



### Deliverable Report

|                             |   |                               |                         |
|-----------------------------|---|-------------------------------|-------------------------|
| <b>Deliverable No:</b>      | D30.1 & D30.2   | <b>Delivery Month:</b>        | 47                      |
| <b>Deliverable Title</b>    | 30.1 Report on value propositions for the producers and Partners<br>30.2 Report on indications of resources for creating customer value for the specific products |                               |                         |
| <b>WP No:</b>               | 30  | <b>WP Lead beneficiary:</b>   | P10. TU/e               |
| <b>WP Title:</b>            | Socioeconomics – Business model and marketing strategy development  |                               |                         |
| <b>Task No:</b>             | 30.1  | <b>Task Lead beneficiary:</b> | P10. TU/e               |
| <b>Task Title:</b>          | Business models   |                               |                         |
| <b>Other beneficiaries:</b> | P6. DLO   | P12. APROMAR                  | P18. CTAQUA<br>P3. IRTA |
| <b>Status:</b>              | Delivered   | <b>Expected month:</b>        | 46                      |
| .....                       |   |                               |                         |

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**Objective 30.1.1:** Firstly, the value proposition for the producers and partners (involved SMEs) will be described and specified for specific customer segments targeted in close cooperation with the SMEs. The information gathered in Task 27.3 will be used as a basis. This will include quantitative elements of price and efficiency, and qualitative matters of overall customer experience and outcome (TU/e, DLO, APROMAR). This subtask will result in Deliverable 30.1 Report on value propositions for producers and partners.

**Objective 30.1.2:** Secondly, the resources necessary to create value for the customer will be described. The task will identify the partner network and determine the actual resources that are required in order to optimize operations and reduce risks of a business model. Guidelines for the organizations to cultivate buyer-supplier relationships will be developed. Complementary business alliances will be explored, including options for joint ventures to expand globally (TU/e, APROMAR). This will result in Deliverable D30.2 Report on indications of resources for creating customer value for the specific products.

**Deviations:** It was decided to integrate Deliverables 30.1 and 30.2, for an easier comprehension of the results.



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## 1. Introduction

The objective of this deliverable was to develop business models for the SMEs participating in DIVERSIFY for the focal species and their products. A business model describes the rationale of how an organization and its partners create, deliver, and capture value by accomplishing sustainable competitive advantage in the marketplace (Osterwalder, 2004). A business model has both (i) a coherent business story and (ii) cost and revenue figures that result in a sustainable profit for the parties involved (Magretta 2002). The latter two criteria can be used to check the viability of a business model. In this report, the focus is on the first criterion.

In the DIVERSIFY project several new products were developed to help the firms create better value and address new markets for the focal species. Because products refer to processed raw fish it concerns added value, which can help increase the market price and thus the rents received by the farmer and its partners. Except for developing value propositions for the species in general we develop value propositions for the products developed for the species. A value proposition describes the bundle of products and services that create value for a specific customer segment and identifies how this bundle is positioned on the market compared to competitors and their product/services towards customers (Osterwalder and Pigneur, 2010).

To develop the business models, we largely built on and integrated material of former deliverables of the DIVERSIFY project together with additional input, i.e. information, from the consortium's business partners. Although many deliverables were important we identified some in particular. Deliverables 27.3-4 on market and trend analyses, and Deliverable 27.7 regarding current state of business models of all six fish species were a good starting point. Deliverables 28.2, 28.4 and 29.4, which reported on the ideas generated, prototypes developed and consumer tests performed on new products created for the focal species, were important too. Finally, we drew on 29.2 for target markets and for example 29.6 and 29.7 regarding optimal value propositions (optimal intrinsic-extrinsic product quality profiles) and communications for the targeted segments.

We begin with a brief review of the 'new business development' process using a *new product development funnel perspective*. Table 1 shows the product development funnel. For four species of the DIVERSIFY project, 43 new product ideas were generated (Deliverable 28.2). First, these were reduced by using expert assessments. Ten ideas were selected. Second, using these ideas 12 prototypes were developed, i.e., three for each of four selected species: grey mullet, greater amber jack, pikeperch and meagre (Deliverable 28.4). Third, based on these results, 6 products were selected for a consumer sensory test using consumer panels in all five target countries. Finally, in subsequent consumer tests the researchers and participating companies involved reduced this set of alternatives to a final set of 3 products for two species. The choice was based on scores of sensory profile attributes (see Deliverables 29.4), but also on scores of overall liking after visual inspection of the different products and purchase intention that were found across the five EU countries (see Deliverables 29.5 and 29.6).

**Table 1** holds important information for our business modelling effort. First, for meagre and pikeperch no final products were selected and further researched, despite the fact that these species show relatively high production-readiness. Second, for greater amberjack and grey mullet 3 products were developed and studied in subsequent consumer research, i.e. steak, fillets in olive oil and thin smoked fillets. However, characterized by low rather than high production readiness the supply of full-grown fish and products for these species remains uncertain. Farm-based production for these species remains experimental. The uncertain supply makes the farmers and products of these species unattractive for retail stores, who tend to prefer steady and sustainable supply of products for their customers (see e.g., ref ED 2017). Even when products deem successful in pre-launch market tests adequate follow up of supply of product will be difficult at best (i.e., ramping up), making continuity hard. Actual market tests and launch for these species should better wait till better control over the production process is obtained.

Finally, the findings summarized above also show that for two species of the DIVERSIFY program no products were created: wreckfish and Atlantic halibut. Although in the biological research progress was made, serious bottlenecks persist hindering serious business model development efforts. With



Atlantic halibut availability of juveniles and high mortalities in early life stages have been a bottleneck and a serious challenge for commercial producers.

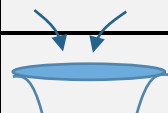
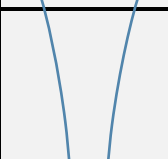
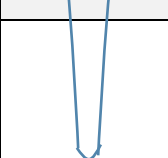
The above-mentioned findings set the stage for our business modelling effort, of which the results are reported below. However, we first offer a brief theoretical background and framework.

## 2. Theoretical Framework

### 2.1 Business model CANVAS

A business model is defined as the designed system of activities through which a firm creates and captures value (Zott and Amit, 2010). Business models help identify core assets, capabilities, relationships and knowledge (Linder and Cantrell, 2000). These models provide understanding of the fundamental question of a business: how to create and deliver value and how to reap benefits, i.e. make money in this process. A popular conceptualization of a business model is Osterwalder’s (2004) Canvas framework. It has four core elements, namely; *product, customer interface, infrastructure management and financial aspects*. These four elements include nine building blocks (value propositions, customer channels, customer segments, customer relationships, capabilities, value configuration, partnerships, revenue streams and cost structure). **Figure 1** shows the Canvas framework and the relationships between its elements.

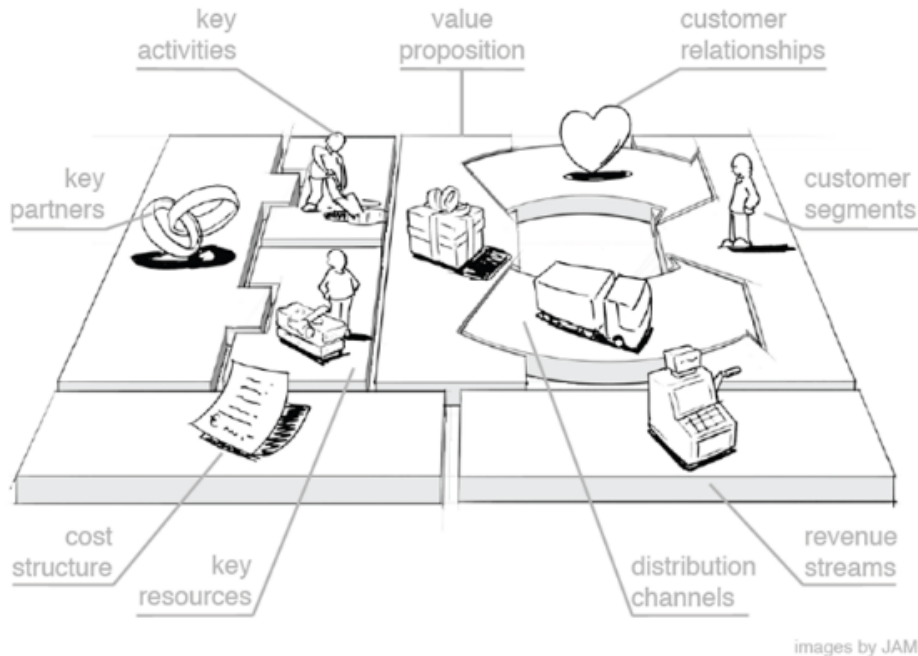
**Table 1:** Overview of focal species and the fish products developed under DIVERSIFY

|   |   | Production readiness   |  |                           |                  |
|---|---|--|--|---------------------------|------------------|
|   |   | Low (experimental)   |  | high                      |                  |
| Innovation funnel   |   | <i>Greater amberjack</i>   | <i>Grey mullet</i>                           | <i>Meagre</i>             | <i>Pikeperch</i> |
| Stage ‘Idea generation’                                     | <i>ideas</i>  | 43 ideas   |  |                           |                  |
| Stage ‘Prototyping’   |  | 12 different prototypes based on 10 ideas selected for the 4 fish species. |  |                           |                  |
| Stage ‘Product concepts developed’ (29.4)                   |  | Grilled steak  | Thin smoked fillets<br>Filletts in olive oil | Fish burger<br>Fish salad | Fish pate        |
| Stage ‘Consumer test’ communications (29.5)                 |  | Grilled steak  | Thin smoked fillets<br>Filletts in olive oil |                           |                  |
| Stage: ‘Business model developmentt and market test’ (WP30) | <i>new product</i><br>↓<br><i>market</i>  |  |  |                           |                  |

The Canvas framework is often used as a tool to help managers identify their business logic in management meetings. It helps: (1) explain the business, (2) how to run the business and (3) how to develop the business (Spieth, Schneckenberg and Ricart 2014). By making business models transparent, managers can identify the costs and risks involved, which can help them take actions that



enhance a firm's value creation, competitive positioning and money earning capabilities (Osterwalder, 2004).



