How the EU Fishing Fleet can Become Low Environmental Impact, Low Carbon and Socially Just

Fishing Opportunities as an Agent of Change

Low Impact Fishers of Europe & Our Fish
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CONTENTS

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SUMMARY

In principle, the allocation of fishing opportunities, e.g. quotas has the potential to ensure environmentally sustainable and socially just fisheries. The EU already has legislation in place for this purpose, but lacks both the political will and a clear mechanism for implementation, and as a result, has so far failed to realise the potential environmental and social benefits.

There is a solution: activating Article 17 of the Common Fisheries Policy to reallocate fishing quotas to the "forgotten" small-scale low-impact fleet, which for historic reasons has had restricted access to quota species. In the context of the climate and biodiversity crises, a just transition to a low-carbon, low-impact EU fishing fleet is critical. This report proposes criteria and processes which the European Commission and member states could harness in order to enable a transition to a more ecologically, socially and economically sustainable fishing industry.

INTRODUCTION

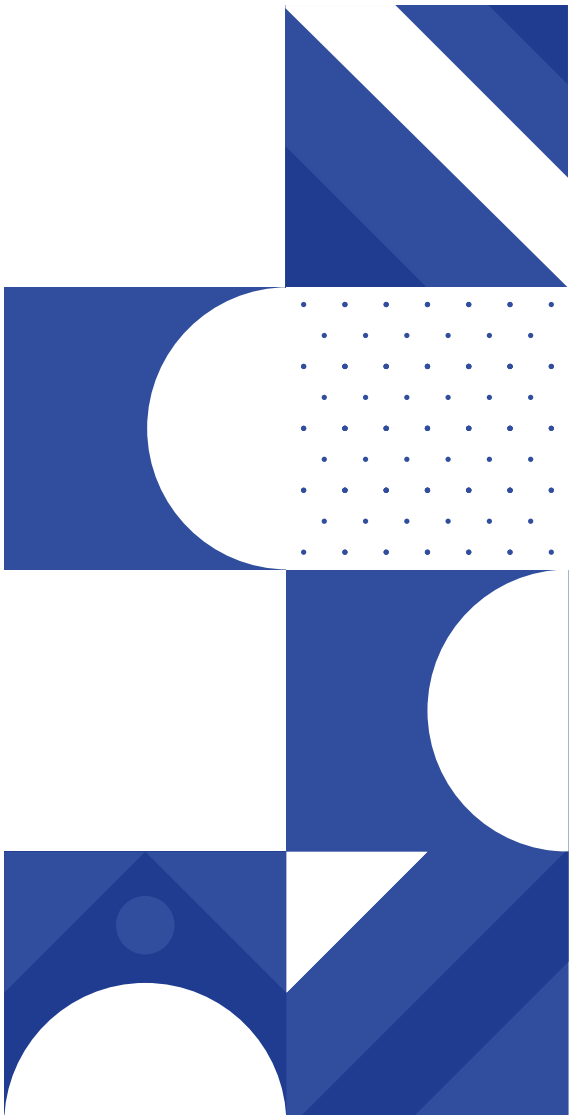
All life on Earth originated in its primordial ocean; ever since the ocean has nurtured life by providing essential services and underpinning essential planetary functions. The ocean – comprised by Earth's saltwater bodies – covers over 70% of the surface and constitutes over 90% of the habitable space on the planet[1], contributes almost half of the annual primary production and produces half of the oxygen.[2] The ocean is a key driver of global weather patterns and through the cycling and sequestration of carbon, the ocean continues to help to stabilise our climate and to make the planet habitable for humans.[3] A healthy ocean full of life is essential to the wellbeing of human societies and our economies. Marine fisheries are crucial to the subsistence and livelihoods of coastal communities around the world[4], underpinning the ocean economy.[5] However, humanity's treatment of the ocean and marine life does not reflect our dependence upon it. Marine ecosystems are under unprecedented pressure from industrial exploitation, overfishing, climate change, habitat degradation and pollution[6], which affect their ability to deliver ecosystem services and to support human life on earth. There is a serious risk that these stressors will overshoot tipping points leading to cascading impacts that could accelerate biodiversity loss and critically impair the functioning of ecosystems, threatening human existence.

In European waters, the health of a high proportion of marine species and habitats is poor or unknown[6]. Of the monitored fish populations that are commercially fished in the North East Atlantic, close to 40% have been overfished during the last ten years; while in the Mediterranean 83% of the stocks analysed are overfished.[7] Across the EU, only 27% of assessed fish populations are deemed to have Good Environmental Status, while the health of 89% of populations remains unknown due to data gaps.[6]

The recovery of some commercially important fish populations has contributed to the improved economic performance of the EU fishing fleet, however this should not overshadow the ongoing decline in the number of active vessels and direct employment within the sector.[8] For decades, the system used to allocate fishing opportunities by the EU Common Fisheries Policy (CFP), along with other CFP mechanisms (including subsidies) has engineered socio-economic change in the fishing sector, with the concentration of fishing opportunities in ever fewer hands, to the detriment of small-scale low impact fishers and their communities. Fishing fleets today are far more technologically efficient than they were in the past, with fewer vessels employing fewer people and with a higher potential impact on the marine environment. It is the European Union's responsibility to ensure that, when it takes action to stop the loss of biodiversity - to end overfishing, to restore marine health, and deliver on climate commitments – that it also creates a level playing field for the different actors to compete fairly for fishing opportunities and to access fishery resources.

Meeting environmental and socio-economic objectives requires a fair transition to a transparent system of fisheries management that restores ocean health, and supports a secure future for fishers. This is what was envisioned when the CFP was reformed in 2013. In particular, Article 17 was devised as an allocation tool for fishing opportunities to incentivise sustainability – by rewarding those who fish in the most sustainable manner with priority access to resources. Although very little has been done to deliver this transition, there has never been a better time, or indeed, a bigger need to make it happen.

This report highlights the lack of progress the EU has made in implementing Article 17 by allocating fishing opportunities in ways that deliver enhanced social and environmental outcomes. We review indicators and criteria that have been proposed and highlight alternative criteria and processes which the European Commission and member states could undertake, that would serve to enable a transition to a more ecologically, socially and economically sustainable fishing industry in the EU.



EU FISHERIES REFORMED

Globally, commercial fisheries and marine resources are commodified and exploited to achieve short-term economic growth, disregarding the social and environmental consequences. This is based on poor political decisions and poorly designed systems for managing and allocating fishing opportunities, which serve to maintain and strengthen the status quo. However, greater environmental, economic, and social outcomes could be realised if fisheries were managed properly and in a more transparent fashion. Part and parcel of managing fisheries properly is having a transparent system that allocates fishing opportunities fairly and objectively, and contributes to fish population and marine ecosystem sustainability.

