures
5. Integrate market issues into management
6. Promote product differentiation
7. Remunerate multi-functionality
8. Make use of short supply chains
9. Ban or limit fuel subsidies
10. Support the adaption and development of informational technologies
11. Fund research in technical innovations

In addition to the policies that have been listed here, the SUCCESS project has identified various challenges and Room For Improvements (RFI).

All the work in the SUCCESS project has potential to be quite useful, both for policy makers and for researchers, when tackling the challenges, aiming for the possible improvements and increasing competitiveness. For that to materialize, it is vitally important build on work that has been done.

This includes, but is not limited to, dissemination, knowledge and policy making.

3.1 GOING FORWARD

From the above, the SUCCESS project has made clear that some actions can be taken at EU and national levels to improve competitiveness in the fisheries and

aquaculture sector. Some of the actions are directly available to policy makers, as they are partly linked to situations generated by regulations:

- In the aquaculture sector, the development of new producing facilities is almost impossible in some places, either inland or at sea, due to the complicity of the regulations and the associated transaction costs, although aquaculture is identified as a key component of the Blue Growth agenda. In some case (e.g. salmonids / trout in France), the sector is even undersupplying the market to match the growing demand.
- In the fisheries sector, decisions regarding the management of wild marine resources have clear market impacts that need to be better understood when deciding about stock management. The case of plaice in Germany shows that when the market is lost due to strong cut in quotas, this is highly difficult to recover the market. Also, lack of (co) management, in particular for shared stocks, might have negative impacts on the possibility to differentiate the products, especially based on the sustainability attribute.
- In the same vein, the complexity of the regulations or of the process associated make it difficult for some economic agents across the value chain to fully use existing schemes, such as the European Maritime and Fisheries Fund (EMFF). For instance, tools for promoting better marketing activities are underused by small scale producers. This could be facilitated through the development of appropriate capacities and / or simplification of some process.
- Another area where policy makers could act, although more indirectly, is the lack of market-oriented skills is some places of the industry. This is not only a question of improving and disseminating knowledge, it is also about the design or composition of managing organizations. While in some countries (e.g. the Netherlands), the economic and marketing dimension is well represented in most of the Producers and Industry Organizations (including through the hiring of recognized experts), this is not the same in all the countries. The example of the Fasolari fishery in Italy shows how important such an integration of economic and marketing dimensions in the management process is important and can be successful. In general, economic and marketing skills are needed to understand the surrounding markets.
- Another case of direct potential action form policy makers concerns the menus in the public restaurants. In some countries at least, menus in public

restaurants are directly managed / decided by local or national policy makers (school canteen, University restaurant, army, hospitals, etc…). When this is the case, the SUCCESS project shows that it is technically feasible to promote differentiate products through public procurements (e.g. sustainable or local products).

- In other areas, such as general knowledge, policy makers can act in promoting the place of fisheries and aquaculture activities and products in the general curricula (e.g. through the development of Ocean Literacy).