**Figure 1.** Business Model Canvas (Osterwalder, 2004)

## 2.2 Different conceptualizations of business model innovation

Companies increasingly find the need to innovate not only by developing new products and services, but by modifying or even creating completely revising their business models. Different perspectives on business models and how managers can change them exist (Martins, Rindova, and Greenbaum, 2015). We discuss these perspectives briefly:

The **rational positioning school** represents business model innovation as outcome of rational redesign processes focused on creating a new system of components and linkages that optimize the business model to new interdependencies created by exogenous shocks. The rational positioning view treats business models as purposefully designed systems (Zott and Amit, 2010) that reflect rational managerial choices and their operating implications. When the underlying technology changes (e.g. moving from wild catch to farming), and an established logic for satisfying consumer needs is overturned (convincing consumers that farmed is as good or even better than wild catch), the business model must change too.

The **cognitive view and school** suggests that business models reflect industrial recipes, mental models, or schemas that provide managers a theory of how to set boundaries to the firm, of how to create value, and how to organize its internal structure and governance. It focuses on the sense-making as the most important input into the initial business which may include different strategic visions about the opportunities for value creation and capture in their industries, and in the business models they create. Business model innovation refers to change of these managerial schemas resulting in strategic change to how the firm and its partners create an appropriate value. Two cognitive processes involving controlled mental operations on the structures of schemas have been identified: analogical reasoning and conceptual combination (Ward, Smith and Vaid, 1997). Analogical reasoning refers to use of the knowledge contained in the schema about one domain (termed 'source') to interpret information in



another domain (termed ‘target’). This occurs when managers in the fish industry for instance learn from colleagues in the meat or dairy industry. Conceptual combination is a cognitive process through which a focal/target concept is combined with a modifier/source concept in order to create a new concept. The latter involves for instance integrating new packaging forms applied in the super market to fish products. Analogic and complementary reasoning both involve leveraging of pre-existing knowledge. Their effectiveness in innovation arises from the possibility of using this pre-existing knowledge from another domain to inform the understanding of one’s current domain by relying on familiar concepts and relations among them, respectively.

In contrast, the *evolutionary learning school* conceptualizes it as an incremental process of refining a business model to improve fit with changing interdependencies caused by external developments. This evolutionary learning view of business model innovation argues that change is generated by external uncertainty, requiring managers to engage in experimentation until they find a system of activities that allows them to compete effectively within these new external conditions. Management primarily focuses on experimentation (e.g., the expert opinions, sensory tests with panels and consumer responses to mock-ups and price exposure) in the generation and change of business models.

### 2.3 The value proposition and customer-side

A key element and starting point for business model development is the question: what is the value that the firm and its partners create for and deliver to (potential) customers in the market marketplace? Customers are the ultimate arbiters of the value a firm (with its partners) creates (Priem 2007). Value is reflected in the price they are willing to pay but also in their appreciation for and loyalty to the brand. Unique properties differentiate a product from alternatives in the market place and explain why customers are willing to pay an extra margin.

Most markets are not homogeneous but heterogeneous. They are composed of different customer segments with different customer needs. These different customer segments perceive value differently and may use different channels of distribution to buy the product. Consistent with this, it is important to segment the market and target specific segments using the right communication message but also deliver them using the right channels of distribution.

We define the core elements of this ‘value delivery-side’ of the business model:

- **Value Proposition.** The value proposition describes the bundle of products and services that create value for a specific customer segment (Osterwalder and Pigneur, 2010). The value is derived from the resources of the focal firm and its partner network (Osterwalder, 2004). Value emerges from activities and should be unique. It may include newness, extra ordinary performance, level of customization, unique design, brand/status, low price or cost and risk reduction, better accessibility and convenience among others. In fishery and aquaculture products such as wild catch and farmed fish offer different customer value (e.g. taste versus sustainability). The same is true for fresh, frozen and/or processed products (e.g., nutritious and enjoyment versus convenience).
- **Target Customer (Customer segments).** The target customer/segment refers to the type of customers, i.e. specific customer group or groups, a company creates value for with its products or services (Osterwalder, 2004). Customers buy a firm’s products or services because they think they can help them satisfy their needs. Customers can often be segmented based on their similarities and differences. Behavioural segmentation (benefits sought, purchase occasion, purchase behaviour, usage, perceptions and beliefs) can be considered the ultimate basis for segmentation. Psychographic segmentation is applicable when it is believed that purchasing behaviour is correlated with personality or lifestyle of customers. Profile segmentation uses demographic, socio-economic and geographic variables (Jobber and Fahy, 2009). Different types of segmentation strategy are mass market, niche market and the multiple segment approach. In the fish industry, important segments are regular fish consumers versus non-fish consumers, and young versus old(er) consumers (e.g. EUMOFA



2017, consumer habits study). In Deliverable 29.2 involved innovators, involved traditionals and ambiguous indifferent consumers were identified as segments (next to non-fish eaters).

- **Customer Relationship.** Customer relationship describes the link a company establishes between itself and the customer (Osterwalder, 2004). Relationships evolve over time and depend on product type. Transactional and relational market relationships are generally distinguished. Transactional relations refer to low loyalty and involvement, whereas relational relations suggest high involvement and high emotional attachment and thus loyalty. Examples in the fish industry are the personal relationships consumers have with fish mongers, staff of the fish category in the super market (EUMOFA 2017) or their relationship with brands of fresh or frozen fish products.
- **Distribution Channel.** The distribution channel refers to the avenues farmers and their partners (or channel leaders) use to deliver their value, i.e. products, to the target customer segment(s) (Osterwalder, 2004). Channels may differ by product (e.g., selling live fish to ponds for recreational fishing and fillets to retailers). Effective channels help a farmer distribute its products effectively, efficiently and fast, that is, at low cost and to the right customer groups. Examples of channels are super markets, fish mongers/specialty stores and the food service channel (e.g. catering, restaurants). Fish mongers focus on selling fresh and ready to eat fish. Supermarkets and delicatessen stores carry many pre-packaged but also processed fish products, and are moving to convenience products too. Farmers should be aware that channel partners have different purchasing criteria than consumers. Channels buy products because their customers like them, because a product adds to the assortment (has unique properties), helps them earn more money, or makes their lives easier to manage by solving distribution issues (e.g. certified, large assortment from key supplier).

## 2.4 Resources, key partnerships and activities

While the above refers more to the value delivery side of the business model, there also is the ‘value creation-side’. The key question here is: how do the firm and its partners create its unique value and make the effort profitable? It should lead to an understanding of the activities and business processes that are required, but also the unique choices that are made to attract customers and meet or beat the competition. We again briefly discuss the key elements:

- **Resources.** To create and deliver value a firm needs resources and development of business processes that contribute to creating and delivering its value. Applied in business processes resources are used to create this value. Business processes can be many, including for example procurement, production, logistics and channel management, but also support of processes such as HR-, ICT- and innovation management. Different business models require different key resources. Key resources can be physical, financial, intellectual or human, and can be owned or leased by the company or acquired from key partners.
- **Key partnerships.** The key partnerships refer to the network of suppliers and partners and unique activities that make a business model work and create its unique value for the market. Companies may partner for many reasons. They use partners to optimize their business models, reduce risk, or gain access to important resources. Generally, four different types of partnerships are distinguished:
  - Strategic alliances between non-competitors (e.g. with research institutes)
  - Coopetition: strategic partnerships between competitors
  - Joint ventures to develop new businesses
  - Buyer-supplier relationships to assure reliable supplies or create strategic positioning and advantage as a network, upstream (suppliers) but also downstream (channel partners, e.g. retailers, mongers, food service firms).
- **Key activities.** The key activities refer to those activities or actions that are used to convert resources into value. Key activities are those most critical to the value creation, delivery, maintaining relationships with partners and customers, and to earn money. Key activities



differ by business model and explain why a firm is able to sustain its position and earn extra rents.

While the Canvas framework also includes a revenue and cost model we like to mention that information on this part of the framework is a separate subtask and deliverable, i.e. D30.4.

### 3. Methodology

#### 3.1 Data collection

Three sources were used to develop the business models and value propositions for the four focal species for which at least some product development efforts were made.

First, from prior deliverables relevant information was identified and compiled. Deliverable D27 contained information about current business models of species and market conditions (e.g. competition and trends). In Deliverable D28 product ideas, concepts, sensor tests but also consumer responses to the newly developed products had been recorded. Finally, in the Deliverable of WP29 (D29) results on market segments, important extra value drivers (country of origin effect, impact of sustainability labels etc) and acceptable price range, and communication were identified. These results provided the core information for the business models.

Second, like for identifying SME's current business models (see D27.7) we used a workshop approach to collect feedback on (i) the current state of fish farming of the species and (ii) the products developed by the new product developers. A workshop approach was chosen because it allows researchers to quickly get input and offers the opportunity for discussion and follow up questions. This is particularly useful when exploring different opportunities. The interactive nature allowed for double checking of conclusions too, which helped ensure reliability of outcomes. All business partners had been invited for the workshop and had been urged to attend. They had also been requested to invite and bring other relevant parties such as (associations of) mongers/retailers and processing firms too. They were deemed necessary to get on board to move the project forward towards the market. The presence of business partners helped secure the external validity of data and results.

The workshop took place as part of the DIVERSIFY's 3<sup>rd</sup> Annual Coordination Meeting (ACM) (Barcelona, Spain, 17-20 January, 2017). Because the results from the biological experiments were presented to all participants in the two days of the ACM preceding the workshop, members of the workshop had knowledge of progress made regarding feeding (e.g., research on optimal feeding tactics) and breeding (e.g., approaches to reducing cannibalism of pikeperch) and thus could factor this in, in their responses and evaluations. The workshop itself involved an intensive interactive session and focused on filling in the business models for each of the four species and their products. Specific attention was given to the identification of the value proposition and customer segments, as well as general business story and remaining bottlenecks. A list of participants is provided in the appendix (see appendix A).

Third, we collected data using interviews with a small set of consortium partners engaged in farming efforts for the specific species. The survey questions were derived from the Canvas framework. The aim was to collect complementary data, i.e. fill blank spots. Intermediaries and species leaders helped collect this data.