The European Commission's 2009 Green Paper drew attention to the "current reality of overfishing, fleet overcapacity, heavy subsidies, low economic resilience and decline in the volume of fish caught by European fishermen." This led to a rebalancing of social, economic and environmental sustainability objectives through the reform of the CFP. The European Commission's Green Paper also identified the unclear and conflicting objectives of the CFP, and the lack of safeguards to prevent short-term economic growth from dominating in practice.[9] It was proposed that this be addressed through the reform of the CFP.

It was proposed that a European-wide system of "transferable fishing concessions" be established, however this was rejected by most member states, with the CFP instead gaining a hybrid system of the status quo, based on catch history and a new "potentially revolutionary" system of allocating fishing opportunities.

ARTICLE 17: CRITERIA FOR THE ALLOCATION OF FISHING OPPORTUNITIES BY MEMBER STATES[10]

When allocating the fishing opportunities available to them, as referred to in Article 16, Member States shall use transparent and objective criteria including those of an environmental, social and economic nature. The criteria to be used may include, inter alia, the impact of fishing on the environment, the history of compliance, the contribution to the local economy and historic catch levels. Within the fishing opportunities allocated to them, Member States shall endeavour to provide incentives to fishing vessels deploying selective fishing gear or using fishing techniques with reduced environmental impact, such as reduced energy consumption or habitat damage.

Article 17 requires that member states allocate fishing opportunities using transparent and objective criteria, including those of an environmental, social and economic nature. However, it does not describe a hierarchy or priority system for the criteria. The type of criteria, their effectiveness, and what process is used to introduce and apply them, are left to the discretion of the member states.

Article 17 has been described as revolutionary by one DG Mare official. However, in 2019, in a PECH Committee discussion on "a fair deal for small-scale, artisanal and coastal fishermen in the allocation of fishing opportunities"[11], DG Mare argued that "Article 17 does not give a clear role to the Commission as it does not provide a definition of those criteria. The Commission is therefore not in a position to ensure how they are implemented". This is tantamount to saying that Article 17 is not fit for purpose and designed to fail – the wording of the legislation gives member states a free reign to decide on what criteria to choose and how to apply them, with no controls.

This admission by DG Mare that they are not in a position to ensure how Article 17 is implemented demonstrates that in its current form there are too many loopholes undermining its implementation. This needs to be highlighted in the European Commission's forthcoming 2022 report on the implementation of the CFP, and rectified with strong recommendations made as to how the criteria are defined, and allocating roles and responsibilities to DG Mare and member states on the implementation of Article 17. The Commission can already start this process with the drafting of the Action Plan to Conserve Fisheries Resources and Protect Marine Ecosystems (EU Biodiversity Strategy for 2030).

Despite the loopholes, in July 2021, the Tribunal of Montpellier in France ruled in favour of a 2017 challenge bought by the Professional Union of Small-scale Low Impact Fishers of the Occitan Region (SPMO) to the way Bluefin tuna quota was allocated.[12] The judgement ruled that the basis on which the government decided how to allocate the sub-quota infringes Article 17 of the CFP, being neither transparent nor objective. The French government remains silent on the issue but is expected to appeal the judgement. The question subsequently arises: if the allocation system infringes Article 17 in France, in how many other countries is this the case?

FISHING OPPORTUNITIES AS AN AGENT OF CHANGE

The way fishing opportunities are allocated determines who has the right to fish and to benefit from the fisheries commons. EU legislation defines fishing opportunities as a "quantified legal entitlement to fish, expressed in terms of catches and/or fishing effort"[13]. They are managed through quota management (QM) and effort management (EM): Quota Management imposes output limits in terms of caught weight, or number of fish, while Effort Management imposes input controls, such as restrictions on access to areas, days at sea, engine power etc.[14] The way that fishing opportunities are implemented varies considerably across member states.[15]

The core objectives of managing fishing opportunities include preventing overfishing, managing conflicts and promoting responsible utilisation of natural resources.[14] Decisions on who gets to fish also have broad implications: prioritising fishing opportunities for one fleet segment, one interest group or one region over another, can directly influence the structure and viability of fleets with socio-economic impacts for coastal communities, as well as the types of fishing activities allowed to take place with environmental implications.[14] The decision-making process around who gets these opportunities is therefore exposed to lobbying pressure from differing interests, which can result in socio-economic inequalities and environmental degradation.[16] Likewise, in instances where opportunities are transferable, fishing opportunities may concentrate in the hands of wealthier segments of the industry, entrenching inequalities in the way that different fleet segments are treated within the framework of fisheries management.[14]

The way fishing opportunities are distributed is fundamental in shaping a fisheries management system, and has direct socio-economic and environmental implications. Criteria-based allocation systems for fishing opportunities can be tailored to achieve specific benefits – with the potential to create a race to the top to incentivise positive environmental and social outcomes.[17]

The opportunity to deliver environmental benefits through the allocation of fishing opportunities was one of the driving forces behind the genesis of Article 17. For instance, Article 17 specifically directs member states to use fishing opportunities to deliver direct environmental benefits by deploying selective fishing gear or by using fishing techniques with reduced environmental impact. Therefore, if implemented, Article 17 could be a key tool for the enforcement of an ecosystem-based approach to fisheries management.

The need to ensure that the rights of small-scale fishers are respected was another driving force behind Article 17, a need that has also been highlighted by United Nations Sustainable Development Goal 14b, which calls for the provision of "access of small-scale artisanal fishers to marine resources and markets"[18]. Despite these obligations, a status quo of distributive injustice has been maintained in many EU member states, impacting the overall resilience of fishing communities, with some researchers suggesting that the only way to tackle them is to overhaul the existing policies and governance systems.

A WASTED OPPORTUNITY FOR FISHING OPPORTUNITIES

Eight years on from the adoption of the reformed Common Fisheries Policy the EU has failed to meet the legal deadlines to end overfishing by 2020, and end discarding by 2019, of managed fish stocks.[19] These deadlines were further underpinned by its international legal commitments to end overfishing under the United Nations Convention on the Law of the Sea[20], the United Nations Sustainable Development Goals[18] and the Marine Strategy Framework Directive.[21] Given the failure of the EU to implement the two flagship objectives of the reform, it is sadly unsurprising that little progress has been made in implementing Article 17. Several assessments carried out since the reform highlight the poor progress that the EU has made in reshaping the allocation of fishing opportunities, with all drawing similar conclusions.

