Globe International Commission on Land Use Change and Ecosystems

Draft Report of the GLOBE European Fisheries Policy Workshop

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1. Executive Summary

I. Poor management has led to the overexploitation of many European marine fisheries with 88% of stocks fished above their Maximum Sustainable Yield. Overfishing not only affects individual stocks but also the overall health and resilience of marine ecosystems. Although the potential benefits of appropriate fisheries management are huge, a range of factors including short-term political pressure and a lack of policy coherence have prevented these benefits from being realised.

II. A meeting was held at the European Parliament in Brussels on 23rd March 2010 between European legislators, DG MARE representatives and expert advisors to comment on and further develop recommendations for improved fisheries management proposed by the GLOBE Marine Technical Advisory Group (MTAG) and the UK fishing community. Discussions focused on the forthcoming reform of the European Community's Common Fisheries Policy (CFP).

III. Improving the role of science in decision-making was regarded to be a crucial issue for CFP reform. Scientific recommendations for catch limits must be respected, with precautionary limits taken where data is lacking. Meeting participants agreed on the need to increase financial support for fisheries research and to address the distrust and lack of communication between industry, scientists and managers.

IV. Lack of coherence between environmental and fisheries policy frameworks was considered a failing of European policy. European fisheries policy is currently not subject to the Marine Strategy Directive, under which Marine Protected Areas are implemented. Policy integration is vital for the success of both fisheries and marine environment policy.

V. The benefits and drawbacks of various rights-based management systems were discussed, with particular emphasis on Individual Transferable Quotas (ITQs) and community-based rights. Because of the diversity of European fisheries, these systems should be implemented with clear policy objectives based on local and regional contexts. It was agreed that regionalized management should be a policy priority for CFP reform.

VI. With general agreement that capacity reduction should occur where overcapacity threatens ecological or economic sustainability, discussions in this area focused on ways to mitigate the short-term impacts of such reductions.

VII. There was general agreement that public financial support should be directed at programmes that increase overall sustainability and removed from those that encourage unsustainable fishing practises and promote overfishing. Financial incentives for the adoption of sustainable fishing practices were proposed.

VIII. Developing a culture of compliance in EU waters, for fisheries importing to the EU, and on the high seas was discussed. In EU fisheries, incentives were regarded as critical to achieving compliance. Global cooperation and building capacity in developing countries is needed to effectively combat IUU fishing, an important part of implementing the EU IUU Regulation aimed at eliminating illegally-caught EU fish imports. Compliance in Regional Fisheries Management Organisations (RFMOs) was discussed, with meeting participants supporting the MTAG proposal to mandate the United Nations (UN) to review RFMO performance and use international law to hold non-compliant countries accountable.

IX. Fisheries Partnership Agreements (FPAs) were debated by legislators, experts and representatives from the European Commission with particular regard to their governance and sustainability in third party waters. Issues surrounding financing and licensing of FPAs were discussed, with general support for increasing ship-owner contribution to access payments and strengthening coherence with development policy, but with some disagreement over the Commission's role in licensing. Meeting participants strongly agreed that FPA reform must be steered by clear policy objectives.

X. As within the EU, the role of science in RFMO decision-making was considered by all to be a key area for reform, with a focus on scientific recommendations for catch limits. Important changes to high seas fisheries legislation will be made in 2010, and meeting participants discussed the role of the EU in the development and implementation of these changes.

2. Introduction

Background

Marine ecosystems are extremely important in terms of global food security and provide critical ecosystem services for humankind. The oceans regulate the Earth's temperature, provide nearly half the oxygen in the atmosphere and play a critical role in the major planetary nutrient cycles. However, the oceans are in crisis. Overfishing, driven by poor systems of ocean and coastal governance, open-access to fisheries and inappropriate subsidies, poses a significant threat to fish populations and can jeopardise food security. Destructive fishing methods damage the habitats that many fish depend upon for reproduction and survival. Coastal pollution, mainly arising from the use of agrochemicals and poor waste management, is causing extensive habitat degradation through eutrophication and harmful algal blooms leading to the spread of dead zones and contributing to the loss of coral reefs, one of the most species diverse ecosystems on Earth. The overriding threat of climate change is changing patterns of productivity in the oceans, altering the timing of natural marine cycles and causing coral bleaching and ocean acidification which will have knock-on effects on marine resource supply and fisheries.

Many of the management problems faced by the oceans today can be resolved but they require harnessing the intellectual, political and economic resources of the international community to develop a comprehensive plan of action and to successfully implement it. The level of threat and both the current and predicted costs to humankind demand a response on a scale not previously considered by governments. The GLOBE International Commission on Land Use Change and Ecosystems (ICLUCE), a unique forum bringing together legislators from the G20 and major fishing nations, plus leading international scientists and economists, is an ideal mechanism to deliver such a plan.

The Commission aims to develop a specific political narrative that is consistent with the latest economic and scientific understanding which can be shaped into a set of politically-tested policy measures for international leaders to implement. It provides a platform for constructive dialogue between scientists, economists and legislators in order to develop policy frameworks that strive to prevent the continued destruction of the world's critical ecosystems. The Zoological Society of London (ZSL) is working closely with the GLOBE International Secretariat to produce robust and practical policy briefing papers on critical global conservation issues for both marine and terrestrial ecosystems. The Commission is currently addressing the major issues facing the oceans and developing recommendations to legislators that will operate synergistically to tackle and help resolve these issues

GLOBE's work on the marine environment began in June 2009 at the GLOBE Legislators Forum in Rome. In July 2009, when the ICLUCE met at the UNEP Headquarters in Nairobi, ZSL drafted a policy briefing paper on marine fisheries that was presented to Globe legislators in both written and oral format as a series of presentations by scientific experts. Since this meeting, the Commission's marine scientific advisors from ZSL have focussed on the topic of marine fisheries and revised the draft policy paper that outlines a series of key policy recommendations for specific topics contained within six broad subject areas. The fisheries policy paper currently contains preliminary recommendations for fisheries regulations, Illegal, Unregulated and Unrestricted (IUU) fishing, rights-based fisheries management, overcapacity and subsidies, bycatch and discards, and the role of MPAs as a fisheries management tool (Annex 1).

A Series of Fisheries Policy Workshops

The crucial next step is to determine practical and effective ways to implement policy recommendations as working legislation or recognised codes of practise at a range of levels (international, national, regional and local). It is for this reason that GLOBE and ZSL set up a Marine Technical Advisory Group (MTAG) in August 2009 to provide expertise on marine fisheries to the GLOBE ICLUCE.

The GLOBE MTAG met for a one day workshop on 29th October 2009 to develop preliminary recommendations within four key areas:

- Fisheries Regulation and Management I: Overcapacity and Subsidies
- Fisheries Regulation and Management II: High Seas and RFMO Reform
- Fisheries Regulation and Management III: IUU Fishing and Traceability
- Marine Protected Areas – Implementation of a Global Network (with a focus on High Seas MPAs)

A draft set of implementation recommendations were formulated for each subject during the discussions on the day that were finalized shortly afterwards and sent to GLOBE International legislators and civil servants as a Summary of Recommendations in November 2009 (Annex 2). A full report of the meeting was finalized in January 2010.[1]

On 2nd March 2010, GLOBE held a UK-based workshop in collaboration with the All Party Parliamentary Fisheries Group to comment on and further develop the ZSL/MTAG recommendations. Legislators and key representatives from the UK fishing and processing sectors, governmental fisheries managers, non-governmental organizations and expert scientific advisors developed policy recommendations within three key areas:

- Overcapacity, Rights-based Management and Subsidies
- IUU, Traceability and Compliance
- Marine Protected Areas and Marine Spatial Planning

A fourth topic of Global Fisheries Management with particular reference to Regional Fisheries Management Organizations was also briefly discussed. Stakeholder contributions through presentations and discussion were used to formulate a set of policy recommendations which were finalised by participants shortly after the meeting[1] and are summarized in Annex 3. This report along with ZSL and MTAG recommendations formed the basis for the EU Fisheries Policy Workshop.

A Marine Ecosystems Recovery Strategy

On June 8th 2010 GLOBE legislators will be launching the first part of a *Marine Ecosystems Recovery Strategy* onto the international political agenda through a plenary meeting of GLOBE's International Commission on Land Use Change and Ecosystems (ICLUCE) to be held in London. By collectively increasing the knowledge of a leading group of legislators and facilitating an informed discussion within the world's key legislatures, GLOBE aims to catalyse a step-change in the way politicians legislate for the marine environment. Part one of the *Marine Ecosystems Recovery Strategy* will be developed through contributions from the ZSL policy paper, the Marine Technical Advisory Group, the UK Fisheries Policy Workshop, the EU Fisheries Policy Workshop and a similar meeting held by GLOBE in Japan.

The EU Fisheries Policy Workshop

On 23rd March 2010, GLOBE EU and GLOBE Europe hosted a workshop in the European Parliament to comment on and further develop the ZSL/MTAG and UK Workshop recommendations with a specific focus on reform of the EU Common Fisheries Policy (CFP). The workshop provided an opportunity for discussion between a panel of experts and European legislators consisting of MEPs, members of the European Parliament's fisheries committee and from Europe's main fleet nations. The primary aim of the meeting was to reach consensus on the following key principles for CFP reform:

- Panel 1: Addressing Fleet Overcapacity
- Panel 2: Developing a Culture of Compliance
- Panel 3: The External Dimension

Subjects which addressed the CFP Green Paper topic "Focusing the Decision-making Framework" were discussed by Panel 1. Contributions from experts, European legislators and representatives from the European Commission were summarized in this report shortly following the meeting. Subject headings are based on Sections 4 and 5 of the CFP Green Paper.