#### 3.2 Data processing

First, all Deliverables were evaluated focusing on relevance and usefulness for our goal. Next, from the selected prior Deliverables the key findings per species (greater amberjack, meagre, pikeperch and grey mullet) and products were tabulated building of the Tables of Deliverable 27.5. Two independent senior researchers complemented the table and then triangulated to come to a final integrated result, focusing on the rows relevant for value proposition, target market and channels. The value propositions were then detailed.





Subsequently, the business models per species were developed by filling in the framework. To further verify these models, we collected the extra information from primary sources mentioned above, but also additional secondary sources.

Before we present the business models per fish species and detailing it to products, we reflect on and classify the business model development approach of the DIVERSIFY project and its partners. We do this based on the classification presented in the theoretical section of this report.

## 4. Results

### 4.1 Observations of the workshop of participants

First some observations of the discussions are presented that will be the basis for the development of the business models.

#### 4.1.1. Observations regarding the value proposition

The consortium partners were asked to respond to the products developed, and specifically on the value created and also to reflect on the target markets. How could this help to make their business profitable?

Most participants were positive about the outcomes of the development process and mentioned that consumers would value the products. It is consistent with findings reported for example in Deliverable 28.

First, the fish salad and fish burger fit the trend towards convenience and, for instance, eating fresh fish with a sauce at points of sales (e.g. mongers). Fish mongers (e.g. in Spain) sell fillets with a sauce but also fish-burgers. Consistent with this trend, the business partners of the consortium see good market opportunities for the products developed, in particular: fillets/steaks, fish-burger and fish salad.

Second, there is an overall trend to eat less meat and more fish and vegetables. This trend is encouraged by local associations and the EU committee and is expected to accelerate over the next years (see also EUMOVA 2017). It creates a positive attitude towards fish and can be used by farmers and stores to position and promote the 'new' species and products.

Third, aquaculture is becoming a selling argument that resonates with consumers in the market. Consumers prefer clear quality assurance and an industry that respects the environment. So, leveraging the fact that the DIVERSIFY products are 'farmed' with tight control over the supply chain means that consumers know what they buy/get and that sea life is preserved. Local farming claims can further reinforce feelings of trust and signal that the fish were not flown in from the other end of the world. Moreover, the label 'local' (or EU produce) signals quality and attention for the environment, and fits this trend. It will allow for a higher price which in itself further enhances the quality of the product and thus value. In this sense, the participants agreed with findings of the communication/consumer research (Deliverable 29.7).

However, the fish spread/pâté was considered less appropriate. First, fish mongers prefer fresh products than processed ones. Second, although the fish spread/pâté can help to better use the whole fish (use discards and muscle tissue) the business partners thought the production cost of this product high, possibly too high particularly for high value fish species like the four DIVERSIFY ones (e.g. pikeperch that sells at 30-35 euros/kg retail). Most of the fish species of the DIVERSIFY project are high end/high quality. For these species fillets and steaks are key. In this regard, e.g. fish burger and fish salad are better alternatives/choices because they fit the trend to convenience, as mentioned. Future research could further explore opportunities and ideas for these kinds of products. Products such as pâté/spread may become of interest only when prices come down and/or when the urgency grows to use the whole fish. The participants do not anticipate this will happen soon since the species are still at an early stage of (production and market) development.



#### 4.1.2. Observations regarding target customers

In accordance with the DIVERSIFY project's aim to increase diversity of species and stimulate fish consumption in the EU and the rest of the world, several products were developed. Using consumer research different customer segments were identified. The results suggested to target established fish consumers and not non-fish eating consumers (see for example Deliverable 29.2). While regular fish eaters like fish and think it's healthy, non-users dislike fish consumption based on appearance and smell (in general and/or during preparation). Non-users are difficult to convince to try and convert to fish. Only products that mask the flavour can be used to attract consumers of this segment (e.g. smoked fillets, fish burgers, fish fingers).

Within the segment of regular fish eating consumers a sub segment exists that prefers to save the environment and thinks fish quality is important (e.g., non-toxic). This sub segment can best be targeted. A segment of young customers preferring convenience also can be distinguished and holds promise for the newly developed products particularly those that are easy to prepare. Young consumers prefer convenience and gravitate towards fresh products that are ready-to-eat. Compared to their older counterparts, youngsters tend to buy more in supermarkets. Although these segments may be relatively small (the majority of heavy fish users still prefers wild catch, see e.g. EUMOVA (2017)) these segments will grow in the near future, particularly in Western Europe. However, results of the consumer segmentation study (D29.6) showed no difference between the innovative and regular user segments in attitude and preference for the new products. The youngsters, i.e. convenience buyers, are probably part of the segment this research labelled 'innovators'.

Partners do differentiate between consumers who buy at mongers and supermarkets respectively. The customer shopping at the monger likes freshness and direct consumption (e.g. fish with sauce). The super market consumer is more focused on one stop shopping and thus general convenience. Trust in the super market is an important factor, just like the fact that consumers are very sensitive to labels referring to local production and sustainability.

#### 4.1.3. Observations regarding the channel development

Except for producers of, for instance, pikeperch (i.e. Fish2be from Belgium), farmers' contacts with retailers and customers seem rather limited. The focus on nearby partners and not the supply chain/channel at large may be explained by the experimental stage of farming for our focal species. However, it increases farmers' dependence on channel partners and limits their possibilities to build a strong strategic position early on. Farmers' network is generally limited to contacts necessary to produce and sell their current species. Hence, serious relationship development by farmers to bring the new species to market will be necessary to be successful, i.e. to be able to build market share and create a sustainable market position in the near future. A company like Geremar (Tenerife) that is experimenting with juveniles of greater amberjack could leverage its excellent relationships with Spanish retail chains for selling its sea bass and bream to also bring the new species greater amberjack to the Spanish market and build consumer demand for it. However, it will require joint goal development and serious investment in further cooperation and marketing investments to popularize the new species and its products. Government support for consuming more fish for health reasons and more alternative seeking behaviour regarding meat and meat products of consumers make that an interesting market can develop for new fish species. However, also opportunities to partner with service food channels need to be explored.

Fish are generally sold unbranded. Branding is limited to pre-packaged fish products. Branding in fresh fish thus is still rather underdeveloped and -explored. Sustainability and country of origin/regional origin labels do exist and are useful options to position products in the market and build customer loyalty. Attention of partners to marketing and branding issues is important to build competitive advantage. An advantage of regional/country of origin and sustainability labels is that they perceive them more as useful fancy labels and thus do not consider them to threaten their position.

Online fish sales exist but are extremely limited to date. It may represent a serious market and business opportunity for (cooperative) farmers and mongers/retailers alike. Delivery would require distribution



using e.g., trucks with cooling. New entrants like AmazonFresh also explore this market option and could disrupt the supply chain. It will be good to watch these developments. However, the partners in the consortium are not actively involved in these activities yet. Moreover, it does not seem to be part of their strategic thinking or scope.

Below we discuss the result for the business models per species. Later we will also detail the value propositions and models for the products developed.

## 4.2 The business model per species

Based on the observations above, business models are developed for all the species. The model and characteristics are presented per species.

### 4.2.1 Pikeperch

Production of pikeperch remains problematic (e.g., due to high cannibalism). As a result, many producers in the Netherlands, Germany and France gave up their efforts or went bankrupt in the last few years (Eurofish Magazine 2015). It implies that business models for pikeperch remain problematic or fickle. Still, there are also several parties that have invested in pikeperch development. AquaPri A/S (Denmark), for example, invested €7.5 million (3million subsidized by EU and Danish government) in a new 500 metric tons recirculation plant/outgrow facility to diversify its trout business (Fischer, 2013). Fish2be (Belgium) is also betting on pikeperch production. Its main customer, i.e. Migros of Switzerland is investing in a large grow out basin near Dresden. It suggests that business possibilities for pikeperch exist. Below the focus is on business model for intensive recirculation systems for on-growth rather than extensive ponds (see FAO 2017).

#### Value proposition

Pikeperch is a fresh water fish and resembles rainbow trout and carp. A value proposition has to position this fish in regard to these species.

Pikeperch resembles trout; it is low in fat and thus completely lean. The structure of its meat is similar to flat fish species; white with soft texture (e.g. trout, carp, Pangasius). Pikeperch flesh has a mild taste, and thus lends itself to many different forms of preparation. Other USPs are: versatile fish that can be used in many preparations (e.g. salad), excellent taste, recognizable, local, and lean. Its filets can be boneless, unlike carp or (whole) trout. Therefore, it is a good alternative for people who look for an alternative for Pangasius, trout or carp.

Due to the low supply, pikeperch is an exclusive fish, and prices are fairly high. Farms sell whole fish at approx. 9-10 euro/kg. The fillets in Germany/Benelux end consumer markets have a going rate of approx. 30-35 euro/kg, while in Switzerland it even is approx. 50-60 euro/kg.

Pikeperch is easy to recognize based on its unique skin marks; hence selling fillets with skin on could offer a unique selling point (USP).

Pikeperch is mainly sold fresh (as whole fish) or as fillets (Deliverable 27.3) to distributors/wholesalers, restaurants (whole fish), and local retailers plus to large supermarkets (particularly in German speaking countries). However, farmers also sell live animals to recreational fish ponds (e.g., in Germany, Poland and Czechoslovakia), and juveniles to other fish growers.

The growth process takes 15-18 months to reach 800-1,200 kg. For a good fillet the fish should be 1 kg. However, as growth of the fish slows disproportionately after reaching 800 grams the aim should be selling smaller fillets.



### Target customers

Consumers in the EU countries consuming pikeperch prefer fish sold under local label and are willing to pay higher prices for such products. Developing a local brand is an opportunity for differentiation. The ASC label should be used in combination with this local label. Swiss supermarket chain Migros also plans selling this species using local claims because it positively resonates with consumers and the prices they are willing to pay. So, the customer benefit for the high price could be: *‘Delicious fresh water fish from a trustworthy source close to home.’*

Currently pikeperch is still a niche product, and relatively unknown in many markets. The niche consists of German speaking countries, like Germany, Austria and Switzerland, where it is well-established and has a serious market share. The fish is also well accepted in Eastern-European countries like Poland and Hungary. Here people mainly eat it for Christmas (festival). In these east European countries people used to eat cheap carp but are now shifting toward the more expensive and therefore exclusive pikeperch. A market for pikeperch also exists in North America and China (Intrafish 2013).

