SUPPORTING MARICULTURE DEVELOPMENT: EVIDENCE FOR INFORMED REGULATION

POLICY BRIEF

Workshop Report
September 2020

CITATION:

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This briefing summarises the discussions from a multi-stakeholder workshop held via Zoom on **3rd July 2020**.

The meeting sought to **clarify evidence requirements for sustainable marine aquaculture development**, especially for novel and emerging approaches.

Regulators, planners, researchers and representatives from mariculture businesses came together to discuss the evidence most needed to inform the development of a sustainable mariculture industry in the South West of the UK.

Comments are anonymised and only refer to a participant's sector where particularly relevant to the discussion, as this report aims to summarise the key issues raised across the workshop, in the six breakout discussion rooms, and in post-event feedback.

The organisations who participated in the meeting are outlined at the end of this briefing – please note that fishing industry members were not represented at the workshop.

EXECUTIVE SUMMARY

All attendees agreed that marine aquaculture (mariculture) is as a **growing sector** in the UK and anticipate further expansion. The South West represents a particular hotspot for development and can lead the way in developing spatial planning. They recognised that mariculture has significant potential to **restore and enhance marine environments** if appropriately located, as well as **contribute to local coastal economies** and existing maritime industries, including capture fisheries. However, competition for marine space is intense – particularly in inshore waters and the potential benefits can be stifled in regulation and licensing. As such, there is an **urgent requirement for consistent evidence** about the benefits and interactions that are **relevant for consideration by regulators** during the licensing process.

Participants from all aspects of mariculture represented, agreed that **collaboration across sectors is essential** to provide relevant evidence to inform regulation. Particularly developing an effective framework to connect research, government bodies, stakeholders and industry.

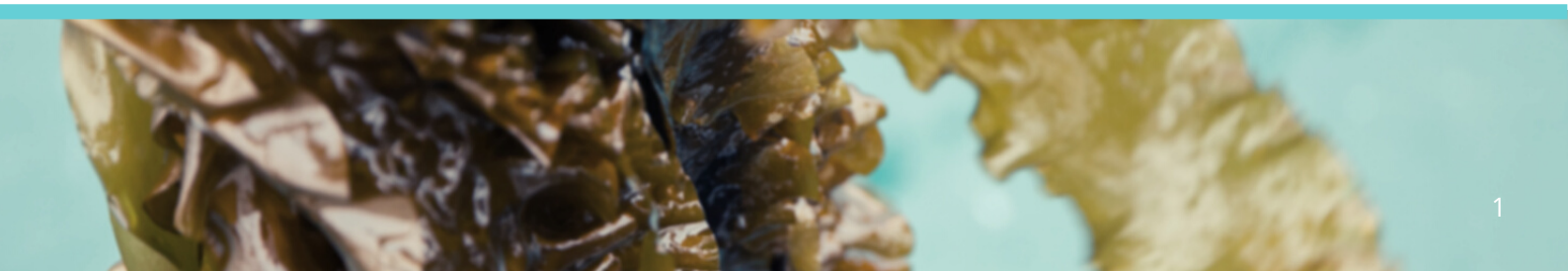
- Establishing **clear channels of communication** between marine users (industry and domestic stakeholders) and regulators is crucial for fine-scale marine spatial planning and sustainable development.
- **Formation of local working groups** – comprised of individuals from across sectors and marine user groups to represent those with a vested interest. These retained groups would create opportunity for early and ongoing engagement between marine users.

Enabling more detailed, progressive mariculture development requires a **greater understanding of impacts** (both positive and negative) on the surrounding habitats and sensitive species.

- **Pilot mariculture project and test sites or hubs would support small operators** and innovators to test new methods or species. Centrally managing the regulatory approvals for the individual farmers who use such sites and collecting and sharing data to enhance the evidence base will relieve the barriers to novel and emerging technologies.

Developing a clear roadmap for licensing will reduce the regulatory burden and **encourage innovation and development**. Building upon the Centre for Environment, Fisheries and Aquaculture Science (Cefas) 'aquaculture regulatory toolbox', to provide the 'routes' that new species or technologies will need to take to get final approval.

- **Regulation and licensing processes** require balance between adaptability and clarity to support mariculture development and appropriate resources need to be made available to allow this to happen. Clear engagement frameworks between regulators, industry and researchers would help this.
- **Mariculture policy must be written in collaboration with mariculture industry, academia and regulators**.
  The policy should outline the roles and responsibilities of all stakeholders, as well as the roadmap to guide development approval. Policy development should be led by the governmentand supported by appropriate industry-facing bodies, underpinned by a supportive government mandate, endorsed by The Department of Environment, Food and Rural Affairs (Defra) and given adequate resourcing in terms of in terms of grants funding, advice and regulation/licencing.



BACKGROUND

The UK government has ambitious plans for growth in the aquaculture sector. As part of the Seafood 2040 strategy, growth of 40% is considered achievable and desirable. This creates an immediate requirement for concentration and funnelling of regulatory resources that will be essential to facilitate this growth. The existing 2015 UK Multi-annual National Plan for the development of sustainable aquaculture and the forthcoming English Aquaculture Strategy provide mechanisms that brings these threads together.