[1] Full reports of all GLOBE fisheries workshops available upon request from Elizabeth Clark (Elizabeth.clark@ioz.ac.uk) and Beth Gardiner-Smith (BGardiner-Smith@globeinternational.org)

3. European Fisheries Policy Development

3.1 The Need for Reform

European legislators and expert advisors discussed the main shortcomings of European fisheries management and envisioned the potential beneficial outcomes of successful reform. Although the discussions in this workshop are focused on CFP reform, most of these principles also apply to fisheries management around the world, with similar needs for reform in the Exclusive Economic Zones (EEZs) of many other countries and on the high seas.

Europe's fisheries management has on the whole been poor since the start of the CFP in 1983, with 88% of fish stocks currently fished beyond their Maximum Sustainable Yield (MSY), compared with a global average of 25%.[2] The CFP and its implementation have not succeeded in achieving economically or ecologically sustainable fisheries. European legislators and expert advisors highlighted the following reasons for failure at the meeting:

- In Europe, fisheries and agriculture are dealt with under the Agriculture and Fisheries Title of the TFEU so that fisheries are subject to the same regime as that established for the agricultural sector. While fisheries policy takes account of many environmental concerns, it may be determined without due regard to clear scientific advice. A precautionary ecosystem-based approach to fisheries management has not been widely adopted and many of thesome damaging impacts of fishing (such as by-catch and discards, food web impacts and habitat destruction) have not been adequately addressed.
- Intergovernmental fisheries management exemplifies the "tragedy of the commons" as nations compete for larger shares (quotas) of a shrinking pie (TACs) at the political level.
- Decision-making mechanisms for fisheries management are properly constituted but have often been unintentionally weakened by the good governance strategy of stakeholder participation which has given too great a voice to industrial interests. Government bodies responsible for making management decisions are pressured by fishing industry lobbyists, and often prioritize short term socioeconomic gains over long term economic and ecological sustainability. Scientific advice is, in many cases, ignored or only partly accepted.[3]
- The EU still provides subsidies that increase fleet catching power. These subsidies contribute to fleet overcapacity and overfishing, undermining sustainable fisheries management objectives.[4]

Legislators also highlighted the role of aquaculture in fish production, warning that it will not be a feasible substitute for marine capture fisheries, mainly because of its environmental impacts and high reliance on wild caught fish as feed. Depletion of marine fish populations that make up the higher trophic levels in an ecosystem can have serious ecological and environmental consequences. One example is the increased size and frequency of algal blooms in the Baltic Sea, mainly caused by overfishing of cod and the subsequent effects of this on lower trophic levels. Healthy fish stocks are a key component of healthy marine ecosystems.

The potential benefits of ecosystem-based sustainable management of marine fisheries resources are huge. Greater food security for consumers, higher and more stable incomes for fishers, and healthier marine ecosystems are all realistic outcomes if fisheries are well managed. Achieving these potential benefits requires drastic and enduring reform of current management practices.

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[2] European Commission, *Fishing Opportunities for 2009: Policy Statement from the European Commission*, COM(2008) 331 final (Brussels, 30.5.2008).

[3] Daw & Gray, 2005. *Fisheries science and sustainability in international policy: a study of failure in the European Union's Common Fisheries Policy.* Marine Policy. 29: 189-197

[4] Cappell, R., T. Huntington and G. Macfadyen (2010). '*FIFG 2000-2006 Shadow Evaluation'*. Report to the Pew Environment Group.

Expert advisors contended that Europe faces a serious marine fisheries crisis that requires radical solutions. Minor, incremental reform will not be sufficient to achieve truly sustainable and profitable fisheries. It is time for decision-makers to break away from short-term political pressures and invest in the future through long-term measures.

3.2 Focusing the Decision-making Framework

Decentralized management and co-management

A common theme reiterated throughout the workshop was the complexity of European fisheries and the need to develop a management structure that can tailor management decisions to local or regional situations. For many of the issues concerning fishing in EU waters, legislators agreed that regionalized management should be a policy priority for CFP reform.

The issue of industry co-management was also briefly discussed, with general agreement that increasing stakeholder involvement in management would have a number of benefits including increased compliance. However, experts highlighted the need for checks on industry responsibility to ensure that long term sustainability goals are met both for both target and by-catch species and also for the marine environment.

The knowledge base for fisheries policy

The European Council regularly ignores scientific recommendations on catch limits, setting Total Allowable Catches (TACs) significantly higher than recommended limits[5]. Both legislators and expert advisors agreed that scientific recommendations, including adjustments for uncertainty, should be considered the maximum possible catch limit to be adopted by the Council. The CFP includes a commitment to the precautionary principle and ecosystem-based management. Furthermore, the European Union have ratified the UNCLOS and UNFSA with provisions for ecosystem-based management. These commitments make it unacceptable for the Council to adopt catch limits above scientific recommendations. It was also agreed that greater transparency in the TAC decision-making process was necessary. There should be no mechanisms available for decision makers to collectively exceed the scientific recommendations on TACs during quota negotiations

Legislators agreed on the need to increase financial support for fisheries research that forms the basis of scientific recommendations. Scientific uncertainty and lack of data for many commercially fished species is still a serious problem in need of attention. Legislators proposed the creation of a central, non-governmental research institute to collect fisheries data from around Europe. Expert advisors reiterated the need to apply the Precautionary Principle, as laid out in the proposed CFP reform, to fished stocks where assessment data were lacking (e.g. deep-sea fisheries and many inshore species). Given that only 17 out of a total of 96 fished stocks within Europe are subject to management or recovery plans[6] there is a clear requirement for increased investment in research for those fisheries where management is lacking or undertaken with a high degree of uncertainty. A similar situation of poor availability of data exists with respect to assessment of the environmental impacts of fishing activities by EU vessels both within and outside of EU waters. Furthermore, increased economic analysis of fisheries should be supported to improve economic performance within the fishing industry. Legislators supported the MTAG recommendation to perform economic "stress tests" on severely depleted fisheries that have been closed to allow stock recovery in order to ensure optimum economic performance upon the reopening of the fishery.

Both legislators and expert advisors expressed concern over the distrust and lack of communication between industry, scientists and managers. There was general consensus that increasing

[5] Daw & Gray, 2005. *Fisheries science and sustainability in international policy: a study of failure in the European Union's Common Fisheries Policy.* Marine Policy. 29: 189-197

[6] MRAG, 2009. *A vision for European fisheries – 2012 reform of the EU Common Fisheries Policy*. WWF, Brussels.

communication between the three groups and facilitating collaboration in fisheries research should be a policy priority.

Integrating the CFP into the broader maritime policy context

Legislators considered the separation of fisheries and environmental policy frameworks to be a major failing of European policy. The European Union is committed to an integrated marine programme through the European Marine Strategy Directive, and under present EU law Marine Protected Areas (MPAs) are to be established and administered by Member States under this Directive. However, EU fisheries policy is not subject to the Directive and there is currently no wording in the CFP requiring that fisheries policy comply with the Integrated Maritime Policy. Expert advisors suggested success is dependent upon integration of fisheries and environmental (including MPAs) law and policy.

3.3 Addressing Fleet Overcapacity

Developing rights-based management

It is critical that rights-based fisheries management is steered by clear policy objectives. Legislators expressed optimism regarding the potential of rights-based management schemes such as Individual Transferable Quotas (ITQs), but also concern for the risk of economic consolidation and loss of fishing communities under some ITQ systems (e.g. Iceland). Expert advisors agreed that the diversity of fisheries across Europe will require a range of rights-based management systems (including ITQs and community-based schemes) driven by clear policy objectives. These objectives may be, for example, the maintenance of sustainable small-scale fishing communities, economic efficiency, or capacity reduction.

Addressing the impacts of fleet capacity reduction

There was general agreement that capacity reduction should occur where overcapacity poses a threat to ecological or economic sustainability. Discussions on capacity reduction focused on the need to mitigate negative social impacts of any reductions, making it important to work in conjunction with other agencies providing regional and rural development funding rather than trying to rectify the adverse effects of capacity reduction solely through fisheries policy. GLOBE MTAG members outlined their 'Cap and Restore' proposal for severely depleted fisheries, which includes measures both to assist fishers wishing to leave the industry and to employ fishers in scientific stock assessment or enforcement roles during fishing moratoria. Both expert advisors and legislators agreed upon the importance of mitigating the social impacts of capacity reduction.

Public Financial Support

The role of subsidies in promoting and protecting small-scale fishing fleets in Europe was discussed. One the one hand, it was argued that small-scale fisheries require special treatment to protect them from competition from industrial fisheries. Conversely, it was contended that subsidies to help small-scale fleets modernize can result in their transformation into industrial or semi-industrial fleets with increased fishing power. Legislators agreed that poorly managed small-scale fisheries can contribute to overfishing. Small-scale fishers can target a range of species that have little or no stock assessment and are often not subject to fishing quotas.

Recent expenditure under the Financial Instrument for Fisheries Guidance (FIFG) aimed at reducing fleet capacity may have resulted in an overall increase in fishing power of the European fleet. Taking into account Member State allocation this amounted to a subsidy of €4.9 billion between 2000 and 2006. Whilst the scheme resulted in the scrapping of 6000 vessels, most of these were small inshore vessels from Italy and Greece. Under the scheme 3000 new vessels were built and 8000 modernised. 83% of the measures under FIFG were regarded as having an unclear or negative impact on capacity

reduction whilst only 17% resulted in capacity reduction or other beneficial measures to reduce pressure on fish stocks.[7]

Legislators and expert advisors generally agreed that public financial support should be directed at programmes that increase sustainability, and removed from programmes that increase capacity and promote overfishing. Financial incentives for the adoption of sustainable fishing practices were proposed by legislators and expert advisors as a way to use public financial support to promote sustainability.

3.4 Developing a Culture of Compliance

Traceability starts at sea

Expert advisors presented information on illegal fish imports into the EU, with a focus on West African case studies. Market measures in the EU to limit the importation of illegally-caught fish are weakened by both poor traceability at sea (outside the EU) and inadequate inspection and control in EU ports. Cooperation between coastal states and port states is needed to improve at-sea surveillance and thus strengthen the efficacy of market-based measures in the EU. Illegal fishing is also pervasive on the high seas, and reform of the flag state system may be necessary to improve control of high seas fishing.

