



**An Roinn Talmhaíochta,
Bia agus Mara**
Department of Agriculture,
Food and the Marine



Mid-Term Assessment
*National Strategic Plan for
Sustainable Aquaculture Development*

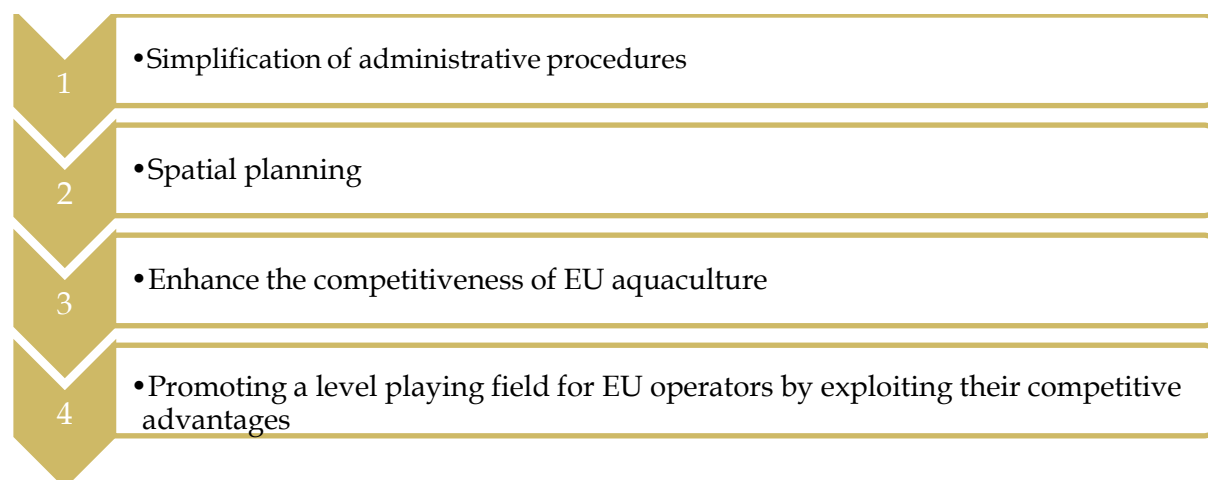
Contents

<i>Executive Summary.....</i>	<i>3</i>
<i>Introduction</i>	<i>6</i>
<i>Priority Area 1 Simplification of administrative procedures</i>	<i>7</i>
<i>Priority Area 2 Spatial planning</i>	<i>12</i>
<i>Priority Area 3 Enhance the competitiveness of EU aquaculture</i>	<i>18</i>
<i>Priority Area 4 Promoting a level playing field for EU operators</i>	<i>28</i>
<i>Acknowledgement</i>	<i>31</i>

Executive Summary

Pursuant to a requirement of the CFP, Ireland published a *National Strategic Plan for Sustainable Aquaculture Development* in October 2015. This multi-annual national plan (MANP) proposed 24 actions to be implemented over the period up to 2020.

This mid-term assessment is being conducted in accordance with a template proposed by the European Commission. It assesses progress under 4 headings:



The following is a summary of this assessment.

Priority Area 1 - Simplification of administrative procedures

The Minister for Agriculture, Food and the Marine tasked an Independent Aquaculture Licensing Review Group with examining the aquaculture licensing process and associated legal framework. The Group made 30 recommendations. The Department is preparing an Implementation Strategy to implement these recommendations and work is almost complete.

The Independent Aquaculture Licensing Review Group recommended that the licensing backlog be cleared by the end of 2019. The Department anticipates licensing determinations in the order of 300 per annum over the next two years, which is expected to clear the backlog.

The Independent Aquaculture Licensing Review Group recommended that all new licence applications submitted after 1 January 2018 should be determined within 6 months. This is under active consideration in the Department.

The Independent Aquaculture Licensing Review Group recommended the establishment of an open-access, web based aquaculture application and monitoring system. A task force has been established within the Department to progress this recommendation.

Priority Area 2 - Spatial planning

The Department of Housing, Planning and Local Government is the lead Government Department for implementation of marine spatial planning in Ireland. The Marine Institute has been mandated by Government to provide scientific and technical advice to that Department to inform the marine spatial planning system. The EMFF Managing Authority has approved EMFF grants of €2.9 million to the Institute to pursue 9 scientific and technical projects to inform the proposed marine spatial planning system.

EMFF grants have also been awarded to Bord Iascaigh Mhara and to the university sector to pursue projects that will benefit the proposed marine spatial planning system.

Priority Area 3 - Enhance the competitiveness of EU aquaculture

A range of actions are being implemented under this heading, with financial support from Ireland's EMFF Operational Programme.

The Sustainable Aquaculture scheme, launched in 2016, provided grant aid to 39 capital investment projects over the 2 years 2016/17. The majority of projects concerned oyster farming, but also some mussels and finfish projects. The investments aim to grow output, increasing economies of scale, and to enhance value, through for example investments in grading equipment. The full impacts of these investments will only become apparent after the new infrastructure has been in place for several years.

Special incentive grant rates of 50% are available for new entrants to the sector, and also for investments in seaweed, integrated multi-trophic aquaculture, and recirculating aquaculture systems.

The Knowledge Gateway Scheme, launched in 2016, is providing aid to public bodies, research institutes and to operators for investments in innovation and research to enhance productivity, environmental management, disease management and animal husbandry in the aquaculture sector. Take up of supports is very positive to date and a number of valuable areas of research are being pursued. These projects can potentially assist operators in future years to increase productivity, and reduce costs through for example reduced incidences of disease and parasites.

A range of technical, environmental and business advisory services are being made available to the sector through an EMFF grant to Bord Iascaigh Mhara for this purpose.

