Marine Management Organisation

Social and Economic Impact Assessments for Fisheries Management Decisions – Final Report

(MMO1384)

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When referencing this publication, please cite as:
MMO (2024). Social and Economic Impact Assessments for Fisheries Management Decisions – Final Report. A report produced by ABPmer and RPA for the Marine Management Organisation, MMO Project No: 1384, May 2024, 63pp

Executive Summary

The introduction of new policies or management measures requires an understanding of the potential environmental, economic and social consequences of introducing the proposals, so that the full range of potential effects can be considered in decision-making.

This study has reviewed a range of SEIAs relevant to fisheries and developed a template and guidance for undertaking social and economic impact assessments for fisheries. The aim is to improve the consideration of wider economic and social impacts, including cultural and wellbeing aspects, and how these might be affected by the introduction of proposed management measures.

The template and guidance expand the consideration of potential impacts beyond the direct impacts on fishing businesses, to include wider economic impacts on supply chains, and to consider the effect on communities by linking to social impacts and social values.

A review of existing socio-economic impact assessments for fisheries was undertaken, to identify strengths, weaknesses and good practice approaches. Guidance on undertaking socio-economic impact assessments, and a template for reporting the outcomes, were developed. They were designed to be flexible so that they can be adjusted to different types of policy or management measures under consideration, different scales of impact, and be applied in a proportionate manner in contexts relevant to MMO decisions. The applicability of the guidance was confirmed through a hypothetical case study using real data.

Principles for socio-economic impact assessment include: proportionality, use of best-available evidence, engagement with affected parties, incorporation of local knowledge, and consideration and compliance with GDPR.

The main aspects of the guidance for socio-economic impact assessment for fisheries management measures, are:

- Identification of impacts on the fishing industry, using established approaches to consider potential impacts on profits, using landings data and HM Treasury Green Book guidance.
- Consideration of the potential for displacement of fishing effort, and its effects on fish stocks, the environment (habitats and species), on fleet segments, on people and communities. The potential for displacement should at least be recognised, and potentially quantified.
- Consideration and quantification of other potential impacts on businesses.
- Assessment of public sector costs, for example for monitoring and compliance activities.
- Wider economic impacts (beyond impacts on businesses immediately affected) in relation to impacts on employment, and impacts on upstream and downstream supply chains.
- Distribution of economic impacts can be explored in relation to fleet segment and location. Locations on land where impacts might be felt can be assessed using information on home port of vessels and port of landing of the catches.

- Social impacts can arise as a result of economic impacts (e.g. through changes in employment which may affect individual wellbeing, careers, income and skills, and community sustainability more widely), as well as independently from the economic impacts (e.g. on social values and wellbeing outcomes), for example related to health and safety issues, impact on relationships and trust, uncertainty and identity.

Recommendations of the project are:

- MMO should broaden the focus of its impact assessments for fisheries issues beyond the impacts on fishing businesses, to also consider wider economic impacts (e.g. on upstream and downstream supply chains, on employment), social impacts (e.g. on individuals, households and communities, and on social values and wellbeing outcomes), and where and by whom these impacts might be felt.
- Spatial resolution of fisheries data is important for assessing potential impacts related to specific areas, and opportunities for improving the resolution and availability of data for over-12m and under-12m vessels should be pursued.
- Additional data collection and research should be undertaken to support the understanding of social values related to fisheries, and values connected to specific locations. This would provide additional context and understanding of the social baseline for future assessments.
- Engagement with affected individuals and communities should be undertaken for proposed management measures that are anticipated to have more substantial impacts. This should build on an understanding of the involvement that these individuals have had in the discussion of potential management measures. Insights from the engagement can help identify social values, potential social impacts, and the cultural value of specific fisheries.
- The template and guidance should be used to support the consideration of potential impacts from decisions that may impact on fisheries.

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1 Introduction

The introduction of new policies or management measures requires an understanding of the potential environmental, economic and social consequences of introducing the proposals, so that the full range of potential effects can be considered in decision-making. Impact Assessments (IAs) are an important part of the government decision-making processes in England and the devolved administrations as well as internationally. They set out the objectives of policy proposals and the expected costs and benefits of different options to help inform decision makers on the appropriate approach and its anticipated effects. Depending on the scope and scale of a proposal, this may involve a Regulatory Impact Assessment, a proportionate cost-benefit analysis to inform decision-making, or options appraisal.

IAs are a structured understanding of the consequences (intended and unintended) of government actions and interventions which can be applied to legislation (primary and secondary), significant policy developments, and also (potentially) to significant investments and budgetary decisions. They are conducted before the event (and ideally early in the policy development/ legislative/ investment cycle) but potentially linked to evaluation after the results.

The Green Book is guidance issued by HM Treasury on how to appraise policies, programmes and projects (HM Treasury, 2022). It highlights the importance of trying to identify all costs and benefits, including social and environmental, through the appraisal of social value or public value. This includes all significant costs and benefits that influence the welfare and wellbeing of the population, such as environmental, cultural, health, social care, justice and security effects. Additionally, the Magenta Book provides guidance on evaluation in government, to help understand the efficiency and effectiveness of interventions and their impacts, providing evidence for the design, implementation and review stages of the policy cycle (HM Treasury, 2020).

In relation to fisheries, the Fisheries Act 2020 explicitly highlights the importance of economic and social concerns. It sets out eight fisheries objectives which guide the implementation of the Act, and which fisheries policies should contribute to the achievement of. The sustainability objective establishes that fisheries and aquaculture activities must be environmentally sustainable in the long term, and managed to achieve economic, social and employment benefits and contribute to the availability of food supplies, and that fleet capacity ensures economic viability and avoids overexploitation of marine stocks.

The Marine Management Organisation (MMO) is responsible for implementing fisheries management decisions in English waters, both for the sustainable management of fish stocks and for environmental considerations. This contributes to the sustainability objective of the Fisheries Act and MMO's strategic goals include ecosystem recovery and assuring sustainable fisheries to achieve a resilient and increasingly vibrant fishing sector (MMO, 2023a). The introduction of Fisheries Management Plans (FMPs) and associated management measures, further roll-out of management measures in Marine Conservation Zones (MCZs) and Special Areas of Conservation (SACs), the introduction of Highly Protected Marine Areas (HPMAs)

and expansion of offshore wind, are all likely to affect fisheries and require proportionate assessment of their potential impacts. In addition, MMO is responsible for marine licensing, for which Environmental Impact Assessments (EIAs) are considered in licensing decisions. EIAs have an obligation to consider impacts on commercial fisheries and socio-economic aspects where scoped in.

When MMO considers fisheries management decisions, environmental aspects are often well considered, but it has been identified that social and economic impacts are often considered in less detail or at a high level. Where they are considered, the focus is often on the economic and financial aspects, and employment, in part because these can be more readily quantified. However, there is an increasing recognition of and focus on social impacts, including cultural and wellbeing aspects. Social and economic impacts on commercial and recreational fishers can be difficult to identify and quantify. This is exacerbated by the fact that relatively small monetary impacts can be perceived by those affected to have significant impacts at a local level on individuals and communities. This includes loss of earnings, a loss of identity and wellbeing, and effects on associated businesses such as upstream suppliers and downstream transport and processing services.

1.1 Aim of this Project

The aim of this project is to develop and test a methodology and template for consideration of social and economic impacts in the appraisal of policy options for decision-making for fisheries management, through the following objectives:

1. Review existing social and economic impact assessments (SEIAs) relating to fisheries in the MMO, Defra, wider government and beyond, identifying their strengths and weaknesses.
2. Development of a template and associated guidance that can be applied to fisheries management decision-making processes for the assessment of social and economic impacts.
3. Testing of the template and guidance through application to a case study and produce recommendations for implementation in MMO fisheries management decisions.

1.2 Structure of this Report

The remainder of this report is structured as follows:

- Section 2 sets out the approach and methodology for the study
- Section 3 provides a summary of the review of existing SEIAs, drawing out strengths and weaknesses and good practice (full details of the examples are in Annex A)
- Section 4 provides guidance for undertaking SEIAs for fisheries
- Section 5 provides a template for reporting the SEIA
- Section 6 provides a summary of the case study that was undertaken
- Section 7 provides conclusions and recommendations.

The following annexes also accompany the report:

- Annex A: Review of Example SEIAs

- Annex B: Case Study
- Annex C: Template for SEIA Supporting Evidence.

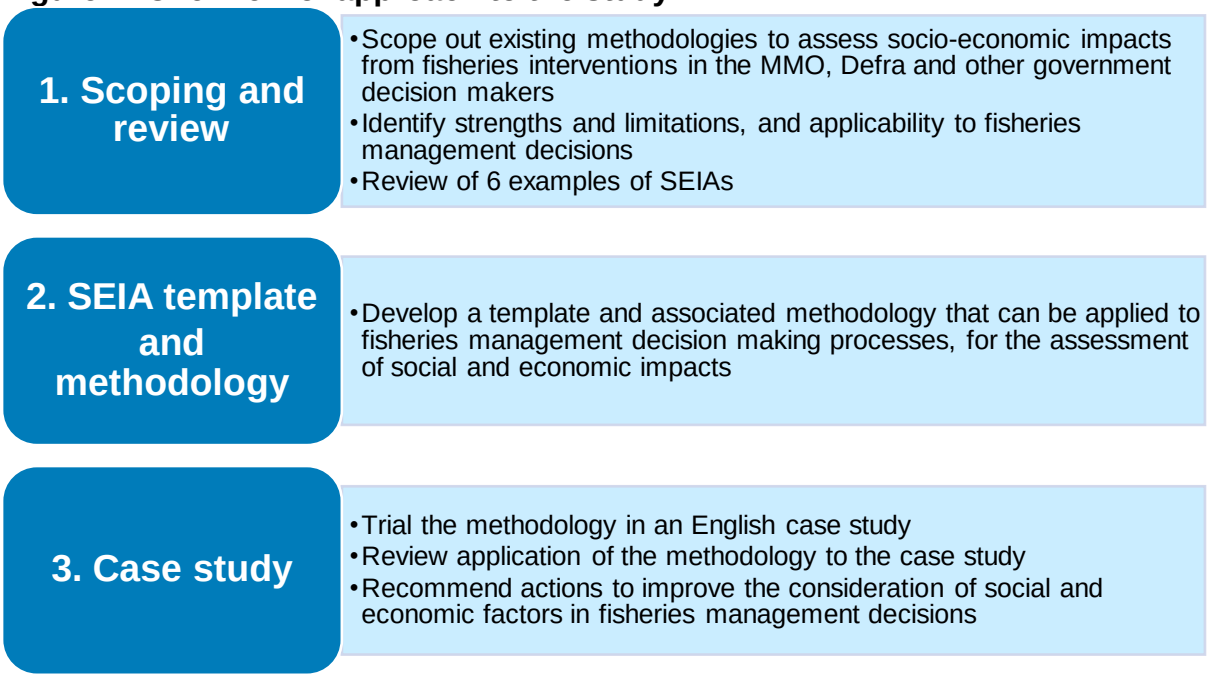
2 Approach and methodology

The approach to this project involved the following (Figure 1):

1. Scoping of potential SEIAs for review, and review of six example approaches to socio-economic assessment in fisheries.
2. Develop a template and method for socio-economic impact assessments.
3. Apply the methodology to an English case study.

The guidance and case study focus on commercial fisheries; recreational fisheries are not specifically included. The principles identified in the guidance would be equally applicable to recreational fisheries, however the data sources and approaches to assessing impacts may differ.

Figure 1: Overview of approach to the study.