The South West represents the highest concentration of marine aquaculture licences in England, and is expected to have considerable scope to expand (with shellfish and seaweed culture showing the highest potential), despite being a busy area for fishing and Marine Protected Areas (MPAs). The region is seen as a pioneering centre for mariculture development, with Dorset and East Devon developing a local marine aquaculture strategy, along with recent examples of trialling novel species and methods to achieve sustainable rapid growth.

Novel and emerging mariculture developments have shown significant potential to mitigate or reverse environmental impacts, including biodiversity enhancement, carbon capture, and coastal protection. New mariculture developments can also open novel markets and improve how aquaculture interacts with other marine users. For example, if the potential benefits of mariculture to provide nursery grounds to juveniles of commercial fish and shellfish species were highlighted, fishers may feel more inclined to support mariculture, rather than feel displaced by it. However, there remain specific knowledge gaps about the extent of how mariculture interacts with environmental, social and economic factors.

With input gathered from presentations and discussions at a July 2020 online workshop, this report explores the gaps in evidence about impacts of mariculture, alongside the issues considered important by the diverse cross sector group present at the workshop (regulators, planners, researchers and mariculture businesses). Recommendations made for future mariculture policy and regulation in England are based on the outcomes of the focused discussions between these stakeholders.

CASE STUDY 1

SEAFOOD 2040: THE ENGLISH AQUACULTURE STRATEGY

TIM HUNTINGTON, POSEIDON

In light of current and anticipated shocks to the supply chain (associated with Brexit and the COVID-19 pandemic), significant emphasis has been placed on improving food security within England. Aquaculture plays a key role in this, with various emerging technologies poised to innovate and alter the seafood landscape.

Seafood 2040 is collaborative project bringing together experts from the seafood industry with fishery and environment policy makers and the food industry to create a plan for a thriving and sustainable seafood industry. Seafood 2040 includes a framework for novel and emerging mariculture development. The English Aquaculture Strategy, due to be finished September this year, will be built around **Seafood 2040**, reflecting existing policy regarding seafood production, food security and climate change in England. The English Aquaculture Strategy will also provide a delivery plan for all stages of mariculture development, ensuring that industry and government are engaged throughout.

Regulatory decisions for new developments take time, and presents a challenge to mariculture businesses, owing to the difficulties of assessing conflict with other activities, particularly fisheries. The challenge is exacerbated by limited resources for aquaculture regulation at the level of the MMO, where a small team is responsible for regulating a growing sector. Streamlining of this process will likely be addressed by the upcoming Defra review of aquaculture regulation, which will feed into the English Aquaculture Strategy. A move towards **locally based regulatory processes could also facilitate this**, and could be based on local experience and guidance, for example – as is outlined in this South-West focused policy brief. There is strong interest in seeing greater levels of co-existence between fisheries and aquaculture.

Note that while this briefing document focuses on novel and emerging (no-feed) marine aquaculture in the southwest, the English Aquaculture Strategy has broader scope, covering finfish, shellfish, and seaweed in English freshwater and marine sites.

ECONOMIC OPPORTUNITIES

Growth in mariculture, either through developing new markets and novel species or through expansion of established industry, has the potential to benefit coastal communities through increased employment and economic activity in the region.

This was discussed at the workshop, where participants strongly agreed that there are opportunities for local communities to benefit from mariculture and they did not believe that new mariculture developments would negatively affect the local economy. One academic participant stated that:

> **“there is no reason [mariculture] would negatively impact a local economy... From what I’ve seen it’s the exact opposite.”**

Additionally, views were expressed that mariculture is likely to have a long-term economic benefit, particularly when considering scope for climate adaptation either through local environmental benefits, growing a low-carbon food source or the potential for additional income through a carbon credit scheme. Seaweed mariculture was raised as a particular example of this, due to its carbon capture potential.

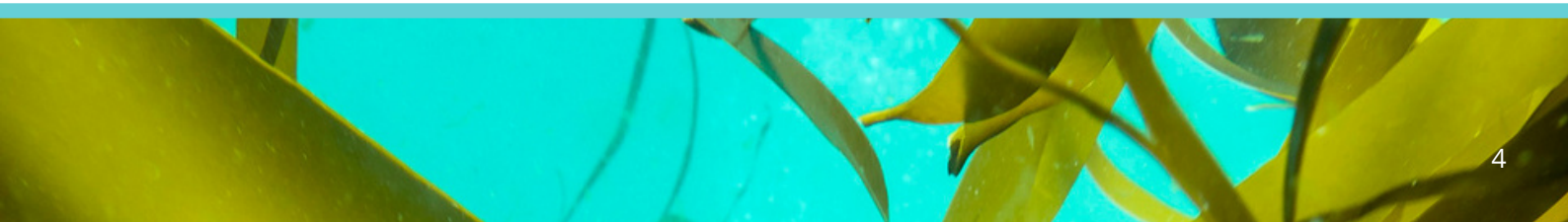
There was consensus that further consideration regarding displacement of existing activities – including fishing – is required, with fisheries representatives present to hear their views, in light of the fact that this workshop did not have active fishers in attendance. Additionally, there may be potential to offset any perceived negative economic impacts of fisheries displacement, as mariculture sites can create nursery grounds that support recruitment potential of commercial fisheries. Furthermore, one mariculture representative thought that mariculture may offer a route for fishermen to diversify their income source, using their expertise on the water and infrastructure (i.e. fishing vessels).