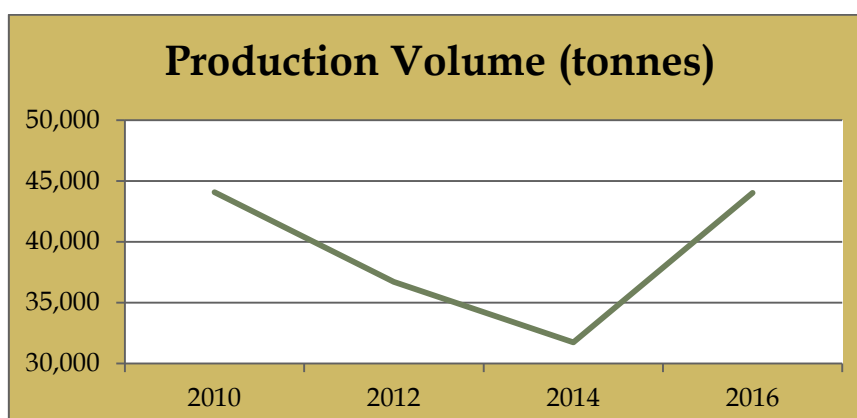
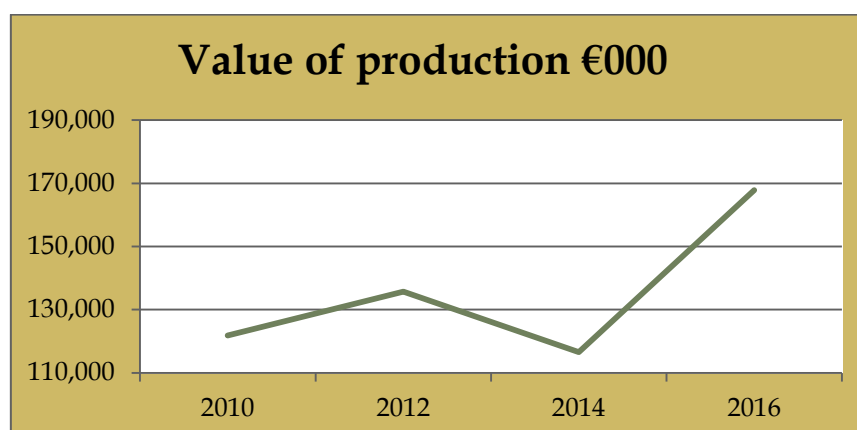
The newly launched Seafood Training Scheme is providing aid to operators to participate in training and academic courses to enhance technical and management skills in the aquaculture sector.

Priority Area 4 - Promoting a level playing field for EU operators by exploiting their competitive advantages

Progress under this heading has focussed to date on renewing and enhancing actions to manage risks to the aquaculture sector and the marine environment from invasive alien species. Actions have included development of biosecurity plans, workshops for operators to enhance recognition of IAS, and development of a smart phone app for reporting sightings of IAS.

Overall Conclusions

BIM survey data shows that there was an overall increase in output of some 10% across all the species over the 2015 to 2016 period. In 2016, the industry produced approximately 44,000 tonnes. Value rose to a level of €168m at first point of sale at the end of 2016. These figures indicate that the trend of decline has reversed in recent years. The MANP aims for an increase in production to 81,700 tonnes by end 2023. While considerable growth is required to reach this level, the outlook at present is positive, and continued implementation of the actions identified in the MANP should greatly assist in this objective.



Introduction

In order to foster sustainable aquaculture development, the Common Fisheries Policy set up a voluntary process for cooperation based on non-binding Union Strategic Guidelines, multiannual national plans and exchange of good practices amongst Member States.

Strategic Guidelines for the Sustainable Development of EU Aquaculture were published by the European Commission in 2013. These defined general objectives and a strategic framework for the promotion of sustainable aquaculture. The Commission Guidelines focused around four priority areas to address aquaculture growth:

- Simplify administrative procedures,
- Securing sustainable development and growth of aquaculture through coordinated spatial planning;
- Enhancing the competitiveness of EU aquaculture
- Promoting a level playing field for EU operators by exploiting their competitive advantages

The CFP required all Member States to prepare a multiannual national strategic plan (MANP) for the development of aquaculture activities on their territory. Ireland's *National Strategic Plan for Sustainable Aquaculture Development* was finalised on 23 October 2015, following public consultation earlier in 2015. Ireland's MANP was submitted to the European Commission on 23 October 2015. The MANP proposed 24 actions to be implemented over the period up to 2020.

The Commission Guidelines encouraged Member States to make a mid-term assessment of the implementation of their MANP by the end of 2017 on the basis of which the Commission intends to consider the opportunity to revise the strategic guidelines.

In 2017, the Commission provided Member States with a guidance document outlining the proposed content and methodology for mid-term assessments.

This document assesses implementation of Ireland's MANP at the end of 2017. The assessment follows the Commission's recommended methodology and structure.

Priority Area 1

Simplification of administrative procedures

Ireland's MANP vision for 2020

"A streamlined and efficient licensing system that provides greater business certainty to applicants, and transparency to the general public."

Actions Implemented

Action No.
22

- Review and revision of the aquaculture licensing process, including the applicable legal framework

A review of the Aquaculture Licensing process by an Independent Aquaculture Licensing Review Group was commissioned by the Minister for Agriculture, Food and the Marine in December 2016 and the report was received by the Minister on 31st May 2017.

The overarching conclusion of the Report is for a root-and-branch reform of the aquaculture licence application processes to take place, with a focus on both short-term immediate actions and longer term initiatives. There are a total of 30 recommendations in the Report.