2.1 Scoping and review

An initial scoping was undertaken to identify potential SEIAs to include in the review. This aimed to identify a range of types of assessment relevant to fisheries that could usefully inform the development of the template and guidance. This was based on internet searches and the project team and Steering Group's knowledge of potential examples. Over 26 options were considered for inclusion, including the following:

- MMO impact assessments for fisheries management or conservation measures (e.g. MMO, 2023b)
- Defra De Minimis Assessment (DMA) (e.g. Defra, 2023)
- Defra Regulatory Impact Assessment (e.g. Defra, 2022)
- Scottish Government SEIAs (e.g. Scottish Government, 2014; 2019a; 2019b; 2019c)

- Wales Audit Office Wellbeing of Future Generations Act (e.g. Welsh Government, 2021b)
- Wales Integrated Impact Assessment (e.g. Welsh Government, 2021a)
- Inshore Fisheries and Conservation Authority (IFCA) byelaw assessments (e.g. D&SIFCA, 2022)
- EIA for marine licensing decisions
- EU impact assessments
- Cefas work on social and economic indicators
- International examples (USA, Australia, New Zealand) (e.g. NOAA, 2022)
- Academic research and social value literature (e.g. Hattam *et al.,* 2014; Jepson and Colburn, 2013; Reed *et al.*, 2011;)
- Grey literature and studies
- International Council for the Exploration of the Seas (ICES) Working Group (WG) Social reports.

Six different SEIAs were selected for review in consultation with the MMO (see Section 3, and full details in Annex A). The examples were chosen to provide a variety of approaches that are relevant to the English context as well as drawing on examples from elsewhere.

The strengths and weaknesses of the existing approaches were identified, taking into consideration issues such as:

- timescale over which impacts are considered
- range of social and economic aspects covered, including traditional or cultural effects
- level of detail in terms of individual, local, regional and national impacts
- distributional effects in terms of different groups affected
- consideration of knock-on effects and how these are assessed (e.g., Type I and II supply chain effects[1])
- consideration of displacement impacts
- consideration of in-combination impacts
- data requirements
- indication of cost of the assessment.

2.2 Development of template and method for socio-economic impact assessments

The review of existing SEIA methodologies and their strengths and limitations informed the development of a template and guidance for SEIAs for fisheries management measures, relevant to work undertaken by the MMO. The template and guidance take into account statutory and non-statutory requirements for impact assessments, any demands or concerns that stakeholders have raised with the MMO if appropriate, and any relevant existing formats that it would need to be

[1] Type I effects include the impact on production of a change in final use (direct impact) and the supply chain impacts stemming from the initial change in use (indirect impact). This includes the upstream supply chain that the industry in question purchases from. Type II effects include direct, indirect and induced effects. Induced impacts are those arising from changes in household spending as a result of the employment changes linked to a change in final use (ONS, 2022).

consistent with. The development of the template and guidance was undertaken in consultation with the MMO, to ensure that they address requirements and take into account data availability.

The template and guidance are designed to be flexible so that they can be adjusted to different types of policy or management measures under consideration, different scales of impact, and be applied in a proportionate manner in contexts relevant to MMO decisions. The accompanying guidance for undertaking SEIAs signposts to other existing guidance and methods where appropriate, for example the conceptual framework for understanding social, cultural and economic wellbeing outcomes from fisheries being developed under project MMO1387.

2.3 Apply methodology to an English case study

The methodology was applied to a case study fisheries management intervention for an English fishery. A hypothetical case study, using real (anonymised) data, was undertaken to test the application of the guidance and use of the template. This enabled the appropriateness and proportionality of the template and guidance to be tested and adjustments made where necessary. Data were provided by the MMO to support the case study. The case study is reported in Annex B.

3 Review of existing SEIAs

This section presents the key findings from the review of example SEIAs, and identifies points of good practice that are used to develop the template and guidance.

A detailed review of six example assessments was carried out. The examples were:

1. MMO DMA of fisheries management measures in marine protected areas (MMO, 2023b)
2. Defra DMA for HPMA designation and management (Defra, 2022; 2023)
3. Devon & Severn IFCA byelaw impact assessment (D&SIFCA, 2022)
4. Welsh Government Integrated Impact Assessment (Welsh Government, 2021a)
5. Scottish Government SEIA for marine protected area (MPA) designation (Scottish Government, 2019a, b)
6. USA Environmental Impact Statement including Social Impact Assessment (NOAA, 2022).

A summary of the different SEIA aspects included in the examples reviewed is provided in Table 1. The full details of each example are provided in Annex A.

These examples were chosen to provide a variety of approaches that are relevant to the English context as well as drawing on examples from elsewhere. Specifically:

- The MMO and Defra examples demonstrate the current approach to impact assessments for fisheries, with the Defra HPMA example providing in-depth analysis of fisheries issues and exploration of social baseline indicators.
- The Devon & Severn IFCA impact assessment demonstrates the incorporation of local knowledge and context.
- The Welsh IIA is not a fisheries-specific example (as none were available), but presents the Welsh Government approach, which puts greater emphasis on social and cultural impacts than on economic numbers, due to the structure of the document and narrative approach.
- The Scottish Government SEIA provides an example of a different approach from a devolved administration including greater exploration of wider social and economic impacts.
- The USA example aims to draw in international experience, and in particular the USA has a well-developed social impact assessment process including routine baseline data collection.

Table 1: Summary of aspects included in each SEIA.

Aspect	MMO DMA	Defra DMA	IFCA IA	Wales IIA	Scotland SEIA	USA EIS
Business and economic impacts						
Approach – discounting of future values	✓✓	✓✓	✓✓	✓✓	✓✓	×
Fisheries landing value	✓✓	×	-	-	✓✓	✓✓
Gear modification costs	×	✓*	-	-	×	×
Familiarisation costs	✓✓	✓✓*	×	-	×	×
Administration costs to business	×	✓	✓✓	✓✓	×	×
Fisheries GVA	×	×	×	-	✓✓	×
Fisheries profit	✓✓	✓✓	-	-	×	×
Employment	×	✓	-	✓	✓✓	×
Displacement assessed	✓	✓✓	-	-	✓	×
Displacement costs recognised	✓	✓✓	-	-	✓	✓
Impact on non-UK vessels	✓✓	✓	-	-	✓	-
Public sector costs	✓	✓	×	×	✓✓	✓
Wider economic impacts						
Supply chain impacts (upstream)	×	×	×	×	✓✓	×
Supply chain impacts (downstream)	×	×	×	×	✓	✓
Social impacts						
Social – distribution of economic impacts	×	✓	✓	✓	✓	✓
Social – vulnerability	×	✓✓	×	✓	×	✓
Social – dependence on fisheries	×	×	×	-	✓	✓✓
Social – social values	×	×	×	✓	×	✓
Social – mental wellbeing	×	✓	×	✓	×	✓
Environmental impacts						
Environmental negative impacts	✓	×	×	×	✓	✓✓
Environmental benefits	✓	✓✓	✓	✓✓	✓	✓✓
Ecosystem services	✓	✓✓	×	×	✓	×
Cumulative impacts						
Cumulative impacts	×	×	×	×	✓	×

Key:

✓	included, qualitatively or brief mention
✓✓	included, quantified
×	not included
-	not relevant to the proposal
*	relevant to initial IA – not included in subsequent DMA

3.1 Strengths and weaknesses

The strengths and weaknesses of the example SEIAs are summarised in Table 2.

Table 2: Strengths and weaknesses of example SEIAs.

SEIA	Strengths	Weaknesses
MMO DMA	Uses best-available data from Vessel Monitoring System (VMS) and logbooks to assess impacts on fishing (value of landings) and loss of profits using Seafish data. Recognition of potential for displacement. Environmental costs/benefits included.	No consideration of social aspects, or knock-on impacts on supply chains or communities. Displacement not quantified or its significance/potential considered. Treatment of environmental costs/benefits is brief and qualitative.
Defra DMA	Uses best-available data from VMS and logbooks to assess impacts on fishing (initial IA considered loss of revenue, the DMA assessed loss of profits using Seafish data). Fairly advanced analysis of displacement undertaken, and incorporated into profit foregone calculations, but details were not provided in the DMA. Net present value to businesses is presented as 'low' and 'high', providing a range. Ecosystem services assessment included. Considers social aspects, such as social vulnerability, in the selection of sites. Distributional impacts considered areas directly attached to sites, and ports where catch is landed to.	Data requirements intense, and specialist models used. No details are provided on the assumptions to the 'low' and 'high' scenarios. No social aspects included in the impact assessment (apart from ecosystem services). Ecosystem services assessment appears to value total ES benefits, rather than marginal benefits from protection. Also uses assumptions and value transfer from other studies that may not be appropriate for UK habitats.
D&S IFCA impact assessment	Use of local knowledge of the fisheries and individual vessels to assess potential impact.	No consideration of social aspects. Minimal quantification of costs (although this is in part due to the nature of the proposal).

SEIA	Strengths	Weaknesses
Welsh Government IIA	Structure of the document puts greater emphasis and focus on social and cultural impacts, rather than economic numbers.	Minimal economic analysis, and assumptions and calculations are not clear (although it is possible details are in separate documentation that was not available for review).
Scottish Government SEIA	Assessment of economic impacts in relation to GVA and employment, including direct, indirect and induced impacts. Linking of impacts on fisheries to land-based impacts through home port and port of landing. Impacts on ecosystem services assessed, albeit qualitatively. Includes cumulative and in-combination assessment of impacts on fisheries.	Social impacts considered only qualitatively and without specific community engagement to identify social values. Concern raised by stakeholders of impacts on individual businesses.
USA Environmental Impact Statement and Social Impact Assessment	Detailed analysis of potential effects of the proposal on stocks. Assessment of impact on revenue of fisheries. Detailed social impact assessment drawing on extensive baseline data sources, and engagement with individual communities.	Quantification of only fishing revenues, and not impact on supply chain linkages (upstream and downstream), although further studies for local multipliers are being undertaken. Extensive data and analysis requirements, documents are often extensive (1,000+ pages).

3.2 Good practice in SEIAs

The review of example SEIAs and general guidance on assessing social and economic impacts (e.g. Green Book) were used to identify key points of good practice in SEIAs for measures that affect fisheries. These are set out below and informed the development of the template and guidance in Section 4.

3.2.1 Key principles

Key principles for SEIAs include the following:

- The level of resources invested in undertaking an assessment should be proportionate to the proposal and its anticipated scale or impact (HM Treasury, 2022; Scottish Government, 2022a).
- There should be consultation and engagement with affected parties.
- Assessments should incorporate local knowledge where appropriate, and consider local impacts and impacts on individual businesses where possible (e.g. MMO, 2023b; D&SIFCA, 2022).
- For some assessments, a subsequent evaluation could compare the actual impacts arising from the intervention with those predicted in the impact assessment, and this can be used to refine future assessment (where appropriate –potentially for key/major interventions) (e.g. Scottish Government, 2020; HM Treasury, 2020).

3.2.2 Assessment of impacts on fisheries landings

When assessing potential impacts of a proposal on fisheries landings, the following should be taken into consideration:

- Use an annual average taken over several years (e.g. latest five years, although adjustment may need to be made for years when Covid-19 significantly affected fishing patterns) (e.g. Defra, 2023; D&SIFCA, 2022; MMO, 2023b; Scottish Government, 2019a,b,c; NOAA, 2022).
- Data should be at an appropriate spatial resolution e.g. ICES area for large-scale changes; VMS linked to logbook records for small spatial scale changes (e.g. MPA, windfarm).
- Under-12m activity should be considered using best available information.
- Impacts should be considered at fleet segment level, but also at level of individual businesses where possible (Defra, 2023; MMO, 2023b; Scottish Government, 2019a,b,c).
- Both UK and non-UK activity/impacts should be included where appropriate (although there is no statutory requirement in UK impact assessments to include costs to non-UK businesses) (Defra, 2023; MMO, 2023b; Scottish Government, 2019a,b,c).

3.2.3 Consideration of displacement of fishing activity

Where fishing activity may be restricted, the affected activity may be displaced to other areas and/or other gear types. There may also be displacement of some gear types *into* the restricted zone (e.g. static gear moving in to an area from which

mobile demersal gear has been prohibited). The following points should be considered:

- Assessments should include recognition of the potential for displacement, its potential environmental impacts, and potential costs to fishing businesses (Defra, 2023; MMO, 2023b; Scottish Government, 2019b,c, 2022b; NOAA, 2022).
- Displacement may be spatial, or into other fisheries/onto other stocks (Defra, 2023; MMO, 2023b; Natural England, 2017; Scottish Government, 2019b,c, 2022b) .
- The activity that may be displaced can be quantified, and should be put into the context of existing activity (as a proportion of existing activity) (Scottish Government, 2019b,c).
- Where potential displacement is anticipated to be more significant, advanced approaches can be used such as modelling to take into account potential displacement, and outputs can be incorporated into quantified cost impacts (e.g. Defra, 2023).