According to the EU's Scientific, Technical and Economic Committee for Fisheries (STECF) in its recent analysis of the social dimension of the CFP[22], two requests for information by the European Commission to the member states in 2016 and 2020 yielded responses from only 16 out of 23 member states. Not only is there a legally binding obligation on member states to implement Article 17, in so far as using *'transparent and objective criteria including those of an environmental, social and economic nature'*, member states also have an obligation to inform the European Commission of their allocation methods under Article 16 (6) of the CFP. Of the responses STECF received, several responses were of limited use as they contained only broad descriptions of the national fishing fleet or simply emphasised the intent of their allocations without outlining the *'transparent and objective criteria'*.[22]

We believe that the translation of the original article "shall use" into other languages may have weakened the legally binding imperative of this element of Article 17 (e.g. In German, "shall" has been translated to be suggestive rather than imperative). The adoption of Article 17 into national law, particularly regarding the legally binding terminology, should therefore be reviewed and updated where necessary.

Despite member states saying that they do take social, economic and environmental criteria into account[15], STECF has concluded that member states in general have not drawn a direct line between Article 17 and their national quota allocation systems.[22] According to STECF "there are no recorded instances of member states changing their allocations in 2014 when the reformed CFP and Article 17 came into force, suggesting a minor or non-existent impact." For example, Ireland is the only member state that is reported to cite Article 17 in its management rules and descriptions.[22]

Despite member states' failure to implement Article 17, there are examples of them using social and environmental criteria in the allocation of fishing opportunities, however there is no obvious trend in the use of social criteria based on geography, type of fishing opportunity, or political culture.[22] In many instances member states have used different approaches to achieve the same goals. One general trend is that the allocation of fishing opportunities in pelagic and industrial fisheries appears to be based primarily on economic criteria, while environmental criteria appear to be more commonly used in demersal fisheries.[15]

Despite the broad variation in approaches adopted by MS, STECF identified some general trends:[22]

- **The historical catch criterion is the primary means of allocating fishing opportunities in every member state;**
- In some systems, a criterion (or multiple criteria) is used to separate the allocations of fishing opportunities for the small-scale fleet;
- Therefore, most systems cannot be described as incentive-based (for environmental and social benefits) because historical landings and vessel size are relatively fixed properties;
- Social criteria are more commonly applied when 'new' quota is introduced (e.g. swaps with other member states in Spain, top-ups from the landings obligation in the UK) or when a fishing opportunity becomes more abundant (e.g. bluefin tuna quota in France, Spain and Malta);
- There is a trend towards systems such as individual transferable quotas, where no environmental or social criteria are considered in transferability;
- There is a trade-off between the duration of fishing opportunities (i.e. the security of holdings) and the use of incentive-based allocations, as well as use of social criteria more broadly;
- Newer systems (e.g. Finland, Swedish demersal fisheries) show evidence of learning from older systems (e.g. Netherlands), for example pairing individual transferable quotas with limits to duration and sectioning off a quota reserve for new entrants.

Where EU member states have reported criteria that could be defined as social criteria such as historical catches or vessel length, these criteria themselves existed before the reform. **"Even a fully comprehensive analysis would likely find high legal compliance with Article 17, but without the transformational change to EU fisheries that was anticipated when Article 17 was adopted."**[22]

In the words of former Environment, Maritime Affairs and Fisheries Commissioner Karmenu Vella "There is no evidence indicating that member states do not use social, economic and environmental criteria when allocating quota", which also implies that there is no evidence that they do.[23]

Assessments by the European Parliament[15] and the New Economics Foundation[14] also found that historical catch records are the most common means of allocating fishing opportunities in every member state. While historical catch records could be considered as a social criterion if catch history is used to protect traditional fishers, in practice the system is open to abuse depending on the historical reference period used and whether it is a fixed or rolling reference period.[15] Depending how far back it goes, a longer reference period may benefit small scale coastal fishers who traditionally dominated EU fisheries; while a shorter fixed reference period is likely to benefit elements of the sector that developed the greatest fishing capacity post industrialisation. In this way the use of historical catch records may entrench the status quo rather than promoting improved environmental and socio-economic outcomes.

The use of historical catch records in many ways encapsulates both the failure of member states to adhere to the spirit of Article 17 and the absence of clear guidance and a strong legal instrument to compel them to improve implementation. This was highlighted in a UK court ruling on a legal case about Article 17 taken by Greenpeace. The judge ruled that "Whilst Article 17 obliges each member state to include criteria of an environmental, social and economic nature, on the face of it, it is silent as to the weight to be ascribed to those criteria in the allocation process." This lack of weight between the criteria, makes it easy for member states to ignore Article 17, or give most weight to already applied criteria (historical catches e.g.).

In response to a survey carried out on behalf of the European Parliament, member states highlighted a number of factors that were constraints on their ability to adopt criteria-based allocation. The biggest constraint identified was stakeholders' reluctance; followed by legal constraints, capacity, and finally political constraints. Member states also admitted that they were having difficulties in implementing criteria, particularly environmental criteria aimed at reducing energy consumption, minimizing discards and bycatch, and minimising impact on the marine environment.[15]

Analysis carried out by the New Economics Foundation[14] identified several key issues in how fishing opportunities have been allocated in Europe, with a focus on Article 17 compliance:

- The allocation of fishing opportunities often do not account for wider social and environmental outcomes;
- There is frequently a lack of transparency and accountability surrounding the method of allocation and the final recipients of allocations;
- New fishers face additional barriers to entry, with few member states implementing measures to accommodate them;
- Equity concerns, particularly the needs of small-scale fishers, are often not taken into account in allocation;
- Most fisheries operate at a significant public financial expense (particularly with costs of research and management as well as implicit fuel subsidies) but few costs are recovered;
- In a few member states there is a risk of lost public control over allocation where fishing opportunities have been gradually privatised.

In 2020, a case study carried out by Said et al[16] of four EU member states attempted to provide insights into the ongoing issues with allocation impacting on the sustainability of small-scale fisheries (SSF). The authors questioned whether problems of access for SSF could be attributed exclusively to a lack of political will, suggesting that the lack of a clear framework within Article 17 is also a constraint on the evolution of inclusive policies. The CFPs current list of social indicators are 'employment generated', 'contribution to local economy' and 'social corporate responsibility', none of which are directly nor explicitly linked to social justice principles. The authors called for the CFP to specify more explicitly the social goals of the protection of the small-scale fleet, and to determine the tools to achieve them, such as a disclosed set of social criteria indicators embedded in the principles of equity and justice.