Since receiving the Report, the Aquaculture and Foreshore Management Division of the Department has engaged in detailed consideration of all 30 recommendations with a view to preparing a comprehensive Implementation Strategy. This Implementation Strategy will take account of legislative, environmental, technical and public interest issues that have a bearing on the sustainable development of the industry.

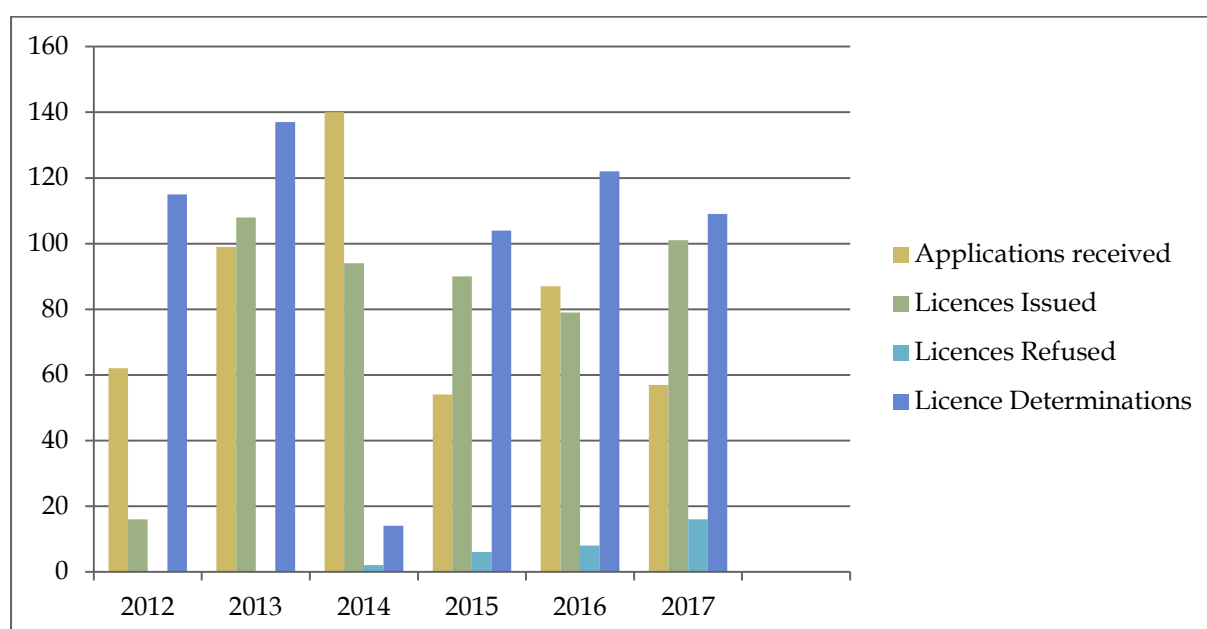
The Department's work on the Implementation Strategy is almost complete.

Actions under preparation and expected to be implemented within the next year

Action No.
21

- Progressively remove the current aquaculture licensing backlog

Progress over recent years in aquaculture licence determinations is illustrated in the figure below.



The Independent Aquaculture Licensing Review Group recommended that the Department establish a task force to devise and implement a strategy to deal with the licensing backlog within an achievable but ambitious, accelerated timeframe and not beyond the end of 2019. This Recommendation envisages the creation of a ‘taskforce’ to devise and implement a strategy to deal with the backlog.

As part of its response to the Report, the Department has made additional staff resources available to the Aquaculture and Foreshore Management Division. These measures have enabled the Aquaculture and Foreshore Management Division to undergo extensive internal reorganisation during Quarter 4 2017, with a view to positioning staff resources in areas best suited to reduce and ultimately eliminate the licensing backlog.

Having regard to the various changes made, the Aquaculture and Foreshore Management Division has embarked on a process which will produce licensing determinations in the order of 300 per annum over the next two years. This will essentially eliminate the shellfish licensing backlog as an issue of concern to the industry.



Action No.
23

- In the context of a reviewed process and revised legal framework, consider the phased introduction of appropriate timescales for licence determination

The Independent Aquaculture Licensing Review Group recommended a reasonable timescale for licence determinations: A six month time limit should be set in which to determine a licence and that this should apply to all new licence applications submitted after 1st January 2018. This is under active consideration in the context of the Department's Implementation Strategy.

Implementation will require the development of an operational strategy specific to this Recommendation, including key targets and resource implications. Optimum use will need to be made of a more systemic pre-application process, continued prioritisation of

applications by reference to completed Appropriate Assessments and policy decisions concerning applications received after the completion of Appropriate Assessments.

Implementation of the proposed six month time limit will be particularly challenging, not least due to legislative requirements and procedures which must be adhered to in full.

Action No.
24

- Develop a data management and information system, with online aquaculture licence application and tracking functionality, and spatial mapping of aquaculture sites

The Independent Aquaculture Licensing Review Group recommended:

- The establishment of an open-access, web based aquaculture application and monitoring system
- The proposed Aquaculture Management Information System should comprise a single portal to all relevant administrative, engineering and scientific material
- Scientific and technical data sets from both the National Parks and Wildlife Service and Marine Institute databases should be integrated with the proposed Aquaculture Management Information System.

A task force has already been established within the Aquaculture and Foreshore Management Division of the Department to participate in a working group on the modernisation of IT systems across the marine divisions of the Department.

The Aquaculture and Foreshore Management Division in conjunction with the Fisheries IT Re-development Project Team will establish a delivery model for future services in a manner which supports the Public Service e-Government Strategy 2017-2020. The requirements for a new IT system will be detailed, guiding its delivery through the development stages to testing and implementation.