Compliance Incentives

Expert advisors described a number of incentives for compliance which may be implemented within the fishing industry or through the seafood retail sector.

A 'critical mass' of agreement from the industry was regarded as necessary for a culture of compliance among fishing operators. Fishermen would be more likely to accept and comply with regulations if they perceived that they would receive the benefits of any stock recovery that resulted. Incentives, such as additional days at sea for vessels using types of low impact fishing gears, could be more effective than regulations imposing technical conservation measures that were not supported by the industry. Furthermore, robust systems of certification for sustainable or legal fish provide a strong financial incentive to fishers through the higher prices they can receive for certified products. Because it can be costly to enter certification schemes (both legal and sustainability certification), assistance to small-scale fishers in the EU and in developing countries will be necessary to enable their participation.

Market legislation that imposes penalties on fish buyers for trading illegal fish or uses financial instruments to penalise fishers and traders that deal in illegally landed fish can effectively reduce illegal fish landings (blackfish) as buyers demand legally-caught fish from fishing operators. This 'buyers and sellers' legislation has worked well in the UK; fishers have benefited through an increase in market-price for fish and the legislation has both discouraged illegal landings and encouraged compliance with fisheries regulations.

Global Cooperation

Illegal fishing is a global problem requiring broad-scale and far-reaching solutions. A number of measures to eliminate or reduce illegal fishing were proposed by expert advisors and supported by legislators.

Expert advisors highlighted the need to improve international coordination and cooperation and further support the work of the International Monitoring, Control and Surveillance (MCS) Network. Support is

[7] Cappell, R., T. Huntington and G. Macfadyen (2010). '*FIFG 2000-2006 Shadow Evaluation'*. Report to the Pew Environment Group.

particularly needed to build human and financial capacity to combat illegal fishing in developing countries. Legislators generally supported the recommendations of GLOBE's MTAG to create a "global marine Interpol", a world-wide intelligence-gathering and enforcement agency for fishing activities. Also proposed was a global record of vessels, involving unique registration codes for individual vessels (for example the International Maritime Organisation (IMO) number) to combat the problem of renaming vessels to avoid traceability.

3.5 The External Dimension: Bilateral Fisheries Partnership Agreements

Representatives from the Directorate-General for Maritime Affairs and Fisheries (DG MARE) joined the workshop for the afternoon sessions focusing on "The External Dimension". Mr. Andrea M. Fontana, Deputy Head of Unit B3 dealing with Bilateral Agreements, gave a short presentation on potential reforms of Fisheries Partnership Agreements (FPAs) that are currently being discussed within the Commission.

Financing Fisheries Partnership Agreements

DG MARE is considering increasing ship owner contribution to access payments, and asked the participants for their position on the issue. Legislators felt that public financing of access agreements constituted a subsidy for the fishing industry, and suggested ship owners should contribute a higher proportion of access payments. Expert advisors agreed, supporting the goal of increasing ship owner contribution from current rates (~25%) to the total cost of access payments. Both legislators and expert advisors felt this form of subsidy led to unfair competition between EU ships and local fleets for fishery resources in third country waters.

Fisheries sector support to third countries through FPAs

DG MARE outlined plans to change the structure of FPAs by de-linking structural support for the fisheries sector from unrestricted access payments. Under the proposed plans, the amount of structural support for each third country would not be determined as a proportion of the access payment, but would instead be adapted to country need. Legislators expressed concern that current sector support is often not spent within the sector due to corruption in the third country or a lack of adequate governance and infrastructure for disbursement of such funds. Legislators also proposed that sector support be offered to all third countries in need, not just those involved in fisheries access agreements with the EU, suggesting this would be more consistent with sustainable development objectives.

DG MARE also intends to complement bilateral agreements by supporting regional cooperation programmes to improve regional fisheries management through Monitoring, Control and Surveillance (MCS) and scientific research and assessment. Legislators proposed that the EU play an active role in MCS of the EU fleet fishing in third country waters. This also ties in with the EU IUU Regulation for seafood imports and the need for capacity building in third countries to enable compliance with these regulations and export to the EU.

The Role of the EU in FPA Licensing

DG MARE is considering reducing or ending its license management role for FPAs, in which it sees itself to be an unnecessary intermediary between member states and third countries. Under this proposal, DG MARE would continue to monitor licensing but would allow member states to deal directly with third countries regarding licensing of member state vessels fishing in third country coastal waters under FPAs. Legislators were generally not in favour of this proposal, suggesting that it contradicted a recent regulation to set up the licensing system and that it would conflict with goals to improve governance in FPAs. Expert advisors concurred with legislators and added that the Commission has had problems in the past with the data provided by member states regarding licensing, and recommended that the Commission should play a stronger rather than a weaker role in

the licensing process. It was suggested that licenses provide an opportunity to incentivise sustainable fishing practices by the EU distant water fleet through preferential licensing to those ships proven to use responsible fishing practices and maintain a good record of reporting catches.

Policy Coherence for FPAs

Legislators and expert advisors strongly supported an improvement in policy coherence in the matter of bilateral FPAs. Development of clear policy objectives for FPAs and cooperation with other Directorate-Generals to ensure EU policy coherence were two priority areas for improvement of the CFP raised by legislators and expert advisors.

Legislators also asked whether DG MARE was the most appropriate agency to implement sector support and governance agreements with developing third countries, suggesting the Directorate-General for Development (DG DEV) as an alternative. Legislators suggested that DG DEV may not support some aspects of FPAs, such as the negative impact that they can have on local fishing fleets and livelihoods. Therefore, legislators would like to see stronger collaboration between DG MARE and DG DEV. Expert advisors concurred, pointing to the EU's legal obligation under the Treaty of Lisbon to support third country development. Mr. Fontana agreed that collaboration between DG MARE and other Directorates-General was an important part of current discussions on the reform of bilateral fisheries agreements.

Legislators stressed the importance of defining clear and specific policy objectives for FPAs to steer reforms and improve fisheries management. While DG MARE's general policy objectives include the promotion of responsible and sustainable fishing by the EU distant water fleet, specific objectives (including, for example, a clear definition of responsible and sustainable fishing) have not yet been developed. Legislators strongly supported the development of these more specific policy objectives. Expert advisors agreed on the importance of clear policy objectives, and suggested that an ecosystem-based approach to fisheries management as required under the UN Fish Stocks Agreement be included.

3.6 The External Dimension: High Seas Fisheries Management

.For the second part of the External Dimension session Mr. Roberto Cesari, Head of Sector Regional Fisheries Management Organizations (RFMOs) at DG MARE, gave a short presentation on EU work to improve performance of sector RFMOs.

The Role of Science in RFMOs

DG MARE considers the role of science in RFMO decision-making to be a key area for reform. It sees a need to invest in scientific research and to improve decision-making to ensure scientific advice is more closely followed. Legislators agreed that a lack of respect for scientific advice by decision-makers in RFMOs is an issue of serious concern, and supported increasing funding and support for scientific research and assessment on the high seas. Legislators and expert advisors highlighted examples of RFMO decision-makers setting TACs significantly higher than the scientific recommendations. Legislators supported the recommendation of MTAG to expand RFMO mandates to include ecosystem-based management rather than management based primarily on target fisheries or fish stocks. It was suggested that involving RFMO member state Environment Ministries or Departments in RFMO operations would help to promote better environmental performance.

Improving Compliance in RFMOs

DG MARE considers compliance to be a key area for improvement. In his presentation, Mr. Cesari highlighted problems with developing country compliance and the need to build human and financial capacity in-country to enable compliance. He also reiterated the challenges of implementing the new EU IUU Regulation, but considered it to be a good opportunity to use market-based measures to

reduce high seas illegal fishing. Legislators agreed that compliance was a serious issue, and raised the possibility of establishing an agency to oversee, appraise and sanction RFMOs. Mr. Cesari suggested individual countries should be held accountable, rather than RFMOs. Legislators generally supported the proposal of MTAG to mandate the UN to review RFMO performance and use international law (UNFSA and ITLOS) to hold countries accountable. Expert advisors called attention to further compliance issues such as non-contracting parties and unregulated deep sea fishing in violation of the UNFSA. It was pointed out that not only developing countries, but also developed countries (including the EU) contribute to high seas noncompliance.

The Role of the EU in High Seas Fisheries Management

Implementation of international high seas fisheries legislation has not been successful. The EU plays a significant role in high seas fisheries, both as fishing nations and as political negotiators at the UN. Legislators support EU efforts to improve implementation at UN negotiations in 2010, especially with regard to the deep sea fisheries access regime. It will be critical for the EU to promote mechanisms to improve the role of science in decision-making and improve compliance in high seas fisheries management.

4. The Next Steps: Priorities for Action

A number of key recommendations for CFP reform were made during the meeting. It is extremely important that these points are followed up and pursued by legislators in the ongoing process within the European Parliament to significantly change the CFP so that fisheries decline is halted and the potential substantial benefits of well-managed sustainable fisheries can be realised both within Europe and in the waters of it trading partners.

An overarching point that was made repeatedly is the need for clear policy objectives that are focussed on achieving both economic and environmental sustainability for European fisheries. Clarity of purpose will help to dictate the objectives and requirements for a range of subjects within the CFP such as compliance, the use of subsidies, management approaches and fisheries research.

Scientific research for fisheries monitoring and stock assessment is still a priority that needs significant long-term investment if we are to reach a stage where the vast majority of marine species harvested in European waters have been adequately assessed and allocated quotas. Moreover, scientific recommendations for TACs of well monitored stocks must be respected by all members of the EC. Where research is lacking and accurate recommendations are not possible the precautionary approach should be followed in setting of catch limits. The current practise of setting catch limits above recommended levels must cease and steps should be taken so that it is not an option during the final decision making process.

