



The MMO and the UK Fisheries Objectives: a framework for shared outcomes and the role of fisher agency

Final Report

29 October 2021

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The MMO and the UK Fisheries Objectives: a framework for shared outcomes and the role of fisher agency

Final Report

A report submitted by [ICF Consulting Services Limited](#)
in association with

[Howell Marine Consulting](#) and [MacAlister Elliott and Partners](#)

Date: 29 October 2021

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Document Control

Document Title	The MMO and the UK Fisheries Objectives: a framework for shared outcomes and the role of fisher agency. Final Report
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Date	29 October 2021

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1 Introduction

The MMO's purpose is to protect and enhance England's marine environment and to support UK economic growth by enabling sustainable marine activities. One of those activities is commercial fishing, for which the MMO is the national regulator in England. The UK Fisheries Act 2020 established eight objectives for UK fisheries (see section 2.1.1). The MMO is one of several actors¹ whose actions will contribute to the achievement of the UK Fisheries Objectives.

To plan a programme of activities that can support achievement of the UK Fisheries Objectives, the MMO needs a clear understanding of:

- The problems/challenges that need to be addressed.
- The outcomes it should target to enable the objectives to be met.
- How it can directly and indirectly, through interaction with other actors, achieve its targeted outcomes.

To support the MMO's organisational performance management and demonstrating value for money requires evidence that the MMO is effectively achieving its target outcomes and its contribution to the UK Fisheries Objectives. This requires an appropriate framework that identifies the outcomes the MMO is trying to achieve and why the outcomes are relevant to the UK Fisheries Objectives. This report makes the first steps in developing such a framework.

1.1 Purpose of the study

The objectives for UK fisheries were set in the Fisheries Act. How they will be delivered is an ongoing exercise – a Joint Fisheries Statement (JFS) will be prepared by UK fishing authorities together with supporting fisheries management plans.

The study provides a logical framework that can be further developed to support MMO's strategic planning for fisheries and to guide improved monitoring and evaluation.

Specifically, the study:

- Provides a framework depicting what the MMO is trying to achieve in support of the UK Fisheries Objectives. It:
 - Explains how a theory of change can be used to support strategy design and monitoring and evaluation.
 - Identifies a set of common outcomes that need to be delivered (preconditions) for achievement of the objectives and lays out key areas of activity and actors relevant to each area.
- Focusses on one outcome: fisher compliance. It reviews the role of incentives in encouraging compliance and explores elements of a strategy to enhance the power of fishers' agency i.e. their influence over the system in which they work, to incentives compliance in the sector.

¹ Others include Defra, the Inshore Fisheries and Conservation Authorities as well as the fishing industry themselves.

This study does not seek to pre-judge the outcomes of the JFS and has not undertaken research to determine the best courses of action to achieve the objectives.

1.2 The relevance of theories of change

1.2.1 Challenges in regulator strategy design and Monitoring & Evaluation

The challenge of establishing robust monitoring and evaluation (M&E) for regulators has been recognised by the National Audit Office: “Performance measurement by regulators is particularly complex, because their intended outcomes (for example, a fishing industry that generates jobs and food) are generally delivered by the organisations that they regulate. There are also many external factors outside regulators’ control, and outcomes often do not become evident for several or even many years. Regulatory performance depends on the effectiveness of influence that they exert over regulated providers, as well as the outcomes that those providers deliver.”

The context in which MMO fisheries regulation operates has several specific complexities:

- Achievement of the Fisheries Objectives is influenced by multiple external factors as well as the actions of both regulated (fishing industry) and other actors related to the sector.
- MMO is not the only fisheries regulator in England or the UK.
- Fishers are active in, and fish move between, multiple regulatory jurisdictions, including English fishers active outside English waters, and non-English fishers active within English waters.
- MMO has control but not full enforcement powers over non-UK fishers active in English waters.

To better understand what the MMO is seeking to achieve and what indicators are needed to monitor performance, the MMO requires a robust framework that articulates its target outcomes, who is involved, the challenges associated with achieving those outcomes, and how those challenges may be addressed or progress towards the outcomes encouraged. This will enable the MMO to better design its strategies and operational approaches to fisheries management and better monitor and evaluate its performance.

1.2.2 A brief introduction to theories of change

A theory of change is a way of making explicit the thinking behind why a policy or programme will make a difference. It provides a strategic view of how a policy or programme is expected to work, mapping the causal chain through which the policy or programme will deliver targeted outcomes.

A theory of change can be used as a predictive model to support strategy design. By laying down the causal chain, it provides a framework for checking the logic behind strategic plans and helps to flag areas of uncertainty where there is a lack of evidence of the cause-and-effect relationships, or particular areas of risk where greater attention may be warranted.

The logical view of cause-and-effect relationships set out in a theory of change, provides a framework for monitoring and evaluation plans, which can be set up to track progress and provide evidence for adaptive management and demonstrating effectiveness and accountability.

Where projects are long-term and highly complex, for example where multiple agencies are involved, and multiple or alternative causal strands are possible, or where complex feedback loops exist, nested theories of change can be used. These focus on specific themes or areas of interest, breaking down a complex policy area into simpler components which can be examined individually as well as in aggregate together.

Case Study 1 Evidence 1 Conclusion 1 Recommendation 1 Box 1 summarises the steps involved in developing a theory of change.

Box 1 Process for developing a theory of change

- Identify the ultimate objectives
- Identify the outcomes necessary to achieve the objectives
- Analyse the reasons why (challenges and root causes of problems) these outcomes may not be being sufficiently achieved / the problems or challenges that need to be addressed in order to deliver the outcomes
- Articulate the role of the MMO and other actors in relation to these outcomes and challenges/problems
- Design the actions and strategies needed to address the problems and challenges
- Identify cause and effect linkages and feedback loops and how these may influence outcomes
- Articulate the assumptions implicit in the cause-and-effect linkages in order to refine the strategy design and finalise the theory of change for future monitoring and evaluation.

2 Initial steps towards a high-level theory of change

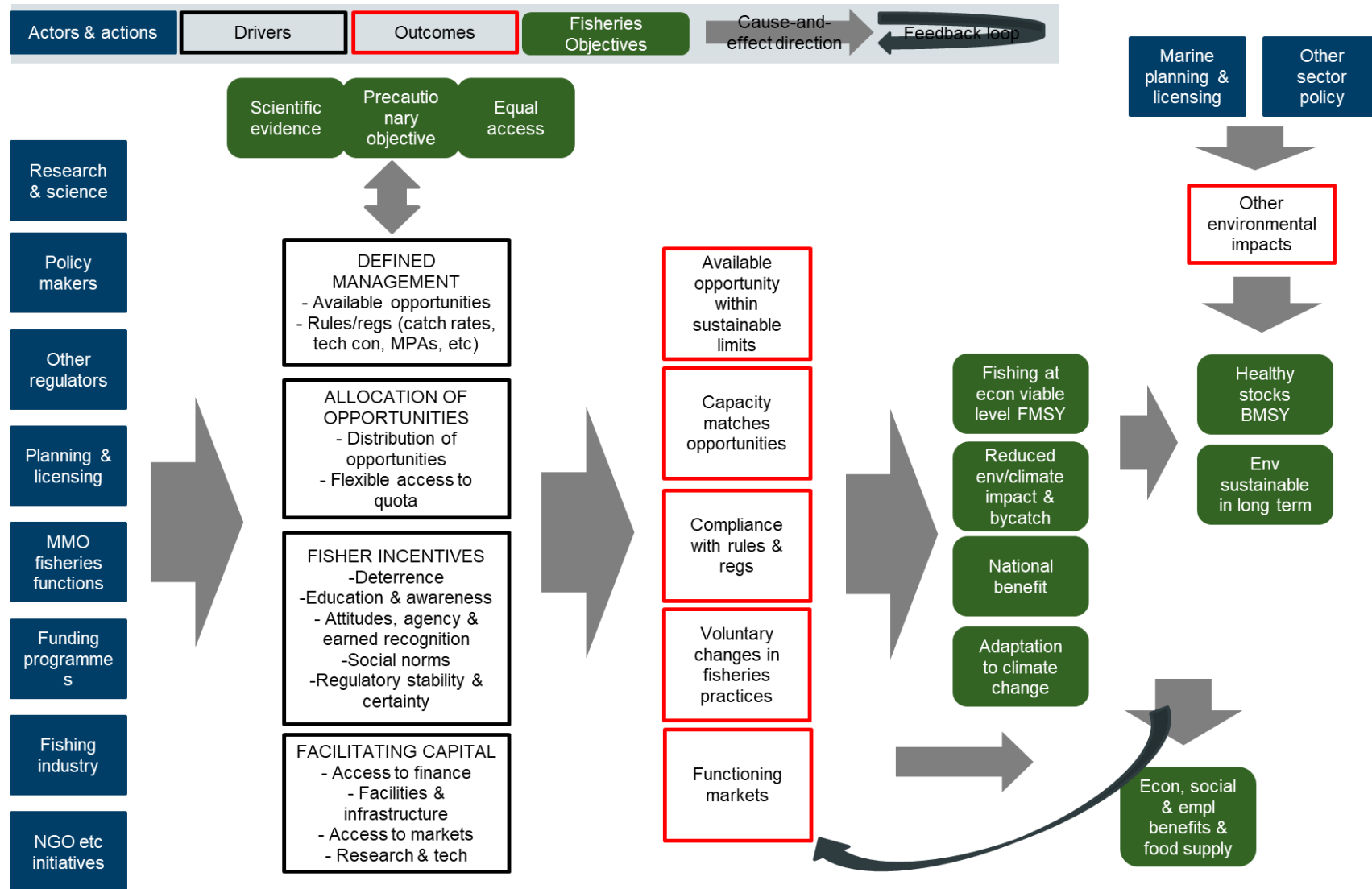
The purpose of this section is to identify a set of target outcomes, which reflect the preconditions necessary for achieving the Fisheries Objectives, as a starting point for building a theory of change for the MMO's forthcoming strategy. Specifically, it:

- Reviews the UK Fisheries Objectives and the relationships between them.
- Identifies and clusters the outcomes.
- Frames the strategic areas of activity through which the outcomes can be delivered.
- Identifies the role of the MMO and other key actors in each strategic activity area.