After the above-mentioned countries expansion could continue in adjacent countries, for example Denmark, Belgium and The Netherlands, and in Eastern European countries such as Poland, Hungary and Czech Republic (that produce the fish themselves). It is anticipated to be easier to sell here than to consumers in saltwater fish oriented countries like the Mediterranean countries (e.g., Spain). Good international opportunities involve the United States and China (Eurofish Magazin 2015, Fischer 2013).

In accordance with Deliverable 29.4 for the traditional (e.g., German speaking) markets traditional segments can be targeted and grown. In contrast, in new markets (e.g., Belgium, Netherlands) involved innovators and traditional fish eaters should be targeted. Involved innovators stand out from other two segments as being more knowledgeable of the healthiness underlying the fish consumption. They are more likely to try new alternatives entering the market. ‘Traditionals’ are conservative and reserved regarding the new experiences in fish products in general, but hold the strongest positive beliefs regarding the farmed fish production, being also aware of its possibilities both in connection to the environment but also regarding the hedonic aspects of fish consumption.

### Distribution channels

Pikeperch is mainly sold as whole fish to restaurants (via wholesalers), and in small amounts to retailers (production lags behind). The out-of-home market seems to be driving penetration in the retail market (BVF 2017). To sell to large retailers a constant, reliable delivery is important. Retailers sell fillets. Sustainability certification is generally needed to grow this business.

Penetrating a market through the out-of-home market would seem to be a good strategy. If consumers get in contact with this new aquaculture species due to preparation by an expert, the chance is higher that they will try it at home. Other products have been successfully introduced in the market this way.

The Swiss retailer Migros has shown interest for pikeperch. Referring to Migros’ investments in pikeperch other European retailers could be interested also to explore the opportunities for this species. Pangasius is interesting for consumers since it is a cheap product, but all sustainability issues make the product vulnerable. Pikeperch is a more solid and stable choice for distributors. One of the partners in the project has contacts with Carrefour that considers to capitalize and to expand the assortment of fish in France and Belgium. Other retailers could use a similar approach.

Collaboration with large super markets is a good idea for quick market expansion and penetration, but farmers /suppliers should be careful to not become too dependent. Restaurants help create a buy-in of



customers and facilitate market penetration in the retail /monger market. By developing a portfolio of channel relations and expanding its markets growth can be accomplished and sustained.

### Resources and key partnerships

Pikeperch is a difficult species. It is prone to stress and sensitive to bacterial loading of water. Moreover, it is sensitive to high density resulting in stiff cannibalism. Hence, it needs great attention and quiet conditions. By controlling the temperature and light the fish can spawn four times a year, which allows for continuous supply of the market, e.g. super markets. Close cooperation with research institutes and water management companies is beneficial. An issue in raising pikeperch is cannibalism; approximately 45-50% of product (e.g. larva) is lost. Reduction of cannibalism by good selection and breeding is possible.

Only a handful of major farmers of pikeperch exist in Europe. Experimenting with intensive rearing many went bankrupt or stopped their efforts in the past few years. It shows that it is hard for commercial producers to master the process and build a constant revenue stream.

Recirculation systems have high energy use. So, energy consumption is high and costly. Reduction of energy cost is vital to success (Fischer 2013). A partnership or deal with an energy company would be desirable for farmers of aquaculture of pikeperch.

Stripping the eggs rather than using fish spawning seems to offer the best results. It offers valuable data on numbers of eggs, fertilization and survival rates and thus helps to optimize processes more easily (Eurofish Magazine 2015). So, careful data analyses and active life stock management are needed.

Pikeperch has an average market weight of 750-800 g. Fillet yield is approx. 45%. Key to good tasting products is good pre-mortem treatment. Therefore, processing expertise is important for pikeperch farms to achieve necessary product quality.

Farmers need adequate financial resources, i.e. slack, to deal with disruptions in production associated with experimentation stage of development of this species. In this regard, adoption of this species may be easier for established firms than start-ups (mono-product).

Firms need to step up their marketing, i.e. make serious marketing investments to build channels and develop the market for pikeperch. Selling the fish under local product/country of origin labels resonates with customers and can be used to create a unique, sustainable positioning.

Finally, good stakeholder management with, for example, environmental protection agencies, policy makers and government is important. Farmers may benefit from increased awareness for need and opportunity in rural areas to help supply fish in Europe. Farmers may benefit from Brexit due to negative consequences for fresh water fish supply which may increase possibilities for farming. As pikeperch aquaculture is getting established it can positively affect employment in rural regions.

### Key activities (and related resources)

In summary, the following activities are needed for the successful launch and commercialization of pikeperch in the market:

- Human: strong production knowledge required (spawning, post mortem treatment etc.)
- Constant supply, e.g. using multiple breeding groups. Sustainable certificate.
- Marketing knowledge (e.g., country of origin claims/brand), channel relations management, international marketing activities (leveraging large retailers' relations)



- Financial slack to be able to overcome incidents
- Good data and live stock management for optimal results
- Energy cost management
- Relationships with research and water treatment/equipment suppliers

#### 4.2.2 Meagre

Meagre is unknown to many European consumers and only sold in small quantities to small market niches. Sales are restricted to local markets, mainly Italy, Spain, Portugal and southern France. Although a market study (Montfort 2010) predicted fast growth in production due to intrinsic market value of this species to the consumer market, progress seems slower than was anticipated. Serious and persistent challenges for commercial producers remain.

##### Value proposition

Meagre is a species with “an attractive fish shape, good processing yield, good nutritional values, low fat content, excellent taste, firm texture suitable for a large variety of recipes” (Montfort 2010). Substitutes for meagre are European sea bass and gilthead sea bream, which today are positioned as middle-priced species. However, meagre has a superior taste, texture and has less fat than for instance sea bass. Consumers tend to prefer meagre over many other species; meagre has a superior overall value.

While wild meagre generally is 20-40 kg, farmed meagre rarely exceeds 4 kg. Still, it grows fast, can attain large sizes, and can be available year-round. Meagre is an excellent raw material for the seafood processing industry. Once processed, meagre competes with salmon and Pangasius (a catfish farmed in Southeast Asia), which are also often transformed into a large variety of end products (Deliverable 27.3).

Meagre shows good marketing potential and can be processed into portions (fillets, loins and fish-burger) to supply the growing segment for portion sized ready-to-cook products, provided large commercial size is attained (>2 kg) (e.g., Hernández et al., 2009) (Deliverable 27.3).

The products developed for meagre in DIVERSIFY were fish-burger and fish salad and thus catered primarily to the consumer trend of convenience (Deliverable 29.5). Extra new product development could support market development.

USPs and related pay off can be summarized as: *Fish with excellent texture and taste in convenient form, from fillets and to other processed products and even meals. Low fat/lean.*

##### Target customers

Because meagre is an unfamiliar fish species, in current markets its reputation lags behind, for instance, sea bass and beam, and serious promotion effort is required to convince consumers to try the product. Problematic is the fact that meagre is known by consumers under different, local names (Deliverable 27.3). Hence, there is a serious marketing communication challenge.

Traditional local markets for meagre are Italy, Spain and Portugal. First penetrating these markets with this species will help secure farmers’ competitive positions. The results and marketing insights can then be used to build market share in other European markets. If aiming at processed foods branding of these products may be important too, maybe more important than building consumer awareness for the species per se.



Based on Deliverable 29.4 in new EU markets/countries ‘innovators’ and ‘traditional’ market segments should be targeted. ‘Involved innovators’ stand out from other two segments as being more knowledgeable of the healthiness underlying the fish consumption. They are also more likely to try new alternatives. ‘Traditionals’ are conservative and reserved regarding the new experiences in fish products in general, but hold the strongest positive beliefs regarding the farmed fish production, being also aware of its possibilities both in connection to the environment but also regarding the hedonic aspects of fish consumption. Particularly the convenience subsegment in these main segments may be targeted.

### Distribution channels

Meagre is currently most sold in food service rather than in the retail channel (80/20%). The fish is less available from supermarkets and mongers. Even most mongers, for example in Spain, don’t carry it. In Madrid, it is available from mongers but has to be pre-ordered. Hence, the retail channel for meagre needs to be developed completely. Given the potential to address the convenience market the focus could be on channels related to this positioning e.g., service food companies or convenience restaurants.

Since meagre wild catch is best known in southern France, Portugal, Italy, Greece and Spain (Deliverable 27.3), market development for meagre should start in these countries, before expanding to other EU countries.

Demand in the market is not increasing as rapidly as production prices are decreasing. Particularly retail demand lags behind. So, serious investments in building channel relationships are necessary. Only then access to the consumer market can be obtained and demand stimulated. However, it requires marketing vision and investments from the farmers and their partners. A collaborative relationship may be considered with retailers and processing firms to develop a product range and explore market opportunities. Venturous partners (e.g., innovators, runner up firms) should be selected rather than conservative ones. The products that have been developed in the DIVERSIFY project are a good starting point.

### Resources and key partnerships

Meagre is one of the more established fish species and has mature production/farming possibilities. However, some bottlenecks remain and thus production levels are still low yet growing. The average size of fish sold currently is 1-2 kg. However, the fish can grow substantially more (it has the same potential as greater amberjack). In 15 months, weight can be doubled. Specific cuts from large farmed fish may have to be developed. This requires collaboration with processing firms. This would also allow for extra new product development and exploring branding opportunities. Extra new products are seen as critical to market expansion (Deliverable 27.3).

Meagre is often sold on the spot market. It is difficult to close annual contracts. As a result, price fluctuations are high. This is fuelled partly by seasonal trends (people eat meagre for religious reasons, e.g. with Easter and/or Christmas) and producers anticipate these trends. Lack of coordination in the value chain, and homogeneous/generic product add to this problem. Hence, someone needs to take initiative and act as channel leader. By aiming for more value added i.e. convenience products and selling them to retail partners as well as to food service companies a leap forward could be made. However, investment in channel relations and sales/marketing are both critical and necessary. It can help to develop a more constant level of demand rather than current seasonal business. Well controlled and certified supply will be important in this process. A possibility might be for suppliers of two



countries to collaborate to accomplish this change. They could share the cost by cooperating with a large European retailer.