The New Economics Foundation[14] analysed the fishing opportunities allocation in line with the CFP's social and economic objectives of eleven EU member states[24] and the UK. These objectives are not specifically and clearly defined in the CFP, so the authors developed an overarching framework of 12 foundational objectives and indicators to assess the performance of the countries and made recommendations to improve the sustainability of how fishing opportunities are allocated.[14]

Their approach was based on the following principles:

1. Marine fish stocks are fundamentally a public resource.

2. The distribution of fishing rights needs to include social and environmental objectives.

3. Fishers and stakeholders need more control over their fishing opportunities.

4. To be effective, management must work for all actors involved.

The authors identified several best practice examples in the assessed countries which promoted socio-economic outcomes in line with the foundational objectives. Some of these best practices include:[12]

• Denmark and Sweden's differentiated approach in managing small-scale and large-scale fisheries means that they can pursue objectives that respond to the distinct needs of these two sectors.

• Sweden's interactive and engaging stakeholder processes are conducive to fairer outcomes in decision-making, better design and a greater legitimacy of regulations.

• Spain's criteria-based allocation in some of its fisheries are exemplary for incorporating social concerns in the allocation method.

• Denmark's use of a quota validity notice period offers greater security to fishers, whilst retaining ultimate public ownership and control of the resource.

• Belgium's transparency in publishing and disseminating information on the outcomes of its allocation decisions and informing fishers directly.

• Denmark's limited use of a government-controlled quota reserve to provide access to new fishers and with the potential to be expanded for other purposes, such as applying Article 17 criteria.

• The UK's FQA register and Denmark's ITQ and FKA register, which publicly detail the holding of quota shares provide greater transparency in allocation.

• Denmark's online, peer-to-peer quota swapping platform gives individual fishers more control over their quota allocations and provides more flexibility in quota access.

• France's mechanism of recovering a portion of vessel quota back to the state when vessels are exchanged provides a means to populate quota reserves and maintain public control over allocations.

• Ireland's quota management body puts fishers at the centre of allocation decisions and provides a means to respond to timely concerns.

Despite the opportunity to deliver environmental benefits through the allocation of fishing opportunities, much of the dialogue around the implementation of Article 17 has focused on the social and economic aspects of fisheries management. For example, the European Commission has commissioned a report from STECF on the social dimension of the CFP[22], but there has been no request for a report on the environmental dimension of Article 17. Likewise, analysis of implementation has largely ignored the environmental dimension of Article 17.

By using access to fishing opportunities, The EU can create synergies between the social and environmental objectives of Article 17, as many of the low impact fishers identified by member states are also small-scale fishers. There have already been some positive examples of member states incentivising environmental sustainability through the allocation of fishing opportunities. Based on the limited information supplied by member states to the Commission, in combination with additional expert knowledge and preparatory work, STECF found that out of the 23 member states assessed, 12 had no environmental criteria in place, with the remainder allocating fishing opportunities, at least for some fisheries, based on what we would categorise as direct or indirect environmental benefits (Table 1).

NO ENVIRONMENTAL CRITERIA	DIRECT ENVIRONMENTAL CRITERIA	INDIRECT ENVIRONMENTAL CRITERIA
Belgium, Croatia, Cyprus, Denmark, Finland, France, Germany, Latvia, Netherlands, Poland, Portugal, Slovenia	Greece, Ireland, Italy, Lithuania, Malta, Spain, Sweden, Bulgaria	Bulgaria, Estonia, Italy, Romania, UK

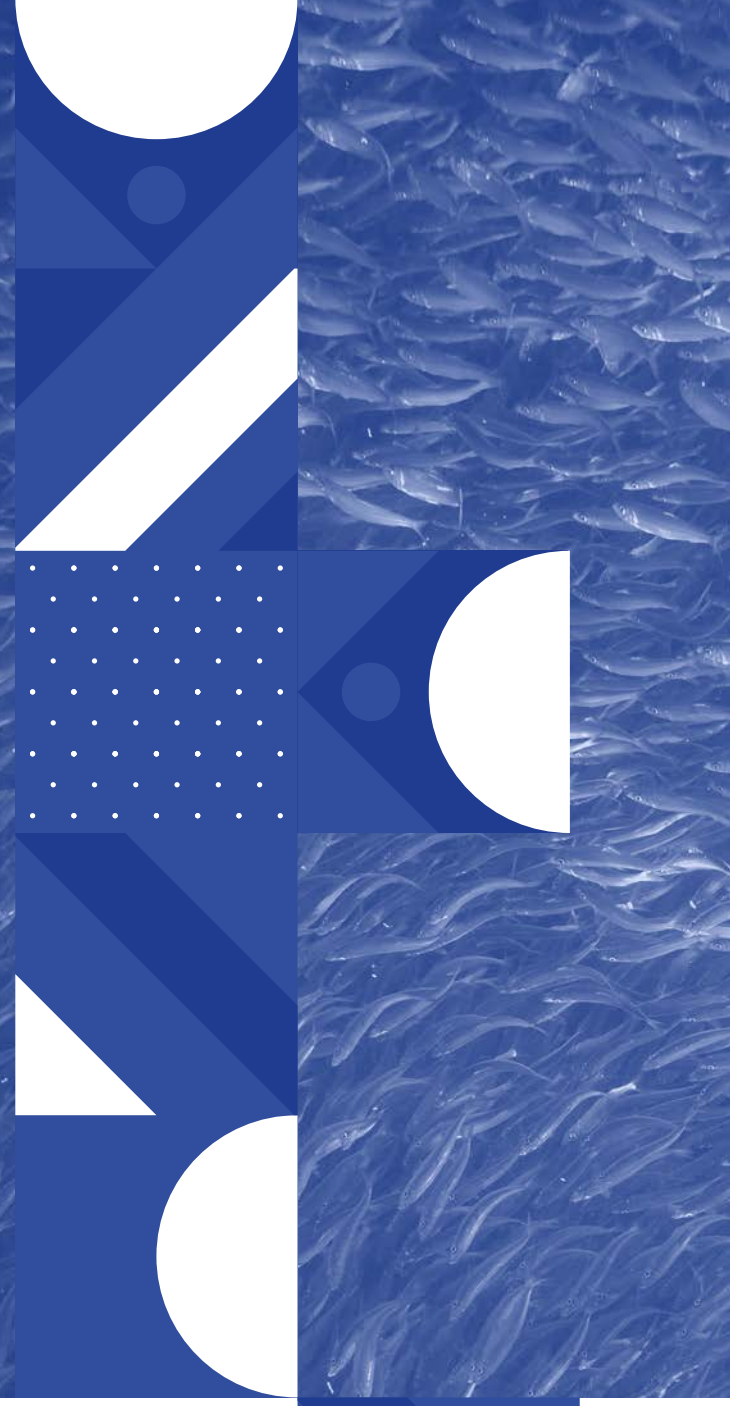
Table 1: Environmental criteria reported by STECF

We are also aware of additional unreported examples of environmental criteria being used to allocate fishing opportunities. In France, the Austral toothfish fisheries had their allocated quotas decreased when accidental catches of protected seabirds increased, and it is reported that some environmental criteria have recently been introduced for a very small fraction of the Danish quotas.[25] However due to a lack of reporting on these cases, it is impossible for us to draw any conclusions on their effectiveness.