2.1 An initial view of the theory of change for UK Fisheries Objectives

Figure 2.1 shows how multiple actors and actions effect a series of drivers, which in turn influence key outcomes, that together support achievement of the UK Fisheries Objectives. The figure is a simplification of reality and is drawn from a fuller version which considers specific lines of cause-and-effect and feedback loops. The intention of the presented theory of change is to highlight the main outcomes, their key drivers, as well as the range of actors (including the MMO) that have influence, within the context of the UK Fisheries Objectives.

Figure 2.1 Draft UK Fisheries Objectives theory of change



2.1.2 The UK Fisheries Objectives

The Fisheries Act 2020 sets out eight broad objectives for UK fisheries:

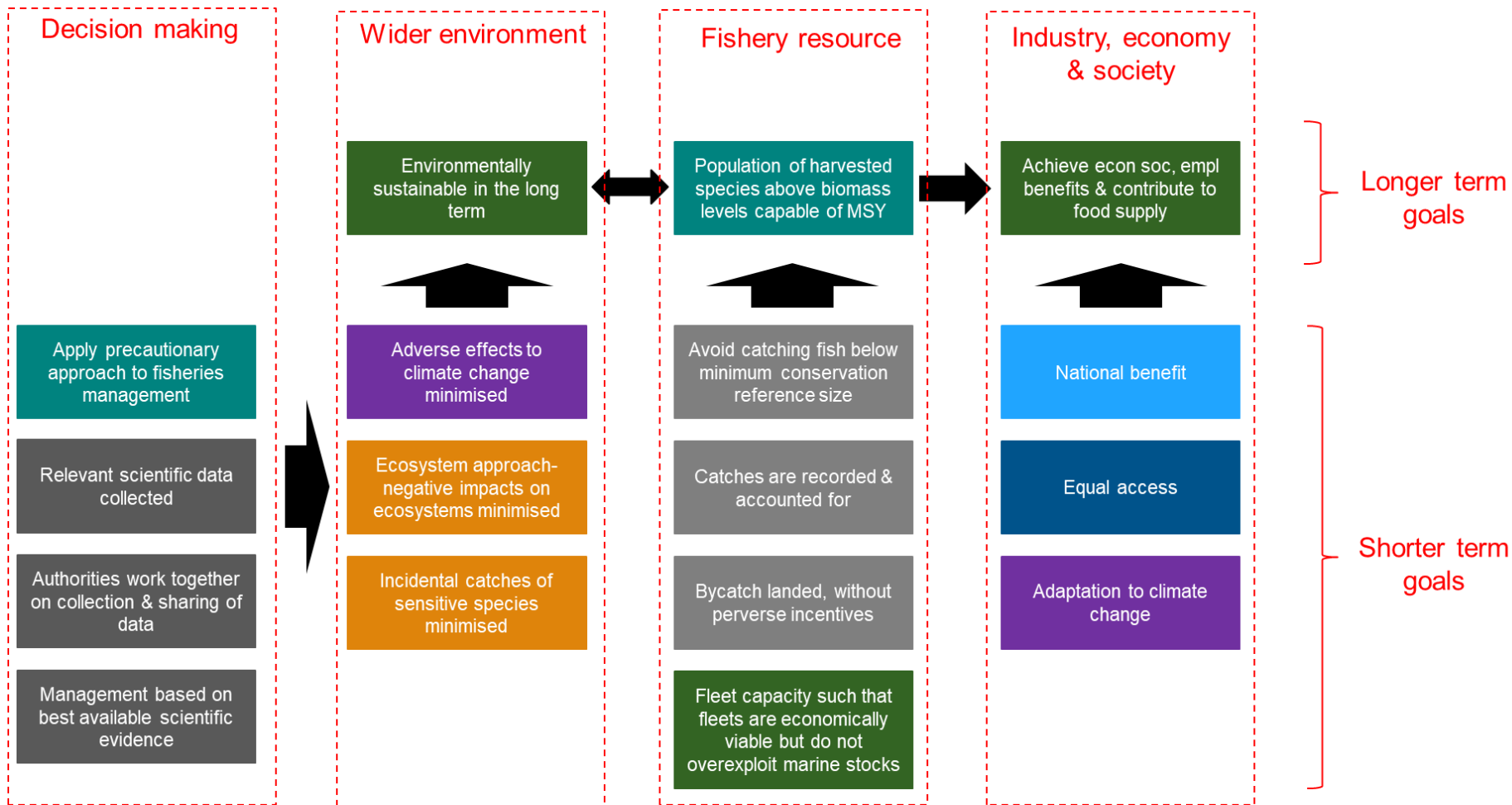
Box 2 UK Fisheries Objectives

- the sustainability objective,
- the precautionary objective,
- the ecosystem objective,
- the scientific evidence objective,
- the bycatch objective,
- the equal access objective,
- the national benefit objective, and
- the climate change objective.

The Act places each objective on an equal footing. It does not present any hierarchy for the objectives. However, there are clear differences in the nature of the eight objectives.

- The timeframes that apply to the objectives differ: The sustainability objective includes commitment to achieving environmental sustainability in the long term while managing activities to achieve economic, social and employment benefits. Other objectives, in contrast, are applicable immediately, e.g. equal access and scientific evidence.
- Conflicting objectives: the sustainability objective states that economic and employment benefits should be achieved, while environmental sustainability should be achieved in the long-term. However, the precautionary objective requires harvested species to be managed so that biomass is above that capable of producing Maximum Sustainable Yield (MSY). Given the depleted state of numerous stocks fished by the UK/English fleet, it is likely that the fishing capacity of some fleets is currently excessive relative to the exploited stocks. The ecosystem objective equally raises questions about the compatibility of the economic and ecological objectives - achieving these objectives in parallel seems unlikely.
- Process vs impact: The scientific objective and the precautionary approach element of the precautionary objective set goals which govern and support decision making, rather than being targeted end points in themselves. Sustainability, also, is a process requiring continual improvement and balancing of environmental integrity, economic vitality and social equity.
- Impact theme: the objectives can be categorised as to whether their primary focus is the fishery resource, the wider environment or the economy/society.

Figure 2.2 Depiction of the relationships between the UK Fisheries Objectives



Note: colour coding shows the subcomponents of each of the eight UK Fisheries Objectives

Sustainability objective	Precautionary objective	Ecosystem objective	Scientific objective	Bycatch objective	Equal access objective	National benefit objective	Climate change objective
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2.1.3 Outcomes

There are a number of outcomes that need to be achieved, in whole or in part, if any given “impact” objective is to be met. The specifics of any of these outcomes varies depending on the objective being targeted. Table 2.1 identifies these outcomes and the objectives for which they are particularly relevant. The scientific evidence objective – as a process rather than impact objective – is not included in this analysis.

Table 2.1 Most important outcomes for each objective

Outcomes	Objectives							
	Sustainability	Precautionary	Ecosystem	Scientific evidence	Bycatch	Equal access	National benefit	Climate change
Opportunity & regulations within sustainable limits	✓	✓	✓					
Capacity matches fishing opportunities	✓	✓	✓		✓			
Compliance with rules & regulations	✓		✓	n/a	✓	✓	✓	✓
Voluntary changes in fisheries practices	✓		✓		✓			✓
Functioning markets	✓				✓		✓	✓

Available opportunity and regulations set and support fishing within sustainable limits: The outcome requires that fishing opportunities, in terms of their level and characteristics, are set such that the conditions under which the fishing industry is permitted to carry out their activity are sufficient to address key environmental and fishing resource management needs. This includes, for example, setting and agreeing total allowable catch that will promote fishing within MSY ranges (as per scientific advice on mixed fisheries); implementing legislation to prevent unsustainable behaviour, such as through the Landing Obligation, in terms of how, where and for what fishers fish and processors process.

Capacity matches fishing opportunities: Capacity balancing tools are appropriately applied to ensure that fishing capacity is kept balanced in line with the level of fishing opportunity set e.g. fishing pressure is kept in line with FMSY which allows stocks to rebuild towards BMSY. It also ensures adequate opportunity for vessels to generate economic returns (assuming a vessel’s economic return is maximised when it is active at its full fishing capacity) through the allocation of fishing opportunities and ensures mechanisms for flexibly using that opportunity (e.g. quota).

Compliance with rules and regulations: a high level of compliance with rules and regulations, in both the catching and non-catching sector, is necessary if they are to have their intended effects.

Voluntary changes in fisheries practices: In addition to the direction given to the sector through the established rules and regulations, there are opportunities for fishers to voluntarily adopt and invest in new and alternative fishing practices which can have a positive effect on the financial performance and their impact on the environment and fish resources. Such changes enable fishers to take advantage of new opportunities and adjust to changing contexts (e.g. changes in market demand, shifts in resources due to climate change, new rules and regulations) as well as deliver improvements in environmental performance that can further fisheries management aims in support of or instead of rules and regulations.

Functioning markets: Underpinning the economic component of the fisheries management system is a functioning market that works for sellers (fishers, fishing businesses), intermediaries (such as traders), and buyers including the end consumer. A functioning market supports fishers operating within rules and regulations to make a fair living given their inputs and supports consumers with fairly priced, good quality and transparently sourced seafood. – A functioning market includes the architecture required to support sellers and buyers.