Farmers need also good stakeholder management towards environmental protection agencies, policy makers, government etc. Farmers may benefit from increased awareness for need and opportunity in rural areas to help supply fish in Europe.

#### Key activities (and related resources)

In summary, the following activities are needed for the successful launch and commercialization of meagre in the market:

- Human: strong production knowledge
- New product development in cooperation e.g., with venturous food service firms
- Excellent marketing knowledge, particularly branding and communications for convenience products
- Channel management and coordination
- Financial slack: investment in supply chain and relationship management and marketing

#### **4.2.3. Greater Amberjack**

No significant farming of greater amberjack exists, even though attempts in Europe have been made for several decades stocking wild juveniles (Deliverable 27.3). A key problem is fish health, with losses amounting between 50-80% during the growth process. A recent new initiative in Spain of producer Geremar (Tenerife) together with the local research institute concerns an exciting new impulse. The producer is an established firm looking for diversification and is committed to this new species. The producer has good contacts with Spanish supermarkets. Much depends on the first-year results, which are expected winter/spring 2018. Guidelines for a business model are listed below. Reduction of product loss, and thus better health control of the fish in the production process, is a key requirement for moving towards a viable business model.

#### Value proposition

Greater amberjack is a large fish with high flesh quality. Its good quality meat has high consumer acceptability and represents good market value (Nakada, 2000). Tuna is theoretically its closest substitute. Since tuna is a well-known species, with a wide product assortment in all price categories, adequate positioning of greater amberjack is important to gain a strong market position. The challenge for sellers of greater amberjack is to differentiate it (enough) from tuna and to compete on price.

Prices range between medium and high; gross price is 12 euro/kg. Net fish, i.e. steak/fillet sells at 25-30 euro/kg in stores of fish mongers.

Greater amberjack scores high on Omega3. This can be used as a unique selling point. It addresses consumers' concerns for health, in particular heart. Also the fact that (some) tuna is endangered and has high risk of high levels of toxic /heavy metals (as the fish is at end of food chain) could be used as an argument in favour of farmed greater amberjack over consumption of tuna.

Consistent with the above the product developers proposed and tested great amberjack steak. Other related products could be developed.

USPs include: *Excellent meaty fish, similar to tuna, high Omega 3 and healthy. Sustainable production and products. Broad use possible.*





### Target customers

Customers for greater amberjack are probably the consumers of tuna (e.g., fresh, frozen and canned forms) and similar species/products. Aiming again for innovators and traditional market segments it can thus be positioned as satisfactory, “meat-like fish” with health properties (Omega3, good for heart). Key will be generating trail to let customers experience the similarities.

For strong perceived added value in the consumer market greater amberjack should best kept far from canned products and probably frozen products. These product categories are price-oriented market in most countries. Only in fresh products or limited processed products (like smoked or precooked fresh products) a strong margin can be reached and maintained.

Based on Deliverable 29.4 innovators and traditional market segments should be targeted using the health and other claims mentioned above.

### Distribution channels

Market development should probably first focus on markets such as Spain, Greece and Italy, particularly as long as there is still short supply. The aim would be to penetrate the market but also grow the total market by launching processed, convenience products.

Once production/supply increases added value products and processed products could be used to develop the market for greater amberjack further (Deliverable 27.3). Like tuna it has the potential to be offered in fresh, frozen and canned forms to all segments of the market.

### Resources and key partnerships

No significant farming exists, even though attempts in Europe have been made for several decades stocking wild juveniles. The fish is still in experimental stage with losses between 50-80% of fish in production/farming stage. The lack of reliable reproduction and the unavailability are major bottlenecks for the acceptance of greater amberjack by the EU aquaculture industry (D27.3).

Necessary partners include providers of juveniles and fish veterinarians. The latter need knowledge of greater amberjack to be able to assist in the farming process, i.e. help deal with persisting health problems such as parasites, and viral/bacterial infections.

Due to the sheer size and differently shaped than most other species, greater amberjack needs special tooling/equipment to be processed efficiently and effectively. Collaborating with processing firms in early stage thus seems wise. Thus, good contact with processing firms is important too.

There is also little understanding of the chance of success and how to sell this fish species. However, if the Tenerife based farm manages to improve production efficiency, it can seriously benefit from its excellent connections with Mercadona (#1 super market chain in Spain with over 1600 stores in the country), restaurants, and wholesalers/distributors to which they now sell sea beam and bass. They can leverage these connections to get the fish to market as fillets and in processed product form. The firm will also benefit from their close relationships with other processing firms (slaughter, smoking of fish etc). However, it is important to select venturous partners, i.e. those interested in innovation and willing to accept uncertain outcomes (Nijssen 2017).

Greater amberjack has a fast growth rate (i.e., short time to market size). Fish of 90 g reaches 1 kg in a year, and 6 kg in a period of 2.5 years. Its large size makes this species very suitable for product



diversification and development of value added products (D27.3). Slaughter yield is some 50% suggesting an excellent fish/food conversion rate.

Given the experimental stage serious production/species knowledge is required as well as financial back up. An option might be to think of a joint venture. It would buy more commitment and clarity of means and goals, as well as division of revenues.

Finally, good stakeholder management is required. This involves relation management with environmental protection agencies, policy makers and government among others. Farmers may benefit from increased awareness for need and opportunity in rural areas to help supply fish in Europe.

#### Key activities (and related resources).

In summary, the following activities are needed for the successful launch and commercialization of greater amberjack in the market:

- Human: strong production knowledge and fish health management
- Good relationships with veterinarians and research institutes
- New product development in cooperation venturous food service firms and national retailers.
- Cooperation with producers and machine manufacturers to ensure efficient processing
- Excellent marketing knowledge, particularly branding and communications for convenience products
- Efficient channel management and coordination
- Financial slack

#### 4.2.4. Grey mullet

Farming of grey mullet has existed a long time, but is limited to capture-based aquaculture, that is wild fry are grown out in captivity to market weight (600 to 1200 g) (D27.3)). Complete aquacultured grey mullet remains problematic, but efforts have been going on recently in Israel.

#### Value proposition

Grey mullet is a substitute for whitefish in general (Deliverable 27.3). Although other parts are also consumed, the grey mullet is most known for the product bottarga (fish roe) that is considered a great delicacy. The market for this high value product (>100 €/kg) is expanding around the Mediterranean. The fish itself is, however, much lower valued by the market and consumers. Mulletts in general have a negative consumer's image in most parts of Europe because of their filter feeding activities in harbours and other not very clean waters that provide them an unpleasant taste. However, mullets raised in clear waters are of excellent quality and taste. To make farmed grey mullet a success its bad image needs to be addressed. This will require a serious communication effort.

The supplier's power of grey mullet farmers is low due to the high quantities produced. It has resulted in low prices for this fish.

In the product development process of DIVERSIFY two products were proposed and developed for grey mullet: fillets in olive oil and thin smoked fillets. Thus, the suggestion for this species is to focus, next to bottarga and fillets, on medium processed products.

In Deliverable 29.6 the positioning of products was explored based on a variety of communication cues. Consistent with this deliverable's findings a 'produced in own (domestic) country', or other country of origin indication should be used to ensure that consumers develop strong product quality and fresh associations for these products. Sustainability claims can also be added and leveraged. The ASC logo currently does play an important role in consumers' fish product choices and may even



become more important in future as consumers grow more environmentally sensitive. It adds to consumers' quality perceptions and increases their willingness to pay a price premium. Health claims can be added optionally.

Based on these findings the suggestion would be to focus on country of origin and sustainable processing/channel claims, e.g. "*Your delicious and local alternative. Making preparation of delicious food easy.*" (the latter links to the medium processed convenience products involved). To match this positioning a price premium should be accounted for. Note that it should require a complementary marketing investment to build brand awareness and sustain these claims.

An alternative strategy may be to keep serving the local market (i.e. stay with current business model) and make a small leap forward enjoying the benefits from production advantages proposed by the DIVERSIFY project.

#### Target customers

Based on Deliverable 29.4 innovators and traditional market segments should be targeted using the health and other claims mentioned above.

In Egypt and some Arab countries, Islamic people know this fish from their home countries and could be a segment/niche to use as a beachhead for entering other Western European markets. However, the Arabic segment in the Western European market generally involves a price market. Only for added value products, e.g. for Islam festivities, higher prices are paid. Relying on distribution through Islam specialty stores and discounters and aiming for economies of scales such products are the best option to extend this market at a profit.

#### Distribution channels

These are currently lacking in EU countries. Given the limited presence and considering the option to target Islamic consumers, initial distribution using mongers located in areas with a large Islamic population could be considered.

Second, by targeting the out-of-home market awareness for the species can be created and positive attitude to its taste developed.

#### Resources and key partnerships

Farming of grey mullet has been practiced for centuries, but is still limited to *capture-based* aquaculture, i.e. wild fry (ca 1,000,000,000) are grown out to market weight (600 to 1200 g) in captivity (D27.3). Aquacultured grey mullet topped 140,000 t in 2012 with Egypt as its main producer. The issues are spawning in captivity and speeding up grow-out.

Production of this fish in Europe has been small and non-intensive (Pillay, 1993). General size of fish sold: 1.5 – 2 kg. The fish can be grown in polyculture with e.g., sea bass. However, consortium partner Geitonas (Greece) has grown some mullet for the DIVERSIFY project, but has been unsuccessful so far. The fish are only 50 g after 2 years! So, there is still a long way to go before farming grey mullet can be exploited as a business.

Investments in channel building and market development are key. So, serious investments in marketing and sales are required to allow for necessary market development. Given the missionary work needed, an effectual entrepreneurial approach may make most sense; i.e. leveraging one's network and using small iterative steps (Nijssen 2017).

Positive results are shown using plant protein food rather than fish meal. It can help reduce feed cost significantly, allowing farmers to turn profitable more quickly.



Good stakeholder management is required too. This involves relation management with environmental protection agencies, policy makers and government. Farmers may benefit from increased awareness for need and opportunity in rural areas to help supply fish in Europe.