MITIGATING CONFLICT OVER MARINE SPACE

There was lack of consensus regarding whether all stakeholders are equally consulted in the regulatory process. Despite this, participants generally agreed that conflicts typically arise from poor communication between marine users and sectors. Communication is somewhat more regular during the licence application stage, but rarely maintained throughout the lifetime of a project, causing confusion about who mariculture farmers should talk to when issues arise later in the process.

Space – or lack of it – emerged as a key area for conflict across the attendees, and it was widely felt that better engagement with other marine users about the potential benefits of mariculture could help reduce elements of spatial conflict. In particular, a shift to a proactive, collaborative approach to developing finer-scale marine spatial planning would help identify opportunities for coexistence of different uses.

Also developing clear channels of communication between marine users (industry and recreational stakeholders) would help explore and realise the potential mutual benefits or synergies between marine activities.



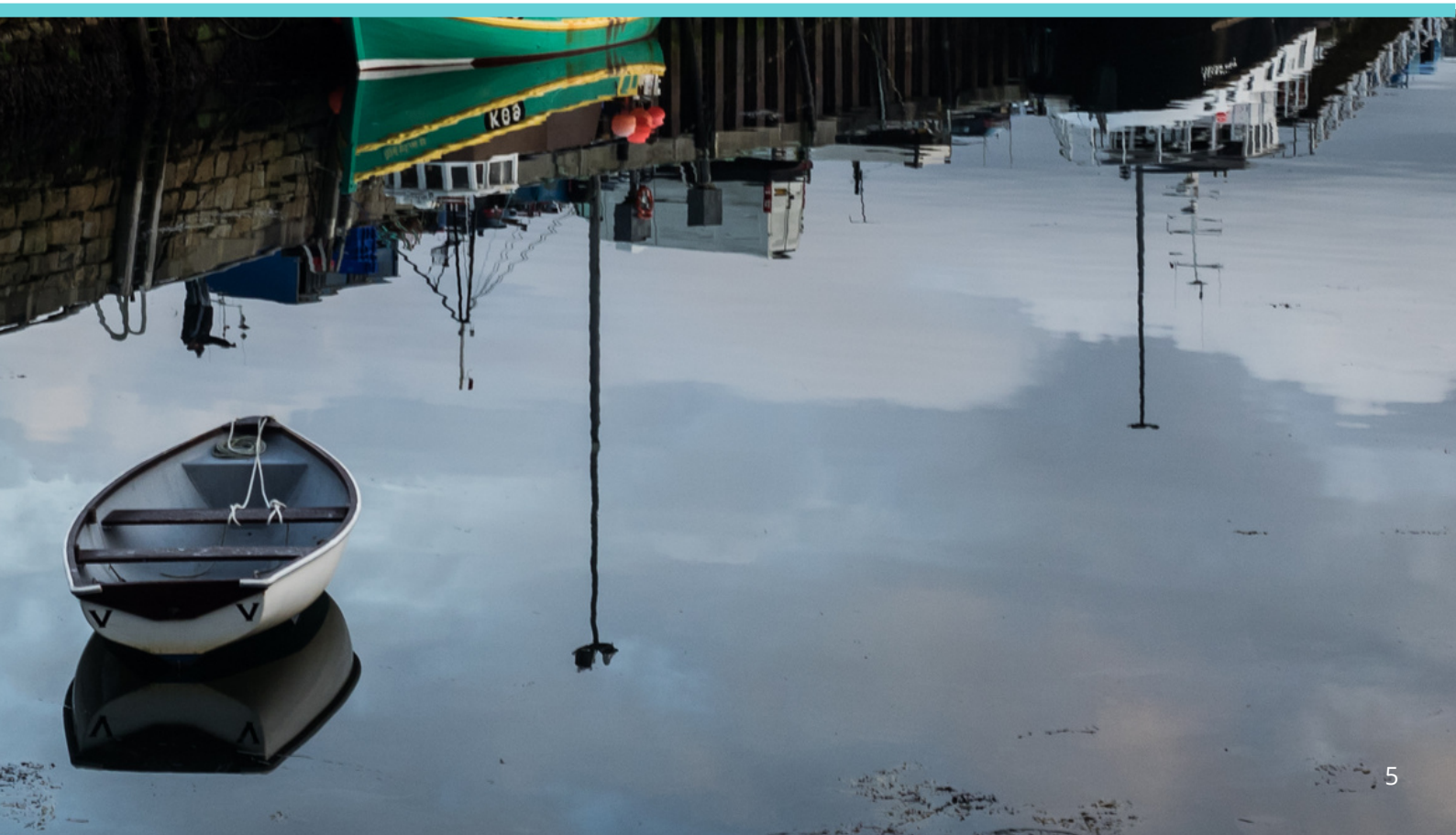
MARICULTURE ENGAGEMENT WITH THE FISHING INDUSTRY

Generally, the group thought mariculture farmers and fishers could be better connected during mariculture planning and development – as this would give an opportunity to talk about the any potential conflicts that could arise, as well as discuss possible synergies, such as restorative or 'spill-over' benefits, that mariculture can offer local fisheries.