The existing divide and distrust between scientists and industry is a major issue that needs to be addressed in Europe if sustainable management is to be achieved. Increased collaboration between fishers, managers and research scientists in many aspects of fisheries management will help to build up trust and understanding. Further investment in fisheries partnership schemes and increased use of fishers' knowledge in management is recommended.

The increased use of rights-based management where appropriate and devolution of fisheries management to the more regional level are two approaches that the reform should incorporate. However, both approaches need to be tailored to the type of fishery and the local or regional context to ensure they are practical and workable in that location.

The use of incentives to enable transition to more sustainable fishing practises and management approaches or to comply with existing regulations is a key factor that should be fully utilised to enable European fisheries reform. In addition there should be a move away from using publicly funded subsidies that promote overfishing and other unsustainable practises and a switch those that encourage best practise and sustainable fisheries.

A culture of compliance is not only important within European waters but also in the EEZs of third party countries and on the high seas. Achieving compliance in external waters requires a concerted effort to significantly improve collaboration and coordination between nations to enforce existing fisheries regulations and eliminate IUU fishing. Supporting existing international MCS initiatives and providing both technical and logistical capacity for third party countries to effectively manage their own fisheries are key priorities for CFP reform. The EU should take a strong managerial and supportive role in bilateral FPAs to help build third party capacity and reduce unsustainable fishing. Building fisheries sustainability externally will secure trade and address a number of environmental, fisheries and development issues in third party nations.

It is also important that the EU continues to take an active role in RFMO reform and high seas fishery management, promoting the use of ecosystem-based management and the adherence to scientific recommendations in decision making for RFMO catch limits.

Annex 1: ZSL and GLOBE ICLUCE Working Paper on Marine Fisheries

Marine ecosystems provide a wide range of services to human society[1]. Among these, marine capture fisheries are of enormous economic and social importance. However, marine fish catches have stagnated or are declining, with 80% of stocks either fully or overexploited[2]. Developing and implementing management systems for the sustainable extraction of marine fishery resources requires policy reform at global, regional, national, and also local levels.

Marine capture fisheries have exceptional value as a source of food, livelihoods and income for millions of people across the globe. Fish provide more than 2.9 billion people with at least 15% of their average per capita animal protein intake[2]. Nearly 44 million people are engaged in the primary production of fish worldwide[2]. Most marine fishers work in small-scale fisheries, mainly in developing countries[3]. These countries have contributed more than half of total capture fish production since 1990 and more than two-thirds in 2005[4]. Approximately 170 million people are involved in the fishing industry and 520 million are potentially dependent on the sector[2]. Annual global fish trade is worth $92 billion[2], while the entire seafood industry is valued at $200 billion.

Depletion of fishery resources is primarily driven by the open-access nature of fisheries, which results in excess capacity, economic waste and the widespread use of unsustainable fishing practices[5]. Growing global demand for seafood, globalization of fish trade and rising fish prices are also powerful drivers of overfishing[6]. Both chronic overfishing and associated habitat loss have a highly negative effect on the availability of remaining marine resources, threatening both the livelihoods of producers and the food security of consumers worldwide.

Sustainable management of fisheries has failed in many parts of the world as a result of ill-functioning institutions and a lack of political will amongst states to implement fisheries regulations at national or international levels[2,7]. Poor management of marine fisheries means that the difference between the potential and actual economic benefit is roughly $50 billion per annum[4].

Marine capture fisheries support a global industry that we cannot afford to lose. Some fishing communities have already suffered due to collapse of fish stocks such as Newfoundland cod[8], while others have thrived due to the sustainable yields and high economic values of catches resulting from successful fisheries management[9]. **The long-term survival and success of the global marine fishing sector depends on a sustainable ecosystem-based approach to fisheries management.**

In contrast, aquaculture production continues to increase globally, contributing 51.7 million tonnes in 2006 with a value of $78.8 billion. However, intensive aquaculture systems that require the use of fish-based feed inputs increase demand on other fish species and may reduce overall protein available for human consumption[10]. Policy recommendations for sustainable aquaculture as a viable alternative to capture fisheries will be provided in a subsequent document and included in a broader marine recovery package.

Overfishing is already causing severe economic hardship and ecological damage, and the problems will only increase unless sustainable fisheries management programmes are implemented. **The root causes of overfishing must be addressed at all levels of governance.** At the international level, urgent reform of Regional Fisheries Management Organizations (RFMOs) is required so they cover all oceans and function effectively. At the national and provincial levels, a range of tools to manage offshore and inshore fisheries must be applied to protect the livelihoods of millions of people in the coastal zone. Fisheries management must be both biologically and economically sustainable while also integrating ecological, economic and social issues and their drivers.

This paper outlines a series of high-level policy recommendations to improve the biological and economic sustainability of marine capture fisheries. These recommendations focus on six aspects of fisheries reform and management: Overcapacity and Subsidies, Regulation of Fisheries, Marine Protected Areas, IUU Fishing, Rights-based Management and Bycatch and Discards.

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Overcapacity in Marine Fisheries

Current fishing capacity is currently more than twice the level required to capture marine fish[1,2,3]. This overcapacity causes "overfishing, the degradation of marine fisheries resources, the decline of food production potential, and significant economic waste"[4].

Overcapacity is a result of competition between fishers in open-access fisheries and is exacerbated by subsidies that artificially increase the profitability of fishing[5,6]. Each year, governments spend about $20 billion on these harmful subsidies[7].

Conventional fisheries management methods aimed at stock conservation do not solve the problem of overcapacity because they do not change the economic incentives faced by fishers[5]. For example, in Total Allowable Catch (TAC) systems fishers still compete for their share of the total catch, resulting in a "race for the fish"[7]. Vessel buyback programs aimed at reducing overcapacity are only a temporary fix, because they fail to address the root causes of overcapacity[8].

When properly enforced and scientifically monitored, rights-based management systems can eliminate unhealthy competition between fishers, halting the growth of overcapacity and enabling fishers and society to maximize profits and benefits from their fishery. Catch rights in fisheries can further contribute to sustainable management by creating the economic incentive to conserve fish stocks. When catch rights are transferable, market forces promote economic efficiency, eliminating redundant capacity[5].

Key Policy Recommendations:

The following measures aim to provide economic security for fishers while reducing overfishing, thereby encouraging economic and environmental sustainability.

Where feasible, establish a rights-based management system to create incentives for economically efficient fishing. Rights-based management in industrial fisheries may take the form of individual catch rights, while in artisanal fisheries it may include territorial or community-based rights. National governments should provide the policy framework to enable rights-based management for both industrial and small-scale fisheries.

Where feasible, make catch rights tradable. A good example of tradable catch rights is the Individual Transferable Quota (ITQ) system. Tradable catch rights for industrial fisheries should be implemented in coastal waters by states and on the high seas by RFMOs.

Eliminate subsidies that promote overcapacity and overfishing, such as boat construction and modernization programs, port construction and renovation programs, fishery support services, tax exemptions and fuel subsidies.

Continue subsidies that promote sustainability, such as monitoring, control and surveillance programmes, stock assessment and other fisheries research, and management of Marine Protected Areas. Government purchase of excess capacity may be included with caution, as their success depends heavily on implementation methods[1].

Address subsidy reform through multilateral, enforceable agreements. This could be achieved through international institutions such as the World Trade Organization or RFMOs.

Use the resources saved by eliminating harmful subsidies to implement transitional measures to mitigate impacts of capacity reduction such as employment losses. Transitional measures may include occupational retraining or financial compensation.

Implement specific measures to protect the rights of small-scale and artisanal fishers because of their importance to global food security and livelihoods.

References: (1) Asche, F. et al. (2008) *Marine Policy* 32: 920-927. **(2)** Sumaila, U.R. and D. Pauly (2007) *Nature* 450: 945. **(3)** World Bank and FAO (2009) *The Sunken Billions. The Economic Justification for Fisheries Reform*. The World Bank, Washington DC. **(4)** FAO (1999) *International Plan of Action for the Management of Fishing Capacity.* FAO, Rome. **(5)** FAO (2008) *Technical Guidelines for Responsible Fisheries. Managing Fishing Capacity.* FAO, Rome. **(6)** Yagi, N. et al. (2008) *Fisheries Science* 74: 1229-1234. **(7)** Khan, A.S. et al (2006). *The Nature and Magnitude of Global Non-Fuel Fisheries Subsidies*. In *Catching More Bait: a Bottom-up Re-estimation of Global Fisheries Subsidies.* Eds U.R. Sumaila and D. Pauly. The Fisheries Centre, University of British Columbia. **(8)** Beddington, J.R. et al. (2007) *Science* 316: 1713.

International Regulation of Fisheries

The United Nations Convention on Law of the Sea (UNCLOS)[1] and the 1995 Fish Stocks Agreement (UNFSA)[2] establish the fundamental principles and obligations for the management of fisheries under international law. In addition, the 1995 UN FAO Code of Conduct for Responsible Fisheries and associated FAO instruments further elaborate on the principles and obligations in UNCLOS and the UNFSA, particularly regarding the application of the precautionary approach and sustainable ecosystem-based management of fisheries[3]. Key to international cooperation and the multilateral implementation of these agreements are regional and sub-regional fisheries management organisations (RFMOs). These bodies are responsible for the management of fisheries on the high seas, and in the cases of straddling stocks and highly migratory fish stocks, in national waters as well. States are required by UNCLOS and the UNFSA to join and cooperate with these bodies and to establish and abide by regulations to sustainably manage harvested fish stocks and protect their associated ecosystems[3,4].