#### Key activities (and related resources)

In summary, the following activities are needed for the successful launch and commercialization of grey mullet in the market:

- Human: production knowledge, particularly knowledge of spawning and grow out is needed
- Financial: sufficient room for investment/brand building
- New product development in cooperation e.g., with food service firms and national retailers
- Strong marketing knowledge, particularly building relationships with distributors/retail and to create a favourable image for grey mullet aquaculture (clean environment)
- Good relationships with distribution partners

#### **4.3 Detailing the business model per species/product: The customer interface**

For the products that were developed subsequent research and consumer tests were performed. Deliverable 29.6 reports the results of the “optimal intrinsic-extrinsic product quality profiles [developed] for their target segments” (p. 1). However, we note that the research was limited to greater amberjack and grey mullet and the products steak, ready-to-eat fillets in olive oil and thin smoked fillets. Despite the fact that no results for pikeperch (fillets) and meagre (fish-burger) and their products were developed, we still detailed the business models for these species/products to some extent. The products we use are fillets and fish-burger respectively. However, we note that these latter suggestions are not based on similar consumer tests. It also explains the different order of presenting the results than the sequence used above.

In the **Tables** below, moving from left to right, first the species is described followed by the product. This is based on previous deliverable D27.3 and other relevant deliverables, e.g., 28.2. The third column from the left depicts the value proposition for the product. It draws on deliverable D29.6 and is complemented with further suggestion in the fourth, most right column. In the rows of the Tables the value proposition, customer segments, customer relationship and distribution channels are discussed in further detail.



**4.3.1. Grey Mullet - Fish fillets in olive oil**

**Table 2a.** Detailing of value proposition and marketing mix for grey mullet/ready-to-eat fillets in olive oil

|                              | <i>Grey Mullet (D27.3)</i>   | <i>Fillets in olive oil (#33)</i>  | <i>Value proposition based on Results D29.6</i>   | <i>Suggestions</i>   |
|------------------------------|--|--|---|--|
| <i>Value proposition</i>     | <ul style="list-style-type: none"> <li>• Environmental friendly (Farming vs. wild catch)</li> <li>• Easy to cook</li> <li>• Versatile in type of preparation</li> <li>• Premium product: Gonads - Bottarga</li> <li>• Low trophic level</li> </ul>   | <ul style="list-style-type: none"> <li>• Traditional – premium meal component (D28.2)</li> <li>• ASC label (D28.2)</li> <li>• EU Farmed fish product (D28.2)</li> <li>• Delicatessen category; substitute for canned salmon/ tuna.</li> <li>• High convenience - Ready for consumption (D28.2)</li> <li>• High healthiness; nutritional value (D28.2)</li> <li>• Low innovativeness (D28.2)</li> <li>• high price (D28.2)</li> </ul> | <ul style="list-style-type: none"> <li>• Ready-made fish fillets in olive oil: 6.69 € (reference price per 300 g), and two premiums 7.69 € (15%) and 8.70 € (30%)</li> <li>• Price level seems too high for Italy and Germany. So, avoid highest price level in these countries. (29.6)</li> <li>• Stress:               <ul style="list-style-type: none"> <li>• Country of origin helps to sustain price premium</li> <li>• Omega3 and heart health claims are useful</li> <li>• Sustainability label (ASC) is key for German market (does not harm other markets)</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• This new product contains farmed premium fish that provides a convenient and healthy meal component, rich of Omega3.</li> <li>• Sustainable fish, helps fight over-fished/farmed tuna / salmon situation.</li> <li>• Glass packaging compliments high positioning</li> <li>• Consider developing/apply brand</li> </ul> |
| <i>Customer segments</i>     | <ul style="list-style-type: none"> <li>• Mass market: grey mullet (housewife)</li> <li>• Niche market: Bottarga</li> <li>• Main markets southern and eastern Mediterranean area.</li> <li>• Image problem</li> <li>• Best known by consumer from Islamic countries; may be target first (D27.3)</li> </ul> | <ul style="list-style-type: none"> <li>• Hedonic consumer with high sensory quality / convenience &amp; environmental conscious (D28.2)</li> <li>• Niche market</li> <li>• Target innovators and traditional segment (D29.2)</li> <li>• Very interested: Italy &amp; Germany, Spain, and maybe France; Not interested: UK (D28.2)</li> <li>• Purchase probability: UK (4.6); all other &gt; 4.9, D29.4, p.25</li> </ul>              | <ul style="list-style-type: none"> <li>• Best received in countries: Spain, Italy and UK. (D29.6)</li> <li>• Least appreciated in France and Germany (D29.6)</li> <li>• Target both innovators and traditionals.</li> </ul>   | <ul style="list-style-type: none"> <li>• Mass market strategy aimed at innovative and traditional fish eaters</li> <li>• High-end mass market.</li> <li>• Hedonic house-wives; double income.</li> <li>• Variety seekers</li> </ul>  |
| <i>Customer relationship</i> | <ul style="list-style-type: none"> <li>• Close relationships</li> <li>• Big market with tradition</li> </ul>   | <ul style="list-style-type: none"> <li>• Except for Italy there is limited innovation in this category (D29.5).</li> </ul>   |   | <ul style="list-style-type: none"> <li>• Involve producer of established brand, or develop own brand</li> </ul>  |
| <i>Distribution channels</i> | <ul style="list-style-type: none"> <li>• Partner channels: Dealers (face/phone) &amp; Bottarga makers (face/ phone)</li> </ul>   | <ul style="list-style-type: none"> <li>• Super market, specialty store, convenience store (D28.2)</li> </ul>   |   | <ul style="list-style-type: none"> <li>• Aim for large super markets</li> <li>• Target monger areas with many Islamic residents</li> <li>• Complement with specialty store/delicatessen</li> </ul>   |



4.3.2. Grey Mullet – Thin smoked fish fillets

Table 2b. Detailing of value proposition and marketing mix for grey mullet/thin smoked fish fillets

|                              | <i>Grey Mullet (D27.3)</i>  | <i>Thin smoked Fillets (#2)</i>   | <i>Value proposition based on Results D29.6</i>   | <i>Suggestions</i>  |
|------------------------------|---|---|---|---|
| <i>Value proposition</i>     | <ul style="list-style-type: none"> <li>• Environmental friendly (Farming vs. wild catch)</li> <li>• Easy to cook</li> <li>• Versatile in type of preparation</li> <li>• Premium product: Gonads - Bottarga</li> <li>• Low trophic level</li> </ul>  | <ul style="list-style-type: none"> <li>• Intense taste, smoked, salty (D29.4)</li> <li>• Good reception overall(scored 10 of all product ideas)</li> <li>• Smoked fillets can be used as a starter or incorporated in salad/sandwich (D28.2)</li> <li>• Sustainably produced</li> <li>• EU as COO</li> <li>• Processed premium product yet fresh and nutritious (D28.2)</li> <li>• Convenience (D28.2)</li> <li>• Perceived as costly (3.8) (28.2) Further seen as rather attractive (6.2) and versatile (5.6) (D28.2)</li> <li>• Competes with e.g., smoked meat and fish carpaccio (D28.2)</li> </ul> | <ul style="list-style-type: none"> <li>• 5.31 € (reference price per 300 g), and two premiums 6.11 € (15%) and 6.90 € (30%).</li> <li>• Price level/range good for all countries (D29.6)</li> <li>• Stress: <ul style="list-style-type: none"> <li>• Country of origin works positively and should be used to sustain price premium</li> <li>• Omega3 enhances marginally but significantly. Add claim healthy for heart</li> <li>• Sustainability label (ASC) is key for German market (does not harm to add for other markets)</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Niche product; component for meal/salad or on sandwich/on toast</li> <li>• Premium payoff: “Convenience and variety in your life”</li> <li>• Tasty and healthy alternative to e.g. meat alternatives</li> <li>• Alternative to similar fillets/ substitutes like fish carpaccio and other salads companions</li> </ul> |
| <i>Customer segments</i>     | <ul style="list-style-type: none"> <li>• Mass market: grey mullet (housewife)</li> <li>• Niche market: Bottarga</li> <li>• Main markets southern and eastern Mediterranean area.</li> <li>• Image problem</li> <li>• Best known by consumers from Islamic countries; may be target first (D27.3)</li> </ul> | <ul style="list-style-type: none"> <li>• Most positive sensory evaluation in Spain (7.1) and also rather positive in other countries.</li> <li>• Lowest mean acceptability in Italy (6.2) and UK (6.1) (D29.4) and also lower willingness to pay in Italy and UK (4.9 and 5.2 respectively vs overall 5.6)</li> <li>• UK not interested in grey mullet fillets (D28.2 p.38)</li> <li>• Target innovators and traditional segment (D29.2)</li> <li>• Target niche, convenience and gourmet</li> </ul>  | <ul style="list-style-type: none"> <li>• Acceptable for all countries, yet best received in UK (D29.6)</li> <li>• Target both innovators and traditional market segment</li> </ul>  | <ul style="list-style-type: none"> <li>• High-end niche of gourmet eaters.</li> <li>• Hedonic house-wives; double income.</li> <li>• Convenience oriented variety seekers</li> </ul>  |
| <i>Customer relationship</i> | <ul style="list-style-type: none"> <li>• Close relationships</li> <li>• Big market with tradition</li> </ul>  | <ul style="list-style-type: none"> <li>• Processors/smokers</li> </ul>  |   | <ul style="list-style-type: none"> <li>• Partnering with retailers (primary)</li> <li>• Specialty store/delicatessen store product range</li> </ul>   |
| <i>Distribution channels</i> | <ul style="list-style-type: none"> <li>• Partner channels: Dealers (face/phone) &amp; Bottarga makers (face/ phone)</li> </ul>  | <ul style="list-style-type: none"> <li>• Delicatessen category (D28.2)</li> <li>• Supermarkets but also delicatessen /gourmet stores</li> </ul>   |   | <ul style="list-style-type: none"> <li>• Aim for large super market adoption</li> <li>• Simultaneously mongers located in areas with many Islamic customers may be targeted. To counter possible ambiguous image stress that fish was farmed.</li> </ul>  |