3.2.4 Economic impacts

Economic impacts should take the following into consideration:

- Economic impacts can be assessed in relation to impact on landings (e.g. Defra, 2023; MMO, 2023b; Scottish Government, 2019a,b,c; NOAA, 2022), profit (e.g. Defra, 2023), GVA (e.g. Scottish Government, 2019a,b,c), and employment (e.g. Scottish Government, 2019a,b,c).
- Other costs should also be considered, e.g. familiarisation costs, gear modification costs, administration costs, public sector costs (e.g. Defra, 2023; MMO, 2023b; Scottish Government, 2019a,b,c; NOAA, 2022).
- Assessment of economic impacts should follow Green Book guidance, including use of the social value time preference discount rate, and can use the associated IA calculator. Different (longer) time frames can be considered depending on the proposal (HM Treasury, 2022; and e.g. Defra, 2023; MMO, 2023b; Scottish Government, 2019a,b,c).
- The distribution of economic impacts can be assessed by home port and port of landing, and also take into account knowledge of other businesses involved in upstream or downstream supply chain, processing, transport etc). This can be put into context in relation to the total landings to those ports, for an indication of the significance of the impacts (e.g. Scottish Government, 2019a,b,c; NOAA, 2022).
- Supply chain impacts (upstream) should be considered. This can be qualitative, or quantitative through the use of multipliers (but there are limitations with multipliers at local/regional level, and potential for further research and studies to improve this) (e.g. Scottish Government (2019a,b,c) applied multipliers; NOAA (2022) chose not to apply multipliers due to lack of locally specific ones).
- Supply chain impacts (downstream) should be considered. This is likely to be qualitative, taking into consideration where the landings are going, such as into local markets, processing, or exports (e.g. Scottish Government, 2019a,b,c; NOAA, 2022).

3.2.5 Social impacts

Social impacts should take the following into consideration:

- Social impacts often arise from economic impacts, and therefore the assessment of social impacts should be linked to the assessment of economic impacts. However, there may be additional social effects that are independent from the economic impacts.
- A social baseline should be prepared to provide an indication of vulnerability to impacts on fisheries. This could consider deprivation statistics in relation to employment, housing and income, as well as level of dependency on fisheries (e.g. Defra 2022, 2023; Welsh Government, 2021a; NOAA, 2022).
- Assessment of social impacts should use best available information, however the assessment is likely to be qualitative.
- Impacts should be considered in relation to impacts on individuals, families, and community, and the distribution of impacts amongst different social groups (e.g. Scottish Government, 2019a,b,c; D&SIFCA, 2022; Welsh Government, 2021a).
- Social values of the affected communities should be considered where possible, and information on social values and associated frameworks are likely to become better developed (e.g. Welsh Government, 2021a; NOAA, 2022).

3.2.6 Environmental impacts

Environmental impacts are considered to an extent in some SEIAs (e.g. Defra, 2023; D&SIFCA, 2022; MMO, 2023b; Scottish Government, 2019a,b,c; Welsh Government, 2021a; NOAA, 2022). An in-depth assessment of environmental impacts is often undertaken separately from the assessment of social and economic impacts, however, the following points are worth noting:

- Assessment of environmental impacts should capture both positive (e.g. Defra, 2023; D&SIFCA, 2022; MMO, 2023b; Scottish Government, 2019a,b,c; Welsh Government, 2021a; NOAA, 2022) and negative (e.g. Defra, 2023; Scottish Government, 2019a,b,c; NOAA, 2022) impacts (e.g. including impacts from displacement of fishing effort).
- Carbon impacts (related to fuel use) can be included in the environmental impacts, where the proposal may affect steaming times or the level of fuel use(e.g. Defra, 2023; D&SIFCA, 2022; MMO, 2023b; Scottish Government, 2019a,b,c).
- Ecosystem services assessment may be appropriate in some cases, but is data limited particularly as many of the ecosystem services in the marine environment relate to non-market values (with the exception of provision of fish/shellfish) (e.g. Defra, 2023; MMO, 2023b; Scottish Government, 2019a,b,c). If undertaken, ecosystem services assessment should only value the *marginal* benefits of the proposed measure (e.g. Scottish Government, 2019a,b,c c.f. Defra, 2023).

3.2.7 Cumulative impacts

Cumulative and in-combination assessments should take the following into consideration:

- If a proposal involves a number of separate restrictions (e.g. management measures in several different areas), individual assessments may be undertaken for each specific area, however a cumulative assessment should be undertaken that considers the social and economic impact of the suite of measures (Scottish Government, 2019a,c).
- The context in which the proposal is made should be considered. Where there are other measures, plans or projects that may also affect the fishery under consideration, an assessment of the impacts of the proposal *in combination with* the other measures and proposals may also be required, to better understand the potential overall impact on social and economic factors (Scottish Government, 2019a,b,c).

4 Guidance for SEIAs for Fisheries Management Decisions

This section provides guidance on undertaking SEIAs for fisheries management decisions (or other management proposals that may impact on fisheries). It covers:

- key principles
- assessment of costs and benefits
- wider impacts – economic
- wider impacts – social
- environmental impacts.

Reporting of the information should use the proposed template (Section 5 and Annex C).

4.1 Key principles

The assessment of social and economic impacts on fisheries for fisheries management decisions should follow these key principles:

- **Proportionality** – the appropriate level of resources should be invested in gathering and analysing evidence on the impacts of a policy. This means the level of analysis should be proportionate to the problem it is addressing and reflect the scale or impact of the measure (RPC, 2019a). More complex proposals, and those that are likely to have greater impacts, would therefore have broader and more in-depth research into the potential extent and distribution of those impacts. More resources could be invested where there is greater uncertainty in assessments, where there is potential to reduce that uncertainty. As such, this guidance does not provide a one size fits all, prescriptive approach for all cases; and the approaches and data that are available may evolve with time.
- **Use of best-available evidence** – the assessment should be informed by the best-available evidence at the time of the assessment. Evidence from multiple sources should be considered and various sources may be required to inform different parts of the assessment, as well as allowing triangulation between sources. Qualitative analysis, such as social research, can also be a useful information source for triangulation, and provide contextual detail that is not apparent from quantitative data. The uncertainties and limitations of the data sources, and gaps in the evidence, should also be recognised.
- **Engagement with affected parties** – timely and broad-based stakeholder involvement is an important ingredient for effective assessment. It can help with the identification of key issues, policy options, potential impacts and identification of options for mitigation. Whilst formal consultation is often a requirement of the regulatory process, informal and ongoing engagement with stakeholders can provide important input to the process leading up to the formal consultation. However, stakeholder consultation or engagement fatigue should also be avoided, and existing and secondary data sources should be used to the extent possible, with any stakeholder engagement aiming to build on existing processes and be designed to fit around stakeholder availability. It may be valuable to consider carrying out targeted social research to

understand the potential wider implications of the fisheries management decision, such as on social values. It is important to clearly communicate to stakeholders at what stage in the process the engagement is happening, and to be familiar with previous stakeholder engagement that has occurred with the same individuals or communities.

- **Incorporation of local knowledge** – in addition to the benefits of engagement with affected parties, local knowledge can help with interpreting the data. Knowledge of fishing patterns and/or steaming routes may help to identify potential impacts or rule out potential impacts that the data appear to show. It can also help to identify connections and potential knock-on impacts, such as where or to which fisheries effort might be displaced to. For example, the MMO DMA for the MPA Bottom Towed Fishing Gear Byelaw 2023 (MMO, 2023b) used expert and local knowledge to interpret apparent fishing VMS pings in one site. Local knowledge identified these pings as likely to be vessels steaming, albeit at slower speeds over ground than normal (and therefore falsely considered to be fishing) due to travelling against strong tidal movements, and/or to time their arrival into local ports with sufficient tide or to meet allotted times provided by harbour masters. They were therefore removed from the assessment of potential impacts.
- **Consideration and compliance with GDPR and avoiding disclosure of sensitive information** – when undertaking an assessment, data may relate to small numbers of vessels. To ensure anonymity, where data represent the activity of fewer than five vessels, standard practice is not to publish or disclose these values.

4.2 Costs and benefits

Existing guidance on expected level of business impact still stands (MMO, 2023c) – this guidance aims to supplement this with additional approaches and options for further assessment where appropriate.

The IA calculator is used to calculate costs to business. This supports the adjustment of prices for inflation to a common price base year, and discounting of future costs and benefits over the appraisal period to their present value. Further guidance on adjusting for inflation and discounting can be found in the Green Book (HM Treasury, 2022) and is beyond the scope of this guidance.

4.2.1 Impacts on the fishing industry

This section provides detail on the costs to the fishing industry (UK and non-UK). The starting point for calculating impacts on business is to assess the potential impact on landings, using landings returns, logbooks, vessel monitoring system (VMS) data and landings statistics.

Impacts on businesses should be based on an annual average from several years of data, to account for fluctuations. Usually, the most recent five years of data is used. Current convention is to exclude 2020 from timeseries, due to the significant impact of Covid-19 on fishing activity during that year. Raw data should be converted to base year values, by using the relevant GDP deflators from ONS (see Section 4.3).

Impacts on landings in terms of value (and potentially also volume) should be included in the supporting evidence base, although there is no requirement to provide this in the DMA or IA summary. Including impacts on landings provides a useful way to put the impact in the context of existing landings for an area, fleet segment, or port of landing.

For the purposes of calculating the Equivalent Annual Net Direct Costs to Business (EANDCB) required for the IA summary, impacts on landings can be converted to impact on profit using data on operating profits provided by Seafish from the fleet segment economic data[2]. This can be done either through a bespoke data request and data extract from Seafish, which will be specific to the vessels affected, or by applying operating profit as a percentage of fishing income (taken from relevant fleet segment(s)) to the impact on landings value. See example below.

Example: calculating operating profit from landings value for a fleet segment

A proposal is estimated to have an impact on landings of £56,000 per year, on vessels from the North Sea and West of Scotland (NSWOS) demersal over 24m fleet segment.

Seafish economic data show that this segment had an operating profit of £137,000 (annual average per vessel) in 2022, relating to a fishing income of £2,274,900 (annual average per vessel). Operating profit as a percentage of fishing income is therefore:

$$\frac{137{,}000}{2{,}274{,}900} \times 100 = 6\%$$

The estimated impact on operating profit of the proposal is therefore £56,000 x 6% = £3,360 per year.

Note: operating profit as a percentage of fishing income can be calculated as an average over a five-year period, to match the same period of data used to assess the impact of the proposal. A single year has been used here for simplicity.

Whilst the EANDCB requires the use of impact on profit, impact on gross value added (GVA) can be used to express the impact on the sector more broadly (rather than impact on individual businesses). A similar calculation can be undertaken from the Seafish data for GVA as a percentage of fishing income, or a bespoke data request can be made to Seafish which will be specific to the vessels affected. Impact on GVA reflects broader impacts on the sector as a whole and on society beyond those impacts on business profits, as it reflects both profits and wages and salaries paid to workers (see definition below).

[2] https://www.seafish.org/insight-and-research/fishing-data-and-insight/ Accessed 26 March 2024.

Definition: Gross Value Added

Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy, net of purchased inputs. As such, GVA excludes 'intermediate consumption', i.e. goods and services consumed or used up as inputs in production, such as raw materials. It largely consists of 'compensation of employees', i.e. wages and salaries paid to the workers of the businesses, and company profits.

Source: RPC, 2019b

The following sections outline approaches and data sources for assessing impacts on landings for over-12m vessels, under-12m vessels, and non-UK vessels.

The most appropriate data source depends on the spatial extent of the proposal:

- For a wide-ranging proposal that applies to the whole of an ICES area (e.g. sub-division, ICES 4c), landings statistics at ICES area scale can be used. Specific data extracts may be required for information at individual vessel level and including information on home port and port of landing.
- For a proposal that applies to part of an ICES area, but is still fairly broad geographically, landings statistics at ICES rectangle level may be able to be used. Specific data extracts may be required for information at individual vessel level and including information on home port and port of landing.
- For a proposal that applies to a specific spatial area smaller than an ICES rectangle, or overlapping several ICES rectangles, VMS data should be used where possible (see over-12m vessels below).