Based on reporting to the Commission:[22]

- The use of low-impact fishing gears was the most common type of environmental measure reported by member states;
- There was no clear regional pattern in the use of low-impact gears with member states spread right across the EU (Greece, Ireland, Italy, Lithuania, Malta, Sweden);
- There were just two instances identified of member states using selectivity measures (Spain, Sweden), although it is likely that some member states may have reported technical measures as low-impact gears;
- Bulgaria was particularly innovative in incentivising the use of acoustic devices for repelling cetaceans;
- Several member states also highlighted their allocations to Small Scale Fisheries as a proxy for environmental impact .e.g. Romania allocates quota to vessels without engines as an innovative way to deliver social and climate co-benefits.

Alongside a lack of political will to implement criteria-based allocation, the complexity of fisheries management and stakeholder engagement has complicated attempts to reform.[14] Despite all member states being subject to the same conditions, some have performed better than others when it comes to adopting measures that are consistent with Article 17. Some European and international best practice examples do exist where social and environmental criteria are being implemented, and some of the more progressive examples could be used by the European Commission to promote better practice across all member states.



RECOMMENDATIONS FOR CRITERIA

It is clear that the current situation is unacceptable, not only because overfishing and all of its negative repercussions for communities remain, but also because fisheries are not being managed to minimise their impacts on biodiversity, marine ecosystems and the critical ecosystem services they provide to people. An ecosystem-based approach to fisheries management is even more urgent in the context of the climate crisis, where we need to make ecosystems and communities more resilient, and find gains in climate mitigation wherever possible in order to urgently achieve carbon neutrality. Article 17 is a clear pathway to a fleet-based approach, which can operationalise the tools needed to achieve ecosystem based management.[26]

In light of the European Green Deal[27], the EU Climate Law[28] and pledges to halt the severe loss of biodiversity, the European Commission and member states need to instigate the development of quota allocation systems based on a set of transparent, objective, environmental, social and economic criteria in order to achieve an ambitious transformation of quota allocations.

ENVIRONMENTAL CRITERIA

Fishing has been demonstrated to be the primary impact on marine biodiversity.[29] Moreover, commercial fisheries have the largest physical footprint of any human activity; the physical footprint of fishing activities is four times larger than agriculture, with more than the 70,000 reported industrial fishing vessels fishing at least 55% of the oceans.[29] The northeast Atlantic is one of the most intensively fished regions of all.[6] In Europe, a high proportion of marine species and habitats are of unfavourable or unknown conservation status[6], and around 40% of fish stocks in the North East Atlantic have been overfished for the last ten years, while in the Mediterranean 83% of stocks are overfished.[7] Across the EU only 27% of assessed exploited stocks are deemed to be at Good Environmental Status while the status of 89% of stocks remains unknown due to data gaps.[6]

Marine ecosystems are under unprecedented pressure from overfishing, climate change and pollution[6], impacting their ability to deliver vital ecosystem services. There is a serious risk that these stressors will breach tipping points resulting in cascading impacts that could accelerate biodiversity loss and critically impair the functioning of ecosystems with knock-on impacts on the social and economic well-being of our societies.

Article 2.3 of the Common Fisheries Policy states that:[10]

> *The CFP shall implement the ecosystem-based approach to fisheries management so as to ensure that negative impacts of fishing activities on the marine ecosystem are minimised, and shall endeavour to ensure that aquaculture and fisheries activities avoid the degradation of the marine environment.*

The EU currently relies heavily on setting fishing limits (TACs) for individual fish species, while failing to manage both the impact of these TACs on other species in the food web, and the impact of the fishing method on marine habitats. The Commission and member states have ignored this legal requirement to apply ecosystem-based management (CFP art 2.3), resulting in a corresponding decline in the health of marine ecosystems. It is urgent that the health and services of marine ecosystems be restored. The utilisation of quota allocation based on environmental criteria is a clear, practical way to apply the ecosystem based approach.

Fishing gears can have a multitude of direct, indirect and cumulative negative impacts on marine species, habitats and ecosystem functioning, depending on the characteristics of the gear used, how it is operated, where and when the gear is being used, and the extent of its use.[30] Through technological innovation and behavioural change, the EU fishing sector can substantially decrease its impact on the marine environment, reduce emissions, lower its fuel costs and be more socio-economically sustainable while also delivering enhanced food security.[30] Applying environmental criteria to quota allocation could help to drive a rapid transition to low-impact, fuel-efficient gear.

Following the CFP reform, the European Parliament published a report on criteria for allocating access to fishing in the EU.[15] The authors proposed a set of criteria, indicators, and measurement techniques for member states to implement Article 17, based on a detailed review of the CFP, relevant EU-funded research, the scientific literature, and stakeholder consultations. We recommend the following indicators based on the European Parliament report and further research.

ENVIRONMENTAL INDICATORS

Indicator 1: Large Fish – the proportion of the catch larger than length at maturity (Lm50)*
Indicator 2: Protected Species Index (PSI) – volumes of by-catch of protected, endangered or vulnerable species*
Indicator 3: Marine Seabed Impact - extent of the bottom surface where relevant fishing activity occurred with respect to specific habitats location, and impact on carbon-richness of seabed˘
Indicator 4: Food Web Integrity – health of all elements of the marine food web occur at normal abundance and diversity levels and the retention of their reproductive capacity¯
Indicator 5: Carbon Cycle Impact – volumes of carbon emissions from vessel use, transport and processing of seafood to point of sale; volumes of carbon extracted directly from the fish, and estimated impact on carbon storage through interruption of functional, behavioural and trophic interactions .¯

Table 2: Recommended Environmental Criteria for quota allocation as per Article 17, based on the European Parliament report (2015) and further research.
*Adopted from the European Parliament report; ˘Adapted from the Parliament report; ¯Additional indicator

Justification for the addition of Indicator 4:

The EU has long proclaimed its aims for an ecosystem-based management approach, and to achieve Good Environmental Status, of the marine environment (CFP and MSFD), however the majority of fishing limits aim to maximise extraction of the most commercially profitable fish, and to apply lower sustainability standards for others . Quota reallocation should allow for the conservation of all species and food web integrity, so that ecosystem boundaries are not breached.