Rationale on prioritisation of actions

The Department's draft Implementation Strategy in response to the recommendations of the Independent Aquaculture Licensing Review examines each of the 30 recommendations and has accorded priority on the basis of the following criteria:

- They represent key "goals" for industry and are therefore likely to be the subject of strong expectations;
- They represent a necessary initial stage leading to the implementation of the Report as a whole;

- They require immediate commencement in view of their overall medium/long-term implications (e.g. legislative change);
- The potential effect that implementation can have on the reduction of the licensing backlog.

Effects/impacts of the implemented actions

The actions described in this chapter are likely to have significant positive benefits for the achievement of the objectives of Ireland's MANP. The timescale for their implementation is over the period to 2020 approximately. The full effects and impacts will only become apparent after that time.

New Actions not foreseen in the MANP

No new actions are foreseen at this point in time in the MANP.



Priority Area 2

Spatial planning

Ireland's MANP vision for 2020

"Aquaculture incorporated into an effective and equitable marine spatial planning system".

Actions Implemented

The following actions have been implemented with the support of aid under Ireland's EMFF Knowledge Gateway Scheme. This scheme provides aid to public bodies and aquaculture enterprises for innovation and research projects to enhance productivity, environmental management, disease management and animal husbandry in the aquaculture sector. The scheme also supports communications initiatives to enhance knowledge and understanding of aquaculture in the community.

Action No.
18

- Identify marine tourism opportunities from aquaculture

The Taste the Atlantic route is an initiative run by Bord Iascaigh Mhara in conjunction with Fáilte Ireland to link aquaculture producers and processors into the Wild Atlantic Way. There are now 22 producers in total enlisted to the route, along with local restaurants where the produce can be tasted. In addition to this, exhibition/interpretation centres demonstrating farmed oyster and mussel culture were opened in Donegal, Sligo and Kerry. This project is ongoing and will continue into 2018.

Action No.
19

- Study on integrated multi-trophic aquaculture and possible synergies with offshore wind farms or other marine renewable energy

An EMFF grant award of €232,000 was made to University College Cork in 2017 to develop novel technology underpinning commercial applications of integrated multi trophic aquaculture. The project will develop technology whereby primary producer species can be used as part of IMTA to:

- Improve water quality in split ponds by removing nutrients and organic matter, reducing remediation costs of waste water;
- Enhance fish health & quality;
- Enable increases in fish density;
- Generate protein-rich biomass that can be used as fish feed;
- Contribute to a sustainable, circular nutrient cycle;
- Improve financial results.

The underlying philosophy of the project is to develop an aquaculture waste stream to produce an economically viable product and thus to contribute to the sustainability and economic viability of aquaculture. The emphasis of the project is method development, with a focus on commercial applications. The project will explore how combinations of algae and Lemnaceae (duckweed) can improve water quality in IMTA, enhance fish production and result in production of a high quality feed, thus demonstrating the benefits of a circular economy approach. This project is ongoing and will continue into 2018.



Actions under preparation and expected to be implemented within the next year

Action No.
19

- Study on integrated multi-trophic aquaculture and possible synergies with offshore wind farms or other marine renewable energy

Synergies with offshore wind farms and other marine renewables will be investigated by Bord Iascaigh Mhara as part of a new EMFF project to be proposed in 2018.

Action No.
20

- Study on how aquaculture contributes to communities in rural areas

Bord Iascaigh Mhara will propose a new EMFF funded project in 2018 focussing on improving communications concerning aquaculture. A study will be commissioned to assess the economic and societal benefits of aquaculture to coastal and rural communities. The outcomes of this will be communicated through a communications and education campaign to enhance knowledge and understanding of aquaculture among the community. This project will work closely with the European Commission's Farmed in the EU initiative.

Rationale on prioritisation of actions

The opportunity to cooperate with Fáilte Ireland and link into the Wild Atlantic Way programme coincided with BIM's role to inform the public and other relevant groups of the methods involved in farming seafood and fishing. BIM is particularly conscious to inform the public of the farming methods involved in the aquaculture industry. This is also a precursor to the study on how aquaculture can contribute to communities in rural areas by demonstrating that aquaculture and tourism can work in harmony and actually support and improve each other.

The implementation of the 9 new EMFF funded projects detailed below (see new actions not foreseen in Ireland's MANP) under Ireland's Blue Growth and Marine Spatial Planning Scheme will provide critical information to support the development and implementation of a marine spatial plan for Ireland, taking account of the Irish aquaculture sector. Products

developed through these projects will aid informed decision making in line with Ireland's IMP strategy [*Harnessing Our Ocean Wealth*](#), which aims to deliver a thriving sustainable maritime economy based on healthy, clean and productive marine ecosystems. It also supports the implementation of a number of cross-cutting EU policies, such as the Marine Strategy Framework Directive, Birds and Habitats Directives, Climate Change and the Common Fisheries Policy. These projects will lead to an understanding of the spatial and temporal demands of the aquaculture policy objectives, the interaction between human activities and their pressures on the environment and to support effective linkages with terrestrial (landuse) spatial planning.

Effects/impacts of the implemented actions

Taste the Atlantic has 22 producers of aquaculture products from along the western seaboard taking part in the Seafood Trail. A survey was carried out on the impact the Trail had on sales of seafood, both at linked restaurants and directly from producers. The uplift in sales reported was on average about 30% higher. This was generated in particular by species such as mussels and oysters, which traditionally would not have been popular in the Irish domestic market. The value of increased sales of seafood which can be directly attributed to the Trail is in the region of €660,000 in 2017. This does not include impact from international coverage and the increased awareness of Irish seafood.

The projects implemented under the EMFF Blue Growth & Marine Spatial Planning Scheme will have the following specific benefits.