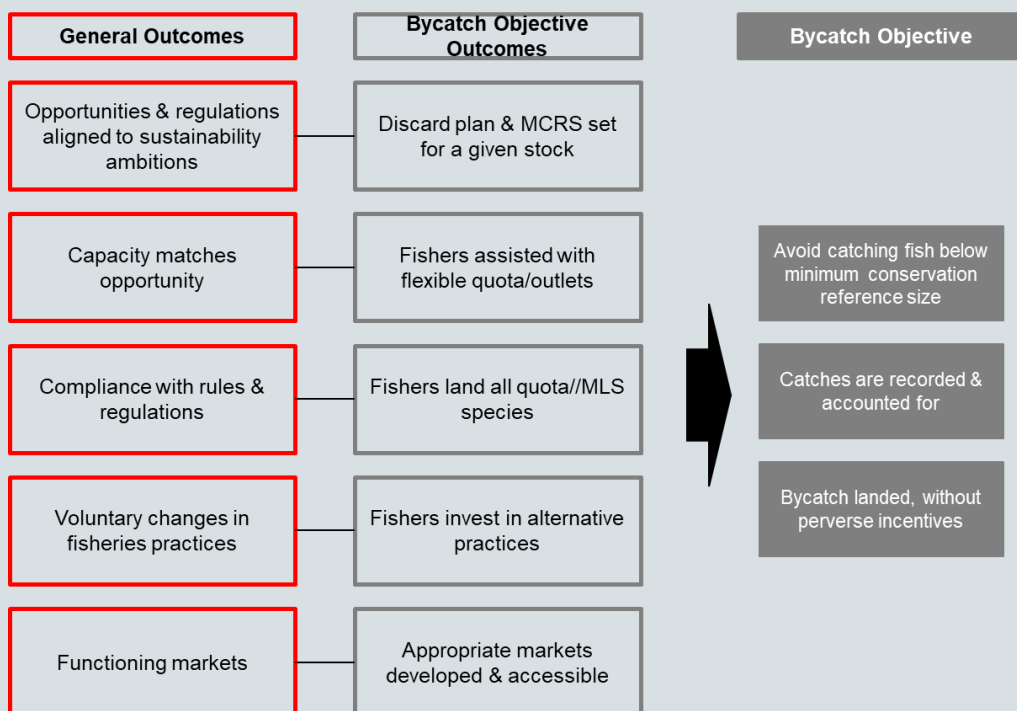
Box 3 Illustration of outcomes, specified for the Bycatch Objective

The Landing Obligation (LO), incrementally introduced into different sectors since 2015 and culminating in the Technical Conservation and Landing Obligation rules and regulations 2020, seeks to address three key reasons for discarding. The first two are regulation-driven and the third is market-driven:

- Landing of undersized fish is not permitted (minimum landing size regulations), and hence undersized fish have, historically, been discarded.
- Fishermen who exhaust their landing quota allocations for a given species were obliged to discard that additional fish at sea or be subject to penalties.
- A lack of market demand for particular species can make it less economical/uneconomical to land such fish and hence they are discarded.

The LO is implemented through discard plans and establishing minimum conservation reference sizes (MCRS) for a given stock. It created a regulatory obligation for fishers to land all catches of species regulated through catch limits or minimum size that would be counted against the fishers' quotas. It is facilitated by opportunities for interannual and interspecies flexibility in quota to enable fishers to land unwanted catches without breaching their quota, and through the development of outlets for landed undersized catches which limit the financial penalty for landing undersized fish but without promoting the creation of a market for them. Through this the LO incentivises fishers to eliminate discards by encouraging more selective fishing that better avoids unwanted catches. Other measures (such as provision of funding) support fishers to make these changes.

Figure 2.3 Simple 2-layer Bycatch Objective ToC



2.1.4 Areas of activity and actors

These outcomes are delivered through four areas of activity:

- Defining management
- Allocation of opportunities

- Enhancing incentives
- Support for facilitating capital

The MMO is a key player in each of these activity areas. However, in each case there are multiple other actors with a stake and influence over delivery. For example, the MMO's control and enforcement actions create a deterrence effect which creates an important incentive for fishers to comply with rules and regulations. However, IFCA's are also responsible for control and enforcement delivery, whilst other actors deliver elements of the control and enforcement package (e.g. the Royal Navy support control activities; the UK courts deliver some enforcement actions). Other actors – including the fishing industry – deliver actions that support other incentives (beyond the deterrence effect) which also generate incentives that support compliance. The MMO recognises the importance of working with these other actors – as indicated in Box 4.

Box 4 MMO Story - delivering sustainable fishing opportunities

“MMO's role supports our fishing industry, providing fishing opportunities, informing negotiations to improve trading and quota allocations, licensing sustainable fishing activities, and monitoring, assuring and, when necessary, enforcing compliance with regulations; “

“Working with Inshore Fisheries and Conservation Authorities, MMO supports and implements byelaws to confirm activities that are not allowed in each of our Marine Protected Areas; administering marine funds; marine planning that delivers win-win-win solutions”

“We will work with our stakeholders and delivery partners, and use the best evidence to better match fishing capacity to opportunity, ensuring fish stocks are harvested and maintained at sustainable levels, and the future of our fishing sector and industries are supported.”

In addition, other actors may directly or indirectly influence the causal links between elements of the theory of change. For example, other sectors outside of fishing have environmental impacts – the environmental performance of these sectors, which may also be influenced by the MMO (e.g. via marine licensing and planning), may impact on the achievement of the Fisheries Objectives of achieving healthy stocks.

3 Exploring ‘agency’ through a nested theory of change for compliance

The purpose of this section is to focus on the outcome of compliance and examine whether co-management may provide a strategic approach capable of generating agency and hence greater motivation among fishers to adhere to regulations. A recent evaluation of MMO control and enforcement² concluded that enhancing the agency of fishers would be an effective complement to traditional deterrent-based approaches to encouraging compliance. This section reviews the issues and relevance of co-management for UK fisheries, and ultimately maps out a theory of how co-management may be successful in improving compliance. It acts as a nested theory of change, exploring one specific issue within the structure set out in the overarching theory of change for the UK Fisheries Objectives.

3.1 The compliance problem statement

Compliance with the rules and regulations that govern the fishing industry is an essential outcome for achieving UK Fisheries Objectives. Whilst most fishers (and wider fishing industry actors) are considered to be largely compliant, the level of compliance varies across different fisheries rules and regulations³.

A lack of compliance is considered to result from insufficient incentives (i.e. motivation or ability to act compliantly). There are several different types of incentive which influence compliance behaviour and which operate at individual and/or societal levels. These include short-term economic self-interest⁴, where fishers are expected to balance the potential financial rewards of non-compliance with the risk of enforcement action, and those – such as fishers’ capability to fish compliantly, their attitudes towards regulations and the regulator, social norms and personal morals – which influence fishers’ desire to voluntarily comply. Ultimately, several different incentives may act in concert⁵ and can vary within individuals in different places at different times⁶.

Regulator responses that seek to improve compliance can be tailored to respond to fishers’ incentives for being non-compliant or compliant. A regulatory ‘deterrence’ strategy seeks to shift the perceived risk-reward balance by increasing the threat of non-compliance being detected and sanctioned, whilst alternative strategies seek to address other incentives which encourage fishers to voluntarily comply.

The MMO’s control and enforcement strategy is largely deterrent-based and is broadly effective where present⁷. The geographical and practical realities of fishing in English waters mean, however, that adherence to fishing regulations remains dependent on fishers’ voluntary actions. – Addressing known and suspected compliance gaps therefore requires the MMO to also influence the drivers of voluntary compliance. – As the MMO’s current approach to control and enforcement

² ICF, MEP and Howell Marine Consulting (2020). An evaluation of control and enforcement. MMO

³ ICF, MEP and Howell Marine Consulting (2020). An evaluation of control and enforcement. MMO

⁴ Becker, G.S. (1968). Crime and punishment: an economic approach. *Journal of Political Economy*, 76: 169-217

⁵ Étienne, J. (2010). Compliance Theories. A literature review. *Presses de Sciences Po. Revue française de science politique*, 60: 493 – 517

⁶ Oyanedel, R, Gelcich, S, Milner-Gulland, EJ. A synthesis of (non-)compliance theories with applications to small-scale fisheries research and practice. *Fish.* 2020; 21: 1120– 1134.

⁷ ICF, MEP and Howell Marine Consulting (2020). An evaluation of control and enforcement. MMO

is unlikely to deliver significant changes in fisher's voluntary compliance⁸, this requires exploration of alternative approaches.

3.1.1 The role and importance of voluntary incentives

The evaluation of fisheries control and enforcement⁹ found that fishers identified voluntary compliance drivers as being of particular importance in incentivising compliance. Around four fifths of fishers responding to a survey rated as either very important or important 'your reputation as a fisher' (85%), 'your awareness and understanding of the regulations' (83%), and 'sense of moral duty / do the right thing' (77%). Whilst most fishers agree with the principle of regulation (87% of survey respondents agree that fisheries regulation are necessary), disagreement with actual regulations was the joint most common reason given for non-compliance by survey respondents, along with being unaware they were doing something wrong. Lack of regulatory awareness and disagreement with regulations appeared to enable fishers to justify their non-compliance based on (actual or fictitious) claims of poor regulatory design and communication, and the challenges of operating a fishing business faced with a changing regulatory environment.

Annex 3 sets out a range of different types of incentives which can influence fisher compliance.

3.1.2 Defining agency and why it matters to fisheries management

This section explores why agency – the feeling of having control over our actions – is relevant to voluntary compliance and why it is relevant to the MMO's ambition to enable cooperative management (co-management) of England's fisheries. As highlighted above, there is broad agreement among fishers that regulation is necessary, the question is how to incentivise fishers to be voluntarily compliant with those regulations. – When people make voluntary actions, they tend to feel as though they are in charge (Moore, 2016). – This sense of agency is pertinent to fisheries management for two reasons:

- At an individual level, compliance with fisheries regulations depends to a large extent on the voluntary actions of fishers. If fishers are to voluntarily adhere to regulations when they are operating beyond sight of a control and enforcement system¹⁰, they need to be motivated to do so. The fisher survey conducted for the evaluation of control and enforcement found that 87% of respondents (n=209) think regulations are necessary, but more than half felt that regulations are not fair and nearly 80% reported that they have no say in fisheries management. – Disagreement with existing regulations was the joint most common reason given for non-compliance. How, then, can fishers be integrated into management to feel a sense of participation and fairness and hence to be more motivated to adhere to regulations?
- At a societal level, if we feel that we have control over our actions, this gives us a sense of responsibility for those actions (Frith, 2014). This underpins a basic societal and legal tenet that members of a society are held accountable for what

⁸ ICF, MEP and Howell Marine Consulting (2020). An evaluation of control and enforcement. MMO

⁹ ICF, MEP and Howell Marine Consulting (2020). An evaluation of control and enforcement. MMO

¹⁰ The evaluation of control and enforcement identified the visibility of the MMO as an important deterrent to rule breaking. – This suggests that REM would have been an effective component in England's control and enforcement framework to address known gaps in enforcement capacity. That REM is not expected to be applied to UK fisheries in the near term heightens the need to focus on enhancing voluntary incentives for compliance.

they do, meaning that behaviour and actions can be legitimately managed through punishment or reward (Moore, 2016). Fishers' negative opinions of regulations and regulators combined with the absence of involvement in fisheries management could be argued to reduce perceived accountability. Enforcement of fisheries regulations will be more effective where fishers feel that they are responsible for their actions and that the regulations that define whether their actions are right or wrong are fair. The opinions of other fishers are also influential: more than 80% of surveyed fishers felt it important to observe locally agreed restrictions, and 85% identified their reputation as a key reason for being compliant.