4.2.2 Over-12m vessels

Over-12m vessels are required to have VMS installed. This data can be linked to logbook returns to provide a spatially-resolved estimate of the location from which landings were taken. There are new data products being developed which will improve the potential for use of such data in assessing proposals with a spatial aspect. The following should be used, in order of preference:

1. Geofish[3] – this system, and access to it, is in development. It follows the ICES/OSPAR method for linking logbook and VMS data and will provide data at c-square resolution. It may also be possible to access individual ping data.
2. Request a Geofish dataset specifically tailored to a particular project or proposal. This option may have a cost associated with it, and once full access to Geofish is set up, this should not be required.
3. Use previous MMO internal method to link VMS pings to logbook data. This is not a preferred approach due to recognised limitations of this method.

[3] Geofish is an analytical tool being developed by Cefas, using ICES methods for linking logbook and VMS data.

All of the above should include information, where possible, on:

- year
- month (if relevant to the proposal)
- length group
- gear category
- species and species group
- live weight
- landed weight
- value
- home port of vessel
- port of landing.

The Fishing Impacts Decision Guidance Information Tool (FIDGIT) is also being developed by Natural England to provide a decision-support tool for fisheries management decisions. The tool can be used to explore socio-economic impacts (mostly economic) of changes to quotas, fleet structure or closed areas. Socio-economic outputs include: profit, sales, fuel costs, target fishing grounds, days at sea, crew costs, running costs, distance covered, societal value, crew size and full-time equivalents. As FIDGIT is further developed, its use and application for SEIAs should be considered. It may provide an additional information source to identify and quantify potential socio-economic impacts.

4.2.3 Under-12m vessels

Impacts on under-12m vessels can be assessed at the level of ICES area or ICES rectangle through existing datasets. The roll-out of inshore VMS (iVMS) should enable the production of more spatially-resolved data on the activity of under-12m vessels. Opportunities for the processing and use of this data to feed in to SEIAs should be explored for proposals that apply to a specific spatial area smaller than an ICES rectangle, or overlapping several ICES rectangles.

Where an intervention is expected to have a substantial impact on under-12m vessels, engagement with the vessels in the area should be undertaken, to understand their fishing patterns, use of the area in question in the context of the broader ICES rectangle, and the impact it might have.

4.2.4 Non-UK vessels

Impacts on non-UK vessels can be assessed in different ways, depending on the most appropriate approach for the proposal, as follows:

- Countries affected can be identified using VMS ping data. Vessel identifiers can be linked to the EU Community Fleet Register to identify likely gear type.
- The number of vessels by nationality potentially affected can be assessed using VMS ping data.
- Effort by non-UK vessels, by nationality, can also be assessed from VMS records.
- Estimates of landing value affected for EU vessels – this can be considered using landings data at ICES rectangle level from the European Commission's

Social, Technical and Economic Committee on Fisheries (STECF). Landings at ICES rectangle level can be apportioned to smaller spatial areas based on either the proportion of the ICES rectangle that intersects a given management area, or the proportion of EU member states' VMS pings within the management area compared to outside the management area In that rectangle (for a given gear type). This approach was used in the DMA for the Stage 2 MPA bottom towed gear byelaw (MMO, 2023b).

4.2.5 Displacement of fishing effort

The potential for displacement of fishing effort should at least be recognised, and potentially quantified. Depending on the proposal, there may be a need to:

- recognise the potential for displacement and its effects – on fish stocks, the environment (habitats and species), on fleet segments, and on people and communities
- quantify the potential scale of displacement
- quantify the potential significance of displacement
- undertake modelling of potential displacement and its consequences.

Any management measure that restricts or permits fishing for a species, with a particular gear type, or in an area, has the potential to cause displacement.

Definition: Displacement

In the context of fisheries, displacement refers to changes in fishing pattern and/or fishing behaviour that occur in response to an intervention, such as MPA management measures, fisheries management measures, or the activities of other maritime sectors that restrict fishing activity.

Displacement can be:

- spatial, i.e. to different areas and fishing grounds
- to different target species using the same gear type
- to alternative gear types to target the same or different species.

Displacement to alternative gear types (not directly affected by the management measure) has two dimensions:

- displaced fishers switching to alternative gears
- fishers already using an alternative gear type increasing their fishing effort within the area or fishery from which others have been displaced.

Source: Adapted from Natural England (2017).

Numerous complex factors interact to determine displacement behaviour, many of which are unknown or unquantified. The actual social and economic impacts of displacement on fishers and fisheries are therefore complex and difficult to predict and assess.

Factors that affect displacement behaviour include:

- availability, knowledge of and access to alternative fishing grounds (including stock and quota availability, access rights, distance from port and operational range of vessels)
- expectation or occurrence of localised 'spillover' effects
- individual strategies and preferences
- type and level of fishing activity already present in potential alternative fishing grounds
- availability of financial capital and knowledge for changing to an alternative gear type.

The scale at which potential displacement effects need to be considered varies from fishery to fishery, depending on the range of the vessels involved, the extent of current fishing grounds used by those vessels, and the distribution of alternative fishing grounds. It is possible that vessels may move to a different home port, which can affect the supply chain impacts (see Section 4.3) and may be locally significant.

Impact assessments sometimes assume that all affected effort is lost from the fishery. This ensures that the potential social and economic impacts are assessed as a worst-case scenario. However, this assumes there is no displacement of fishing effort. In reality, some effort is likely to be displaced, so the potential consequences of this should be considered. If effort is displaced it will reduce the cost impacts on businesses as compensatory landings will be taken from other areas. There are other direct and indirect impacts of displacement including:

- changes to cost-revenue profiles of fishing vessels (higher fuel costs from increased steaming times, reduced catch rates)
- increased conflict with other vessels/gear types (vessels displaced into fishing grounds already exploited by other vessels of the same or different gear type, vessels changing gear type)
- reduced efficiency of fishing leading to higher carbon emissions
- greater environmental/seabed impacts and/or impacts on bycatch rates in areas where effort is displaced to
- where mobile gears are restricted from an area, this might result in an increase in static gear into the area.

Displacement can be assessed as follows:

- The **amount** of effort or landings that might be affected by a proposal can be assessed through the approaches described above for over-12m, under-12m and non-UK vessels.
- The **significance** of the effort or landings affected can be assessed by comparing it to the total amount of effort or landings for the fleet segment, either at the scale of ICES rectangle, wider region (e.g. ICES area), or of total fleet segment activity. This can also be considered on an individual vessel basis. Section 4.3 discusses the use of indicators such as revenue dependency which correspond to this. See also below on thresholds.

- Consideration of **where** fishing effort might be displaced to. Spatially, this could include consideration of available and accessible existing fishing grounds. Fishing effort might also be displaced into other fisheries, either a change of target species using the same gear type, or a change of gear type for the same or different target species.
- Consideration of the consequences of displacement for the **fishing fleet** and knock-on impacts. Moving to alternative fishing grounds can result in increased conflict with other vessels. Alternative fishing grounds may be subject to more exposed weather conditions, affecting health and safety, and may require longer steaming times and longer fishing trips, resulting in greater periods of time away from home (see also social impacts). Some vessels might change the port from which they operate, which can affect the supply chain impacts (see Section 4.3) and may be locally significant.
- Consideration of potential impacts of displaced effort on the **environment and fish stocks**. Moving fishing effort to other areas, or to other gear types, can increase fishing pressure on habitats in other areas, affect fish stock dynamics, and change bycatch rates (of juveniles of the target species, of non-target species, and of endangered, threatened and protected species).
- Consider **secondary displacement**, where those in the area to which activity is displaced to are then displaced due to increased activity displaced from the original site. In addition, other gear types may be able to displace *into* the area from which other gears have been prohibited, resulting in benefits to these fishers.

Thresholds have been developed and applied in SEIAs in Scotland (see Annex A.5), to consider the potential significance of displacement from a spatial closure, in the context of existing fishing activity in the surrounding area. These are:

- Where the value of landings affected (for a fleet segment, i.e. gear type and length group) is less than 10% of the value of landings (for the same fleet segment) from the ICES rectangles in which the proposed closure is located, it is assumed that the affected effort can be displaced to surrounding existing fishing grounds, without significant impacts on the environment, or on other vessels.
- Where the value of landings is greater than 10% of the value of landings at ICES rectangle level, the value of landings affected is then compared to the value of landings from the region (for the same fleet segment). Region should be defined as appropriate; Scottish SEIAs have considered inshore fishing regions, offshore wind energy regions, or Clean and Safe Seas Evidence Group (CSSEG) regions. Where the value of landings affected is less than 1% of the value of landings (for the same fleet segment) from the region, it is assumed that the affected effort can be displaced to surrounding existing fishing grounds within the wider region, without significant impacts on the environment, or on other vessels. However, it is also noted that displacement within this wider regional context may have greater impacts on steaming time and vessel cost-revenue profiles.
- Where the value of landings affected is greater than 10% of the value of landings at ICES rectangle level, and greater than 1% of the value of landings at region level, the displacement of fishing effort is assumed to have more significant impacts on the environment (as effort may be displaced into new, previously unfished grounds), and on the fishing fleet (as they may need to

displace further, or displacement to alternative grounds may not be possible, and there is increased potential for conflict with other fleet segments).

Where displacement effects are anticipated to be potentially significant, and further detail or analysis is required on displacement and its impacts, specific modelling can be undertaken. The Fishing Impacts Decision Guidance Information Tool (FIDGIT) could be used to help predict and quantify displacement impacts. Other location choice models exist and are referred to in Defra (2022).

There is increasing recognition of the potential for, and assessment of, displacement. Existing guidance on displacement includes:

- Natural England (2017) Displacement of fishing effort from Marine Protected Areas (NECR241). This provides a literature review and framework for the identification of potential impacts of displacement.
- Scottish Government (2022b) Good Practice Guidance for assessing fisheries displacement by other licensed marine activities. This is focussed on assessing spatial displacement in relation to EIAs for other maritime activities. Only publicly available data sources are considered. Considerations for assessing displacement are provided, to inform a qualitative assessment of sensitivity and magnitude in line with EIA methods for determining the significance of impacts.

The caveat used in existing DMAs, that the assessment of impacts on business does not account for potential recoupment through displacement of activities, should also recognise the issues discussed above. That is, that displacement of activities in itself has additional impacts on business (changes to cost-revenue profiles of fishing vessels through increased fuel costs, reduced profit from fishing on less productive grounds, costs involved with seeking out new fishing grounds, increased conflict with other vessels/gear types), as well as wider impacts such as reduced efficiency of fishing leading to higher carbon emissions, and greater environmental/seabed impacts, and potential social impacts. There may also be limits to the potential for displacement to alternative grounds. For proposals that might have a more significant impact on displacement of fishing effort, more in-depth assessment may be required.

4.2.6 Other business costs

Other business costs should be considered and may include familiarisation costs, gear modification costs, administration costs and quota leasing/purchasing costs.

For familiarisation costs, see previous guidance (MMO, 2023c) in relation to the time taken for fishers to read the proposal and understand its impacts. Familiarisation costs could also be considered in relation to researching alternative fishing grounds. However, note that familiarisation costs were removed from the final version of the HPMA DMA as the consultation indicated these costs would not occur (Defra, 2023).

Where there might be a need to modify or change gears to comply with the requirements of a proposal, or where fishers might choose to change gears due to restrictions on the use of their existing gears, these should be monetised and included in the costs to business.

Any additional administration costs for business associated with the proposal should be estimated and monetised.

Quota leasing/purchasing costs – where the proposal either directly or indirectly (e.g. through displacement) requires fishers to target different species, or to fish in different total allowable catch (TAC) areas for existing species, there may be a need for businesses to access additional quota for these species or areas. The potential impact and cost of this should be discussed with those affected. Where possible this should be monetised. If it is not possible to monetise, the impact should be recognised and noted.