- Improving accessibility, understanding and utility of marine data and knowledge to support Aquaculture policy.
- Improved national and international cooperation.
- Support licensing and consenting through the planning process.
- Better understanding of the impacts of Climate Change
- Capacity building

New Actions not foreseen in the MANP

The Department of Housing, Planning and Local Government is the lead Government Department for implementation of marine spatial planning in Ireland. The Marine Institute has been mandated by Government to provide scientific and technical advice to that Department to inform the marine spatial planning system. As part of this initiative, the following nine marine spatial planning projects from the Marine Institute have been approved for funding under Ireland's *Blue Growth and Marine Spatial Planning Scheme*.

Data Discovery, Collation and Gap Analysis for Spatial Representation

This project aims to identify and map datasets of relevance to the MSP process and review their validity. It will provide up-to-date spatial and temporal information on marine ecosystems and human activities taking place within Ireland's maritime domain to support marine spatial planning. This will advance marine data and knowledge in Ireland and is a fundamental exercise for successful implementation of MSP. It is the first step in the process and delivers enhanced spatial evidence to support ecosystem based advice and marine spatial planning.

Data prioritisation and collection for Spatial Representation

This project will build on project 1. It aims to provide up-to-date spatial and temporal information by filling in gaps in knowledge required to support MSP, regarding human activities, pressures, resource distribution etc.

Assess and Map Marine Ecosystem Services

There is currently a lack of information available about marine ecosystem services in Ireland. This project will contribute to improved marine data and knowledge to inform the MSP process. Maps of existing and potential ecosystem service that are produced will be useful to inform the costs/benefit analyses (i.e., trade-offs) of potential marine spatial planning options and sectoral growth opportunities.

Mapping the Potential Impacts of Climate Change

This project will provide improved understanding on the implications of climate change on marine ecosystem goods and services and human activities, through monitoring and modelling. It will provide spatial evidence to support ecosystem based advice, decision making and marine spatial planning that is cognisant of the impacts of a changing climate on Ireland's coastal and marine resources, economies and communities.

Best Practice on Modelling and Support Tools for Integrating Marine Spatial Data for Scientific and Technical Advisory Services

Across the EU there are a range of modelling and decision support tools available for progressing Marine Spatial Planning, related to data provision, pressures and impacts of human activities etc. This project will identify best practice technical tools in the Irish context. It will inform policy makers of technical options to progress nationally.

Data Integration for Improved Spatial Analysis and Representation

This project will provide improved understanding of what marine data are available to form a basis for improved MSP-related products and decision support tools. It will leverage current and future programmes through reuse of data collected, without incurring the

otherwise substantial data acquisition costs. Data will thus be more easily integrated and reused. The project will provide better definition and greater clarity as to the origin and quality of underlying data and information being used in decision making.

MSP Data Governance

Reliable data storage and management systems will provide assurance of the availability and versioning of data. Improved data archiving will support legislative compliance and reduce costs by only retaining data which are required. Access to data and information is controlled to meet legislative and data owner requirements, necessary to assure ongoing availability of these data. The data catalogue will provide clarity as to what data are available and their usage suitability. More consistent data storage and access will provide easier integration and reuse.

Development of Marine Invasive Species Surveillance Methods to Facilitate Their Spatial Mapping in Irish Nearshore and Foreshore Waters and Benthic Habitats

This project will increase the knowledge of the existing baseline incidence of marine IAS in Ireland, by providing a fit-for-purpose surveillance system, and providing spatial knowledge of marine invasive taxa in Irish coastal habitats. Such spatial knowledge will enable management criteria to be addressed in a marine spatial plan that define appropriate activities that could be engaged in specific water bodies to minimize the risk of further spread of recognized IAS, and define additional control and/or eradication methods that could be implemented. Thus, resource managers and local authorities addressing foreshore infrastructure and nearshore development proposal decisions will be able to make informed choices.

Mapping Ireland's Invasive Marine Species Incidence and Colonization, Impacts and Opportunity Costs to Compromised Marine Ecosystem Services Compromised by Their Introduction and Spread

The output from this project will provide decision support evidence for MSP decision makers. It will demonstrate the risk from invasive species based on maps of existing marine non-native species incidence and colonisation.

Priority Area 3

Enhance the competitiveness of EU aquaculture

Ireland's MANP vision for 2020

"A sustainable and competitive aquaculture sector, where production will grow according to market and consumer demands and in balance with nature and society."

"A more competitive, technically efficient and innovative aquaculture sector."

Actions Implemented

Action No.
1

- Build capacity and scale in the industry

The EMFF Sustainable Aquaculture Scheme provides financial supports to aquaculture enterprises to promote the sustainable growth of output, value and employment in the aquaculture sector.

Some 18 projects were approved for EMFF support under the Scheme in 2016, with 16 completed with EMFF aid of approximately €800,000. The majority of these were investments to grow the production of oyster farms.

Some 23 projects were completed in 2017 with EMFF aid of approximately €1.5 million. Again, the majority of projects concerned oyster farming, but also some mussels and finfish projects.



Action No.
2

- Dedicated supports to new entrants to the sector

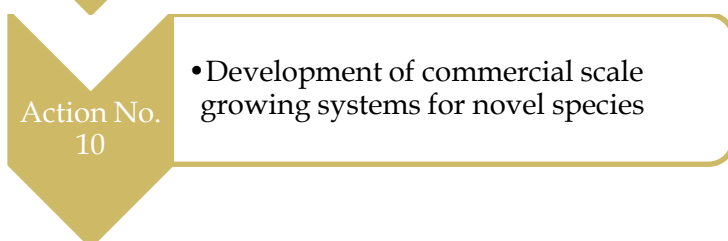
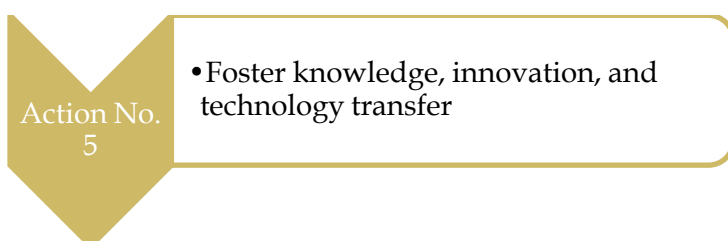
While aquaculture enterprises generally receive a support rate of 40% of their investment costs under the Sustainable Aquaculture Scheme, a special higher rate of 50% is available to new entrants to the aquaculture sector. This is the maximum support rate allowed under the EMFF Regulation.