Groups discussed how mariculture could bring additional jobs to coastal communities. One group discussed that the South West has a plentiful supply of mariners/fishers who possess many of the required skills sets that could 'easily' be adapted to mariculture development/systems. As such, fishers may be some of the most qualified people in the communities to take key mariculture jobs, presenting economic opportunities for personal diversification of income, and potentially increasing support for mariculture developments across stakeholders.

By discussing the potential mutual environmental and economic benefits of a mariculture development alongside fisheries (or better still giving fishers an opportunity to experience it first hand), the fishing industry's needs could be taken into account during the design process. Many participants thought co-existence with other marine activities was possible, and a mariculture participant stated that mariculture can "improve fishing activity and enhance wild catches" as the sites can enhance seabeds and offer habitat for juveniles of commercial fish and shellfish.

However, the group acknowledged that co-location benefits of mariculture and fishing grounds varies for the type of fishing. Static gear fishermen, for instance, can often share space with mariculture (in particular shellfish and seaweed sites) and can benefit directly from greater yields, if the farm is designed with them and their target catch species in mind. However, it was noted that sharing spaces with trawlers is generally not feasible and neighbouring locations would need to be dictated and managed though marine spatial planning.



REGULATORY ENGAGEMENT WITH MARICULTURE

Designating areas for different marine users or areas where co-existence could be possible – through marine spatial planning – should be a priority for regulators, and should collaboratively involve both mariculture and other marine industries to determine these boundaries. It is essential that regulators have open and frank conversations with all marine users about the benefits and drawbacks of new mariculture developments. Bringing together mariculture with other marine users and stakeholders early in an application process will allow risks and challenges to be navigated more effectively, as well as helping to identify and convey longer-term communication opportunities for all parties. Additionally, engaging in such conversations can ease the application process for mariculture developers who would benefit from including a range of views in their plans.

Regulators currently ask developers to retrospectively submit evidence of all pre-application engagement (minutes of meetings, emails etc.), to facilitate licencing processes and expedite additional stakeholder consultations. However, many participants thought a restructuring of the licencing process to include requirements for proactive (rather than the current reactive) approaches to engagement – at the very start of the application process – could streamline the regulation process for all involved.

For example, the Aquaculture mapping project in the Dorset and east Devon FLAG area, pre-engaged stakeholders in the spatial planning process at high spatial resolution to identify potential areas of conflict or synergies between users and the environment. This proactive approach could be used as a process to identify suitable areas for development to guide potential mariculture applicants. However, this requires strong leadership from regulators and stakeholder groups. Participants agreed this would provide an early forum for communication between stakeholders, regulators and researchers and potential for streamlining process for mariculture to develop under particular constraints.

Breakout groups agreed that gathering more data about where current marine activities take place would help in guiding 'finer resolution' of future marine spatial planning – thereby allocating enough different spaces to accommodate multiple activities in neighbouring areas, or in areas of co-existence.

For example, recent efforts by IFCAs to recognise and document movements of the inshore fishing fleet will likely help identify areas that are more conducive for shared use with mariculture, and this fine-scale resolution is essential to help prevent conflicts.

MOVING MARICULTURE OFFSHORE

There is potential for careful regional-scale spatial planning to benefit all stakeholders by having greater access for marine resources – both nearer and further from shore. Indeed, most participants thought moving aquaculture offshore was considered a good solution to reduce areas of potential conflict between marine users, as well as providing more flexibility in decision-making.

However, there was varied opinions on possibilities for offshore developments:

- Moving operations offshore could help to reduce co-location conflict, but there needs to be a stronger evidence base for the technology and infrastructure to sufficiently support offshore operations, before it can become a readily available and reliable option to farmers.

- Offshore mariculture development is risky and requires a completely different set of capabilities and as such regulators should consider increased risk associated with offshore developments and allow for offshore pilot sites in future regulations.

- Regulatory representatives cited potential conflicts with other non-fishery offshore marine users, and stressed that area assessment and marine spatial planning is also crucial to support effective and conflict-free offshore mariculture.

CASE STUDY 2

SUSTAINABLE MARICULTURE DEVELOPMENT: SHARING SPACE, AVOIDING CONFLICT AND PROTECTING THE ENVIRONMENT

SARAH CLARK, DEVON AND SEVERN IFCA

The Inshore Fisheries and Conservation Authorities aim to lead, champion and manage a sustainable marine environment and inshore fisheries and take necessary steps to achieve sustainable development within their given districts. The Devon and Severn district is a hive of marine activity – over 1000 permits are issued to commercial and recreational fishermen and there is a squeeze on opportunities for fishing to take place. Conflicts arise from such a crowded marine space and this leads to compliance issues.