Justification for the addition of Indicator 5:

The true carbon footprint of seafood is currently not measured or managed in the EU, despite large quantities of greenhouse gas emissions being generated throughout the supply chain, carbon emissions from disturbance of the seafloor's carbon stores, or from the extraction of carbon directly through removal of fish. With the alarming pace and worsening intensity of climate change impacts , and the EU's commitment to carbon neutrality legalised in the Climate Law[28], it is both critical and urgent that the climate impact of fishing activities be measured and minimised as far as possible.

SOCIAL AND ECONOMIC CRITERIA

Globally, small-scale fisheries (SSF) account for over 90% of the commercial fishers (over 100 million people), as well as nearly half (46%) of the total global fish catch.[29] The small-scale fishing sector in the EU comprises around 75% of the vessels in the EU commercial fleet[34], and in general is characterised by micro and nano enterprises (annual turnover 50-500,000 Euro, with 1-3 employees), mostly operating vessels smaller than 12m in inshore waters.[35] In Europe, small-scale fisheries contribute to society by creating direct employment, value adding in coastal communities such as fish processing or indirect positive effects on the tourist sector[34], as well as maintaining the identity, culture and the wellbeing of coastal communities.[36] In fact, the STECF found that despite the number of active SSCF vessels declining[8], they are more economically efficient than the Large Scale Fleet (LSF), with productivity twice as high in terms of the use of capital and labour, probably derived from shorter value chains and a larger focus on quality and high-value species.[22]

The European Parliament report on criteria for allocating access to fishing in the EU[15] was also supported by two detailed case studies of the Bluefin tuna fisheries in Spain and Danish Coastal Fisheries. The authors concluded that both case studies supported the proposal of introducing differentiated management regimes, one for large-scale fleets and another for small-scale fleets; they believe this would allow for different segments of the fishing industry to be managed according to their own context and policy makers priorities. The Low Impact Fishers of Europe and Our Fish would support a tailored approach to Article 17 criteria, but given the variability in socio-economic conditions and environmental impacts across the fishing fleet, differentiated management regimes should be implemented based on fishing gear and length of vessel. The other recommendation made by the authors of the European Parliament report was that rights-based management should be based on detailed management objectives and extensive all-inclusive stakeholder consultation.

SOCIAL ALLOCATION CRITERIA*

Indicator 1: Fisheries dependency - Number of direct and indirect (at the NUTS3 level) employments per ton of fish produced ˇ
Indicator 2: Revenue contribution to local economy – at the NUTS 3 level*
Indicator 3: History of fisheries and environmental compliance – using CFP Point System for the last five years ˇ
Indicator 4: History of compliance - combines fisheries compliance with other behaviour (e.g. tax duties; alignment to ILO standards on crew security and enrolment, etc.) (last five years)*
Indicator 5: Monitoring of at-sea activities for improved transparency – use of CCTV in working spaces and net sensors (Remote Electronic Monitoring (REM)) on vessels larger than 12 metres and small-scale vessels that are at a high risk of breaching the rules of the Common Fisheries Policy ¯

ECONOMIC ALLOCATION CRITERIA*

Indicator 1: Catch records – proportion in the catches of the targeted stock during the last three years*
Indicator 2: Footprint – proportion of the trips where catches of the targeted stock took place (last three years)*
Indicator 3: Efficiency without capacity enhancing/harmful subsidies - net output of an individual vessel or fleet sector without capacity enhancing/harmful subsidies from national government or the EU ¯

Table 2. Recommended Social and Economic Criteria for quota allocation as per Article 17, based on the European Parliament report (2015) and further research.
*Adopted from the European Parliament report; ˇAdapted from the Parliament report; ¯Additional indicator

Justification for Indicator 3 of Social Allocation Criteria

It is the opinion of the authors that fishing opportunities should be viewed as just that, "an opportunity". We propose that access to this public resource must come with certain conditions and above all else, an expectation of compliance with national and EU laws, including environmental law. The decision to cancel fishing licences or redistribute fishing opportunities in instances where there is evidence of non-compliance with environmental law (such as fishing in closed areas or during spawning closure) should be an option that managers have at their disposal to promote and enforce legal compliance, especially where there have been repeated breaches. This is the norm in other areas of EU policy where food production and environmental protection are closely intermingled, such as the EU Common Agricultural Policy, where compliance with EU environmental standards is a prerequisite for access to public support.[37] The risk of redistributing fishing opportunities would similarly help to create a culture of compliance. National managers could directly incentivise progressive measures that go beyond those existing at an EU level, allowing for greater flexibility and grass roots buy in.

Justification for Indicator 5 of Social Allocation Criteria

Ongoing deficiencies in the monitoring and control of EU fisheries continue to seriously undermine the objectives of the CFP. Without adequate control, even the most basic tools like Total Allowable Catches are not effective at limiting fishing pressure. However, the use of Remote Electronic Monitoring (REM) such as closed-circuit television and sensor data, is a proven, effective monitoring and control tool; being more cost-effective, having superior potential coverage, and offering enhanced registration of fishing activity and location. To date, a lack of buy-in from industry has halted progress to roll-out REM across the EU, so in the absence of mandatory REM, member states should incentivise the implementation of REM through Article 17. This will be particularly useful in overcoming the cultural prejudices that exist in certain countries where REM is suspected by many fishing stakeholders of threatening individual freedoms.

Justification for Indicator 3 of Economic Allocation Criteria

Capacity enhancing or harmful subsidies in fisheries artificially lower operating costs and distort the ocean economy, fuelling destructive and uneconomic fishing practices. They disproportionately benefit larger, polluting and more destructive fishing fleets leaving small-scale low-impact fishers with depleted fishing grounds. Because these subsidies "mask the true costs of fishing"[38], they create a perverse incentive to fish at otherwise uneconomic levels. Capacity enhancing subsidies are harmful to both the environment and the economy by damaging the productivity of fish stocks, and therefore catch rates and profitability.[39] There is now conclusive research that, despite certain claims, capacity-enhancing subsidies are not necessary[40], and that their removal is necessary to ensure the sustainability of marine resources.[41]

THE RACE TO REVERSE THE BIODIVERSITY AND CLIMATE EMERGENCY

The EU must look to harmonise fisheries management, marine conservation and climate action as an urgent priority. It has been made abundantly clear from numerous global reports such as the IPBES 2019 global biodiversity assessment[29], the Second World Ocean Assessment[42], the UNFCCC 1.5 degrees report[43], and the most recent IPBES-IPCC Workshop report of 2021[44], that without radical changes to the way we do things, the effects of biodiversity loss and climate change will result in crucial and potentially irreversible tipping points being exceeded, with dire consequences for people and nature. So it is not a choice of whether we change, but how we do it in the most fair, efficient and effective way.