Separately, Bord Iascaigh Mhara was provided with an EMFF grant of €120,000 in 2017 to provide advisory services to the aquaculture sector. These advisory services relate to

business planning, environmental management, best husbandry practice, disease management, animal welfare, organic certification and accredited assurance programmes. These advisory services are of particular importance to new entrants to the sector, who may be less familiar with best practices and with regulatory requirements.



The EMFF Sustainable Aquaculture Scheme provides some limited financial assistance to encourage organic production in the sector. Supports are limited by the EMFF Regulation to the costs of organic certification. Supports are available at 50% of eligible costs. One project was aided in 2017.



The EMFF Knowledge Gateway Scheme provides aid to public bodies and aquaculture enterprises for innovation and research projects to enhance productivity, environmental management, disease management and animal husbandry in the aquaculture sector.

Bord Iascaigh Mhara is funded through EMFF grants to undertake a wide range of innovation and research projects to support the objectives of the Knowledge Gateway Scheme. These projects are undertaken by BIM on behalf of the aquaculture sector, as aquaculture enterprises are predominantly SMEs and have limited capacity to innovate and develop new techniques and species. However, the Scheme is also open to research institutions, and a number of such institutions were awarded EMFF grants in 2017 to foster knowledge, innovation and new technology.

The following are examples of some of the projects underway.

Perch; Novel species development including an IMTA component

The work is split into distinct lines; the development of selected brood stock with associated genetic monitoring suitable for pond culture; production of juveniles; further development of split pond technology (Recirculating Aquaculture Multitrophic Production - RAMP); inclusion of duckweed production to reduce environmental impact and to provide an alternative source of renewable energy product.

Seaweed technical development and IMTA

Developing the techniques and technologies required to reliably produce juveniles of higher value species such as *Porphyra* and *Palmaria*. Vegetative tank trials on *Porphyra* and *Palmaria* are being compared to longline trials to provide comparative biological and economic data on the growth of these seaweed varieties.

Developing hatchery techniques for scallop and native oyster

Suitable scallop broodstock was sourced and conditioned for breeding and the spawning and settlement of both scallops and native oysters under hatchery conditions was completed and documented. Further trials on the use of cultch for settlement of oysters at sea were also carried out.



Action No.
7

- Provision of expert advice to improve environmental and business performance

Areas identified in the MANP include;

- Upskilling through business training and mentoring programmes;
- Boosting industry management competence through placement programmes and exchange of best practice;
- Embedding environmental technology in formal training courses across all industry sectors;
- Embedding a culture of food safety in the aquaculture sector;
- Networking and professional skills development.

Bord Iascaigh Mhara is supported through EMFF grants to provide the following programmes and services to industry;

Business mentoring

Direct support to aquaculture producers through onsite direct mentoring and linkage to individuals with specific expertise in business development. Ten companies were brought through the business mentoring programme in 2017.

Origin Green support

BIM supports existing and new members of Origin Green to develop and implement their Origin Green plans and assist in the formation of the targets and producing the reports. Seventeen seafood companies have been mentored to develop plans and are fully verified members of the Origin Green programme.

Organic and Quality Schemes

Provision of an assistance programme to companies looking to convert to organic farming and production of a quality and organic management system to meet the organic requirements. Twenty nine companies have been assisted with the development of a quality and organic management system.

Industry Workshops

Providing a platform for exchange of knowledge and dissemination of information both to and between industry members and provides an opportunity for networking and inform on new emerging technologies. Eleven fish welfare workshops were held, providing information for over 100 freshwater and saltwater fish farm workers.

Action No.
8

- Support best husbandry and disease management practice

The following innovation and research projects by Bord Iascaigh Mhara were funded under EMFF grants in 2017 under Ireland's EMFF Knowledge Gateway Scheme.

Depuration and Norovirus research

The developing markets in the Asia for oysters have a zero tolerance for the detection of viruses in product. As such various depuration systems and processes have been established to mitigate against the problem. These systems require validation to ensure that they are working correctly and those farms that do not depurate require a positive release before placing product on the market. A feasibility study on the requirements and economics of a private testing facility has been commissioned.

Investigating alternatives to veterinary medicines in salmonids

Alternatives to conventional veterinary medicines are essential for good management practices especially in Ireland, where the organic farming of salmon accounts for approaching 100% of the industry. Alternative sea lice treatments, such as cleaner fish, are vital part of this and to help address the issue. A broodstock development and selective breeding for lumpfish has been undertaken.

Trialling emerging treatments for Amoebic Gill Disease (AGD) in salmon

AGD has recently become a major biological challenge to salmon production. Current treatment techniques involve the use of freshwater baths, or treatment with hydrogen peroxide. Both treatment types have logistical and biological difficulties. New techniques for handling water and fish, use of ultrasound devices and the potential for desalination equipment to be used instead of fresh water have been investigated.