There is a lack of current data on space use and on the impacts of fisheries on the environment and other users, particularly for towed gear fisheries. New mariculture licences require a thorough assessment of potential conflict and the absence of this information can slow down regulatory processes. To combat this, the **Devon and Severn IFCA** is developing a mariculture strategy that takes into account all influencing factors and evidence on existing space use within the Devon and Severn district. Central to the strategy is the incorporation of up-to-date spatial maps that can be used to highlight opportunities for sustainable development without increasing conflict with other users. These include a potential aquaculture park within Torbay, and other areas within North Devon where there is less fishing pressure.

There is an opportunity for aquaculture businesses to engage with members of the fishing industry early on in order to strengthen applications. Importantly, any developer is encouraged to try and engage with local fishers to evidence how they can benefit from the site, rather than risk removing fishing opportunities. Remaining transparent and keeping an open mind on how the two industries can integrate is essential.

OPPORTUNITIES FOR MARICULTURE AND MARINE PROTECTION

There was consensus among participants about the potential for mariculture to restore and improve areas (for example coastal biodiversity, habitat provision), particularly in degraded areas. Several participants from across sectors indicated that restoring and enhancing the marine environment was as important – or even more important – than conserving existing habitats alone. Examples raised included mariculture farms providing habitat for juveniles of various marine organisms, supporting population growth, and seabed ecosystems benefiting from the nutrients and shelter that mariculture provides. Indeed, some breakout groups thought mariculture developments could gain support of environmental groups and fishers by incorporating methods designed to enhance the marine environment, and by detailing the ecosystem services they can provide.

Statutory nature conservation bodies determine whether developments are appropriate for use in Marine Protected Areas. These decisions hinge on an understanding of the impacts of a development on the surrounding area and, to some extent, the positive impacts or ecosystem services that a sustainable mariculture development could provide. The group discussed the need to shift from 'maintain and protect' to a 'restore and enhance' management approaches.

To better understand the impact of mariculture and other comparable marine activity developments on the environment, Marine Evidence based Sensitivity Assessment (MarESA) is compiled in Natural England's Advice on Operations around MPAs. Data or evidence from other parts of the UK, such as that provided by the Feature Activity Sensitivity Tool (FEAST) and other national and international research initiatives can be applied to similar habitats in the South West and elsewhere in England and the UK, but this should be done in consideration of how transferable some site-specific research results are.

CASE STUDY 3

MARICULTURE DEVELOPMENTS AROUND MPAS

ROSS BROWN, UNIVERSITY OF EXETER

The **International Union for Conservation of Nature (IUCN) has identified that there are potential conservation opportunities connected to MPAs and aquaculture** particularly through helping deliver on targets for biodiversity and fisheries under the Convention on Biological Diversity and UN Sustainable Development Goals. There is an urgent need to reconcile sustainable development with nature conservation and – in the case of mariculture – understand the impacts and ecosystems services associated with novel and emerging approaches.

Within the southwest, over 70% of aquaculture sites are located within MPAs, with sites chosen to ensure that sensitive habitat features are unaffected. For example, 24% of the Poole Harbour Special Area of Conservation is leased for bottom shellfish aquaculture – the development exists on sub-tidal mud, where activities don't interfere with wading birds, and is away from other sensitive species and habitats, such as seagrass beds.

The presence of sensitive marine habitat features can influence the decision to permit a new aquaculture development. There is a need to understand impacts of aquaculture activity on these habitat features – to ascertain where negative impacts are likely and where positive impacts may occur. Such data can be used to create a risk matrix with detailed mapping in order to identify areas that are compatible with mariculture development. With this in place, it is possible to complete relatively rapid assessments of new developments and start developing general rules for initial screening of licence applications in and around marine protected areas.

COMBATING DATA SCARCITY

Data deficiency poses a significant hurdle to mariculture developers, as there is not an agreed bank (or single coordinated repository) of information about the potential environmental and social impacts of novel and emerging mariculture.

Additionally – how the data is used by regulators in the assessment process is not always well understood by licensing applicants. One regulatory attendee noted that although mariculture applications must describe the benefits and negative impacts to the environment, in the current regulations the balance of these must be considered in the application process – and one significantly negative impact could outweigh the myriad of benefits.

A lack of data presented to regulators can lead to a hiatus in decision-making around licencing.

Areas in which the group identified data gaps include:

- insufficient understanding of levels of exploitation of inshore fishing areas by the under 10m mobile fleet,
- the area coverage of static fishing gear,
- insufficient evidence for offshore mariculture operations, technology and infrastructure,
- insufficient evidence for the benefits of emerging/novel mariculture to the environment (in contrast to evidence focusing on the negative impacts from some more established forms of aquaculture such as finfish mariculture), and
- current and future demands for space by other marine users which will affect the availability of space for potential mariculture sites.