The EU's Common Fisheries Policy committed to an ecosystem-based approach and an 'integrated approach' to fisheries management, to maintain fisheries 'within ecologically meaningful boundaries'.[45] It states that: it "should contribute to the protection of the marine environment … in particular to the achievement of good environmental status by 2020', and must be 'coherent with the Union environmental legislation".[10] Truly sustainable fisheries management can only be achieved if management approaches integrate environmental, economic and social dimensions.[46] When prescribing environmental measures, policy-makers should look to identify synergies with social and economic criteria. This will help to promote true sustainability while avoiding unintended negative impacts at a fleet and community level. When it comes to identifying synergies, many SSF may already be implementing low impact and fuel efficient fishing methods.[30] Many small-scale fisheries using passive fishing gear have much lower fuel consumption but also less capacity to catch fish. Therefore, it is essential that they can sell their catch for a reasonable price, and for direct sale to be promoted, which maximises profits.

We believe that any environmental criteria and indicators prescribed under Article 17 should be tailored to remedy the dominant negative environmental impacts of all commercial fishing and deliver on the EU's main policy objectives and targets.

The EU Biodiversity Strategy for 2030[47] has prioritised restoring the good environmental status of marine ecosystems as an essential action to address biodiversity loss and affirms that "restored and properly protected marine ecosystems bring substantial health, social and economic benefits to coastal communities and the EU as a whole." Globally bottom trawling and dredging are widely perceived to have significant direct and indirect impacts on marine habitats, species and ecosystem functioning.[48] From a fisheries management perspective, it is also recognised that bottom trawling has contributed to a decline in the mean trophic level of the fish community over time, and consequently that trawling effort therefore needs to be managed to restore the prevalence of commercial fish species.[49] For these reasons, the European Commission has signalled that measures will be introduced to limit the use of fishing gear most harmful to biodiversity, with specific reference to the need to reconcile the use of bottom-contacting fishing gear.

A just transition must bring the EU towards embracing more selective and less damaging fishing techniques. The European Maritime and Fisheries Fund is one vehicle to facilitate behavioural change; however, giving low impact fishers priority access to fishing opportunities is another way to speed up this necessary transition in a fair and equitable way. This can be achieved through quota allocation or spatial access. No fishing gear can be considered totally environmentally benign, and overall environmental impact will be dependent on factors such as the overall fishing pressure, but passive fishing gears such as pot, trap and hook fisheries are generally considered less impactful in comparison to demersal trawls, and in particular to dredges and beam trawls.[30] Likewise bottom seines and purse seines and set nets (or gill nets) are generally considered less damaging than bottom trawling, but need to be managed to minimise unwanted fish or bycatch of protected species.[30]

CASE STUDY ON IMPACT OF BOTTOM TRAWLING: NEPHROPS

Given the EU's commitment to address bottom trawling, this is one area where a just transition to low-impact gears should be prioritised. As an example, the impact of mobile bottom-contacting fishing gears are extensive in the Celtic Seas ecoregion with a clear concentration of activity within the Nephrops (Nephrops norvegicus) fishing grounds.[50] Alongside the direct impacts of bottom trawling on benthic habitats, the high level of bycatch of vulnerable and near threatened elasmobranch species (e.g. spurdog, thorny skate, thornback ray) in the Nephrops trawl fishery is considered by the IUCN as a serious conservation issue in the Celtic Sea[50], and is the primary constraint on the recovery of a number of overexploited fish stocks such as cod and whiting, with serious implications for ecosystem functioning and sustainable fisheries management.[51] Additionally, fuel consumption with bottom trawling gear typically produces more carbon emissions than small-scale fishing.[52] Alternatively, creel fishing for Nephrops has a far lower impact on benthic habitats than trawling, is highly selective, resulting in low levels of bycatch juveniles and non-target species[53,54], and therefore a less impact on the ecosystem overall. Research from Scotland has shown that "there is remarkable similarity in the competitiveness of the larger creel vessels and the trawl fleet segments," with segments of the creel fleet actually outperforming the trawl fishery in regard to the average price per kg of landings and fishing income generated for every £1 of operating cost.[55] Phasing out Nephrops trawling in favour of a well-managed creel fishery would not only deliver a range of positive environmental benefits, allocating more fishing opportunities to small scale inshore fishers would also reduce conflicts between mobile and static gears.

As transitioning away from bottom trawling will not solve all ecological or social impacts in commercial European fishing, it is important to take a flexible approach to criterion, defined on a case by case basis, ensuring that environmental impacts are reduced in all fisheries, and social benefits increased.

THE URGENTLY-NEEDED TRANSITION TO CLIMATE-WISE FISHING

Much attention has been given to the impact of climate change on marine ecosystems and fisheries. Comparatively little attention has been given to the contribution of fisheries to climate change. The marine fishing industry relies heavily on the use of fossils fuels, which typically account for 50-80% of total fishing costs.[56] However emissions from the fishing industry are not all equal – industrial fishing vessels not only use more fuel than low-impact vessels and emit more CO_2 directly (the EU SSF use just 6% of the fuel although they account for 56% of the days at sea)[57], and bottom-trawlers also release enormous amounts of CO_2 from seafloor sediment. Marine sediments combine to form the largest pool of organic carbon on the planet, and when disturbed by bottom trawling, these carbon stores can re-mineralize sedimentary carbon to CO_2, currently estimated to release 1.47 billion tonnes of aqueous CO_2 emissions annually, a volume similar to the global aviation industry. These emissions are likely to increase ocean acidification, reduce the buffering capacity of the ocean and potentially add to atmospheric CO_2.[58] Emissions from the global fishing industry have been rising in recent years, with little coinciding increase in production[59], yet at the same time little has been done to reduce emissions or the sector's dependence on fossil fuels.[53]

Fish and marine vertebrates play a vital role in limiting the impacts of climate change through behavioural, functional and trophic interactions, which leads to the fixing, storing and sequestering of 'blue carbon' in the marine environment.[31] Commercial fisheries impact on the capacity of fish and marine vertebrates to mitigate climate change in this way; it is estimated that since 1950, global marine fisheries have prevented sequestration of 1.74– 2.62 x 10^{-2} Gt Carbon through removal of tuna, mackerel, billfish, and shark species from non-upwelling habitats deeper than 200 m.[31] Additionally, marine habitats such as seagrass beds, kelp forests, and the seafloor store carbon - another critical component of the ocean carbon cycle. While the scientific understanding of this area is rapidly advancing, it is clear that marine ecosystems play an essential role in stabilising the climate, which has to date been poorly reflected in either climate, biodiversity or fisheries policy.