The recent evaluation recommended MMO explore opportunities for co-management to improve fisher agency as a route to enhancing the group of incentives that encourage voluntary compliance.

3.1.3 Key challenges limiting agency amongst English fishers

The UK operates a hierarchical mode of fisheries governance whereby the fundamental decisions are made by a central government department (Defra). The development of the UK Fisheries Act 2020 involved consultation, although fisher influence over the Act via consultation is likely to have been limited. Fisher participation in setting management decisions at lower levels, e.g. specific regulations and byelaws, is also primarily achieved via consultation. However the evaluation of control and enforcement reported that fishers “felt that their views and local/fishery knowledge are not adequately represented and/or considered in fisheries regulations, even when they are consulted”. There is (justifiably) increasing influence on fisheries management of environmental principles such as MPAs, the ecosystem approach and the precautionary approach. There is a growing perception within the fishing industry that environmental priorities now dominate decision-making - a recent letter to Fishing News called for the ‘F’ (for fisheries) in IFCA to be dropped¹¹. There is a valid question to ask about fisher expectations, but this indicates that there is a need to establish a common understanding of what the problems are and how management interventions can and do address them.

Fisher agency is also being eroded as the number of actors with a legitimate stake in marine management increases. As well as regulators and fishers, maritime industries, NGOs, recreational users and the general public all have legitimate claims to participate in deciding how and why marine spaces are used. The greater number of voices, some of which are better organised and influential than the fisher ‘voice’, increases the sense of marginalisation.

Formal participation and recognition of the legitimacy of the fishing industry to sit at the decision-making table may increase the sense of agency. However, the fishing industry is heterogenous and disputes between sectors within the industry are common – see for example the current disagreement between the Scottish pelagic sector and the groundfish sector caused by the failure to secure access to Norwegian waters in 2021.

Most of the English fleet comprises non-sector vessels, which as a group are geographically dispersed, relatively unorganised and largely unrepresented. The profitability of and access to fishing opportunities for small-scale vessels are a world away from industrial sector, which is well organised with a competent lobby, and **which** is well represented through Fish Producer Organisations. In contrast, non-

¹¹ Fishing News 13/05/2021 p8

sector vessels are numerous but unempowered relative to decision making and participation and a majority of inshore fishers feel disenfranchised from management decision-making¹². A significantly larger proportion of under 10 metre vessels reporting poor attitudes towards regulation and regulators – including feeling that they did not have a say in how fisheries are managed – than did over 10 metre vessels¹³. This fragmentation and division are typical of fisheries that are excluded from fisheries governance¹⁴, and creates a negative feedback loop by eroding the capacity of the majority of fishers to productively participate in potential co-management projects.

A logical route to increasing agency is to explore how to increase fisher participation in fisheries governance. It is evident, though, that this will require capacity building to address issues of marginalisation, productive participation, representation and legitimacy.

3.1.4 Preconditions and design elements to enhancing agency through fisheries co-management

A substantial literature base identifies and discusses preconditions, or key elements, conditions and principles relevant to fisheries co-management. There are many potential conditions (the influential 1998 study by Pomeroy and colleagues lists more than 25) and the seminal common pool resource management scientist, Elinor Ostrom, consistently highlighted the need to consider each specific setting. – A set of eight design principles (or conditions), reviewed in Cox et al (2010) have been shown to be associated with successful common pool resource outcomes in a variety of settings¹⁵. Participatory governance – which is a foundation for agency – is a common thread running through the design principles.

However, a hierarchical approach to fisheries management has dominated for well over half a century. The complexities involved in managing common pool resources such as fisheries led Hardin to post his thesis that the only means of preventing the tragedy of the commons was to impose strong hierarchical control¹⁶. – Hardin's narrative, which is arguably flawed¹⁷, was readily accepted and influenced fisheries management, which in Europe (including the UK) resulted in decades of strict hierarchical governance before the 2002 CFP reform called for increased participatory governance to address the failure to meet conservation objectives. There is now broad consensus and a growing evidence base that a blended

¹² Pita et al. 2010. Stakeholders' participation in the fisheries management decision-making process: Fishers' perceptions of participation. *Marine Policy* 34 (2010): 1093-1102.

¹³ ICF, MEP and Howell Marine Consulting (2020). An evaluation of control and enforcement. MMO

¹⁴ Gray, T. S. 2005. Theorising about participatory fisheries governance. – Pp1-25 In: *Participation in Fisheries Governance*. – Gray (Ed). Springer Netherlands. 366pp. DOI 10.1007/1-4020-3778-3

¹⁵ Cox et al. 2010. A Review of Design Principles for Community Based Natural Resource Management. *Ecology & Society* 15(4).

¹⁶ Hardin, G. 1968. The Tragedy of the Commons. *Science*; **162**: 3859, pp. 1243-1248

¹⁷ Putting aside Hardin's disturbing views on human rights, Hardin's analysis was flawed as he failed to investigate if evidence existed of successfully managed common-pool resource situations, of which there are numerous examples – see Cox et al. 2010. A Review of Design Principles for Community Based Natural Resource Management. *Ecology & Society* 15(4).

approach of hierarchical control and participation through co-management are necessary to achieve positive socio-ecological and economic outcomes^{18,19}.

A selection of preconditions that resonate with respect to English fisheries and that are adapted from common pool resource and co-management literatures are listed in Box 3. The intention is not to provide a comprehensive review of preconditions, but to highlight the range and nature of elements to be considered in the design phase of a co-management strategy.

Box 5 Design Elements (DEs) of a co-management strategy

1. Appropriate scale and clearly defined boundaries between legitimate users and nonusers.
2. Access rights to the resource and security of user rights over time – enforcing claims against outsiders
3. Recognition of resource management problems
4. A common understanding of the situation supported by monitors of users and resources who are accountable to users and who can provide a trusted characterisation of resource use and condition
5. Social capital between users and regulators (trust, respect, relationships)
6. Collaborative leadership that is able to convene, to represent, to support, to organise, to inform and to facilitate.
7. Stakeholder participation including legitimate users (not only fishers)
8. Participatory learning that enables stakeholders to understand perceptions, share common concerns and ambitions and to generate ideas to lead to action.
9. Empowered stakeholders supported by capacity building to enable autonomous participation in decision-making and social learning
10. Effective conflict management and resolution mechanisms
11. Effective communication including to legitimate users and nonusers
12. Effective enforcement supported by graduated sanctions against offenders
13. Enabling legislation including the capacity to implement locally derived technical and management measures and
14. A coordinating body with legitimacy and a remit to drive forward the strategy

Adapted from: Pomeroy et al (1998²⁰); Cox et al (2010²¹); Gutierrez et al. (2011²²); Brouwer et al. (2016²³).

¹⁸ Whitehouse, L. & Fowler, M. (2018). _Meta-analysis reveals that fisheries co-management alters socio-economic outcomes and resource well-being. Marine Ecology Progress Series, 600, 127-140.

¹⁹ Hilborn et al. (2020) Effective fisheries management instrumental in improving fish stock status. Proceedings of the National Academy of Sciences Jan 2020, 117 (4) 2218-2224.

²⁰ Pomeroy, R. Katon, B. M., Harkes Ingvild, I. 1998. Fisheries Co-management: Key Conditions and Principles Drawn from Asian Experiences. ICLARM, 23pp.

²¹ Cox et al. 2010. A Review of Design Principles for Community Based Natural Resource Management. Ecology & Society 15(4).

²² Gutiérrez, N., Hilborn, R. & Defeo, O. Leadership, social capital and incentives promote successful fisheries. *Nature* **470**, 386–389 (2011). <https://doi.org/10.1038/nature09689>

²³ Brouwer et al. (2016). The MSP Guide, How to design and facilitate multi-stakeholder partnerships, Wageningen: Wageningen University and Research, WCDI, and Rugby, UK: Practical Action Publishing

3.1.4.1 Barriers and solutions to enhancing agency through fisheries co-management

A workshop with MMO staff, convened for this study, introduced five of these preconditions/design elements: **social capital** (how to generate trust, respect and good relationships to facilitate cooperation); **property rights** (how to allocate fishing rights to engender stewardship of fished resources); **empowerment in decision making** (building the capacity of fishers and communities to have greater social awareness, to gain autonomy over decision making, to address power imbalances); **stakeholder participation** (enabling genuine and transparency consultation and participation in decision making); and **common understanding** (developing a shared understanding of the problems, the need for regulation and solutions).

Workshop participants voted to explore the challenges, opportunities and uncertainties associated with two elements: empowerment in decision-making and common understanding. Most of the issues raised at the workshop are reflected in the fisher agency theory of change. Annex 3 sets out issues raised at the workshop and where they feature in the theory of change. A short synthesis is provided below.

Empowerment in decision-making: Barriers listed included ‘straightforward’ issues (such as identifying a common language from which to guide discussions and the cost involved in implementing co-management), to complex issues such as managing the expectations of a heterogenous fishing industry, and how to enable power sharing. An interesting barrier identified was the perceived reluctance of the fishing industry to be held accountable, which could reflect a lack of agency and subsequent reduced sense of responsibility.