There is clear evidence that the increasing numbers of overexploited or collapsed fish stocks is a result of the failure of States to comply with their obligations under international law and the failure of the RFMOs to sustainably manage fisheries. In national waters these problems have often resulted from an emphasis on short-term socio-economic considerations rather than long-term sustainability when setting catch limits for harvested fish stocks. Problems with certain RFMOs have been documented in a recent independent review which identified the following issues, including: (i) many RFMO conventions need updating to incorporate the provisions of the UN FSA and other internationally agreed standards and modern principles of fisheries management (ii) a failure of States to provide timely and accurate catch and bycatch data (iii) lack of compliance by States with the rules and recommendations of RFMOs (iv) a lack of transparency in decision making (v) failure to establish management measures consistent with scientific information and advice (vi) decision making structures which allow one or more States to block or 'opt out' of compliance with needed regulations (vii) IUU fishing (viii) inadequate funding[4].

Key Policy Recommendations

Review and reform of existing RFMOs through:

- Requiring RFMOs to be periodically reviewed and where necessary reformed consistent with States' obligations under international law;
- Identifying fleet overcapacity where it exists and reducing it accordingly;
- Ensuring the application of ecosystem based management of fisheries and the precautionary approach as outlined in international law or else prohibit fishing;
- Ensuring RFMO management measures are based on the best scientific information available.

Immediately establish RFMOs for species and/or areas of the high seas where they are absent.

Further develop the international legal framework to allow for the equitable access, allocation and application of management and enforcement measures for fisheries for straddling, highly migratory and high seas fish stocks.

Improve enforcement of international fisheries law through:

- Use of the International Tribunal of the Law of the Sea (ITLOS) to ensure the effective implementation of international fisheries law, particularly the UNFSA;
- Allowing access to ITLOS by non-state entities in cases relating to the mis-management of fisheries on the high seas.

Establish international measures on traceability of caught fish by effective port and market State measures and strengthening the international legal regime for flag State responsibility in fisheries.

Ensure effective implementation of internationally agreed measures for the management of high seas deep water fisheries, in particular UN GA resolution 61/105.

Establish environment impact assessments as a prerequisite for permitting large-scale fisheries on the high seas.

Fund research to "assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks"[4].

References: (1) United Nations Convention on the Law of the Sea (1982) **(2)** United Nations General Assembly (1995). Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and

management of straddling fish stocks and highly migratory fish stocks. **(3)** FAO (1995). Code of Conduct for Responsible Fisheries. FAO, Rome. **(4)** Hurry, G.D. et al. (2008) *Report of the Independent Review.* International Commission for the Conservation of Atlantic Tunas (ICCAT).

The Role of MPAs as a Fisheries Management Tool

Marine Protected Areas (MPAs) are increasingly being considered as an important tool for achieving an ecosystem approach to fisheries management and as a rational and practical way of managing marine resources to facilitate the achievement of ecosystem-based fishery objectives[1]. Community-based MPA management or co-management initiatives are also an important and often highly successful approach for small-scale artisanal and subsistence fisheries as part of integrated coastal zone management.

In terms of fish and fisheries it has been shown that MPAs:

- Can lead to an increase in the density, biomass, individual size and diversity of nearly all fish functional groups[2] and export both biomass and eggs/larvae to neighbouring fisheries and habitats respectively[3].
- Have great potential to complement and underpin other commonly used fishery management practises, helping to increase the overall success of management[4].
- By protecting areas from fishing, enable habitats to recover from fishing disturbance, increasing species diversity, habitat complexity and productivity, as well as restoring ecological processes such as water filtration and carbon sequestration in sediments and reef structures[5]. In particular, MPAs can play a key role in the protection of slow-growth habitats such as deepwater coral and sponge communities.
- Reduce mortality of non-targeted species due to bycatch, discards, collateral mortality from fishing gears and ghost fishing[6].
- Provide protection for breeding and nursery areas of important fishery species, including mobile and migratory species, and particular spawning aggregation sites for heavily exploited species[7].
- Create more natural, extended population age structures and larger population sizes that will increase resilience to environmental fluctuations and directional climate change, as well as offering a buffer against management failures, and reducing risks of fisheries collapses and extinctions[8].

Key Policy Recommendations:

Implement a Global Network of Marine Protected Areas that afford a high level of protection from fishing to enable the protection of 20-30% of marine habitats including offshore pelagic habitats. The cost of such a network was estimated at $5-19 billion in 2004[9], but is still considerably less than global expenditure on subsidies to industrial fisheries, at $30-34 billion per year[10]. This network has been estimated to create 1 million new jobs[9], helping to offset any restructuring costs for local fishing communities.

Provide adequate support for the setting up of a Global MPA Network in terms of infrastructure, capacity, management and enforcement.

Integrate the use of MPAs as a management tool into regional fisheries management programmes at the ecosystem level to complement other approaches such as Individual Transferable Quotas.

Support both small-scale co-management initiatives and traditional management practises involving MPAs to promote best practise community-based management for artisanal and subsistence fisheries.

Provide funding for further MPA research for subjects such as MPA Success Indicators, Fisheries Benefits of MPAs for a range of target species and fisheries worldwide particularly for the pelagic zone, Fisheries Models incorporating MPAs and assessing the suitability of MPAs for different fisheries.

References: (1) Martin et al. (2006). Background paper 1: *Experiences in the use of Marine Protected Areas with fisheries management objectives – a review of case studies.* FAO Workshop on Marine Protected Areas and Fisheries Management: Review of Issues and Considerations. **(2)** Halpern, B.S. and R.R. Warner (2003) *Ecology Letters* 5:361-366. **(3)** Sobel, J. and C. Dahlgren (2004) *Marine Reserves: A Guide to Science, Design and Use.* Island Press, Washington, D.C. **(4)** Sainsbury, K. and Sumaila, U.R. (2003) *Incorporating ecosystem objectives into management of sustainable marine fisheries, including "best practice" reference points and use*

of marine protected areas. In M. Sinclair and G. Valdimarsson (eds) *Responsible fisheries in the marine ecosystem*. FAO, Rome. 343-361. **(5)** Roberts, C.M. and J.P. Hawkins (2000). *Fully Protected Marine Reserves: A Guide*. Washington, DC: Endangered Seas Campaign. **(6)** Murray et al. (1999). *Fisheries* 24(11): 11-25. **(7)** Sadovy, Y.J. and M.L. Domeier (2005) *Coral Reefs* 24: 254-262. **(8)** Roberts, C.M. et al (2005) *Philosophical Transactions of the Royal Society B*, 360:123-132 **(9)** Balmford, et al. (2004) *PNAS* 101(26): 9694-9697. **(10)** Sumaila, U.R. and D. Pauly (2007). *Catching More Bait: a Bottom-up Re-estimation of Global Fisheries Subsidies.* The Fisheries Centre, University of British Columbia.

Illegal, Unreported and Unregulated Fishing

Illegal, Unreported and Unregulated (IUU) fishing is a symptom of poor ocean management and represents a significant threat to the sustainability of fishing, recovery of overexploited fish stocks and marine ecosystems.

Impacts

Illegal fishing harms fish stocks and the wider ocean ecosystem. It contributes directly to overfishing and depletion of fish stocks, and also increases uncertainty in stock assessments used to make management decisions[1]. Fishing in protected areas or using banned gear increases by-catch and destroys marine habitat[1]. IUU fishing deprives coastal states of landing fees, license fees, taxes and export earnings[2]. Legal fishers suffer increased costs, decreased incomes and lost employment opportunities as a result of resource depletion by IUU fishing[3]. In developing countries, illegal fishing threatens food security and livelihoods in coastal communities with few alternative sources of food or income[3]. IUU operations also often do not meet international standards of vessel safety and may involve human rights abuses of the crew[4].

Status and Trends

Because of its clandestine nature, IUU fishing is extremely difficult to measure. Recent studies have produced global estimates of illegal fish catches between 11 and 26 million tonnes, worth $10-23 billion[1]. IUU fishing became prevalent in the 1970s and 80s, and reached its peak in the 1990s. Over the last decade, there has been some progress in curtailing IUU fishing, with levels dropping in 11 ocean regions but rising in another five[1]. IUU fishing levels are connected to both maritime control and overall strength of governance in coastal states[1]. East and West Africa have been especially hard hit, where internal political instability and lack of resources in many coastal countries results in uncontrolled coastal waters. Currently, the eastern Atlantic (West African coast) experiences the highest amount of IUU fishing, with total estimated catches 40% higher than reported catch figures[1]. IUU fishing is often carried out by large industrial vessels, which may be registered with so-called Flag of Convenience countries, but are usually owned by companies in developed countries, particularly East Asia and Europe. However, the increasing power and range of small coastal vessels in developing countries, particularly SE Asia and Africa, is generating new opportunities for IUU activity.

Policy Options

Illegal fishing is driven by **economic incentives and poor ocean governance**. Overcapacity and market demand make illegal fishing profitable[5], while the benefits from engaging in illegal fishing far outweigh the cost if apprehended[6]. Failures to govern both the oceans and the seafood markets have facilitated the proliferation of IUU fishing. Inadequate surveillance and intelligence-sharing between states and regions makes IUU fishers unlikely to be detected, while lack of enforcement by flag, coastal and port states makes even detected IUU fishers unlikely to be sanctioned[5]. Effective policies to combat IUU fishing must begin by improving detection of IUU through regional cooperation in surveillance and control, in particular gathering and sharing vessel information. This information must then be used to strengthen enforcement capacity and prevent illegally-caught fish from entering the seafood market[8].

Currently, **detection of IUU fishing** is impeded by poor capacity for surveillance and poor communication of intelligence information. Surveillance of coastal waters requires financial and human resources that many countries lack. On the high seas, RFMOs may lack the funds, means and legal mandate to undertake effective surveillance and act against vessels undermining their regulations. Funding and training to improve ocean monitoring in developing countries is critical to reducing the high levels of IUU in these areas. Transparency and communication of information about fishing activity are necessary for not only detecting IUU fishing when it occurs but also identifying illegally caught fish when it is landed and traded[5].