Low-impact and fuel-efficient fishing refers to fishing gears and practices that ensure fishing occurs using a low amount of fuel with low impact on the environment.[30] Alongside the positive climate and biodiversity benefits, reducing fuel use will also deliver positive economic benefits for fishers. Transitioning to low-impact fuel-efficient fishing will include changes to management, behaviour and technology and should be driven through Article 17.

Fishery management efforts aimed at reducing overcapacity and rebuilding stocks will reduce fuel use and emissions by increasing carbon sequestration by marine life and increasing the resilience of fisheries to climate change. At the same time, it will help to reduce the sector's contribution to climate change. Reducing fishing pressure would reduce emissions from the fishing sector by:[60]

(i) *Less emissions of CO_2 by the fishing sector itself* – as fish stocks rebuild less fishing effort is required to find and catch fishing quotas. Therefore, the efficiency of the fishing sector would increase. reducing the sector's emissions.

(ii) *Sequestration of higher levels of CO_2 that more fish in the ocean enables* – larger fish stocks and healthier marine ecosystem have a greater capacity to fulfil the oceans functions as a biological carbon pump and as a carbon sink.

SPATIAL MEASURES

Spatial measures are a commonly used tool in EU fisheries management and marine conservation. Reserved or preferential access to fishing grounds has the capacity to deliver socio-economic and environmental benefits through the redistribution of fishing opportunities. The CFP[10] highlights the need to prioritise access for the small-scale coastal fleets within inshore waters (12 nautical miles), partially to ensure fishing opportunities for the inshore fleet and to restrict fishing pressure in the most sensitive part of Union waters. The use of spatial restrictions as an Article 17 criteria has been reported by Estonia, Ireland and Italy.[22] Ireland has proposed to take this approach further by proposing to ban vessels larger than 18m from trawling in their 6nm zone. The rationale behind this shift in policy again includes the positive socio-economic benefits for the inshore fleet and coastal communities, and the positive environmental benefits associated with reduced fishing pressure and impact.[49] Ireland and the UK also use spatial measures in a more targeted way giving preferential access to low impact fisheries to biologically sensitive fishing grounds in the Dunmore Box and the Mackerel box respectively. This hybrid approach to quota management and effort management provides socio-economic opportunities for the SSF while simultaneously reducing the fishing pressure on biologically sensitive areas such as fish spawning and juvenile nursery grounds.[22]

CASE STUDY ON SPATIAL MEASURES: ØRESUND

Øresund (The Sound) is the strait between Sweden and Denmark, that links the Baltic Sea to the North Sea. It has high biodiversity and species richness, with a range of habitats including eelgrass, rocky reefs and sandy beach habitats, supporting over 100 fish species.[61] The strait has its own cod population, which is the main source of cod recruitment in the Kattegat and Skagerrak. In 1932, Denmark and Sweden banned trawling in Øresund for safety reasons due to high shipping traffic, but less destructive methods of net and line fishing are still allowed.[62] While cod and other fish populations in the adjacent Kattegat have either disappeared or been reduced to very small populations, Øresund has been less affected: Øresund cod contributes almost half of the cod larvae which settles every year in the two adjacent sea areas, and the cod stock in the Sound is well over 100 times more productive than the stock in the Kattegat.[62,63] This substantial increase in fish productivity is due to the absence of trawling.[63]

All environmental indicators mentioned in the European Parliament report can reap additional benefits from criteria for fishing opportunities being applied spatially.

Where Individual Transferable Quota (ITQ) systems exist nationally such as in Denmark, member states may find it easier to introduce spatial access differentiations for the most environmentally and socially beneficial fleets and vessels in the short term (until the lease of the quota expires or reaches a certain point), as opposed to redistributing quotas. In fact, this may also be used in member states where sectors of the fishing fleet have long-held expectations to receive certain percentages of the quota, and it is considered akin to a “property right”.

CONCLUSIONS AND RECOMMENDATIONS

Ensuring a healthy ocean is a crucial component of humanity's response to the climate and biodiversity crisis. In this context, the CFP is critical to realising a transformation of EU fishing to maximise environmental, social and economic benefits that ensure a fair, sustainable and secure future for the coastal communities who depend directly on fisheries, and for all EU citizens who depend on a healthy, functioning ocean.

Article 17 is key: the European Commission should define criteria and a rating system, along with a process for member states to utilise the power of fishing opportunities to restore fish populations to a sustainable level, protect ecosystems and mitigate climate change. To achieve this, the Commission should:

1. Seek input from scientists and stakeholders on environmental and socio-economic criteria for allocating fishing opportunities.

2. Drive a transparent, accountable process to design a set of allocation criteria for fishing opportunities and a rating system for implementation, including:

a. Active engagement of stakeholders in the development of locally adapted allocation criteria;

b. Public listing of the criteria and the process for reallocation;

c. Co-management by establishing quota management committees that include representation from the fishing and NGO sectors, with financial and organisational support for small-scale fishers to participate at local, national and EU level;

d. Public listing of the beneficiaries of allocation.

3. Develop clear guidance for member states to utilise quota allocation to deliver on EU's Climate Law and the European Green Deal.

4. Use the *'Action Plan to conserve fisheries resources and protect marine ecosystems'* and the 2022 CFP implementation report to propose a clear legal instrument which requires member states to implement Article 17, including:

a. Full biodiversity, ecosystem and climate impact assessments of fishing, including the definition of indicators able to quantify each of these impacts;

b. A minimum number of priority criteria to be addressed by the quota reallocation, with specific targets, that require prioritising criteria that maximise multiple social, environmental, and economic benefits e.g., decrease CO2 emissions from vessels and marine life interactions by 40% for all fleets by 2025 ;

c. A process that describes the reallocation of an incrementally increasing share of the Total Allowable Catch (TAC) over a period of eight years, which should include prescribed minimum allocations of fishing opportunities to the small-scale low-impact fishing fleet;

d. Create a mechanism to review the criteria and their application by member states to ensure that allocation based on social, environmental and economic criteria do not have unacceptable unintended impacts, but instead maximise co-benefits.

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