4.2.7 Public sector costs

There may be additional monitoring and compliance costs for public sector bodies associated with the proposal. These should be assessed where appropriate in line with existing guidance. However, in many cases monitoring and compliance may be absorbed by existing compliance systems and therefore not represent an additional cost. Where monitoring and compliance requirements are substantial, there may be a need to increase the capacity of compliance systems and personnel, which would involve an additional cost to business as usual.

Public sector costs are not impacts on business but have been included in this section as they have usually been reported within the 'impacts to businesses' section of the IA/DMA template.

4.3 Wider impacts – economic

4.3.1 Timeframe and discount rate

In line with the Green Book (HM Treasury, 2022), economic impacts should be assessed over a defined timeframe using an appropriate discount rate[4]. Typically, the timeframe or time horizon is 10 years, and the discount rate is the social time preference rate (STPR) of 3.5%. For example, if the predicted economic impact of a decision is a loss of £100,000 in year 10 of the assessment period, the impact figure after the STPR is applied would be £73,400 in present value terms. This is because a sum of money available today is perceived to be worth more than the same amount in the future due the preference for benefits now (rather than the future) and factors like expected increases in per capita consumption and risk (Annex A6 of the Green Book).

Longer timeframes may be appropriate for proposals which involve long-term effects such as significant environmental effects. For example, Scottish Government SEIAs for MPA management measures use a timeframe of 20 years (Scottish Government, 2019a,b) and the Defra HPMA DMA used a timeframe of 30 years (Defra, 2023). For timeframes longer than 30 years, a declining discount rate should be applied. This is

[4] The discount rate reflects the rate at which society values the present compared to the future. This enables proposals with different time spans and benefit cost profiles to be compared on a common 'present value' basis. This reflects the preference people have for value now rather than later ('time preference') and the expected growth in per capita consumption over time ('wealth effect') (HM Treasury, 2022).

3.5% for the first 30 years, reducing to 3.0% to 75 years, and 2.5% beyond that (see Annex 6 of the Green Book).

Raw data should be converted to base year values, by using the relevant GDP deflators from ONS. This should be done before calculating the annual average, so that the annual average value reflects base year values.

4.3.2 Distribution of economic impacts

The economic impacts identified in Section 4.2 should be considered in more detail to identify how they are distributed geographically, across different parts of the fishing fleet, and on different social groups. The latter is considered further under social impacts (Section 4.4).

The distribution of the impacts on fishing can be explored in relation to:

- fleet segment (by vessel length, by gear type, by fishery or metier)
- location (this could consider: the marine plan region within which the impacts arise at sea; home ports of the vessels affected; landing ports where catches affected are landed; whether these areas are rural/urban).

The significance of the economic impacts can be considered in different ways, for example:

- average revenue dependency (see Defra HPMA DMA)[5]
- average effort dependency (see Defra HPMA DMA)
- proportion of revenue affected, for individual vessels (this can identify specific vessels that may be particularly impacted by the proposal)
- proportion of revenue affected, for a fleet segment (e.g. under-12m vessels using demersal trawl) (this can identify particular fleet segments that are more heavily affected by the proposal).

4.3.3 Impacts by home port

Impacts often arise at sea but may be felt on land. Distribution of impacts can be considered in relation to impacts on home ports of the vessels affected. This may provide an indication of where employment impacts are most likely to be felt and can help to identify relevant locations for consideration of social impacts (see Section 4.4). Different ways of identifying geographical areas on land that may be affected by a proposal include:

- Based on the vessels affected, expert or local knowledge of where those vessels operate from and where their crew are from.
- From landings data, use information on the home port of the vessels to calculate the value of landings affected by home port. The significance of this for the area can be considered by looking at the relative impact (value of landings affected as a proportion of total landings by vessels from that home

[5] This was categorised as low, medium or high, however details of how it was calculated were not provided. Presumably it relates to the proportion of vessels' income or effort that derives from the area under consideration.

port). However, the registered home port of a vessel may not be the port it operates from on a day-to-day basis.

If displacement of fishing effort might result in vessels changing the port from which they operate (see Section 4.2 'Displacement of fishing effort'), potential impacts of the displacement of spend on supply chains should also be considered. This may not be significant at a national level, but could be significant locally and should be recognised where it may be an issue.

4.3.4 Impacts by port of landing

The distribution of impacts by port of landing may provide an indication of where impacts on the ports and downstream supply chain (sale, transport, processing of catches etc) are most likely to be felt. Different ways of identifying ports of landing affected include:

- Based on the vessels affected, expert or local knowledge of where those vessels land their catches to.
- From landings data, use information on the port of landing of the vessels to calculate the value of landings affected by port of landing. The significance of this for the area can be considered by calculating the relative impact (value of landings affected as a proportion of total landings to the port). However, the port of landing may not be the place where the catch is sold, as catches may be transported on to other markets/auctions from the point of landing.

4.3.5 Employment impacts

Proposals that may cause a reduction in output of the fishing sector (turnover, i.e. landings and sales of fish), have the potential to result in a reduction in employment.

The Office for National Statistics (ONS) Input-Output Analytical Tables (ONS, 2023) do not include data from which impacts on employment can be calculated. Instead, the number of jobs or full-time equivalents can be calculated per unit of turnover (value of landings). This can be used to calculate the number of jobs that equate to the value of landings affected.

The impact on employment can be estimated based on the value of landings affected, and the number of jobs in the UK fleet per £ million of landings (Table 3). Over the period 2017-2022 (excluding 2020), there was an average of 10.04 jobs in the UK fishing fleet per £ million of landings. It should be noted that this is not the same as full-time equivalent (FTE) jobs[6].

It may also be possible to explore employment impacts through the use of Seafish economic data for fleet segments, and this should be further explored[7].

[6] An attempt was made to estimate FTEs per unit of turnover from the Seafish economic indicators, but the data were not considered reliable. It may be possible to derive alternative estimates of the impact on employment in discussion with Seafish.
[7] This was tested in the case study, but the resulting impact on employment was unrealistically high, therefore the fleet-wide average was applied as described.

Table 3: UK fishing industry turnover and number of jobs, 2017-2022 (excluding 2020).

Indicator	2017	2018	2019	2021	2022
UK fishing industry turnover (£ million, nominal values)[8]	921.3	1,002.8	986.8	830.9	921.3
UK fishing industry turnover (£ million, 2023 prices)	1,132.7	1,209.5	1,165.7	932.0	1,036.8
UK industry employment (number of jobs, includes part-time and full-time)[9]	11,692	11,961	12,043	11,298	10,724
Number of jobs per £ million turnover (2023 prices)	10.32	9.89	10.33	12.12	10.34

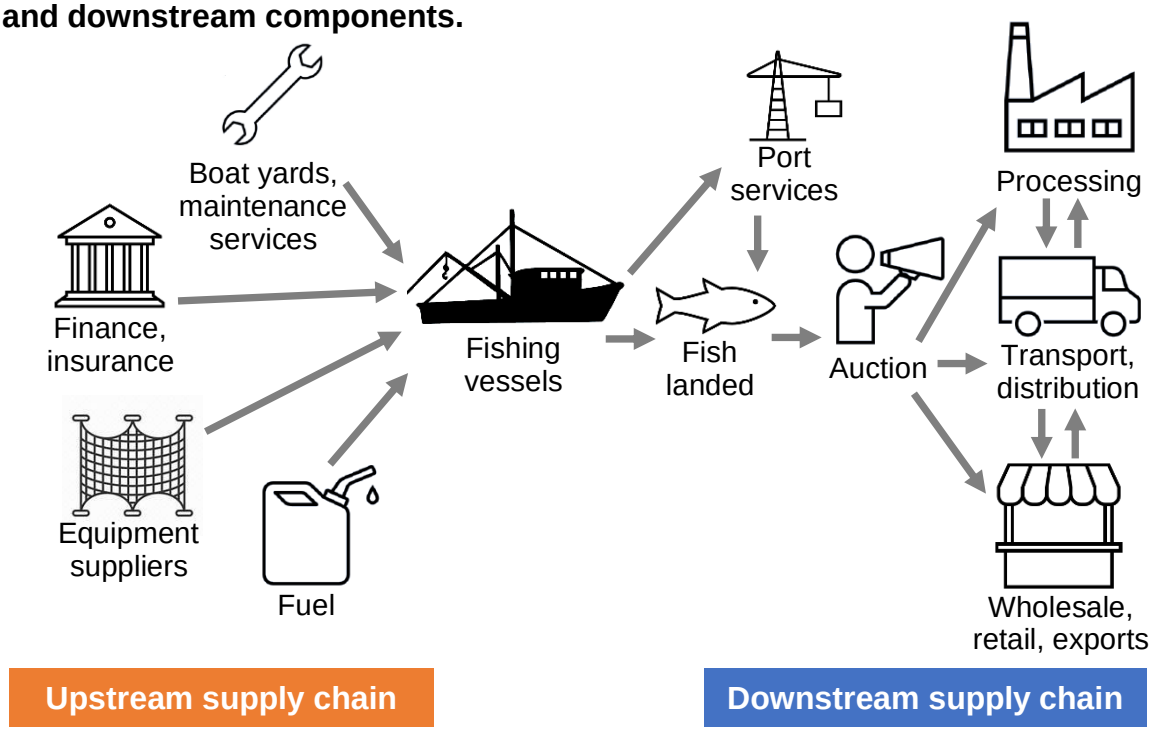
4.3.6 Supply chain impacts (upstream)

An impact on the catching sector may have impacts on other businesses that the catching sector buys from. If the number of businesses or their overall turnover is reduced, there may be potential knock-on impacts on the upstream supply chain (e.g. boat maintenance, gear suppliers, transport, financial services) (Figure 2).

Economic multipliers can be used to extend the assessment beyond the catching sector (direct impacts) to also consider indirect impacts on the upstream supply chain. These are called ‘Type I’ multipliers. Multipliers can also be used to consider further ‘induced’ impacts, which reflect changes in household spending arising from the indirect impacts (from increased or reduced employment). These are called ‘Type II’ multipliers. Note that the Office for National Statistics (ONS) does not currently provide estimates of Type II multipliers.

[8] https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2022 and https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2021. Section 2 'Landings' tables (spreadsheet). Table 2.1. Accessed 6 March 2024.
[9] https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2022 and https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2021. Section 1 'Fleet' tables (spreadsheet). Table 1.6a. Accessed 6 March 2024.

Figure 2: Generalised supply chain diagram for fisheries, showing upstream and downstream components.



The ONS produces input-output analytical tables and associated effects or multipliers[10] each year. The latest dataset was released in March 2023 and includes data for 2019 (ONS, 2023). These tables include a series of effects and multipliers including for output and GVA:

- **Output effect/multiplier**: this is expressed as the ratio of direct and indirect output changes due to a unit change in final use. The output multiplier is applied by multiplying it by the change in final use (direct impact) to give the estimate of direct plus indirect impacts on output throughout the economy. In the latest Input-Output tables (2019), this is 1.881 for 'fish and other fishing products; aquaculture products; support services to fishing'. This means for every £1 million increase in final use, the overall effect on the economy (direct plus indirect) would be £1.881 million. The output effect and multiplier are the same since the initial impact of a unit change in final demand on output is one and the total impact is defined as the effect value.
- **Gross Value Added (GVA) effect**[11]: the GVA effect shows the total impacts of an increase in final demand for a product. The GVA effect for 'fish and other fishing products; aquaculture products; support services to fishing' is 0.728. This means for every £1 million increase in final demand for fishery and aquaculture products, there is a £0.728 million increase in GVA (or

[10] Effects show the impacts on the economy per unit change and are used when final use is known. Multipliers measure the ratio between the direct and total impact. Unlike effects, multipliers are used when either the direct or total impacts is known (ONS, 2017).

[11] A GVA multiplier is also provided, however it appears high (2.094) compared to that in the Scottish Input-Output tables (1.1). The GVA multiplier from the Scottish Input-Output tables is 1.2. In contrast, the GVA effects are much more similar between the UK and Scottish Input-Output tables (0.728 for the UK and 0.7 for Scotland). The reason for the difference in the GVA multipliers is unclear. For this reason, it is recommended to use the GVA effect rather than the GVA multiplier.

conversely, a decrease if there is a reduction in final demand). The remaining £0.272 million is comprised of taxes on products and imports.