Satellite-based monitoring and tracking systems can be useful, and include the GPS-based Vessel Monitoring Systems (VMS) and Synthetic Aperture Radar-based Vessel Detection Systems

(VDS). VMS units, in which on-board GPS units automatically transmit information about vessel location and speed, are becoming widespread. However, there are limits to the effectiveness of VMS. Some varieties of on-board transmission units are vulnerable to data-falsification. Furthermore, even accurate VMS data are transmitted to the vessel's flag state but not to coastal states, port states, or RFMOs. Vessel Monitoring Systems are a powerful tool that could contribute to the detection of illegal fishing, but to be effective, transmitters must be tamper-proof and data must be shared among states[5]. VDS can be effective in identifying the presence of vessels in low and mid-latitudes (where ice bergs do not produce a confounding signal), but cannot identify individual vessels and so rely on surface-based support to complete the surveillance picture.

Flag state non-compliance represents a serious failure of ocean governance and remains a significant barrier to the elimination of IUU fishing[5]. Flag states with open registers have no citizenship or nationality requirement for vessels to fly their flags and many of these states cannot or will not take enforcement action against these vessels[5]. Persistent IUU activity by vessels registered with these countries should be met with a coordinated and coherent international response, leading via diplomatic engagement eventually to sanctions against countries or prohibitions on the import of fishery product from vessels registered to them.

Historically, **IUU control measures** have focused on apprehending vessels and prosecuting illegal fishing operators. These measures must continue to be strengthened, particularly in coastal developing states. However, there has been a recent trend toward a diverse range of port and market measures to prevent illegally-caught fish from entering the market[8]. The UNFAO has recently concluded negotiations on an International Agreement on Port State Measures based on its Model Scheme[9] to deny port access to vessels engaged in or supporting IUU fishing. Domestic legislation in market states banning the import of illegally-caught fish, such as the Lacey Act in the United States, has also been effective in blocking trade in IUU fish products[5]. Public sector traceability measures such as Catch Documentation Schemes have been successfully applied to some fisheries[4], while a European Community Catch Certification Scheme will take effect in 2010[10]. Private sector traceability programmes such as the Marine Stewardship Council's certification scheme that promotes sustainable sourcing policies through eco-labelling may also contribute to improved traceability. Port and market state control measures should be used in conjunction with more traditional control measures at sea to ensure illegal fishing is deterred at every stage of the supply chain.

Key Policy Recommendations

Reduce overcapacity through measures outlined in page 3 of the Fisheries Document.

Gather and share information on fishing vessels and catch

- Expand and strengthen monitoring and surveillance to enhance IUU fishing detection. These can include Vessel Monitoring Systems (VMS), aerial and satellite surveillance, observers, and maritime surveillance by government agencies, NGOs, and fishers.
- Provide technical capacity building for developing countries to set up and operate effective monitoring and surveillance techniques, including regional collaboration for cost-effective monitoring
- Invest in development of improved technology such as satellite based VDS and tamper-proof VMS systems, and harmonise the technology to facilitate timely and accurate sharing of data
- Promote the use of the International Monitoring, Control and Surveillance (MCS) Network for sharing IUU vessel intelligence[5] and create a global database of fishing vessels[11]

Implement control measures throughout the fish supply chain

Flag state measures

- Develop framework for legal and coordinated international diplomatic and economic action against non-compliant flag states[5], for example, through the International Tribunal for the Law of the Sea[7]

Coastal state and RFMO measures

- Improve high seas governance through measures outlined in page 2 of the Fisheries Document
- Strengthen the abilities of coastal states and RFMOs to locate, apprehend and prosecute IUU fishers
- Improve legislation and enforcement of regulations relating to maritime safety of vessels
- Increase penalty levels for IUU offenders

Port state measures

- Ratify, and encourage others to ratify rapidly, the UNFAO Port State Agreement; develop mechanisms for practically implementing it; and provide funds for capacity building to allow its early and effective implementation in developing countries
- Implement domestic port state policies to refuse port entry and landing of fish by IUU vessels

Market state measures

- Implement domestic legislation and policies making it illegal to import or sell IUU fish, such as the Lacey Act (USA), and increase penalty levels for offenders.
- Implement harmonised, fraud-resistant catch documentation or certification schemes ensuring traceability of seafood products
- Promote private traceability schemes through eco-labelling and sustainable sourcing policies

References: (1) Agnew, D.J., et al. (2009) *PloS ONE* 4 (2). **(2)** MRAG (2005) *Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries.* **(3)** High Seas Task Force (2006) *Closing the net: Stopping illegal fishing on the high seas.* **(4)** FAO (2002) *Implementation of the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing*. FAO, Rome. **(5)** FAO (2009) *State of the Worlds Fisheries and Aquaculture 2008*. FAO, Rome. **(6)** Sumaila et al. (2006) *Marine Policy* 30(6): 696-703. **(7)** Gianni, M. & Simpson, W. (2005) *The changing nature of high seas fishing: How flags of convenience provide cover for illegal, unreported and unregulated fishing*. **(8)** OECD (2004) *Regulating IUU fishing or combating IUU operations?* **(9)** FAO (2007). *Model Scheme on Port State Measures to combat Illegal, Unreported and Unregulated Fishing*. FAO, Rome. **(10)** EC Regulation 1005/2008 to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing. **(11)** FAO (2009) *Combating Illegal, Unreported and Unregulated fishing, including through a legally binding instrument on port state measures and the establishment of a global record of fishing vessels*. FAO, Rome.

Fisheries Bycatch and Discards

Bycatch can be defined as 'that part of the capture that is discarded at sea, dead (or injured to an extent that death is the result)[1]. The problem of bycatch has been recognised ever since people started to catch fish. In the 20th Century fishing technology and capacity rapidly increased, with a corresponding lack of effective regulation to control overfishing and bycatch levels. The management and mitigation of bycatch is one of the most pressing issues facing the global commercial fishing industry[2], and is regarded as fundamental to fish stock sustainability and a conservation/food security imperative[3].

Status and Trends

Global estimates of bycatch are difficult to quantify as data is incomplete for many areas and fisheries[2]. In the 1980's commercial fisheries annual bycatch was estimated at 27 million tonnes or 25% of the total global catch[4]. A more recent estimate using a different method to derive bycatch led to a total of 7.3 million tonnes[5]. A new definition of bycatch itself which includes all unmanaged and wasted fisheries' catch produced a total of 38.5 million tonnes, accounting for 40% of global marine catches[3]. However, using the more widely accepted definition[1], it is generally agreed that the total bycatch in commercial fisheries has decreased since the 1980's, which was mainly attributed to a combination of bycatch mitigation measures and an increased utilisation of bycatch for food and livestock feeds[5] Increased utilisation of bycatch for human consumption and aquaculture is especially high in Asia and parts of Africa and is considered to be part of a global trend[6]. However, the concept of bycatch in terms of defining target/non target catches is weak for many fishing communities in developing countries where most of the catch is usually retained for food[2,3].

Impacts

The main types of bycatch that are still major issues for fisheries management include sharks on longlines, cetaceans in gill nets and trawls, discards from shrimp trawls, seabirds on longlines, pinnipeds in trawls, seabirds in coastal gill nets and juvenile fish in trawls[2,7,8,9]. As well as causing the mortality of large, long-lived and often rare or endangered species such as turtles, sharks, cetaceans, seabirds and some invertebrates there are considerable ecological impacts on marine ecosystems. These include effects on benthic fauna and habitats, scavenging species, predator-prey interactions, diversity (genetic, species and community), nutrient recycling and ecosystem resilience and function[7,10,11]. Bycatch and discards can therefore be a serious conservation issue as well as a substantial waste of potential food resources[12]. Both target and non-target stocks can be further reduced through bycatch mortality, contributing to ecosystem degradation. Damaged ecosystems will be less commercially viable in terms of fish stocks than ones managed sustainably.

Policy Options

Solutions to reduce bycatch need to be tailored to specific fisheries and can differ between regions of the world[2]. The overall process of bycatch mitigation implementation can be split into three stages[13]:

1. Selecting and prioritising species and fisheries that require bycatch reduction action;

2. Bycatch mitigation: selecting the methodology and measures for a particular fishery;
3. Implementation, compliance and monitoring, with feedback to enable adaptive management.

Furthermore, three main approaches to bycatch reduction (**technical, regulatory and social**) have been suggested. These approaches should be adopted in an integrated way[2]. Examples of successful bycatch mitigation are presented below.

Technical approaches can be split into three types; **selectivity, deterrence and avoidance**. Selectivity and deterrence both involve making changes to fishing gear. Examples of **selective gear** are bycatch reduction devices (BRDs) and turtle exclusion devices (TEDs) for shrimp and prawn trawl fisheries, which are now mandatory for a large number of these 'bycatch heavy' fisheries around the world.

Deterrence involves measures to prevent bycatch mainly for passive fishing gear such as longlines and gillnets. An example of successful deterrence is the reduction in seabird mortality in CCAMLR waters. A number of deterrence methods were made mandatory including the use of streamer lines, weighted longlines and night setting of gear[14]. These methods along with effective monitoring using observers and compliance by the fishers enabled a drastic and consistent reduction of bycatch levels. Deterrence can also be very effective for coastal gillnet fisheries[15] but is not widely used, resulting in high mortality of seabirds, cetaceans, sharks, and turtles [9,16,17,18]

Avoidance measures include the use of time and area closures to protect species at certain stages of their life history such as the closure of juvenile nursery areas or adult spawning grounds. Permanent area closures are also used to protect vulnerable species from incidental capture. Examples are area closures for the Hawaiian monk seal and the vaquita porpoise in the Gulf of California. However such closures often just displace fishing effort, and although protecting one species, can lead to unintended consequences for others[19].