### 4.3.3. Greater amberjack- Fish steak

**Table 2c.** Detailing of value proposition and marketing mix for greater amberjack/fish steak

|                              | <i>Greater amberjack</i>   | <i>Fish fillets/steak</i>  | <i>Value proposition based on Results D29.6</i>  | <i>Suggestions</i>  |
|------------------------------|--|--|--|---|
| <i>Value proposition</i>     | <ul style="list-style-type: none"> <li>Fast growing fish</li> <li>Excellent flesh quality</li> <li>Large size (easy to process)</li> <li>High consumer acceptability and demand</li> </ul> | <ul style="list-style-type: none"> <li>Highest score in sensory test</li> <li>Very good properties on all characteristics (p.11-12, D29.5)</li> <li>Premium product; healthy (D28.)2.</li> <li>In Italy, sensory scores generally lower although overall acceptance similar to other countries (p.15 D 29.5)</li> <li>Environmentally sustainable (containing ASC) label. Country of origin is EU.</li> </ul>  | <ul style="list-style-type: none"> <li>5.73 € (reference price per 300 g), and two premiums 6.59 € (15%) and 7.4 5€ (30%).</li> <li>Price levels ok, however in France product should <u>not</u> be priced at highest level (D29.6)</li> <li>Stress:               <ul style="list-style-type: none"> <li>Convenience (grill)</li> <li>Country of origin works positively and helps sustain price premium</li> <li>Omega3 and healthy heart claims work positively</li> <li>Sustainability label (ASC) particular for German market</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Easy to prepare high quality fish steak for grilling</li> <li>Excellent alternative to tuna and swordfish</li> <li>Help save the oceans, wild tuna</li> <li>Price in line with tuna, i.e. more high-end</li> <li>Transparent tray stressing freshness</li> <li>Add series recipes, e.g. online to offer cooking ideas</li> </ul> |
| <i>Customer segments</i>     | <ul style="list-style-type: none"> <li>N.a.</li> </ul>   | <ul style="list-style-type: none"> <li>Intended for a mass market</li> <li>Conscious customer; convenience/health (D28.2)</li> <li>Less processed and high quality product could have greater chances for success in the Italian and Spanish marke. (D28.2). Yet France has very high acceptance score so can also be considered (D29.4)</li> <li>Target innovators and traditional segment (D29.2)</li> </ul> | <ul style="list-style-type: none"> <li>Good acceptance in all 5 target countries (D29.6)</li> <li>No difference in acceptance between innovators and traditional segment. So, both can be targeted.</li> </ul>   | <ul style="list-style-type: none"> <li>Mass market</li> <li>Convenience, health conscious customers</li> <li>Also, out-of-home/restaurant market to stimulate consumer awareness</li> </ul>   |
| <i>Customer relationship</i> | <ul style="list-style-type: none"> <li>N.a.</li> </ul>   | <ul style="list-style-type: none"> <li>absent</li> </ul>   |  | <ul style="list-style-type: none"> <li>Address trend towards less animal proteins and more fish, plus convenience</li> <li>Sustainability label=trust</li> <li>Build of familiar name and precarious situation of tuna</li> </ul>   |
| <i>Distribution channels</i> | <ul style="list-style-type: none"> <li>N.a.</li> </ul>   | <ul style="list-style-type: none"> <li>deliver through several distribution channels including supermarkets, specialty stores/mongers</li> </ul>   |  | <ul style="list-style-type: none"> <li>Leverage trends towards less animal proteins and more fish, plus convenience to build relationship with super markets</li> <li>Add series recipes. Product message e.g.: ‘Daily meal of the Fish monger’ (D28.2)</li> </ul>  |



#### 4.3.4. Pikeperch- Fish fillets†

**Table 2d.** Detailing of value proposition and marketing mix for pikeperch/fish fillets

|                              | <i>Pike Perch (D27.3)</i>  | <i>Fish fillet</i>   | <i>Value proposition based on Results D29.6</i>  | <i>Suggestions</i>  |
|------------------------------|--|--|--|---|
| <i>Value proposition</i>     | <ul style="list-style-type: none"> <li>Sold whole</li> <li>Continuous supply (year-round)</li> <li>High quality flesh</li> <li>French fish (country of origin)</li> <li>Customizable size (near future)</li> <li>Scarcity (increasing demand, low volume farmed fish; wild catch dominates)</li> </ul> | <ul style="list-style-type: none"> <li>Premium product / meal component (D28.2)</li> <li>Different recipes, enhancing meal flavour (D28.2)</li> <li>Sustainable ASC label (D28.2)</li> <li>EU Farmed fish product (D28.2)</li> <li>Well-known and accepted fresh water species, particularly in German speaking countries but also e.g. France, Belgium Netherlands</li> <li>Easy to recognize with skin on</li> <li>Excellent, neutral taste†</li> <li>Low fat/lean</li> <li>Its filets can be boneless, unlike carp or (whole) trout.</li> <li>High price</li> </ul> | <ul style="list-style-type: none"> <li><b>[no information]</b></li> <li>2 small fillets (with and/or without skin)</li> <li>Price, market confirm with premium: 9-10 euro /.300 g</li> </ul> | <ul style="list-style-type: none"> <li>Position as fresh water fish with excellent taste</li> <li>Healthy and lean; e.g. Omega 3</li> <li>Offer with skin to emphasize uniqueness; (may be also offer without skin)</li> <li>Offer recipes in print and online</li> </ul> |
| <i>Customer segments</i>     | <ul style="list-style-type: none"> <li><b>Niche market:</b> Dealers &amp; Chefs</li> <li>Main markets Western Europe (e.g., Germany and France)</li> </ul>   | <ul style="list-style-type: none"> <li>Hedonic consumer with high sensory quality / convenience &amp; environmental conscious (D28.2)</li> <li>Mass market strategy in German speaking countries</li> <li>All other countries may be better to focus on niche</li> </ul>   |  | <ul style="list-style-type: none"> <li>Niche product</li> <li>First penetrate German speaking countries, and France. Followed by Belgium, Netherlands</li> </ul>  |
| <i>Customer relationship</i> | <ul style="list-style-type: none"> <li>Short &amp; long term relationships (building)</li> </ul>   | <ul style="list-style-type: none"> <li>Focus on existing contacts</li> </ul>   |  | <ul style="list-style-type: none"> <li>Build awareness for new species with trade/restaurants and consumers</li> <li>Offer with recipes</li> <li>Consider using celebrity support in adoption (food blogs/vlogs)</li> </ul>   |
| <i>Distribution channels</i> | <ul style="list-style-type: none"> <li><b>Partner channels:</b> Small set of distributors (face/ phone)</li> </ul>   | <ul style="list-style-type: none"> <li>Super market, specialty store, convenience store D28.2</li> <li>Catering and restaurants D28.2</li> </ul>   |  | <ul style="list-style-type: none"> <li>Retail</li> <li>Mongers</li> <li>Restaurants</li> <li>Use results from extra sensory test to convince Spanish parties</li> </ul>   |

† We selected, for pikeperch, fillets rather than paté/spread based on feedback during the workshop.





### 4.3.5. Meagre- Fish burger

**Table 2e.** Detailing of value proposition and marketing mix for meagre/fish burger

|                              | <i>Meagre (D27.3)</i>   | <i>Fish Burger</i>   | <i>Value proposition based on Results D29.6</i>  | <i>Suggestions</i>   |
|------------------------------|---|--|--|--|
| <i>Value proposition</i>     | <ul style="list-style-type: none"> <li>Sold whole or as fillets.</li> <li>The largest fillets can be smoked in some cases.</li> <li>An application for quality labelling has been filed (Label Rouge and Indication Geographique Protégé - IGP)</li> <li>Good quality flesh, low in lipids with a high proportion of polyunsaturated fatty acids</li> <li>Appropriate size for processing (filleting and smoking)</li> <li>Long shelf life</li> <li>Scarcity (high demand, low volume)</li> </ul> | <ul style="list-style-type: none"> <li>Frozen product (D28.2, p.6)</li> <li>Convenience</li> <li>Fish shape for children</li> <li>Premium product,</li> <li>Sustainable, EU origin</li> <li>Position as healthy AND playful/fun</li> <li>Vacuum packed, transparent packaging</li> <li>Low fat; high preservation quality (D28.2, p.24-26), nutritious (D28.2, p.34)</li> <li>Competing products include e.g. fish fingers and hamburgers (substitute).</li> <li>Many new fish burgers launched all countries in 2011-2016 (D29.5, p.8)</li> </ul> | <ul style="list-style-type: none"> <li><b>[no information]</b></li> <li>Burger with shape of fish</li> <li>Healthy and fun meal for children (up to 8 years)</li> <li>Nutritious and low fat, comparing favourably to fish fingers/hamburger</li> <li>Add Omega 3 claim and ASC certificate</li> <li>Price: 5.73€ (reference price per 300 gr.)</li> </ul> | <ul style="list-style-type: none"> <li>Most innovative new product;</li> <li>Better sold as fresh than frozen to stress value and legitimize price premium</li> </ul>  |
| <i>Customer segments</i>     | <ul style="list-style-type: none"> <li><b>Niche market:</b> Dealers &amp; Chefs</li> <li>Market not sufficiently developed as species is poorly known by the general public.</li> <li>Main markets Southern France and Italy.</li> </ul>  | <ul style="list-style-type: none"> <li>Specific mass segment; mothers with children</li> <li>Health conscious parents (D28.2, p.34)</li> <li>Convenience/variety seeking parent (p.34)</li> <li>Innovative yet familiar product characteristics (D28.2 p.16)</li> <li>Favourable purchasing probability in all countries: &gt;4.7 (lowest in UK/It; highest in France, i.e. 6.2 (29.4, p.25)</li> </ul>  | <ul style="list-style-type: none"> <li>Sell to parents that like fish/variety in diet</li> </ul>   | <ul style="list-style-type: none"> <li>Consider advertising, e.g. in super markets folder.</li> <li>Advertise aimed at parents and children</li> <li>Low cost options are use of social media and YouTube</li> </ul> |
| <i>Customer relationship</i> | <ul style="list-style-type: none"> <li>Short &amp; long term relationships (building)</li> </ul>  |  | <ul style="list-style-type: none"> <li>Consider developing brand to build relationship with audience/children.</li> <li>Use cartoon</li> </ul>   | <ul style="list-style-type: none"> <li>Brand relationship</li> <li>Maintain relationship actively</li> </ul>   |
| <i>Distribution channels</i> | <ul style="list-style-type: none"> <li><b>Partner channels:</b> Small set of distributors (face/ phone)</li> </ul>  | <ul style="list-style-type: none"> <li>Supermarket</li> </ul>  | <ul style="list-style-type: none"> <li>Super markets</li> <li>Food services, e.g. schools</li> </ul>   |  |



## 5. Discussion

In the DIVERSIFY project a rational approach towards developing business models was initially used. The rational positioning view treats business models as a rationally designed system and related management choices and operations. Focused on stimulation of farmed fish production and consumption, bottlenecks were identified and as much as possible resolved. Cost reduction research was performed (e.g., actions for reducing cannibalism and methods to enhance food consumption) and new products developed and tested using consumer research. Eventually it became more of an evolutionary approach focused on improving existing business models.