The group agreed that the body of scientific evidence was increasing but queried 'how much' evidence would be needed – especially to be sufficiently persuasive that the environment benefits or that of co-locating mariculture sites with fishing operations. An example was offered in which a South-West mariculture test site (pilot site that can test a range of novel/emerging no feed aquaculture species and will conduct long term environmental monitoring) is intend to work closely with universities to research the benefits of mariculture and map the local environment before and after the site is built. The group agreed that this type of proof would be useful for this operator and other operators also, when applying for future mariculture licencing – if results show positive impacts on the surrounding environment.

Additionally, participants from industry, academia and regulators agreed that areas could be developed as mariculture parks or hubs, where 'tenant farmers' can set up traditional and novel mariculture operations relatively easily, with support from researchers and authorities. Application of the parks' regulation could fall to a single, central group, making it simpler for developers to pilot ideas, methodologies or novel species. These parks could act as evidence and technology incubators to help create stronger industry development and evidence provision to support evidence-based regulatory requirements.

The Several Order for Poole Harbour provides a good example; this area provides a designated space, regulatory framework and tenure for mariculture to flourish. There was general agreement that aquaculture parks or Allocated Zones for Aquaculture (AZAs) could be highly valuable, providing important evidence, and a real solution for reducing risk, regulatory burden and start-up costs.

There is currently an onus on mariculture developers to undertake an 'appropriate assessment' to gather evidence required for decision-making. The costs associated with this evidence provision can be prohibitive, particularly to small start-up businesses and those likely to research mariculture across England and as such, are a barrier to mariculture development. Similarly, IFCA representatives said they also feel the pressure and burden of gathering relevant information to support the regulations in place. Groups thought that a network of regional evidence-gathering hubs, supported by government and academia, could provide an alternative that removes this burden from developers and other groups.

One breakout group thought that the regulator should be responsible for gathering evidence to support decision making for mariculture licensing. Recognising that regulator resources may not be available for this purpose, the group suggested that it could perhaps fall to industry representative Seafish.

Seafish currently provide information, guidance and advice, as well as support to a number of initiatives that strategically assist domestic aquaculture but resources and restrictions on their operations may also place limits on this; for example some mariculture sub-sectors are not levy paying (e.g. salmonids and seaweed) and as such the Seafish's engagement with these sub-sectors is somewhat limited.

A single organisation that could gather and house a bank of resources to that facilitate mariculture applications with resources and clear responsibilities to drive this forward is essential. A similar role was fulfilled historically by the Ministry of Agriculture, Fisheries and Forestry (MAFF), but this has been somewhat lost when The Department of Environment, Food and Rural Affairs (Defra) and the Centre for Environment, Fisheries and Aquaculture Science (Cefas) were formed to take over the MAFF roles.

Other participants suggested that an aquaculture industry representative group could be established – to help support, guide and represent the industry in this andnmany other issues. The group agreed that if Seafish (or an aquaculture industry group) did gather and house this type of information, it may be even more likely to be used by applicants, as their engagement and industry focus will ensure that any evidence gathered is relevant and inclusive of the fishing industry, too.

CASE STUDY 4

REGULATORY PROCESSES FOR AQUACULTURE

ABBEY COPPIN, MARINE MANAGEMENT ORGANISATION

Mariculture licensing sits under **Section 66 of the Marine and Coastal Access Act**. The licensing process can take longer than most people realise, and includes multiple stages – namely pre-application engagement with the Marine Management Organisation (MMO) and stakeholders, the licensing process and any requirements on any license granted i.e. surveys.

Key points for developers to consider:

- **Licensing exemptions can apply** for propagation and cultivation of shellfish (but not finfish or seaweed), however, foundational activities such as construction, artificial reef creation, and others, require approval by the MMO.
- Fish and shellfish aquaculture requires an **Environmental Impact Assessment**, but culture of algae does not usually require EIA screening.
- It is recommended that any applicant seeks pre-application advice from the MMO, while this is optional, advice from the MMO can streamline proceedings.
- MMO encourages strong, early engagement with all stakeholders that might be impacted by the project, and retaining evidence of these discussions.
- Applications up to 1nm out to sea, must submit a **Water Framework Directive screening assessment** irrespective of EIA requirements. Supporting evidence requirements in relation to this will depend MMO screening.

Additional assessments are required for developments proposed near Marine Protected Areas (MPAs) (e.g. Habitats Regulations Assessments, MCZ stage 1 assessment, for European sites and MCZs). Advice from Natural England and the Joint Nature Conservation Committee is taken into account for applications. Even if a project has potential to improve one feature of site, an assessment of the impact on other features is also necessary.

The MMO are moving towards plan-led licensing, with remaining marine plans to be adopted by 2021. To determine where suitable sites exist the **MMO's Explore Marine Plans tool** can be used to locate strategic sites for sustainable aquaculture and identify policies that apply to a development in that area. All applications need to evidence compliance to all relevant policies.