Action No.
9

- Applied research and collaborations between industry, scientific and development bodies

There are presently 5 ongoing projects from industry and research institutions approved for EMFF supports under the Knowledge Gateway Scheme. Further applications from research institutions are under consideration at present. The results of the projects approved in 2017 are not yet available, but the project plans involve the following areas of investigation:

- Reducing the levels of nutrient discharge of selected farms to meet Water Framework Directive criteria by implementation of appropriate technologies to treat the wastewater and facilitate re-use of the treated water.
- Water quality monitoring to be implemented to assess the performance of the technologies against the benchmarking.
- Exploring how combinations of algae and Lemnaceae (Duckweed) can:
 - Improve water quality in Integrated Multi-trophic Aquaculture;
 - Enhance fish production; and
 - Result in production of a high quality feed, thus demonstrating the benefits of a circular economy approach.
- Structural and functional characterisation of novel macroalgal-derived phlorotannins, carotenoids (fucoxanthin) and polysaccharides (fucan) from *Alaria esculenta*, cultivated on near-shore long-lines in Bantry Bay, Co. Cork, providing further insight into the structure and antimicrobial/antioxidant activity of the compounds.
- Using novel technologies to reduce impacts of algal blooms and damaging zooplankton on marine finfish farms.

Actions under preparation and expected to be implemented within the next year

Action No.
6

- Enhance the skills base to foster a knowledge economy

A new EMFF *Seafood Training Scheme* is due to be launched on 2 March 2018. This scheme will provide grant of up to 50% to aquaculture SMEs and persons active in the aquaculture sector. Supports will cover course fees and course materials, up to a maximum of €50,000. It is anticipated that applications will be received from students undertaking higher diploma courses in Aquabusiness, Certificate in Aquaculture, and other similar courses. The scheme will be implemented by Bord Iascaigh Mhara.

Rationale on prioritisation of actions

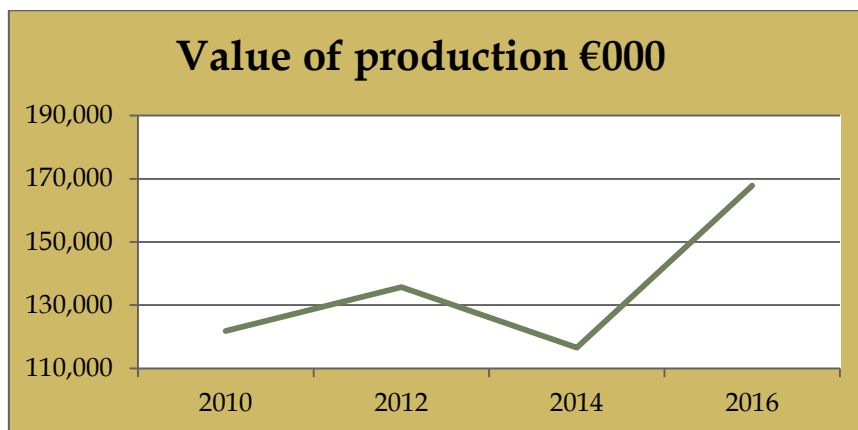
All relevant actions identified in Ireland's MANP under this Chapter are being implemented.

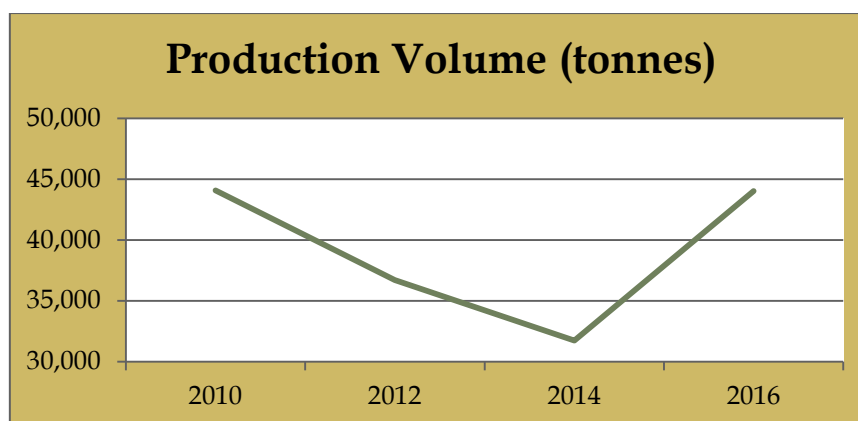
Effects/impacts of the implemented actions

Results of the Sustainable Aquaculture Scheme

The direct impacts of projects under this chapter on the competitiveness of the aquaculture sector will only be seen after several years. There is a lag time between investment in the sector in building capacity and the actual increase in productivity from the stock on site. All capital projects supported under the EMFF include targets for increasing production, change in net profit, employment created and maintained. Success against targets will be verified during the course of the EMFF programme. However it should be noted that directly relating increases in production to any financial intervention is difficult, as there may be external factors contributing to the success or failure of a project, which are outside the control of the farmer. This could include; unexpected shifts in the market for the product (both positive and negative), disease or other naturally occurring events outside the control of the farmer, and access to juvenile stock.

The following graphics illustrate the trends in volume and value of aquaculture production.





Review of the output trends and market demand for Irish Aquaculture and its products over the period from 2015 to 2016

Summary

BIM survey data shows that there was an overall increase in output from Irish aquaculture of some 10% across all the species over the 2015 to 2016 period. On that basis, in 2016 the industry produced approximately 44,000 tonnes of high value seafood. Not only did the volume of output increase, so did the value which reached a level of €168m at first point of sale at the end of 2016. These figures reflect the growing global demand for seafood which in turn is underpinned by a strong demand for differentiated, quality-assured seafood products within the EU.

Over the period, the producers experiencing the strongest growth in output and value were the (gigas/pacific/rock) oyster farmers and the salmon farmers.