Common understanding: Barriers/challenges identified to reaching a common understanding of the need for and appropriate structure of fisheries management frequently touched on the variability of opinion between actors, for example environmental- versus economic-dominated perspectives, and the difficulty defining ‘truth’.—Biases to and the challenges of reaching sufficient scientific consensus were highlighted.—The length of time it would take to reach a common understanding was also flagged. The number of opportunities identified was greater than the number of barriers, with recognition that a common understanding would be a powerful compliance tool and that the process of reaching a common understanding would put greater emphasis on the variety of actors at play in fisheries management.

3.2 Co-management as a route to generating agency and improved compliance

A co-management strategy is typically based on the theory that increasing fisher participation in fisheries management will enhance agency and accountability and thus influence key incentives that can encourage greater compliance with fisheries rules and regulations (as laid out in Section 3.1.2).

Behaviour change interventions can seek to *directly* influence voluntary incentives – such as through the way in which control and enforcement is conducted to foster improved relations or greater awareness and understanding; information campaigns which promote the effectiveness of the regulator and its legitimacy, or promote perceptions that other fishers conform to regulations in order to influence social norms; or publishing convictions and other enforcement actions²⁴ to heighten the

²⁴ Battista et al., 2018. Behavior change interventions to reduce illegal fishing. <https://www.frontiersin.org/articles/10.3389/fmars.2018.00403/full>

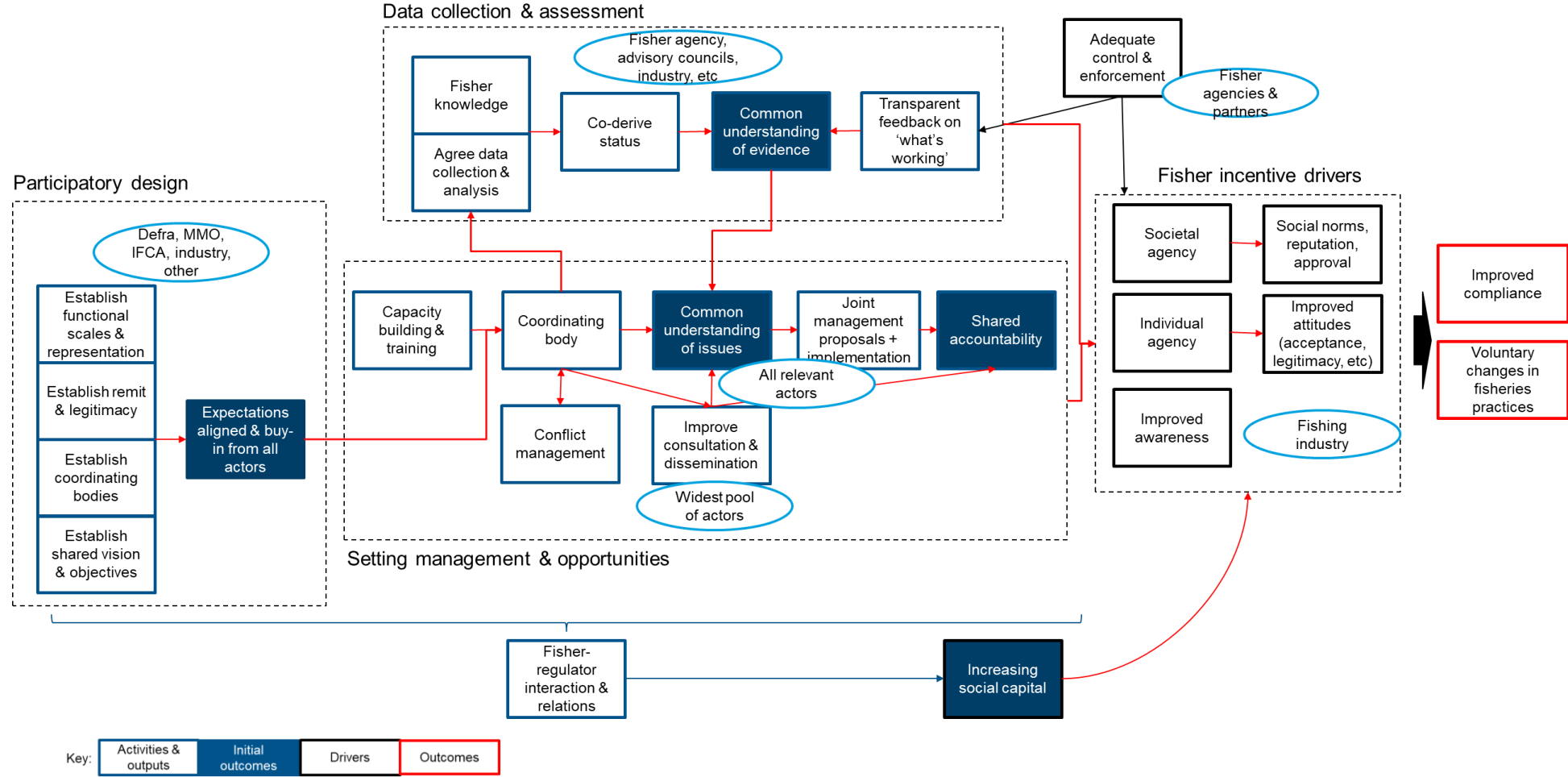
impact of social norms. However, co-management *indirectly* targets voluntary incentives through enhancing fisher agency within the machinery of fisheries management. Increasing fisher agency may be able to enhance those voluntary incentives – such as legitimacy – which are harder to influence through more direct measures.

A lack of agency occurs as a result of a lack of fisher participation in fisheries management. Co-management is increasingly seen as a means of increasing participation/involvement. A co-management strategy therefore requires changes that are pervasive across large parts of the overarching Fisheries Objectives theory of change (which was set out in Section 3). The theory of change indicates how participation through co-management requires actions that change the involvement of the fishing industry in key areas of 'data and assessment' and 'setting management and fishing opportunities', underpinned by 'preparatory actions' which appropriately set the framework for co-management.

3.2.1 Mapping the activities and effects of co-management

Figure 3.1 shows a draft theory of change for a co-management strategy that generates agency in order to improve compliance.

Figure 3.1 Draft theory of change for fisher agency



3.2.1.2 Co-management design activities

The design of a co-management system needs to directly address some of the preconditions (appropriate scale, local leadership) and lay the foundations that allow others to be satisfied (providing enabling legislation, building social capital through the process; enabling empowerment in decision-making).

The co-management design process should be aligned to the fundamental principle of co-management and itself be participatory. The design needs to reflect the varied characteristics of the English fishing fleet (and recognise the wider fleet active in English waters), and respond to the different needs, levels of representation and modes of working across fleet segments. The scales at which co-management is conducted needs to work at a legislative level and practical level. There is a risk that the design of co-management structures enhances agency in those parts of the sector that are already best represented, whilst further disenfranchising those that are poorly represented and harder to reach.

The participatory design process needs to not only involve the fishing sector, but also other parties with stakes in English fisheries (recognising their differing influence over aspects of the management process and interests in fisheries objectives) – such as Defra, IFCA and the non-catching sector.

Ultimately, the vision and objectives for co-management need to be shared and agreed between all parties, and respond to a remit supported by legislation that gives sufficient authority and certainty to be able to deliver that vision. This should provide a basis for aligning the expectations of all parties and achieving a strong level of buy-in for the co-management strategy.

3.2.1.3 Co-management in data collection and assessment

Applying co-management within data collection and assessment process can help to satisfy the preconditions for fisher recognition of resource problems and a common (between all stakeholders) understanding of the situation.

This needs to reflect both the state of resources and the environment, and also of the effectiveness of management. It relies on bringing together multiple sources of evidence – including fisher knowledge, scientific and evaluative evidence – to satisfy a jointly defined evidence need and achieve a common understanding of that evidence. This better supports the legitimacy of implemented management.

3.2.1.4 Co-management in setting management and fishing opportunities

As the place where management is co-developed, this activity area needs to implement key preconditions of local leadership, stakeholder participation, empowered decision making, conflict management, and be supported by participatory capacity building and effective enforcement of claims against outsiders.

A functioning coordinating body (i.e. a co-management group) needs to be supported by sufficient capacity building and an effective conflict resolution function, to enable effective consensus-based decision making that produces joint management proposals. Effective implementation (i.e. by the regulator) of joint management proposals is necessary to avoid undermining the effects of empowerment and the building of social capital. Effective communication, local leadership and participation help to ensure that the inclusiveness of co-management extends to the wider fleet, beyond those individuals directly engaged in the coordinating body.

Ultimately, a shared accountability for enacted fisheries management and its effectiveness is achieved.

3.2.1.5 Influencing fisher incentive drivers

Effective co-management builds societal and individual agency which can strengthen voluntary incentives to comply with rules and regulations, as set out in Section 3.1.2 – in particular, improving fisher attitudes regarding legitimacy, effectiveness and fairness of regulation, and positively strengthening social norms towards compliance/ non-compliance.

Effective enforcement by the regulator remains necessary - 81% of fishers indicate that adhering to rules agreed by other fishers is important. However, the impact on voluntary incentives to comply will diminish with an individual fishers' 'distance' from the co-management process. Fishers active in English waters include those from other parts of the UK²⁵ as well as from EU nations, who may be less well represented in an English co-management process. Effective enforcement of jointly agreed management reinforces the impact of co-management on agency and hence the influence on incentives – absence of effective enforcement undermines the link to incentives.

Additional potential benefits result; (i) improved agency encourages positive action by individual fishers to independently make changes to their fishing practices that have a positive impact on resources; (ii) improved participation in setting management and in the communication and consultation processes – 70% of fishers rely on other fishers as one of their main sources of information about regulations – improves fisher awareness²⁶ of rules and regulations; (iii) enhanced social capital supports improving fisher-MEO relations and hence the ability of MEOs to perform their duties and ability for the regulator to implement robust enforcement measures.