SUPPORTING AND STREAMLINING REGULATION

Overall, there is currently no clear, national strategy for implementing mariculture projects, and attendees noted that individual commercial operators find the regulatory system unclear in both licensing process and delivery. Marine plans state that mariculture development will be encouraged, but the group queried the lack of a clear roadmap or guidance about how this will happen. Key issues raised with the current regulations were:

- The apparent lack of a clear 'roadmap' as to how mariculture will be encouraged.
- Onerous regulatory burdens for new business such as the requirement for costly environmental impact assessments, and retrospective environmental monitoring, which present significant barriers to new mariculture developments (regardless of their scale).
- Despite the regulatory toolbox providing a comprehensive list of regulations and an address book of regulators, it is felt that there is still a need to create a user-friendly roadmap that provides: a process flow of the 'routes', contact fora/databases for regulators, stakeholders and applicants and detail on funding support.
- There is a (perceived) lack of expertise and interest in mariculture within regulatory bodies, perhaps stemming from under-resourcing in this developing field. This under-resourcing was seen to be compounded for novel mariculture ventures, (e.g. seaweed and shellfish), for which there is little location-specific or comparative evidence to assist in efficient decision-making.
- There is an apparent lack of transparency, responsiveness and communication from regulatory bodies, particularly around the acquisition of new licences and reasons for lengthy decision-making processes.
- Although management and regulation of mariculture could (and arguably should) fall to local bodies (i.e. IFCAs), the lack of a national strategy to guide the regulations can create confusion or inconsistencies for the local regulators and those applying to develop farms.

Industry participants felt the licensing process to be hugely onerous for small businesses, with one industry participant stating that:

> **"the costs and time involved are 'prohibitive' and 'discouraging' for the industry."**

Currently, there are multiple processes and agencies involved in approving new mariculture sites, and mariculture and research participants noted that this made it difficult to know the clear steps involved in the approvals and licencing process. The MMO target for processing of a marine licence application is 13 weeks, but consultation and mandatory requirements often hamper this. This was backed up with an anecdotal example, where 'shifting goalposts' in the application process meant it took 18 months to get to the point of a decision on a marine licence for a new mariculture site, which eventually was rejected and by which time any funding opportunities to support the site had also been missed.

In another example, it was noted that diverse species will settle on aquaculture structures, such as mussel farms, not only those species that the development has been licensed for, and so greater flexibility in licensing procedures is required to allow users to harvest natural wild settlement species. Though regulatory attendees noted there is scope for this in existing regulation, the group agreed there is opportunity to make this process smoother or more transparent to farmers.

There was general agreement that regulation needs to be more flexible to facilitate delivery of government targets and for the sector to develop more efficiently, as well as to encourage and accommodate innovation and industry diversification.

Differing sector experiences were voiced about how best to guide the industry to navigate existing or future regulatory requirements, as outlined below:

REGULATORS
Acknowledging the industry desire to streamline licensing processes, one simple solution offered by regulators is to build on the Cefas regulatory toolbox to create a licencing 'roadmap'. This is essentially a flow diagram illustrating the key decision points and pathways with signposts to relevant regulatory authorities, evidence requirements and existing examples/best practice.

INDUSTRY
To streamline licensing, the mariculture industry wants a clear 'how to apply guide' as well with step-by-step instructions specifically for setting up mariculture sites, including supporting information to understand the processes a developer must go through in pre-application consulting. This is the aim of the Aquaculture Virtual Hub hosted by Dorset Coast Forum.

Additionally, having a government and industry-facing body such as Seafish to champion aquaculture and streamlining licence applications processes coordinated through the MMO and IFCAs would also support industry development.

RESEARCH
Licencing needs to be adaptable to remain evidence driven and closely linked to research developments and findings. Research funding often dictates research developments and as such timely licencing processes are essential to align with restrictions imposed by research grant applications and timelines.

Academic attendees thought that a new, interconnected licence system to enable research-led sustainable development of mariculture could ensure research at mariculture sites is facilitated through the licencing process.

Despite these different views on how to make the process for licencing more clear, the group agreed that streamlining the process will allow farmers to get onto the water sooner, start making income, and therefore facilitate overall mariculture development across the UK.

RECOMMENDATIONS

To support English mariculture development, the industry needs clear policy, a directional roadmap for licencing and strategic research and investment to support expansion. The points below are recommendations based on conversations from the workshop.

RECOMMENDATION 1

INCREASE THE EVIDENCE BASE FOR MARICULTURE'S ENVIRONMENTAL IMPACT

All participants agreed that a lack of data on novel mariculture projects, particularly around environmental impacts, inhibits their development. They also agreed that without the required evidence or expertise, regulatory decisions may be delayed and stakeholder engagement may be hampered.

KEY ISSUES:

- The positive and negative environmental impacts of mariculture (particularly for seaweeds), but also for shellfish and different finfish species.
- A lack of understanding of the conflicts and potential synergies or mutual benefits between mariculture and fisheries (or other marine users/stakeholders).