Regulatory approaches can be effective but may inadvertently cause increased discards of other target species that fishery managers are also trying to protect[2]. Therefore any regulatory legislation must be carefully evaluated beforehand. **Reducing fishing effort in commercial fisheries is one obvious way to reduce bycatch**. For overexploited fisheries a reduction in fishing effort can significantly reduce bycatch without greatly affecting target catches. Examples of legislation that address bycatch directly are the Magnuson-Stevens Fishery Conservation and Management Act in the United States, and the 1996 New Zealand Fisheries Act. Bycatch quotas for vulnerable species are also used where fishing ceases when the quota is reached, for instance for Hooker's sea lion in New Zealand or dolphins in the IATTC-managed Eastern Pacific Ocean, both examples of environmental legislation that has been effective in changing fishing practises. Discard bans operate in Norway, Iceland and New Zealand, where bycatch of commercial species is landed for a guaranteed value. Total bycatch bans in Namibia require that all bycatch is landed for processing into fishmeal and fishers pay a surcharge towards the processing cost.

Social measures to reduce bycatch are critical if both technical and regulatory measures are to be most effective. Fishers need to be made aware of the ecological and economic costs of bycatch and discards, particularly the loss of revenue and time. In the north-west Atlantic groundfish fishery there was an estimated loss of potential income of $50 million when the 1987 year class of yellowtail flounder was harvested prematurely and then discarded[20]. Awareness initiatives to explain the use of technical measures can improve compliance and reduce bycatch considerably[14]. However, in some cases even when deterrent measures are mandatory fishers tend to ignore them or do not implement them effectively.

Economic incentives to fish sustainably are becoming more common through certification schemes, where bycatch mitigation can be a condition for operating a certified fishery. Public opinion, linked to media attention and peer pressure within fishing communities or fisheries can also play a large part in changing fishers' attitudes and fishing behaviour. Making a change happen often requires a 'champion' within the fishing community who can perceive the problem, is receptive to new information and is able to positively influence fellow fishers[21].

Key Policy Recommendations

Review current bycatch mitigation measures in RFMOs and inshore fisheries including those in developing countries

Conduct research into new technical bycatch mitigation techniques for fisheries lacking such measures

Implement appropriate existing mitigation measures for fisheries where bycatch reduction is poor (e.g. inshore gillnets).

Implement regulatory measures that provide economic incentives (or disincentives for non-compliance) for fishers to reduce bycatch to an ecologically acceptable level through sustainable fisheries certification schemes, the issuing of fishery licences and control of licence fees.

Focus on social measures in combination with technical and regulatory ones in order to drive change in fisher's attitudes and fishing behaviour. Examples include improved awareness coupled with persuading key fishers in a community to actively support change and influence fellow fishers.

Ensure that all regulated fisheries are monitored effectively using on-board observers or remote cameras to record bycatch, including discard estimates. Expand the remit and extent of observer programmes where necessary and conduct research into new or improved remote monitoring techniques.

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Rights-based Fisheries Management

In open access fisheries, fishers compete for their share of the total catch, resulting in a damaging "race to fish" which often leads to overcapacity, overfishing and reduced catches[1,2]. Eliminating harmful competition between fishers is critical to improving the sustainability of fisheries worldwide. Secure harvest rights can create incentives for economic efficiency and ecological sustainability. In this paper we tackle rights-based management approaches for both large-scale and small-scale fisheries, but separately, because of the largely different nature of these two types of fisheries[3,4].

Large–Scale Fisheries and Rights-based Management

In the large-scale commercial fishing sector, group or individual catch shares can eliminate the "race to fish" by granting fishers a set proportion of the total allowable catch (TAC)[5,6]. Catch shares, also known as fishing quotas, may be transferable or non-transferable, and may be allocated to individuals or groups of fishers. Individual Transferable Quota (ITQ) systems are the most commonly used form of rights-based management in large-scale fisheries, and will be the focus of this section.

The adoption of individual fishing rights in large-scale fisheries has accelerated since the 1970s. By 2008, 20-25% of the global marine catch was harvested using ITQ or similar systems[7]. At least 15 nations use ITQs as a major management tool[7], including New Zealand, Iceland, Canada, Namibia, the United Kingdom, Norway, Australia and the United States[8]. On the high seas, individual fishing rights have proven more difficult to implement. To date, none of the Regional Fisheries Management Organizations (RFMOs) have implemented individual fishing rights[6].

ITQ systems can generate a number of economic and ecological benefits. Transferability of fishing quotas enables a reduction of excess capacity, improving economic efficiency[1,6]. Use of quotas allows fishing to be more cost-effective, increasing profits[1] and reducing the need for subsidies. Secure harvesting rights confer a stewardship incentive to fishers as catch share values are directly linked to fish stock health. This incentive has led fishers to lobby for reduced TACs to rebuild stocks, invest in scientific research to improve stock assessment, and fund monitoring, control and surveillance (MCS) to reduce illegal fishing[9]. Large-scale fisheries with ITQ systems are less likely to collapse[8], often have improved TAC compliance, greater fisher involvement in the decision-making process and improved cooperation between fishers, managers and scientists[5]. Through improved efficiency and stewardship, ITQs can "halt and even reverse the global trend toward fisheries collapse"[8].

However, catch shares alone are not a guarantee of sustainable fishing. Their success depends on the setting of suitable ecosystem-based TACs, which in turn relies on robust stock assessment and political will[10]. ITQs can provide an incentive to fishers to fill their quota with high-value fish, leading to "high-grading", or the discarding of lower value fish. This issue has been countered in many ITQ fisheries through the combined use of on-board observers and discard quotas, which promotes more selective fishing and has led to investment in by-catch reduction techniques[2,9]. ITQs can address most

fisher incentive issues but not all by-catch and habitat conservation issues, and should be used in conjunction with other fishery management tools such as by-catch mitigation, gear restrictions, spatial and temporal closures, input controls, and certification. Tradable quotas or 'quota leasing' have lead in some cases to economic concentration but can be resolved through individual quota limitations and robust leasing regulations[9,10]. Employment losses from capacity reductions may occur, but can be mitigated through measures such as occupational retraining and financial compensation.

Small-scale Fisheries and Rights-based Management

Small-scale fisheries (SSF) are defined as 'fisheries that work from the shore or from small boats in coastal or inland waters[11]. SSF are made up of both artisanal and subsistence fisheries, mainly in the developing world, and are an important component of global fisheries. They provide direct employment to more than 90% of the 27 million capture fishers worldwide whilst also supporting a further 84 million in fish processing, distribution and marketing roles[12]. SSF catches make up half of the global fish catch for human consumption and many operate at a fraction of the cost of large-scale fisheries[13].. Small-scale fisheries are highly important both in terms of supporting livelihoods and providing future food security for developed and developing countries. Many countries in Asia depend on coastal fisheries for up to 50% of their animal protein, compared to a global average of 15%[12]. In developed countries, where there is sufficient capacity to provide effective governance and scientific assessment, SSF can be successfully managed using ITQ systems. However, ITQs are less practical in countries where such capacity is lacking and here community based management or co-management approaches are more suitable.

As for large-scale fisheries many small-scale fisheries are facing a crisis. Anthropogenic environmental degradation of the coastal zone and intensification of fishing effort in inshore waters has led to overfishing, depletion of marine resources and habitat loss. The main drivers of overfishing in SSF have been:

- open access to inshore fishing grounds and human migration into the coastal zone;
- increased demand in local or foreign markets for marine resources;
- lack of alternative food supply or income for coastal populations coupled with economic subsistence pressure driving people to keep fishing overexploited stocks;
- competition between small-scale and large-scale fisheries as industrial fishing's range expanded.

Previous neglect of SSF in national development and fisheries plans has led to a lack of regulation and management of these fisheries in many developing countries[14]. Furthermore, the societal and economic value of SSF at the local and national level is often greatly underestimated or poorly understood[14,15].

Rights-based management in small-scale fisheries has existed for centuries in traditional fisheries of the Western Pacific using a system of territorial use rights or customary marine tenure[16,17]. Successful management within these systems is closely linked to the level of cultural and social cohesion within a particular community[18]. Successful small-scale rights-based management approaches have been adopted in many parts of the world. Examples are territorial user rights fishery systems (TURFs) operating within a co-management approach in Latin America for sea urchins (Chile) and lobsters (Mexico)[3]. In these cases, and in South-east Asia (Philippines and Indonesia), fisheries management forms part of an integrated approach to coastal zone planning addressing multiple issues (social, economic and ecological) that is embedded in local or regional government mandates[4,19]. Within these and other management strategies it is critical that fishers, along with other stakeholders, are fully integrated into a participatory decision-making process[20].

Key Policy Recommendations

Implement rights-based management systems in both large-scale and small-scale open-access fisheries.

Implement the form of fishing rights most suitable to the fishery, fishing community and the marine environment.

Rights-based management should be knowledge-based and follow the precautionary principle as part of an ecosystem-based approach to fisheries.

In large-scale fisheries:

- Ensure ultimate control lies with the regulatory authority, with clear lines of authority, transparency, and stakeholder involvement.

- Use rights-based management as part of a diverse fisheries management programme, alongside other tools such as marine protected areas, input controls (e.g. effort restrictions), strong monitoring, control and surveillance (MCS), and market measures such as catch certification and eco-labelling.

In small-scale fisheries:

- Apply a knowledge-based approach incorporating multiple issues (economic, social and ecological) as part of a mandated integrated coastal zone management (ICZM) process.
- Implement forms of co-management that can strengthen the social consensus, participation, self-regulation and compliance of fishers. Fishing communities need to be fully involved in a participatory process to incorporate ownership and stewardship of the fishery. Examples exist in the Philippines, Chile and Mexico.
- Implement a rights-based co-management approach combined with other fisheries management tools where applicable, including territorial user rights in fisheries (TURFs), community fish catches, and temporary closures and reserves (MPAs).
- Ensure management is adaptive and tailored to respond to the changing local socio-ecological situation. An example is the Integrated Assessment and Advisory (IAA) Framework[21].