If it is not possible to apply economic multipliers, these knock-on effects on the upstream supply chain can be recognised qualitatively. Knowledge of the activity of vessels and the upstream supply chain may help to identify potential areas where these impacts may be felt (e.g. location of boat yards and maintenance services used by the affected vessels).

A limitation of economic multipliers is that they relate to the whole national economy, and local multipliers for specific areas may be greater, or smaller, than the national-level multipliers. Ideally, bespoke studies for key fisheries areas would be undertaken to determine local economic multipliers. The USA example did not assess indirect or induced impacts due to 'poorly quantified economic multipliers' but further models were being developed to estimate economic multipliers specific to a particular fisheries-dependent region, to more accurately represent impacts on smaller, fishing-dependent areas.

4.3.7 Supply chain impacts (downstream)

Fish and shellfish that are landed may then undergo further processing and onward transport (Figure 2). The economic multipliers mentioned above **do not** capture impacts on the processing supply chain. These impacts should therefore be considered separately.

The value of landings affected should be assessed by port of landing, and landings affected as a proportion of total landings to the port (potentially by species type) provides a quantification of this potential impact and its significance of this for the area. Local and expert knowledge on the likely destination of the landings (location of processing, or final market, including export) can provide further detail on the potential downstream supply chain impacts. This is particularly important if catches are transported from the port of landing for processing elsewhere.

For more in-depth analysis, supply-use tables from the input-output dataset can be used to identify linkages with other industry sectors. In the ONS Input-Output Analytical Tables, the following can be used:

- **Leontief Inverse (product by product)**: the row for 'Fish and other fishing products; aquaculture products; support services to fishing' shows, for every unit of turnover of the sector, the inputs to other sectors of the economy. Summing these, less the '1.0' attributed to the sector itself, provides a multiplier that can be applied to the change in turnover to estimate the downstream supply chain effects. In the latest Input-Output tables (2019), this is 0.135 for fisheries and aquaculture. The figures in the column for the sector show for every unit of turnover, the amount spent on other sectors of the economy (the upstream supply chain). The sum of these equates to the 'output' multiplier on the 'Multipliers' tab.

Limitations are that the dataset is at national scale and may not reflect regional variations, and it covers high-level industry sectors (e.g. fishing and aquaculture;

processing and preserving of fish, crustaceans, molluscs, fruit and vegetables), so it is not possible to separate out just fisheries effects.

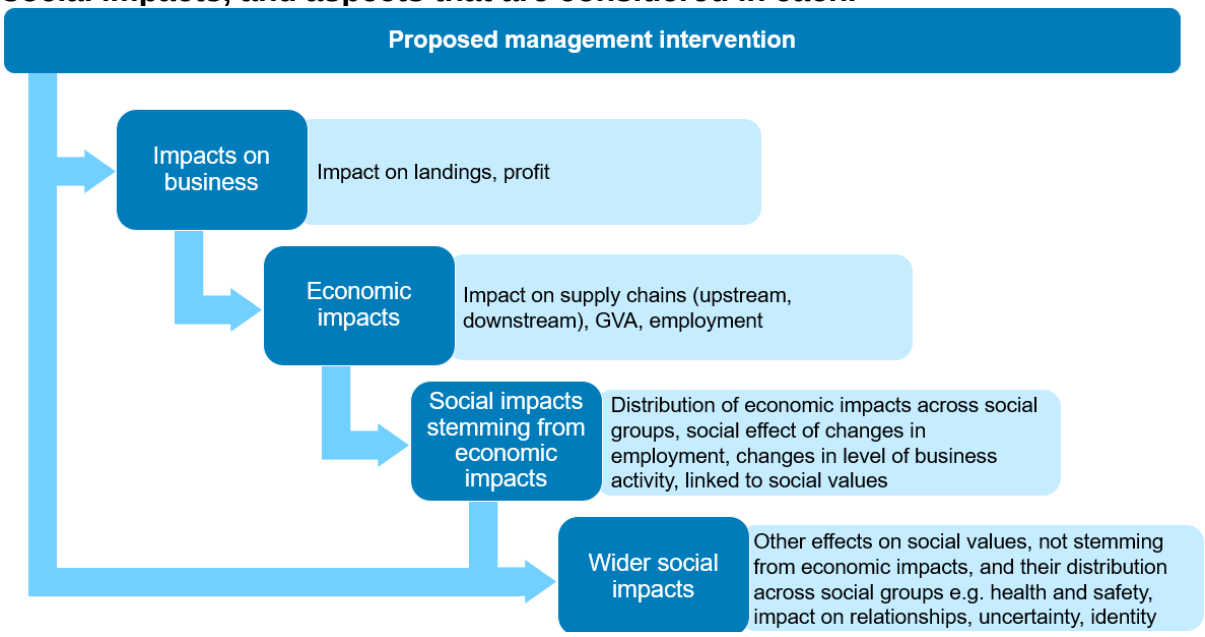
4.4 Wider impacts – social

4.4.1 Background to social impacts

Social impacts are effects on individuals, households, communities and society. They can vary in their desirability, scale, extent or duration (temporal and spatial), intensity and severity, as well as the extent to which they affect particular groups or are compounded by cumulative effects.

Social and economic impacts can be interconnected (Figure 3). Economic impacts identified above may result in social impacts. In particular, any significant change in employment as a result of restrictions on fishing activity, may have social impacts on individual wellbeing, careers, income and skills, and more widely on community sustainability. Management interventions may result in social impacts beyond those that stem only from the economic impacts, such as affecting trust in management and decision-making systems, and feelings of empowerment (or disempowerment). Social impacts stemming from economic impacts, as well as wider social impacts, may affect social values and wellbeing outcomes and may be distributed across different groups.

Figure 3: Linkages between impacts on business, economic impacts and social impacts, and aspects that are considered in each.



Assessment of social impacts may often be mainly non-quantitative, using expert judgement to project the potential positive and negative impacts and compare them against statistics relating to specific social aspects. It should draw on the quantified economic impacts (e.g. on landings, profit, employment) and the distributional analysis (by fleet segment, home port, port of landing), to understand and identify the locations and groups most likely to be affected. An understanding of the baseline social conditions is important to frame the assessment of the potential change.

The assessment of social impacts should be proportionate. Depending on the proposal, and the anticipated scale of potential impact, this may range from a desk-based study using expert judgement and knowledge of the local context, to engaging directly with stakeholders and communities affected to better understand the potential impacts and their consequences, to undertaking bespoke social research to provide a baseline, understand what aspects communities value, and identify and quantify potential social consequences of the proposal.

Qualitative approaches can help to explore complex issues and bring richer insights than quantitative data alone. Qualitative research can explore broad questions, and provide an opportunity for stakeholders to express richness, context and complexity (Rust et al 2017). A wide range of qualitative methods is available (Kara, 2022) and social science expertise may be required to design and implement social research and data collection.

When using social research findings to assess impacts, it may be necessary to extrapolate findings from an area of direct engagement to other geographical areas, where similar social baselines exist. It is important in these situations to capture any assumptions or areas of uncertainty and to be transparent in the approach taken.

When undertaking engagement directly with communities, it is important to identify the target population. This may consider their place of residence (and proximity to the proposed management measure), socio-demographics, employment, role in the community, and interest in the proposed management measure. Engaging with a wide range of stakeholders will help to ensure a range of views are collected.

Any engagement with stakeholders and communities, for understanding the baseline and potential social impacts, should take into consideration the context within which potential proposals are being introduced. The time over which fishers and fishing communities have been involved in fishing, and their experience and knowledge of past management decisions and discussions, is likely to be longer than the period in which researchers, policy officials and decision-makers are in post. It is therefore important to understand the discussion of potential management measures from the point of view of those involved in the fishery and ensure that processes build on past engagement and any points of common understanding that have been developed.

4.4.2 Examples of social values and wellbeing outcomes

There is an increasing amount of research into social values, the social importance of fisheries, and wellbeing outcomes. Project MMO1387 has undertaken a literature review of the socio-economic value of fisheries, with a focus on England, and is developing a conceptual framework for understanding social, cultural and economic wellbeing outcomes from fisheries. This should be taken into consideration and may provide the basis for the assessment of social impacts on these social values and wellbeing outcomes, although the final framework was not available for the preparation of this guidance. Examples of social values relevant to fisheries are provided in the box below.

Examples of social values relevant to fisheries

Social values can be grouped in different ways. Examples are given below relating to social, economic, cultural and place-based values:

- Social values – community bonds, values and knowledge, social capital (relationships and trust)
- Economic value – security of employment; the right to fish
- Cultural values – fishing as a way of life; cultural identity; cultural heritage
- Place-based values – sense of place; aesthetic values; seascape[12] and landscape; tourism.

These social values, and impacts on them, can be experienced at different levels:

- Individual – individual identity; employment and career; pride; security of employment; job satisfaction; the right to fish; physical and mental wellbeing
- Family – family relationships; family life; security and safety; intergenerational issues
- Community – community bonds, values and knowledge; social capital, "community glue"; social cohesion; community identity; community sustainability; sense of belonging.

Sources: Urquhart *et al.,* 2011; Hattam *et al.,* 2014; Urqhart *et al.,* 2014; Acott & Urquhart 2018; Scottish Government, 2019c, 2020.

An alternative framework comes from the Welsh wellbeing goals (Welsh Government, 2021b) – these are not specific to fisheries, but cover a range of potential social and economic effects that could be checked against for potential impacts:

- prosperity (economy, jobs)
- resilience (ability to recover from setbacks)
- health (physical and mental wellbeing)
- equality (ability for people to fulfil their potential whatever their background or circumstances)
- cohesiveness (attractive, viable, safe, well-connected communities)
- vibrant culture and traditions (society that protects culture, heritage and encourages participation in cultural activities)
- global responsibility (consideration of positive contribution to global wellbeing).

4.4.3 Identifying geographical area to focus on for social impacts

Impacts related to fisheries may arise at sea, but social impacts are more likely to be felt on land. See above on 'Impacts by home port' and 'Impact by port of landing' in Section 4.3 for guidance on identifying geographical areas on land to focus on. However, it should be recognised that affected fishers may live some distance from the ports where vessels are based or landings are made, therefore the affected area and communities may extend beyond the port areas.

[12] See, for example, MMO, 2019a.

Note that the registered home port of a vessel may not be the port it operates from on a day-to-day basis. This would need to be checked with expert or local knowledge or stakeholder input. Home port data comes from the MMO fishing vessel register, and landing port data is from logbook returns. Both of these can be linked to VMS data (see Section 4.2). In addition, IFCA records and local knowledge may provide an important source of information on relevant geographical areas, in particular for beach-launched vessels that are not associated with a specific port.

4.4.4 Social baseline

An understanding of the social baseline of the geographical areas and communities involved should be developed to support the basis of the assessment of social impacts, to the extent needed for the proposal.

A description of the community, and its involvement in fisheries and processing and associated industries (e.g. boat yards, maintenance and repair, other support services) should be set out. Any information on the demographics of owners, crew and processing employees (where relevant) could be compiled. The age profile of fishers and intergenerational connections are increasingly recognised as important aspects of fisheries to consider (White, 2015; Gustavsson & Riley, 2017), as well as gender considerations and the involvement of women in fisheries (Gustavsson, 2020).

A number of indices can be used to characterise an area, based on level of economic development, employment, level of dependency on fisheries etc. Local area characteristics and social vulnerability can be described in relation to (MMO, 2019b):

- population
- employment by sector
- unemployment
- deprivation indices
- any wider social wellbeing evidence.

The Defra DMA example used Indices of Multiple Deprivation (IMD) published by the Department for Levelling Up Housing and Communities (DLUHC) to consider:

- levels of deprivation in relation to income and employment;
- housing affordability;
- social dependency;
- employment opportunities.

Indices of Deprivation are available for England, for Local Authority areas, derived from 2011 Census data[13]. Census data from 2021 may also be used to characterise areas in relation to housing, education and economic activity[14]. These data can be

[13] https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019. Accessed 7 March 2024.
[14] https://www.ons.gov.uk/census/maps/choropleth. Accessed 7 March 2024.

obtained for Lower Layer Super Output Areas (LSOA) and Middle Layer Super Output Areas (MSOA)[15].