Oysters

Output from the oyster farmers has been on an upward trend in production for some time and this continued in 2016 with output rising from just over 9,000 tonnes in 2015 to almost 10,000 tonnes in 2016. There was also an increase in value, which rose from €35m in 2015 to €42m in 2016. This rise reflects the increased price being achieved by the oyster farmers as they diversify away from their traditional customers in France and sell increasing volumes, albeit from a low base, into higher value markets, particularly in China and other parts of the Far East.

Salmon

The salmon farming sector also experienced an increase in output, with overall national production reaching 16,300 tonnes, with a value of €105m in 2016. This is the highest level of output which has been achieved for some years and reflects salmon farmers' improved ability to cope with the biological threats of amoebic gill disease and sea lice infestations. Organic certification continues to be the bedrock of success for the Irish industry, as it

successfully differentiates the modest volume of Irish output from its lower cost competitors in Norway, Chile and Scotland and allows Irish farmers to achieve strong returns.

The market emphasis in the EU and the USA was on 'value-addition', either through smaller portions in convenience packaging, or improved differentiation (as is the strategy with Irish production) so as to make the higher prices more palatable to the consumer.

Mussels

The farmed mussel sector experienced a challenging time over the period, principally as a result of persistently low prices in the market place.

Rope grown mussels

For rope grown mussels, prices were flat and it is proving difficult for some growers to maintain an adequate profit margin at the current level of returns. Over the two year period of 2015 and 2016, output was stable at some 10,000 tonnes per annum, as was value, which sat at €6.5 million per annum at first sale value. Improved differentiation through organic certification and certification to the Marine Stewardship Council (MSC) sustainability standard may improve the market price being achieved by Irish rope grown mussel farmers, especially in the key French market. The most recent FAO *'Globefish Highlights Review'* of October 2017 stresses the "importance of quality differentiation to create value in the key French market".

Seabed cultured mussels

For seabed cultured mussels, the expected increases in output following the improved seed mussel fisheries of 2014 and 2015 did not fully materialise in the 2016 output figures. Production over the period rose from circa 5,700 tonnes in 2015 to circa 6,500 tonnes in 2016. Value was essentially stable for both years at about €6 million. It may be reasonably anticipated that there will be an increase in output from the seabed cultured sector in 2017, as the improved seed mussel harvests of the previous years find their way into the harvest for market supply.

Taken together, the overall mussel harvest stood at 16,000 tonnes and realised a first sale value of €12.2 million in 2016.

Jobs

Employment in the Irish Aquaculture sector was stable, or slightly up over the period, with more than 1,900 full and part-time jobs around the coast. The fundamental business case for the sector remains sound, as strong market demand for its products continues to grow as the increasing global demand for high quality differentiated seafood intensifies.

New Actions not foreseen in the MANP

No new actions are foreseen at this point in time.

Priority Area 4

Promoting a level playing field for EU operators by exploiting their competitive advantages

Ireland's MANP vision for 2020

"An aquaculture industry that develops in harmony with nature, and with the confidence of stakeholders".

Actions Implemented

Action No.
13

- Development of an industry Code of Practice for Invasive Alien Species

To date, risk assessments and draft biosecurity plans have been developed by a number of individual aquaculture businesses. Operators have committed to adopting best practice to maximise the opportunity to identify any alien species that may be present and to minimise the risk of spread linked with daily operations e.g. with stock movements.

A two day training workshop was provided by Bord Iascaigh Mhara and GiMarIS to the seabed cultured mussel operators to improve understanding of the risks of IAS, and assist with species description and identification.

Identifying key high risk species based upon natural environment and aquaculture impacts and identifying pathways for potential IAS movement into and within Ireland is vital to future management. A review of the baseline datasets available has been commissioned, along with the identification of knowledge gaps. The results of this report will form the basis for the continuation of this project into 2018.

Actions under preparation and expected to be implemented within the next year

Action No.
14

- Continuation of Invasive Species Ireland Project in relation to aquaculture

Bord Iascaigh Mhara is developing a smart phone application which will allow farmers to rapidly report suspected invasive species sightings on their licensed aquaculture sites to BIM. It will also allow farmers to readily access information on high risk invasive species and best practice suggestions for mitigation and control.

The app could also potentially provide information on the national distribution of invasive species so that farmers can be vigilant to the arrival/spread of these species through the movement of stock between bays. This would also enable farmers to take preventative action to reduce the risk and limit the spread of these species where necessary.



Rationale on prioritisation of actions

Non-native species control is important across a number of different areas addressed in the MANP. It is identified as a pressure on the environment in achieving Good Environmental Status as part of the Marine Strategy Framework Directive. Non-native species were identified as a threat to the sector in the MANP's SWOT Analysis and also an increasing impact on biodiversity as climate change continues. Therefore, actions that mitigate non-native species were considered a priority.

Effects/impacts of the implemented actions

The review of the baseline datasets for non-native species will inform the development of the risk assessment process and provide information on data gaps. Ultimately, the effects of the actions should be increased awareness among aquaculture producers to the threats of non-native species and also a robust system of identification and reporting.

New Actions not foreseen in the MANP

No new actions are foreseen at this point in time in the MANP

Acknowledgement

The actions being pursued under Ireland's National Strategic Plan for Sustainable Aquaculture Development are co-funded by the Government of Ireland and the European Union under Ireland's [European Maritime and Fisheries Fund Operational Programme 2014-20](#).



**An Roinn Talmhaíochta,
Bia agus Mara**
Department of Agriculture,
Food and the Marine



**Ireland's European Structural and
Investment Funds Programmes
2014-2020**

**Co-funded by the Irish Government
and the European Union**



**European Maritime
& Fisheries Fund**

**An Roinn Talmhaíochta,
Bia agus Mara**
Department of Agriculture,
Food and the Marine