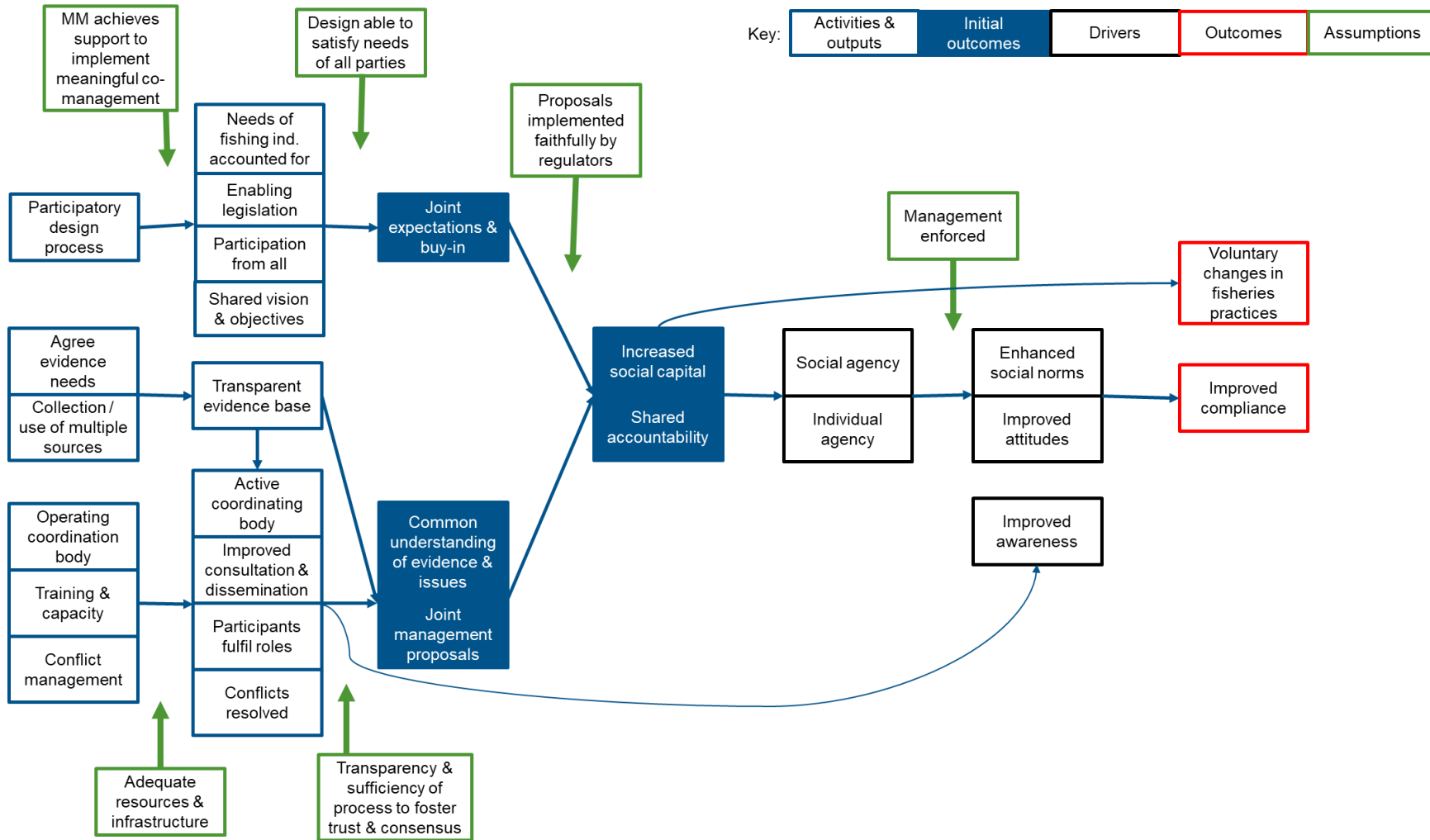
3.3 Depiction of co-management and agency in a logic model

This section re-packages the examination of the co-management activity and effects into a standard logic model (Figure 3.2). In doing so it allows the key activities and outputs (blue), fisher incentive drivers (black), outcomes (red) and assumptions (green) to be clearly and logically identified to better support future monitoring and evaluation.

²⁵ Or other parts of England to the geographical area over which a co-management arrangement is designed. The Equal Access objective precludes the application of property rights to fishers from the co-management area.

²⁶ Awareness of the rule and regulation was identified in the recent evaluation of control and enforcement as one of the highest-ranking incentives influencing compliance.

Figure 3.2 Logic model for fisher agency



4 Recommendations

- The UK authorities will develop fisheries management plans which aim to achieve the UK Fisheries Objectives. These management plans need to be informed by evidence of the causes of current underperformance against the objectives, and of the challenges/barriers to achieving them.
- The theory of change and/or logic model should be further elaborated based on the fisheries management plans. It should be used to test the causal pathways and assumptions that are implicit in these plans. This should occur in parallel with the development of the fisheries plans, such that they can benefit from weaknesses or gaps highlighted through the theory of change development process
- A series of objective- or issue-specific theories of change should be developed first, with an overarching model then synthesising these nested theories. Each theory of change should be subject to testing based on both the available evidence and participatory workshops.
- The MMO should work through these theories of change articulating its specific role and hence identifying where it will contribute. The MMO's strategy should adopt these key areas of contribution as target outcomes and design a strategy that enables them to be fulfilled.
- MMO should develop indicators that represent the outputs and outcomes identified in the theories of change. This may require new routes for data collection or adjustment to existing data collection programmes.
- Implementing co-management will require a long-term commitment, risk taking and sufficient political support. There are a number of risks and uncertainties in implementing co-management. The strategy may therefore take some time to perfect and fully implement, meaning that the benefits may also take time to be fully achieved. Establishing a theory of change, coupled with robust monitoring and evaluation, will support transparent learning about the extent of progress, what works and where any implementation issues are occurring. In this sense it will support adaptive management and may help to ensure ongoing backing for the approach.

Annex 1 UK Fisheries Act Objectives

(2)The “sustainability objective” is that—

(a)fish and aquaculture activities are—

(i)environmentally sustainable in the long term, and

(ii)managed so as to achieve economic, social and employment benefits and contribute to the availability of food supplies, and

(b)the fishing capacity of fleets is such that fleets are economically viable but do not overexploit marine stocks.

(3)The “precautionary objective” is that—

(a)the precautionary approach to fisheries management is applied, and

(b)exploitation of marine stocks restores and maintains populations of harvested species above biomass levels capable of producing maximum sustainable yield.

(4)The “ecosystem objective” is that—

(a)fish and aquaculture activities are managed using an ecosystem-based approach so as to ensure that their negative impacts on marine ecosystems are minimised and, where possible, reversed, and

(b)incidental catches of sensitive species are minimised and, where possible, eliminated.

(5)The “scientific evidence objective” is that—

(a)scientific data relevant to the management of fish and aquaculture activities is collected,

(b)where appropriate, the fisheries policy authorities work together on the collection of, and share, such scientific data, and

(c)the management of fish and aquaculture activities is based on the best available scientific advice.

(6)The “bycatch objective” is that—

(a)the catching of fish that are below minimum conservation reference size, and other bycatch, is avoided or reduced,

(b)catches are recorded and accounted for, and

(c)bycatch that is fish is landed, but only where this is appropriate and (in particular) does not create an incentive to catch fish that are below minimum conservation reference size.

(7)The “equal access objective” is that the access of UK fishing boats to any area within British fishery limits is not affected by—

(a)the location of the fishing boat's home port, or

(b)any other connection of the fishing boat, or any of its owners, to any place in the United Kingdom.

(8)The “national benefit objective” is that fishing activities of UK fishing boats bring social or economic benefits to the United Kingdom or any part of the United Kingdom.

(9)The “climate change objective” is that—

(a)the adverse effect of fish and aquaculture activities on climate change is minimised, and

(b)fish and aquaculture activities adapt to climate change

Source: Fisheries Act 2020. <https://www.legislation.gov.uk/ukpga/2020/22/contents/enacted>.

Annex 2 Types of compliance incentive

The following is an extract from the final report of the MMO commissioned evaluation of MMO control and enforcement activities relating to fisheries management²⁷. One of the aims of the evaluation was to develop an understanding of the levels of compliance within the fishing industry, including factors that influence compliance. The extract below is of the findings that relate to incentivising compliance, through deterrence effects and through voluntary drivers, and implications relative to the MMOs mandate to deliver fisheries control and enforcement.

Creating an effective deterrence effect

Findings

Deterrence drivers were found to be important regardless of a fisher's level of compliance

- A regression analysis of drivers of compliance using Fisher Survey data found that deterrence drivers do not explain variation in fisher compliance. This means that deterrence drivers (e.g. the likelihood of being inspected, whether the severity of sanctions are a concern) were not good predictors of differences in compliance levels. This is not the same as saying that deterrence drivers do not have an impact on compliance.
- Fishers were asked to indicate the importance of 11 possible compliance drivers. The two deterrence drivers were ranked fourth and sixth: 69% reported the 'potential severity of sanctions' to be important, and 65% considered the 'likelihood of inspection or infringement detection' as important.

Fisher opinion on the likelihood of being inspected and of offences being detected has increased

- The proportion of survey respondents who consider there to be a >25% likelihood of inspection in port or at sea increased from 42% and 23%, respectively, in the 2019 Baseline Survey to 50% and 31%, respectively, in the 2020 Fisher Survey. Of Fisher Survey respondents, 27% and 37% thought that the chances of being inspected at sea and in port, respectively, had increased over the last year.
- Of Fisher Survey respondents, 32% thought that the chances of an offence being detected had increased over the last year compared to 6% who said it had decreased (no comparable question was asked in the Baseline Survey).
- Respondents operating vessels Over 10m in length felt there had been a greater increase in infringement detection likelihood compared to those operating smaller vessels.
- The largest increase was seen for likelihood of inspection in port, which has the most obvious links with the capacity investments made by the MMO, although the perceived likelihood of inspection was still low overall. A slightly weaker effect was apparent for likelihood of detection, where a greater lag between MMO investment and changes in fisher perceptions might be expected.
- The majority (62%) of Fisher Survey respondents agreed that a detected offence would result in a sanction (no data was gathered on whether this opinion has changed).
- The majority of Fisher Survey respondents (77%) felt that the severity of sanctions was a concern to them (no data was gathered on whether this opinion has changed).