Generally in the UK, economic dependency on fisheries is not at the community level, in part because of the decline of fishing, but at that of families and individuals (Reed *et al*., 2011). This should be taken into account in the social impact assessment. Degree of dependency on the fishery, and on fisheries in general, can be considered at various levels (drawn from SEIAs related to fisheries):

- Relative importance of the fishery to vessels participating in it, in comparison to all area, species and gear fisheries in which the same vessels participate (community vessel diversity) – this is similar to average revenue dependency and proportion of revenue affected in Section 4.3 under 'Distribution of economic impacts'.
- Relative importance of the fishery to all local ownership vessels (community fleet diversity).
- Relative importance of the overall community fishery sector within the larger community economic base in terms of private sector business activity and public revenues (community economic diversity).

These were used in the USA example. The first two could be calculated from existing data; the third would require additional research to develop for the UK.

Any baseline information available on social values related to fisheries should also be compiled, where available, although it is currently limited. Social values and wellbeing outcomes are experienced by those directly and indirectly involved in fisheries. In addition, people with no involvement in fisheries can value them due to the sense of identity they bring to places (see social values above, for example place-based values such as sense of place and aesthetic values linked with having working ports and local fishing industries) (e.g. White, 2017).

A social survey of commercial fisheries is being commissioned by Defra from the Countryside and Community Research Institute and Fishing into the Future . The survey will inform fisheries management decisions and collect data on issues such as health and wellbeing, cultural identity, community, livelihoods and attitudes. When implemented, this will provide a useful evidence source to help characterise the social baseline for specific areas and inform the prediction and assessment of potential impacts from proposals affecting fisheries.

The social, cultural and historical importance of the fisheries themselves should also be considered. This could be reported as part of the baseline, and/or could be incorporated into engagement or consultation approaches, to understand the values that people attribute to the fisheries.

[15] LSOA and MSOA are geographical areas used for reporting of statistics in England and Wales. LSOA comprise between 400 and 1,200 households and have a usually resident population between 1,000 and 3,000 persons. MSOAs are made up of groups of LSOAs, usually four or five, and comprise between 2,000 and 6,000 households with a usually resident population of between 5,000 and 15,000 persons. https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeographies/census2021geographies. Accessed 20 March 2024.

Distribution of economic impacts on social groups

The distribution of economic impacts should be considered in relation to the social groups that will experience them. This includes the direct impacts of the proposal (e.g. impacts on fishers), as well as the indirect impacts (e.g. on processing and the wider supply chain, and on families and wider communities). Location of impacts is therefore an important starting point (based on home port and port of landing, see Section 4.3).

The distribution of impacts on different social groups can be considered in relation to groups specified in the Equalities Act 2010. This could consider:

- age (children, working age, pensionable age)
- income (10% most deprived, 10% most affluent, remaining 80%)
- gender (male, female, sexual orientation, gender reassignment)
- social groups (ethnic minorities, with disability or long-term sick)
- other protected characteristics (pregnancy and maternity; religion or belief).

The distribution of impacts across different social groups should consider where impacts might occur and how that might affect different groups. For example, potential impacts on employment in the catching sector or processing sector can be considered based on the profile of employment in those sectors. Data from other sources, e.g. census data, can also be used to provide narrative around specific groups that might be more (or less) affected.

4.4.5 Impacts on social values and wellbeing outcomes

The distribution of economic impacts across different social groups, as well as wider social impacts (not stemming from economic impacts), should be considered in relation to their potential to affect the social values identified above. The conceptual framework for understanding social, cultural and economic wellbeing outcomes from fisheries being developed under MMO1387 should be considered as a basis for this.

The potential impacts on social values and wellbeing outcomes will depend on the nature of the proposal under consideration, the fisheries it affects, and the social values in relevant geographical areas.

Examples of impacts on social values and wellbeing outcomes include:

- Increasing restrictions in a fishery or in a geographic area (e.g. an MPA) may result in displacement of fishing effort to other areas, or to other fisheries. This may result in a loss of fishing grounds that are protected from prevailing winds and bad weather, and mean that fishers have to travel to more distant fishing grounds which are more exposed. This may result in safety concerns, and may impact on family life as fishers are required to be at sea for longer or overnight, placing strain on family relationships (Hattam *et al.,* 2014).
- A proposal that is expected to reduce fisheries landings and potentially reduce the number of vessels operating in an inshore fishery, or if local vessels might relocate to other ports, has the potential to affect the connected businesses that support the fishing fleet, as well as local processors that use the catch.

This could affect the overall community and a change in the level of fishing activity might affect the cultural identity, social capital and place-based values.

The significance of the social impacts can be assessed using the following definitions (see also Table 4):

- significant negative/positive effect: this is defined as where it is probable that there will be an impact that is large enough to be noticed and is potentially significant
- possible negative/positive effect: this is defined as where it is possible that there will be an impact that is large enough to be noticed but may not be significant
- minimal negative/positive effect, if any: this is defined as where some possibility exists that a negative/positive impact could occur but the impact is unlikely to be sufficiently significant so as to be noticeable
- no noticeable effect expected.

Table 4: Significance of social impacts by likelihood and impact.

Likelihood	Impact		
	Large enough to be noticed by many	Only noticed by those directly affected	Not noticed
Probable	Very significant effect	Significant effect	Possible effect
Possible	Significant effect	Possible effect	Possible effect
Limited possibility	Possible effect	Possible effect	No effect

The assessment of the significance of social impacts related to positive or negative economic impacts (e.g. changes in income, changes in profitability of business, changes in number or type of jobs) can take account of: the total size of the economic impacts; the relative size of the economic impacts for the home port districts and port of landings affected; and the socio-economic context of the locations in which those impacts occur, recognising that some communities may have fewer alternative employment opportunities. Resulting knock-on social impacts on families and communities can then be identified related to these direct economic effects. Wider social impacts and the consequential impacts on social values and wellbeing outcomes can be considered qualitatively using the same framework.

4.5 Environmental impacts

Assessment of environmental impacts is not included here, as the focus is on social and economic impacts. However, a proposal may have environmental effects (positive and negative) that should be weighed against the social and economic impacts assessed in the SEIA. In addition, environmental impacts can also have social and economic dimensions. For example, impacts on natural capital can affect the delivery of ecosystem services, including recreation, and health and wellbeing benefits, which can be considered as part of social impacts. Separate guidance is available on natural capital assessments. Important points to note are:

- Natural capital and ecosystem services are difficult to quantify as they mostly relate to non-market values.

- Any assessment for the purpose of SEIA needs to consider the *marginal* change to ecosystem services as a result of the proposal (e.g. change in condition of the natural capital asset leading to change in the delivery of quantity of ecosystem services), *not* value the full extent of the service. Data linking condition with delivery of ecosystem services is generally lacking for the marine environment.
- Value transfer needs to be done carefully and consider the applicability of the evidence to the context to which it is being applied. This includes appropriateness of conclusions for different habitat types. For example, PISCO (2011) is often cited as justification for transferring conclusions from tropical MPA studies to temperate latitudes, however the underlying reference cited (Lester *et al.,* 2009) specifically attributed this conclusion to rocky/reef habitats and noted that the same may not apply to sedimentary habitats.

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5 Template for SEIAs for Fisheries Management Decisions

This section presents the proposed template developed by the project for SEIAs for fisheries management decisions.

The information and outputs from an SEIA for fisheries management decisions will inform any regulatory impact assessment or DMA that might be required for the intervention. Proposals with an anticipated annual net cost to business of less than £5 million do not require a full regulatory impact assessment[16], and a DMA can be undertaken instead. Proposals related to fisheries in the UK are unlikely to exceed the threshold, therefore a DMA is usually appropriate.

The DMA template is set by central government. It provides a high-level summary of the policy options considered and impacts assessed. MMO usually produce a 'Supporting Evidence' document (e.g. MMO, 2023b), which sets out the detailed analysis that has informed the DMA.

The template provided in this section focuses on the structure of the Supporting Evidence document, where in-depth analysis of impacts can be undertaken. It is expected that key findings from this would be summarised in relevant sections of the latest Government Impact Assessment or DMA template[17] at the time.

5.1 Existing structure

The Supporting Evidence document structure currently used by the MMO contains the following:

- Supporting evidence (policy issue and rationale etc)
- Policy objectives and intended effects
- Policy options considered, including alternatives to regulation
- Expected level of business impact:
    - VMS maps
    - Costs to the UK fishing industry
    - Familiarisation costs
    - Monitoring and compliance
    - Total monetised costs
    - Non-monetised costs
    - Non-monetised benefits
- Recommended management options
- References
- Annex: tables and figures

As the focus is on impacts on costs to the UK fishing industry, and monetised impacts relating to businesses (operating profits), this does not fully capture the wider knock-on social and economic impacts. The proposed template therefore expands this to provide an increased focus and visibility on these wider impacts.

[16] This threshold is being reviewed and may be updated.
[17] https://www.gov.uk/government/publications/impact-assessment-template-for-government-policies Accessed 4 January 2024.

5.2 Proposed structure

The differences in structure and content between the existing template, and the proposed template, are set out in Table 5. The full proposed template is provided in Annex C.

Table 5: Comparison of existing and proposed structure for the SEIA template

Section in existing template	Proposed structure for revised template
Supporting evidence *Contains the following sub-sections:* **Policy issue and rationale for Government intervention** **Rationale for intervention and intended effects** **Marine Plan Assessment** **Marine Strategy Regulations**	**Background** *Rename section to 'Background' (the whole document is the 'Supporting evidence').* *Sub-sections are as in existing template.*
Policy objectives and intended effects	*As in existing template.*
Policy options considered, including alternatives to regulation	*As in existing template.*
No corresponding section.	**Rationale for de Minimis Rating** *New section added in line with latest Defra DMA template.*
Expected level of business impact *Contains the following sub-sections:*	**Costs and Benefits** *Updates existing structure to incorporate additional considerations.*
VMS maps	*Subsection titled 'VMS maps' removed; maps should be included where appropriate.*
Costs to the UK fishing industry	**Costs to the fishing industry** *This sub-section is similar to the existing template. In addition, potential for displacement of fishing effort is explicitly considered, and more in-depth analysis undertaken if required. Other costs and benefits to UK businesses are also noted and assessed if required.*
Familiarisation costs	*Subsection on 'Familiarisation costs' removed. Such costs are incorporated in 'Costs to the fishing industry' if required.*
Monitoring and compliance	**Public sector costs** *As in the 'Monitoring and Compliance' section of the existing template, subheading updated to reflect that these are public sector costs rather than costs to business.*
Total monetised costs **Non-monetised costs** **Non-monetised benefits**	*Sections on 'Total monetised costs', 'Non-monetised costs' and 'Non-monetised benefits' moved to a section on 'Summary of impacts' below.*
No corresponding section	**Wider impacts – economic**

Section in existing template	Proposed structure for revised template
	New section, added to allow for wider economic impacts on society (beyond the immediate businesses affected) to be explored and noted. *Includes the following subsections:* **Distribution of economic impacts** **Employment impacts** **Supply chain impacts (upstream)** **Supply chain impacts (downstream)**
No corresponding section	**Wider impacts – social impacts** *New section, added to allow for social impacts to be explored and noted. Assessment of most social impacts is likely to be qualitative.* *Includes the following sub-sections:* **Social baseline** **Distribution of economic impacts on social groups** **Impacts on social values** **Trade impacts**
No corresponding section	**Environmental impacts** *New section, added to provide a summary of environmental impacts (costs and benefits). These may be assessed in more detail in a separate environmental assessment.*
No corresponding section, but new section brings together some sub-sections previously under 'Expected level of business impact'	**Summary of impacts** *New section, added to bring together the sections in the previous template on monetised and non-monetised costs and benefits, as a summary of the analysis in previous sections.* *Includes the following sub-sections:* **Total monetised costs and benefits** **Non-monetised costs** **Non-monetised benefits**
Recommended management option	*As in existing template.*
No corresponding section	**Post implementation review** *New section as in latest Defra DMA template and guidance.*
References	*As in existing template, to provide references cited in the text.*
Annex: Tables and figures	*As in existing template. Detailed tables of results and figures can be included here as required.*

6 Case Study

A case study was undertaken to test the application of the guidance and use of the template. This is reported in Annex B. The case study related to a hypothetical

closure of an area to mobile demersal gears. The area chosen was approximately 40 km by 30 km and located around 40 km offshore.