POSSIBLE SOLUTIONS:

- **Trial** test sites or hubs for novel mariculture methods/species could be established, which are subject to adaptable or light touch regulation, and have intensive monitoring to gather evidence. Multiple farmers can test ideas in a structured and monitored environment, where licencing is managed by a central party and the aim of the site is provides evidence to catalyse development for specific projects and share knowledge among the wider industry. This set up could also work in Allocated Zone for Aquaculture (AZA).
- Where evidence continues to be scarce, risk-based adaptive management could be applied to facilitate pilot (early-stage, small scale) mariculture developments.
- Screening to determine the requirement for Environmental Impact Assessments for pilot mariculture projects, should take account of the potential restorative environmental benefits of the intended mariculture development, as well as the scale of the development.
- While the cost of evidence provision remains prohibitive for small scale developers. R&D funding should be strategically channelled and allocated to novel and emerging aquaculture development to encourage increased production.

RECOMMENDATIONS

RECOMMENDATION 2

IMPROVE ENGAGEMENT BETWEEN MARICULTURE AND OTHER STAKEHOLDERS

There is a need for the mariculture industry and it's regulators to have more structured engagement with other sectors – in particular the industrial sector e.g. fishing, renewable energies and shipping, the domestic sector e.g. recreational and leisure, and the environmental sector e.g. conservation bodies.

KEY ISSUES:

- Timing of engagement is key and early engagement is not currently required, and therefore present barriers to regulatory requirements.
- Possibilities for spatial co-existence, but the scale of current marine spatial planning does not support this.
- Lack of clear evidence of existing marine use.
- Potential mutual benefits of mariculture not fully explored or evidenced.

POSSIBLE SOLUTIONS:

- A clear government mariculture policy that both mariculture developers and other industries contribute to, which could facilitate this and help to reconcile conflict and manage interactions from the outset and across the life of developments.
- Individual mariculture developers should engage with other marine users early in the planning process (i.e. before developers even look to apply for a licence) and, where possible, maintain an open channel of communication with all user groups. This could be aided by for example clear evidence of existing marine usage, including a map of key fishing grounds to avoid conflict from the offset.
- Clear, proactive channels of communication between marine users (industry and recreational stakeholders) and regulators should be created and used during the application, development and farm implementation process. This will facilitate improved engagement and relationships to span the lifetime of mariculture operations and provide strategic level alignment, collaboration and communication with the English Aquaculture leadership group, giving the industry a bigger voice, and help support, guide and represent the industry across a range of issues and sub-sectors.
- Formation of local working groups comprised of individuals from across sectors and marine user groups to represent those with a vested interest could facilitate earlier and ongoing communication between sectors.
- A shift to proactive, finer-scale spatial planning where all stakeholders are consulted could help determine how defined areas are used and could be used in the future (possibly through designation of Allocated Zones for Aquaculture, AZA). A proactive, consultative process (perhaps using the aforementioned working groups) would identify suggested suitable mariculture areas, discount areas used by other stakeholders where conflict would arise, and reduce conflict that occurs through reactive consultation the point of application.

RECOMMENDATIONS

RECOMMENDATION 3

A NEW LICENSING PROCESS FOR MARICULTURE

A new, more streamlined regulatory process, with clearer government guidance for approving new projects, is necessary to support sustainable mariculture developments across England. Some amendments to the current regulatory process may also facilitate uptake, including support for start-up businesses, more flexible and adaptive approaches to innovation, streamlining of licensing, and improved engagement with the mariculture industry and other marine users.

KEY ISSUES:

- The aquaculture industry is relatively small in England and has few dedicated regulatory staff, particularly when compared to fisheries. This disproportionate resourcing is not conducive to the ambitious growth targets, and is spread across multiple agencies – often causing confusion and additional barriers for mariculture development or research applications. Though recent movements away from this silo-approach in regulation to more inclusive licensing teams is encouraging
- Mariculture developers find approval and licensing processes confusing and cumbersome, due to the many statutory authorities/consultees and separate processes involved.
- Mariculture researchers find applications for novel mariculture studies difficult to navigate, amidst the already complex licensing process.

POSSIBLE SOLUTIONS:

- Developing a road map for licensing would be enormously beneficial to aquaculture and mariculture development. Although the application process is (and perhaps should be) slightly different for various species, the group thought the road map could have step-by-step instructions to follow for applying for licensing. Building upon the Cefas 'aquaculture regulatory toolbox', this user-friendly road map should provide the 'routes' that various different farmed species may need to take to get final approval. It could also include additional information for applicants to use to help build rapport with key contacts. It could also include 'route' options for securing research or other funding support.
- Regulators will need to reflect ambitious aquaculture growth targets with sufficient staffing/resources. Consideration of how processes could be handled by one single agency should be part of this resourcing review. **The Coastal Concordat** for England could be built upon to ensure streamlined and coordinated consenting was possible for coastal development in England.
- The mariculture regulatory application process could be reviewed with the developers, and should include built-in flexibility.

PARTICIPATING ORGANISATIONS

CITATION:

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