²⁷ Haines et al. 2020. Evaluation of Fisheries Control and Enforcement. Final Report. MMO, UK. 172pp.

Positive relationships were observed between the control outcomes (MMO visibility and frequency of inspections) and the control-related deterrence drivers (likelihood of being inspected and likelihood of infringements being detected).

- Fishers who thought that the visibility of the MMO was high were more likely to also think that the likelihood of inspection and detection was high.
 - Nearly 85% of Fisher Survey respondents who reported a >50% chance of being inspected ashore during or after their next fishing trip agreed that the MMO is visible ashore, compared to 60% of those who reported a <50% chance.
 - Nearly 55% of Fisher Survey respondents who reported a >50% chance of being inspected at sea during or after their next fishing trip agreed that the MMO is visible at sea, compared to 29% at-sea of those who reported a <50% chance.
 - 83% of Fisher Survey respondents who think the MMO have a visible presence felt infringement detection in port / ashore was likely, compared to 48% who thought it was unlikely.
- Fishers recently inspected by the MMO were more likely to think they would be inspected again (just 7% of Fisher Survey respondents who had not been inspected felt the inspection likelihood in port was >70% compared to 23% who had been inspected three times or more). A weaker relationship was found between inspection history in port and perceived likelihood of offence detection.
- Neither receiving a sanction, opinion on the effectiveness of the MMO, nor the likelihood of hearing about sanctions applied to other fishers were associated with differences in fishers' opinions on the likelihood that an offence would result in a sanction or on the severity of sanctions.
- A number of the variables which may influence these deterrence drivers also increased (such as experience of being inspected, MMO visibility in port). A notable exception was MMO visibility at sea, which was reported to be lower than in the baseline despite the evident increased MMO presence at sea.

Insufficient evidence was available to conclude on the extent to which the improvements in control and enforcement have deterred non-compliant activity

- Compliance levels reported in the fisher surveys did not show any significant variation between the two years.
- A number of examples were identified through the sanction fisher interviews of fishers taking corrective actions to minimise the chances of reoffending following receipt of minor sanctions.
- A small number of examples of the effectiveness of the increased deterrence were identified. These related to the role of the FPVs.
- A potential lag between increasing inspection activity and changes in fisher perceptions of deterrence drivers may mean any effect of the increased budget is not yet fully apparent (given the evaluation took place less than a year after the full increased resources came on stream).

There remain challenges with creating a sufficient deterrence effect

- At fleet level, some examples of general deterrence impacting positively on local fleets were identified. At a more granular level, the picture is more nuanced.
- Among fishers who have been sanctioned, examples were identified of fishers taking corrective action to avoid reoffending, but also examples of sanctioned fishers whose rule-breaking continued post-sanction.

- Persistent offenders appear to be less influenced by deterrence drivers with some taking active steps to avoid detection, including studying MMO operating patterns. Anecdotal reports suggest some fishers may include potential sanction costs in their operating model.
- Some MMO interviewees raised questions regarding the effectiveness of fines and whether there is sufficient focus placed on seeing infringements through the sanctions process.

Implications

- *Where appropriate, tighter regulatory controls may be needed, alongside control and enforcement investment, to sufficiently effect deterrence. Should additional regulatory change be necessary, the MMO should fully explore the impacts on fishers' operational flexibility, particularly for the coastal fleet.*
- *For persistent offenders and those determined to ignore regulations, alternative control and enforcement models may be required. For example, imposing full transparency of fishing operations.*
- *The apparent deterrence effect linked to MMO visibility (e.g. behavioural change within the vicinity of an FPV) suggests mandatory use of remote surveillance technologies could create a more permanent effect of being surveyed, but with reduced MMO physical presence required.*
- *Procedures through which decisions are made for proceeding with prosecutions could be reviewed to ensure all viable cases are being taken on.*
- *Investigations may be better supported with financial analyses of the offending business and vessel-specific compliance performance data to support sanctions being set at appropriate levels and better targeted to the circumstances and fisher history.*
- *This evidence base could support increased awareness in courts of the rationale for recommended sanctions.*

Encouraging voluntary compliance

Findings

Voluntary drivers were found to explain more of the variation in compliance levels, and were ranked by fishers as being of greater importance, than deterrence drivers.

- The three compliance drivers that fishers stated as being of most importance to their compliance were all voluntary drivers. Around four fifths of Fisher Survey respondents rated as 'very important' or 'important' 'your reputation as a fisher' (85%), 'your awareness and understanding of the regulations' (83%), and 'sense of moral duty / do the right thing' (77%).
- However, in general, less compliant fishers appear less concerned about 'positive' voluntary drivers, such as their reputation and other fisher approval.
- Based on a regression analysis using Fisher Survey data, 'awareness of the regulation' and 'disapproval of other fishers' were found to be the drivers that explained the largest amount of variance in fisher compliance, for three of the four regulation categories (Technical Conservation Measures, Catch Reporting and Control Requirements, Licence Conditions).
- Compliance with Access restrictions had a notably different set of drivers to these three – it was the only category where the opportunity to save costs / improve catch value was significant (and this was the only significant variable).

When explaining their reasons for offending, fishers typically cited voluntary drivers.

- Being unaware they were doing something wrong was the joint most common reason given by fishers responding to the Fisher Survey and Sanctioned Fisher interviews for their non-compliance.
- Whilst most fishers agree with the principle of regulation (87% of Fisher Survey respondents agree that fisheries regulation are necessary), disagreement with actual regulations was the joint most common reason given for non-compliance by Fisher Survey respondents.
- Lack of regulatory awareness and disagreement with regulations may enable fishers to justify their non-compliance based on (actual or fictitious) claims of poor regulatory design and communication, and the challenges of operating a fishing business faced with a changing regulatory environment.
- By far the most frequently cited reason for infringement of Catch Recording was that it was 'too difficult' to comply with.

Awareness of regulations is one of the most important drivers of compliance and is an area the MMO could readily target for improvement.

- Less compliant fishers tend to have lower levels of awareness of fisheries rules and regulations.
- The role of MEOs to directly educate and raise awareness of regulations is recognised by the MMO and fishers. However, responses to the Fisher Survey indicate that fishers consider other fishers, social media (for 10m and under fishers) and Producer Organisations (for Over 10m fishers) to be more important sources of information.
- Fishers and the MMO recognised that there are issues with the volume and complexity of information provided by the MMO and with inconsistent advice being provided by MEOs. Fishers indicated that this undermines their engagement with, and trust of, MMO communications and advice.
- MMO interviewees and Fisher Survey respondents indicated that the increased resources have allowed for greater MEO-fisher interaction and hence the potential for provision of advice. It is not clear whether this has impacted on general awareness levels.

Attitudes towards the regulations and regulator are important drivers of compliance, but the MMO's current approach to control and enforcement is unlikely to deliver significant changes in fisher attitudes

- Fishers generally agree with the principle of regulation, but do not always agree with the actual regulations. Fishers may disagree with regulations for a variety of reasons, including: impact on profitability / threat to livelihoods, perceived fairness, appropriateness for the issue being addressed, appropriateness for local conditions and local fishery characteristics, and responsiveness / flexibility of the regulations and underpinning scientific data to changing conditions.
- Negative attitudes to the regulations and regulator are nearly always associated with negative opinions on fishers' relationships with the MMO and extent of involvement in fisheries management. Many Sanctioned Fisher and Fisher Survey respondents reported that MEO-fisher relations suffer from an "us versus them" mentality.
- Fisher Survey responses indicate that fishers with poor MMO relationships, and those who feel like they have less of a say in fisheries management, are more likely to have negative views on the regulations.
- Several MMO interviewees indicated that the increased interaction with fishers, enabled by having more MEOs, was improving MEO-fisher relations, and that this was appreciated by

fishers. However, fishers raised issues regarding the experience and attitudes of MEOs, particularly new MEOs.

- Most Fisher Survey respondents (57%) stated that they have a good relationship with the MMO. This is broadly unchanged to opinion in the previous year (58%).
- The lack of meaningful involvement of fishers in fisheries management was raised by all stakeholder groups: MMO interviewees, Sanctioned Fisher Interviewees and Fisher Survey respondents. Only 15% of Fisher Survey respondents agreed that they have a say in how fisheries are managed.

Social norms may be of greater importance to more compliance than less compliant fishers

- Of Fisher Survey respondents, 76% agreed that other fishers would disapprove if they were non-compliant. Concern for their reputation was the top ranked driver that Fisher Survey respondents stated to be of importance when making decisions about compliance (85% said it was very important / important)
- Opinion on whether other fishers would disapprove of non-compliance was found to be a significant explanatory variable of levels of compliance with three of the four categories of regulations. However lower compliance is also associated with lower concern about reputation, and lower expectation that other fishers would disapprove.
- Fisher Survey respondents indicated that the compliance of others was important to them (91% agreed). However, it was one of the lower ranked drivers that Fisher Survey respondents stated to be of importance when making decisions about compliance (53% said it was very important / important). Other fishers not complying was the least frequently reported reason for why Fisher Survey respondents had been non-compliant.