Real fisheries data was used but was anonymised in the reporting due to the hypothetical nature of the case study. For example, home port and landing locations were referred to as ‘Port A’, ‘Port B’, and the location of the closure is not specified. Vessel Monitoring System (VMS) data linked to logbook returns for over-12m vessels were used, together with Census data sources to provide context for the social baseline. The location of the closure area meant that the majority of impacts were on bigger vessels with a larger operating range. If the location were closer to shore, impacts on smaller vessels (under 12m length) would need to be considered in more detail.

Key findings from the application of the guidance to the case study were:

- The consideration of home port and port of landing information allowed the identification of areas on land where impacts may potentially be felt as a result of the proposed measures, that would not otherwise have been apparent, including areas at some distance from the proposed management area. This is considered a helpful addition to current approaches.
- Translation of impacts on value of landings to impacts on employment is uncertain with currently available data sources. Estimates based on Seafish fleet segment economic data generated unrealistically high estimates of employment impact. Estimates based on number of jobs per £ million turnover of the fleet as a whole do not take into account region or fleet specifics, and reflect jobs rather than FTEs.
- Social baseline data were difficult to source. MSOA level data were used in the case study, from ONS. Indices of Multiple Deprivation from DLUHC may be useful (and were used in Defra, 2022; 2023), but have not yet been updated to incorporate 2021 Census data.
- It is difficult to define the geographical area for the social baseline. Affected fishers may live some distance from the ports where vessels are based or landings are made. This complicates the attribution of social impacts.
- Social impacts are difficult to quantify or even identify with any degree of certainty. The guidance improved the consideration of such aspects, however, there are still uncertainties and better data are needed.
- The proposed management area selected for the case study did not give rise to impacts on smaller ports/communities that are particularly dependent on fishing, and for which changes in the level of fishing activity might have more significant impacts on place-based and cultural/aesthetic values. This should be taken into account when applying the guidance to proposals that might affect inshore fisheries and smaller vessels.
- Engagement with affected individuals and communities is an important aspect of the assessment of potential impacts, but was not possible for the hypothetical case study.

7 Conclusions and Recommendations

This study has reviewed a range of SEIAs relevant to fisheries and developed a template and guidance for undertaking social and economic impact assessments for fisheries. The template and guidance expand the consideration of potential impacts beyond the direct impacts on fishing businesses, to also include wider economic impacts on supply chains, and to consider the effect of the impacts on communities by linking to social impacts and impacts on social values.

The hypothetical case study confirmed that the guidance is workable using available fisheries data and can be proportionately applied. Data on catches affected and economic impacts are more readily available than data relating to employment and social aspects.

It is recommended that:

- MMO should broaden the focus of its SEIAs for fisheries issues beyond impacts on fishing businesses, to also consider wider economic impacts (e.g. on upstream and downstream supply chains), and where these impacts might be felt.
- The spatial resolution of fisheries data is important for assessing potential impacts related to specific areas. Current developments should improve the data available for over-12m vessels (e.g. Geofish) and need to take into consideration recommendations from this guidance, particularly in relation to information on home port of vessels and port of landing for fishing trips. Spatial resolution of data for the inshore sector should be increased; this should be forthcoming through the implementation of iVMS which will allow better identification of fishing grounds that are important to inshore vessels. Making this data available would also support the assessment of potential impacts on fisheries from other developments.
- Social impacts, including impacts on social values, that might arise from fisheries management decisions should be considered and assessed in SEIAs. Assessment of these is more likely to be qualitative than quantitative.
- Additional data collection should be undertaken to support the understanding of social values related to fisheries, and values connected to specific locations. This would help provide context and understanding of the social baseline for future assessments and support the assessment of social impacts. Some initiatives are under development (e.g. Defra social survey of fisheries) which should be continued and further built on.
- Engagement with affected individuals and communities should be undertaken for proposed management measures that are anticipated to have more substantial impacts. This should build on an understanding of the involvement that these individuals have had in the discussion of potential management measures. An initial assessment of which vessels and ports are likely to be affected can inform the design of engagement. Engagement can help identify social values, potential social impacts, and the cultural value of specific fisheries.
- The template and guidance for SEIAs for fisheries management decisions should be reviewed against current internal guidance, and used to support the consideration of potential impacts from decisions that may impact on fisheries.

8 References

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9 Acronyms and Abbreviations

BRIA	Business and Regulatory Impact Assessment
BSAI	Bering Sea and Aleutian Islands
CBD	Convention on Biological Diversity
CCRI	Countryside and Community Research Institute
CD	Crown Dependencies
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CSSEG	Clean and Safe Seas Evidence Group
CO_2	Carbon Dioxide
D&SIFCA	Devon & Severn Inshore Fisheries and Conservation Authority
DCF	Data Collection Framework
Defra	Department for Environment, Food and Rural Affairs
DLUHC	Department for Levelling Up Housing and Communities
DMA	De Minimis Assessment
EANDCB	Equivalent Annual Net Direct Costs to Business
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ES	Ecosystem Services
ESVD	Ecosystem Services Valuation Database
EU	European Union
FDI	Foreign Direct Investment
FIDGIT	Fishing Impacts Decision Guidance Information Tool
FMP	Fisheries Management Plan
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GVA	Gross Value Added
HM Treasury	His Majesty's Treasury
HPMA	Highly Protected Marine Area
IA	Impact Assessment
ICES	International Council for the Exploration of the Sea
IFCA	Inshore Fisheries and Conservation Authority
IIA	Integrated Impact Assessment
IMD	Indices of Multiple Deprivation
INTOG	Innovation and Targeted Oil and Gas
LSOA	Lower Layer Super Output Area
MSC	Marine Stewardship Council
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MPA	Marine Protected Area
MSOA	Middle Layer Super Output Area
NECR	Natural England Commissioned Report
NEPA	National Environmental Policy Act (USA)
NM	Nautical Mile(s)
NMFS	National Marine Fisheries Service
NCPE	National Centre for Policing Excellence
NOAA	National Oceanic Atmospheric Administration
NSWOS	North Sea and West of Scotland

ONS	Office for National Statistics
OSPAR	Original Oslo and Paris Conventions
PISCO	Partnership for Interdisciplinary Studies of Coastal Oceans
PSC	Prohibited Species Catch
RPA	Risk and Policy Analysts Ltd
RPC	Regulatory Policy Committee
RYA	Royal Yachting Association
SAC	Special Area of Conservation
SDG	Sustainable Development Goals
SIA	Social Impact Assessment
SEIA	Socio-economic Impact Assessment
SSSI	Sites of Special Scientific Interest
STECF	Social, Technical, and Economic Committee on Fisheries
STPR	Social Time Preference Rate
TAC	Total Allowable Catch
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
USA	United States of America
VMS	Vessel Monitoring System
iVMS	Inshore Vessel Monitoring System
WFGA	Wellbeing of Future Generations Act
WG	Working Group

Annexes

A Review of Example SEIAs

See separate document.

B Case Study

See separate document.

C Template for SEIA Supporting Evidence

This annex sets out the proposed template for SEIA supporting evidence. References to the 'existing template' are to MMO (2023c).

C.1 Background

C.1.1 Policy issue and rationale for Government intervention

See existing template.

C.1.2 Rationale for intervention and intended effects

See existing template.

C.1.3 Marine Plan Assessment

See existing template.

C.1.4 Marine Strategy Regulations

See existing template.

C.2 Policy objectives and intended effects

See existing template.

C.3 Policy options considered, including alternatives to regulation

See existing template.

C.4 Rationale for De Minimis Rating

Refer to Defra DMA guidance (MMO, 2023c). This should provide the rationale for why a DMA is appropriate, based on the thresholds established for anticipated annual costs to business.

C.5 Costs and Benefits

This section is based on the existing 'Expected level of business impact' section in MMO (2023c), updated to incorporate additional considerations.

C.5.1 Costs to the fishing industry

This section provides detail on the costs to the fishing industry (UK and non-UK). Fisheries management decisions will generally have a direct impact on UK fishing businesses through changes to landings value or volume. For the impact assessment this is usually expressed in terms of the change in profit. In addition, potential for displacement of fishing effort is explicitly considered, and more in-depth analysis undertaken if required. Other costs and benefits to UK businesses are also noted and assessed if required.

C.5.2 Public sector costs

See the 'Monitoring and Compliance' section of the existing template, sub-heading updated to reflect that these are public sector costs rather than costs to business.

C.6 Wider impacts – economic

This new section allows for wider economic impacts on society (beyond the immediate businesses affected) to be explored and noted.

C.6.1 Distribution of economic impacts

Consideration should be given to the distribution of economic impacts on business. This includes the distribution across different parts of the fishing fleet and individual vessels, home ports and ports of landing. The consideration of home ports and ports of landing affected helps to identify relevant locations for consideration of wider economic impacts and of social impacts.

C.6.2 Employment impacts

Where the impact on business turnover or profits has the potential to result in a loss of fishing activity this may impact on jobs in the catching sector. Impacts on employment can be estimated from impacts on turnover (catches) using multipliers. Impacts on employment can inform the assessment of wider social impacts.

C.6.3 Supply chain impacts (upstream)

Impacts on the catching sector may also have knock-on effects on the upstream supply chain (businesses that vessels purchase from, e.g. boat yards/maintenance services; fuel suppliers; insurance and financial services companies). Upstream impacts can be calculated using multipliers from ONS Input-Output Analytical Tables.

C.6.4 Supply chain impacts (downstream)

Impacts on the catching sector may also have knock-on effects on the downstream supply chain (ports, processing and transport services). These impacts can be quantified using ONS Input-Output Analytical Tables, and qualitatively assessed based on knowledge of the supply chain and the destination of fish caught.

C.7 Wider impacts – social impacts

This new section allows for social impacts to be explored and noted. Assessment of most social impacts is likely to be qualitative.

C.7.1 Social baseline

A baseline assessment might consider indicators of vulnerability, and details of the fishing industry and associated businesses, in a geographical area relevant to where impacts of the proposed measure might be felt on land.

C.7.2 Distribution of economic impacts on social groups

Social impacts often arise in response to economic impacts (changes to landings, impacts on upstream and downstream supply chains, impacts on employment) and should be considered in relation to their distribution across social groups (location, age, gender etc).

C.7.3 Impacts on social values

Social impacts can also arise separately from the economic impacts. Consideration should be given to potential impacts on relevant social values (see, for example, the outputs from the MMO1387 project on socio-economic values of fisheries), and the distribution of those impacts, e.g. on individuals, families and communities, and on different social groups.

Potential cumulative impacts from other measures and projects that might affect the same vessels/fisheries, individuals and communities should also be recognised and considered.

C.7.4 Trade impacts

New section, added in line with latest Defra DMA template.

C.8 Environmental impacts

New section, added to provide a summary of environmental impacts (costs and benefits). These may be assessed in more detail in a separate environmental assessment.

C.9 Summary of impacts

New section, added to bring together the sections in the previous template on monetised and non-monetised costs and benefits, as a summary of the analysis in previous sections.

C.9.1 Total monetised costs and benefits

See existing template. Potential cumulative impacts should be recognised.

C.9.2 Non-monetised costs

The key costs of the proposal that have not been monetised can be summarised from the wider economic and social impacts sections. Potential cumulative impacts should be recognised.

C.9.3 Non-monetised benefits

The key benefits of the proposal that have not been monetised can be summarised from the wider economic and social impacts sections. Potential cumulative impacts should be recognised.

C.10 Recommended management option

See existing template.

C.11 Post implementation review

New section as per latest Defra DMA template and guidance.

C.12 References

See existing template, to provide references cited in the text.

C.13 Annex: Tables and figures

See existing template. Detailed tables of results and figures can be included here as required.