Several specific observations regarding the process can be made, which offer suggestions for improvement. First, mainly engaged in resolving biological issues i.e. production bottlenecks and driving down cost, farmers and other consortium partners focused first and foremost on the parties directly before and behind them in the supply chain. They showed little awareness for and thus paid little attention to more distant, strategic parties and issues. They were focused on the next level in the supply chain and not (yet) on the end-customer. It may be that they trust their partners to perform the strategic roles of bridging to target segments and differentiating the new species and their products from the competition, but it seems to make them rather dependent on these partners and may seriously limit their own rent earning capabilities. Lacking knowledge and access to the market directly or in a strategic partnership can make farmers vulnerable. Consistent with this, we classify farmers' business model behaviour (at least partly) as evolution oriented, aimed at picking low hanging fruit first rather than seeking business model innovation, which might be possible using their new farming practices/species. Together with partners and competitors they could for instance develop communication to stimulate the positive perceptions of farmed fish and farmed fish consumption in general and for their species in particular. They even could build their own brand (e.g. "Diversify", see for instance Deliverable 29.7) or country of origin label. A brand or label linked to optimal supply chain controlled farmed fish would also be an option.

Second, the farmers' business model innovation would benefit from looking for parallels and differences with other, related product categories (e.g., learn from parallels with meat farming like pork and ostrich to use the whole products, e.g. use fish liver, and skin) and dairy (reliance on high value products and best practices for developing fresh food brands). However, farmers of the fish species seem unaware and uninterested in learning from these analogies. Attention is focused on traditional value propositions and channels rather than on the exploration of alternative products and market opportunities. By fostering the strategic management of farmers, new opportunities and trends could be stimulated. Opportunities that could be explored are, for example, online selling of fish products and entry into the pet food and non-food markets (e.g. using fish skin to make leather products). Cat food products from the four species, for example, could address the positive trend of expensive pet food products and might generate margins more favourably than, for instance, a fish spread or pâté. Also leather products of the skin of large fish species like greater amberjack could be explored (e.g., belts and shoes could be considered, see Appendix B for initiatives on making shoes from fish skin in Belgium). If positioned similar to alligator and ostrich, such products could target a niche market and be profitable. A broader strategic perspective on business models by the industry would be useful and could help it leap forward against local and international competition. It would also allow for better using and processing of the complete fish.



## 6. Conclusions and recommendations

The results from this report have implications for food policy makers and managers in the aquaculture industry interested in developing the business opportunity for the focal fish species and stimulating market launch of the newly developed products. The results show that for several of the species business models are still difficult (greater amberjack and grey mullet) or even problematic (wreckfish and Atlantic halibut). Production problems make process outcomes uncertain and a constant supply difficult. Selling to large retail chains thus will be hard because it requires a controlled and continuous stream of production. Therefore, for the suppliers of experimental species, selling to smaller retailers/parties and local restaurants makes more sense. It generates cash flow, but without the risk of not living up to expectations of being a reliable partner who creates and delivers high quality products of promise. For these producers, collaborating with innovative channel partners who are willing to co-create and co-invest is their best bet (Coviello and Joseph 2012).

The more promising business opportunities and thus models concern pikeperch and meagre. For these species, most bottlenecks in production have been subsidised. The challenge now is to grow customer demand and market acceptance. The newly developed products can help give an impulse to this effort. The products developed for meagre were a fish-burger aimed at children and a fish salad for consumers who like convenience. By targeting the segment of involved innovative customers (Deliverable 29.2) and in particular those interested in convenience, progress can be made. Unfortunately, while these two species are most production ready they and their products had not been selected for additional consumer research to establish the best value specification and communication message (Deliverable 29.6). Still, suggestions were made towards building of results for the products developed for the less-production-ready species.

Overall, our results of the business model development showed a coherent business story for all four focal species, which is the first litmus test for any business model (Margretta 2002). The results showed that firms particularly need to pay more attention to their marketing efforts and relationship building with channel partners. Lack of such a certificate can prevent access to the retail sector. Although farmers will benefit from continuing to work with partners to enhance their production processes to further increase quality/growth and decrease cost, it is clear that serious investments in marketing and sales/channel management are needed. Only with a buy in from distribution partners and adequate marketing efforts can consumers be reached and convinced to adopt and continue purchasing these new products. It benefits from using country/region of origin branding and health claims (e.g. Omega3), among others.

Finally, the business models were further detailed with regard to the newly developed products of the species. Based on the unique selling points of each species and its product (or set of products) that had been identified the business story was filled in. By detailing the elements of the marketing mix (that is: product, place, promotion, price) in a consistent and coherent way ideas for the market launch of the new products were proposed in accord with the general value proposition of the species, the strategic perspective underlying the business model, and results of consumer research regarding optimal intrinsic-extrinsic product quality profiles in the five target countries (Deliverable 29.6). It will help firms to make inroads in the target segments and thus develop the market with their species and products.

Two important additional observations were made regarding business model innovation in the industry, which hold important recommendations for policy makers and managers alike. We noted that firms focused on levels directly before and after them in the supply chain, and noted that such a bias makes an organization vulnerable to fluctuations elsewhere in the supply chain. It prevents these firms from having a broader strategic perspective. It implies that these firms sell fish or fillets rather than serve customer segments and their (changing) needs through their products. It may cause myopia and



failure to respond to shifts in the marketplace. It also will prevent alert response to new trends such as growth of online business and other business model innovations.

A second observation concerned the possibility to learn from other sectors by drawing parallels. Many other sectors have travelled the same road. Studying them can bring new ideas. For example, pig farmers learned using all parts of their animals to optimize their business. Such knowledge and insights can help fish farmers reflect and enhance their own business model, e.g. better use discards and muscle tissue. The new products developed under the DIVERSIFY represent a first step towards continuous innovation and market development, and should not be considered an end in itself.

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## Appendix A: List of Workshop Participants

- Ed Nijssen – marketing professor at TU/e, the Netherlands
- Gemma Tacken – Senior market researcher at Wageningen Economic Research, the Netherlands
- Machiel Reinders – Senior scientist/ consumer researcher at Wageningen Economic Research, the Netherlands
- Kriton Grigorakis – Research focuses on fish quality (including sensory quality) at HCMR, Greece
- Xavier Ojeda– Spanish Aquaculture Association APROMAR, interested in helping the sector to find new species. Mainly interested in meagre, greater amberjack, grey mullet, wreckfish.
- Miguel Anga – Spanish National Federation of Fish. Represents little companies of fresh fish run by fish mongers, 23,000 employees.
- Yolanda Marin, Director of Geremar, ymarin@geremar.com
- Ioannis Pelekanakis – Federation of Greek Marine cultures.
- Martina Ferreira Novio – Works at ANFACO, CECOPESCA – Professional Association of Fish Processors in Spain. Intermediary between producers and the industry.
- Cornelis van der Lelie – CEO Fish2be. Producers of pikeperch since 2003. Produce pikeperch for German market, but basically no market for pikeperch in countries like UK and France.
- Lluís Guerrero – IRTA. Involved in Diversify-project in different tasks.
- Rocio Robles – CTAQUA (non-profit organisation). Involved in grow out of grey mullet, but also in new product development. Also responsible for dissemination.
- Manolis Daniel – ARGOSARONIKOS FISHFARMS S.A., Greece.



## Appendix B: Shoes from fish skin

De Standaard (2016) “Nieuw in ons land: schoenen van vissenleer”

[http://www.standaard.be/cnt/dmf20161211\\_02620173](http://www.standaard.be/cnt/dmf20161211_02620173) (accessed 27-1-2017)

**Het ziet er zacht en breekbaar uit, maar vissenhuid is best wel stevig. Dat ondervinden ook de klanten van de Antwerpse ontwerpster Natalie Van Lijsebettens. Als eerste in België maakt zij volledige schoenen van vissenleer.**

'Het is iets arbeidsintensiever dan een koe openleggen. Maar het voelt wel hetzelfde aan als werken met een python of een andere slang.' Natalie Van Lijsebettens is schoenmaakster van de Antwerpse winkel [Collectif d'Anvers](#), met een webshop vol leer.

Ze is momenteel de enige handelaar in België die vissenhuid commercieel vermarkt. 'Twee maanden geleden heb ik mijn eerste cowboyboots gemaakt, in blauw vissenleer', zegt ze. 'Heel funky. Ik was ze direct kwijt aan een klant uit Los Angeles, en ben intussen bezig aan een volledige wintercollectie voor 2017.'

Normaal belanden de vissenvelletjes gewoon tussen het afval, maar de modewereld recupereert ze nu stilaan op de stiktafel. Sinds twee maanden ook in België: de Oostendse Stephanie Maes koopt de huiden aan bij het Franse bedrijf Arcachon om ze hier te verdelen.

'Het is een interessant alternatief voor andere leersoorten', zegt ze. 'De huiden worden met ecologische materialen behandeld en zijn ook van oorsprong duurzaam: we gebruiken materiaal dat anders gewoon weggegooid wordt.'

### **Zonder geur**

Enig minpuntje: het is arbeidsintensief. 'Voor één paar schoenen heb ik vijf vissen en zo'n twee dagen werk nodig', zegt Van Lijsebettens. 'De schoenen kosten gemakkelijk 750 tot 800 euro, omdat je wat montagewerk hebt. Vissen zijn vrij klein, je moet dus alle velletjes als een puzzel naast elkaar leggen en stikken. De eerste huiden roken ook nog een beetje naar vis. Maar die geur krijgen ze er nu gelukkig uit.'