Implications

- *MMO communications design and delivery may benefit from a review to maximise their reach and usefulness for fishers, taking into account the sources of information highlighted as important to the different groups in the Fisher Survey.*
- *The process by which fisher enquiries are dealt with should be reviewed and strengthened with appropriate recording and actioning processes to ensure adequate formal consideration is given to enquiries received. It should provide opportunity for MEOs to seek adequate support before providing advice, and a system of advice provision verification to ensure accuracy and consistency.*
- *Genuine co-management of fisheries, whereby fishers have a decisive role in shaping the management environment supported by established access rights (as adopted in countries like New Zealand), is recognised to be a challenging proposition in the UK as the organisation and representation of the fleets, particularly the 10 metre and under fleet, is weak. Increased fisher participation offers the chance of more fundamental changes in fisher attitudes, in a way that is unlikely under the current model. A more achievable model, at least in the short-term, could be to further develop and strengthen the existing industry-Government consultation and liaison groups.*
- *Finding a balance between regulatory stability to enable business planning and flexibility to reflect local / regional variability may increase the incentive to comply with regulations, as fishers feel that the regulatory design and implementation better reflects the complexities of fishing businesses and the challenges of investing and operating in small scale fisheries.*
- *The MMO could make greater use of the idea of earned recognition – as embodied in the MMO's 'trusted customer model' – linked to a flexible approach to control activities, whereby fishers more directly recognise the benefit of voluntary compliance.*

- *Greater focus could be placed on equipping MEOs with the skills, experience and opportunities to better build relationships with fishing communities. For example, spending time as invited observers aboard fishing vessels to gain familiarity with fishing operations and to develop positive relationships with vessel masters and owners. Increasing MEO awareness of the practicalities and challenges of fishing operations may further improve relationships between MMO and the fishing industry.*
- *MMO may consider how to create stronger compliance incentives through the fisheries supply chain. For example, there may opportunities to engage with sustainable fisheries certification marques that emphasise transparency in the supply chain (e.g. Marine Stewardship Council), to strengthen audit sections related to control and enforcement, target communications and dialogue with important buyers of nationally caught seafood to encourage buyer-directed pressure of fishing businesses to comply with regulations, or other possible assurance schemes.*

Source: Haines et al. 2020. Evaluation of Fisheries Control and Enforcement. Final Report. MMO, UK. 172pp.

Annex 3 Fisheries Outcomes, Activities & Incentives Workshop

To support the development of a high-level logic model that indicates where MMO activities influence achievement of outcomes and UK fisheries objectives, a workshop for MMO was held on 31st March 2021 to:

- Introduce the Figure 2.1 logic model and seek feedback on the appropriateness of the drivers and outcomes specified therein, with particular focus on the nature and importance of fisher incentives.
- Explore the role of the MMO in influencing fisher incentives, including the barriers, opportunities and uncertainties to enhancing them.

The workshop, hosted by ICF, brought together a range of MMO decision-makers to work around a virtual board where participants were guided through the logic model and invited to give a critical evaluation of it. Thereafter, the role of the MMO in influencing fisher incentives was explored by exploring five of the preconditions/design elements: **social capital** (how to generate trust, respect and good relationships to facilitate cooperation); **property rights** (how to allocate fishing rights to engender stewardship of fished resources); **empowerment in decision making** (building the capacity of fishers and communities to have greater social awareness, to gain autonomy over decision making, to address power imbalances); **stakeholder participation** (enabling genuine and transparency consultation and participation in decision making); and **common understanding** (developing a shared understanding of the problems, the need for regulation and solutions).

Workshop participants voted to explore the challenges, opportunities and uncertainties associated with two elements: empowerment in decision-making and common understanding. The majority of the issues raised at the workshop are reflected in the fisher agency theory of change. The below tables summarise the information captured at the workshop on the barriers/challenges and opportunities associated with the two preconditions/design elements explored.

A3.1 Empowerment in decision-making

Table A3.1 Barriers and challenges

Clustered barriers/challenges identified (verbatim)	Key design elements (DE ²⁸) and ToC component ²⁹
Getting the scale right in terms of area / regional / national Representation Balancing the different ends of the spectrum in fishing operators Diversity of the fleet	DE 1 (appropriate scales) DE 6 (collaborative leadership) DE 7 (stakeholder participation) ToC component: Co-management design activities
Conflicts of interest	DE 1 (appropriate scale and defined boundaries of legitimate users)

²⁸ See Box 1

²⁹ See Figure 3.1

Clustered barriers/challenges identified (verbatim)	Key design elements (DE ²⁸) and ToC component ²⁹
<p>They aren't going to get what they want – expectation management</p> <p>Preferential treatment versus opposing views</p>	<p>DE 2 (access rights)</p> <p>DE 3 (recognition of resource management problems)</p> <p>DE 4 (developing a common understanding)</p> <p>DE 5 (social capital)</p> <p>DE10 (conflict resolution)</p> <p>ToC component: Co-management design activities</p>
<p>Having the opportunity to participate / engage</p>	<p>DE 1 (appropriate scales)</p> <p>DE 6 (collaborative leadership)</p> <p>DE 7 (stakeholder participation)</p> <p>DE 8 (participatory learning)</p> <p>DE 13 (enabling legislation)</p> <p>ToC component: Co-management in setting management and fishing opportunities</p>
<p>Behaviours</p>	<p>DE 1 (appropriate scales)</p> <p>DE 11 (effective communication)</p> <p>DE 12 (effective enforcement)</p> <p>DE 13 (enabling legislation)</p> <p>ToC component: Co-management in setting management and fishing opportunities</p> <p>ToC component: Influencing incentives</p>
<p>Lack of common language / terms / technology / data</p>	<p>DE 4 (developing a common understanding)</p> <p>ToC component: Co-management in data collection and assessment</p>
<p>Relinquishment of power / control</p> <p>Lack of trust in government / regulators</p> <p>Trust of custodianship</p> <p>Reluctance to be held accountable</p>	<p>DE 7 (stakeholder participation)</p> <p>ToC component: Co-management design activities</p> <p>ToC component: Co-management in setting management and fishing opportunities</p> <p>ToC component: Influencing incentives</p>
<p>Mechanisms for enabling it to happen</p>	<p>DE 14 (coordinating body)</p> <p>ToC component: Co-management design activities</p>

Clustered barriers/challenges identified (verbatim)	Key design elements (DE ²⁸) and ToC component ²⁹
Costs of involvement (time/money)	ToC provides cost effective means of articulating logic, exploring alternatives, defining strategy, M&E. Final ToC supports articulation of cost justification

Table A3.2 Opportunities

Clustered opportunities identified (verbatim)	Key design elements (DE ³⁰) and ToC component ³¹
Shared vision Agree shared values and goals Honest conversation Enhanced understanding of the sector	DE 4 (developing a common understanding) DE 5 (social capital) DE 6 (collaborative leadership) DE 8 (participatory learning) ToC component: Co-management design activities
Enhanced reputation	DE 5 (social capital) DE 7 (stakeholder participation) DE 11 (effective communication) Linked to whole ToC
Self-regulation [using existing structures] / Producer Organisations Ability to enable fisher-led management measures Engagement should produce buy in for rules 'Done with' versus 'done to	DE 1 (appropriate scales) DE 7 (stakeholder participation) DE 11 (effective communication) DE 12 (effective enforcement) DE 13 (enabling legislation) ToC component: Co-management in setting management and fishing opportunities ToC component: Influencing incentives
Existing activity to learn from such as Scottish pelagic data collection work A cheap source of expertise	DE 4 (common understanding) DE 8 (participatory learning) ToC component: Co-management in data collection and assessment

³⁰ See Box 1

³¹ See Figure 3.1

Clustered opportunities identified (verbatim)	Key design elements (DE ³⁰) and ToC component ³¹
Iterate management regimes based on objective evidence of impact and intermediate outcomes	DE 14 (coordinating body) ToC articulates cause-effect logic to lead to outcomes TOC supports design of M&E plan and articulates assumptions
(Other) We can now set our own framework Using key influencers Government funding more available than previously Move to more regionally based fisheries management Learning by doing does not have to be big Post EU exit	

Uncertainties identified:

- Risk appetite
- Alignment with objectives
- Level of understanding
- Who to engage with
- Direction, scale and format of FMPs and stakeholder role in them
- What take is sustainable in this changing environmental climate
- Political appetite

A3.2 Common understanding

Table A3.3 Barriers/challenges

Clustered barriers/challenges identified (verbatim)	Key design elements (DE ³²) and ToC component ³³
Conflicts of interest Perceptions of environmental protections introducing risk to economic opportunity Environment versus socio-economic thoughts	DE 1 (appropriate scale and defined boundaries of legitimate users) DE 2 (access rights) DE 3 (recognition of resource management problems)

³² See Box 1

³³ See Figure 3.1

Clustered barriers/challenges identified (verbatim)	Key design elements (DE ³²) and ToC component ³³
Too much focus on positions rather than interests Bad news (i.e. some issues won't have a positive solution)	DE 4 (developing a common understanding) DE 5 (social capital) DE10 (conflict resolution) ToC component: Co-management design activities
Truth in science and perceptions of bias Scientific consensus	DE 4 (developing a common understanding) DE 5 (social capital) ToC component: Co-management in data collection and assessment
It is likely to take a lot longer than you expect	DE 5 (social capital) – generate sufficient trust and patience to support long-term project DE 7 (participation) DE 11 (effective communication) ToC articulates benefits of co-management and time scale

Table A3.4 Opportunities

Clustered opportunities identified (verbatim)	Key design elements (DE ³⁴) and ToC component ³⁵
Realign interests and understanding More sharing of problems which need solving Transparency: shared goals and objectives	DE 4 (developing a common understanding) ToC component: Co-management design activities ToC component: Co-management in data collection and assessment
Powerful compliance tool	ToC articulates cause-effect logic to lead to improved compliance outcome
Greater emphasis on the people rather than the fish Change perceptions of regulators	DE 5 (social capital) DE 7 (stakeholder participation) DE 8 (empowered stakeholders)

³⁴ See Box 1

³⁵ See Figure 3.1

Clustered opportunities identified (verbatim)	Key design elements (DE ³⁴) and ToC component ³⁵
<p>Greater collection and use of objective evidence on what is working (or not)</p> <p>Can we do more to incorporate fisher knowledge of stock health into evidence base</p> <p>Can we make greater use of big data, advanced analytics, machine learning to build the evidence base</p>	<p>Use of strategic TOC supported by M&E plan to identify objectives behind data collection and analytical methods.</p> <p>DE11 Once data/analytical objectives defined, communicate the evidence base and how it has been derived.</p> <p>ToC component: Co-management in data collection and assessment</p>
<p>(Other)</p> <p>A time of change to try new things</p> <p>Enabling funding from the government</p>	

Uncertainties identified:

- Knowledge level/expertise
- Political appetite
- The ‘cost’ of bringing people onboard
- Stock health factors beyond our control