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Annex 2: First Meeting of the GLOBE Marine Technical Advisory Group: Summary of Recommendations

Cross-cutting measures:

Redirect inappropriate subsidies which artificially increase the profitability of fishing, leading to overcapacity and overfishing. Unsustainable fishing will continue to be perpetuated by the use of harmful subsidies unless they are removed.

Ensure all relevant countries ratify existing UN oceans and fishery agreements, such as the UN Convention on the Law of the Sea (UNCLOS), the UN Fish Stocks Agreement (UNFSA) and the Port State Agreement on Illegal, Unregulated and Unreported (IUU) fishing, and adopt robust implementing legislation**.**

Ensure that fisheries are subject to environmental legislation by creating integrated oceans policy that strongly links fisheries and other commercial marine activities with the environment.

Reduce unregulated activities by promoting governance systems for all oceans and fisheries by expanding the coverage and number of Regional Fisheries Management Organisations (RFMOs[1])

Significantly reduce unreported fishing activities by encouraging the reporting of all fishing activities, including subsistence, artisanal, bycatch and discards, in all fishing countries.

Promote governance reform to improve accountability, transparency and inclusiveness of decision-making at global, regional and national levels in accordance with the requirements of UNCLOS and the UNFSA.

Regional Fisheries Management Organization (RFMO) Reform:

Mandate the United Nations to review and monitor RFMO performance by providing comprehensive global oversight and ensuring effective science-based decision-making, referring to existing benchmark standards for RFMOs in the UNFSA .

Hold states accountable by using the International Tribunal on the Law of the Sea (ITLOS) to better enforce the international legal responsibilities of states, specifically compliance and performance, when operating in the high seas.

Revise RFMO mandates to specifically include a precautionary, ecosystem-based approach to management, protection of biodiversity in the marine environment and long term-sustainability of fish stocks (as already required by the UNFSA).

Apply environmental, economic and social assessments to all fisheries to determine the optimal way to operate the fishery and achieve maximum economic value or specific social goals, within the framework of sustainable ecosystem-based fisheries and environmental management.

Investigate a "Cap and Restore" approach for severely depleted fisheries that would impose a temporary moratorium or drastic reduction in catches and effort to allow fish stocks to recover. During the stock recovery period fishers will either be paid compensation to leave the industry or be employed for scientific assessments or enforcement activities. Once re-opened, the fishery will be operated with stronger links to the market, greater economic efficiency, and compulsory environmental and economic impact assessments to set precautionary catch levels.

Tackling Illegal Unregulated and Unreported (IUU) Fishing and Traceability:

Work with every link in the fishery supply chain, by implementing measures for RFMOs, flag states, coastal states, ports and market states, to strengthen action against IUU practices.

Encourage comprehensive membership of RFMOs for all the states involved in the fishery, by investigating the nature of existing barriers to participation.

Restrict market access for non-compliant flag states and provide economic incentives for states to join RFMOs and enforce regulations.

Improve monitoring, control and surveillance (MCS) at the regional level through capacity building that increases and harmonizes the level and effectiveness of the MCS system. In

addition, flag, coastal and port states should increase and harmonise sanctions against IUU perpetrators.

Support and expand the capacity of the International MCS Network to coordinate professional enforcement efforts to fight IUU fishing. RFMOs or other regional bodies should be used as a hub to provide funding and training to developing countries.

Share technical and logistical resources with other marine agencies to effectively manage fisheries alongside other issues including immigration, smuggling, drug and human trafficking at a regional level.

Create a global record of fishing vessels linked to authorised vessel lists which include safety certificate information plus blacklists for vessels, fisheries, management organisations or states that are involved in or allow IUU fishing.

Marine Protected Areas (MPAs):

Promote fully protected marine reserves that build resilience in marine ecosystems, protect biodiversity and provide reference points for research studies. When combined with complementary measures (specifically effort reduction), MPAs can help to successfully deliver sustainability targets, enhance food security in the future and help adapt to climate change.

Adopt modern MPA network targets to propel the creation of marine reserves and MPA networks beyond 2012. This should be based on the latest scientific advice and the 2003 World Parks Congress target of 20-30% of each marine habitat to be protected, noting that in some cases the percentage required for protection may be higher.

Ensure that MPAs are enforced and effectively managed following their designation by creating a well coordinated MCS network at all levels of governance from local communities to national and global legislation. Penalties for breaking MPA regulations need to be severe enough to deter future violation and be fully enforced by all legal systems.

Protect ecologically or biologically significant marine areas beyond national jurisdiction through the use of MPAs and other measures**,** by ensuring that states cooperate using the relevant global and regional organizations and the 2008 CBD scientific criteria for protection.

Investigate the establishment of a new Global Framework Treaty for Marine Spatial Planning in areas beyond national jurisdiction that would provide a framework for MPA network designation, management and enforcement, and mandate the integration of marine conservation into sectoral and regional management.

Increase requirements for Environmental Impact Assessments (EIAs) and ensure their effective implementation and scrutiny at both the national level and for all marine activities with a potential impact in areas beyond national jurisdiction. Governments can endorse efforts within the CBD to develop guidance for such EIAs and promote a mechanism for global consultation.

Glossary

CBD	Convention on Biological Diversity
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organisation of the United Nations
ITLOS	International Tribunal on the Law of the Sea
IUU	Illegal, Unreported and Unregulated Fishing
MCS	Monitoring, Control and Surveillance
MPA	Marine Protected Area
RFMO	Regional Fisheries Management Organisation
UNCLOS	UN Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
UNGA	United Nations General Assembly

1: Regional Fisheries Management Organisations (RFMOs) are affiliations of nations which co-ordinate efforts to manage fisheries in a particular region. RFMOs may focus on certain species of fish (e.g. the Commission for the Conservation of Southern Bluefin Tuna) or have a wider remit related to living marine resources in general within a region (e.g. the Commission for the Conservation of Antarctic Marine Living Resources).

Annex 3 GLOBE UK Fisheries Policy Workshop Summary

Overcapacity, Subsidies and Rights-based Management

Address the root cause of overfishing: the management system

The UK industry sees some evidence of excess capacity in the UK fishing fleet. Given favourable conditions, there are members who would leave the fishing industry. In the UK, the level of potential fishing capacity is greater than available fishing opportunity. However, the UK industry has experienced a number of decommissioning schemes over the years which have greatly reduced the total number of vessels operating in the UK fleet. As a result of this, there are some industry members who do not feel overcapacity currently exists or is a major problem in the UK. The industry would like to see further research into defining capacity, better understanding of the current levels of capacity, and developing ways to enable a transition to a fleet size that is suited to available fisheries resources based on sustainable fishing practises.

This excess fishing capacity can have negative economic and ecological consequences. Some UK fishing fleets have much greater fishing capacity than actual fishing effort deployed or allowed. To some extent this overcapacity is required to give the fleet flexibility in terms of the stocks it exploits and the geographic area in which it operates (vessels may not be restricted to EU waters). However, unused fishing capacity is not benign; it results in less than optimal economic performance of the UK fishing industry, reducing profitability and creating incentives for overfishing. These impacts should be addressed through economic, market-based and ecosystem-based management measures.

The term 'Overcapacity' was regarded as misleading. A number of industry representatives thought that 'overcapacity' was not a clear term to use for fisheries and that controlling 'fishing effort' or 'fishing mortality' would be more useful approaches. Capacity was regarded as the potential to catch fish and did not necessarily mean that fishing was occurring at the maximum capacity of each vessel or fleet. This raises an issue with the current Green Paper on the reformation of the Common Fisheries Policy that places large emphasis on reduction of overcapacity.

As overcapacity is a symptom of poor management the target of policy reform should not be only capacity reduction. Currently, overcapacity is a legacy of over-capitalisation of the European fishing fleet stimulated by indirect subsidies such as open access to fisheries and direct European and national subsidies such as economic assistance with fleet construction or modernisation and tax exemptions on fuel costs. The current management system continues to provide economic incentives to over-invest, allowing overcapacity to persist. However, there are many other areas of poor management including an emphasis on short term socioeconomic gain over long-term sustainability in fisheries, poor monitoring, control and surveillance, and a lack of effective sanctions against fishers who are found to fish beyond quota or engage in illegal fishing practices. A fisheries management system that promotes sustainable fishing practices and sets incentives accordingly is required.

Policy reform should focus on improving management systems, thereby addressing the root causes of overcapacity. Strengthening fisheries management overall (for example, through stakeholder involvement, increasing the role of science in decision-making, strengthening control and compliance, and providing the right economic incentives) is critical. The CFP Green Paper overstates the importance of overcapacity; rather than constituting a central failing, it is a symptom of failed management and inappropriate incentives.

Decommissioning schemes do not address the root causes of overcapacity. Additionally, while decommissioning can greatly reduce the number of fishing vessels, technological innovation and investment in the remaining fleet increases fleet catching power (a phenomenon known as "technical creep"). The industry proposes investing public funds in other areas of management that would be more effective in reducing fishing pressure, such as stock assessments and monitoring, control and surveillance (MCS). Promoting the development and use of sustainable fishing practises

is also suggested, by non-industry groups. Decommissioning may, however, have a role to play for fisheries or fleets where there is a large difference between potential capacity and permitted fishing effort.

Develop integrated, flexible rights-based management at the national level

Fishing quota management through Producer Organizations has been successful in the UK. Regional and sectoral Producer Organizations have been involved in quota management since 1985. The process has been dynamic and adaptive, introducing and modifying tradability of quotas through time and allowing for both individual and pool or group quotas. The fishing industry has seen benefits of the system including reducing the incidence of discarding, elimination of the competitive race to fish, establishing a collective self policing dynamic over quota use and fleet restructuring through consolidation of quota into fewer licenses. However, non-industry organizations do not view UK quota system to have been successful at eliminating overcapacity, overfishing or economic inefficiencies. To improve, non-industry groups suggest fishing quotas need to be formalized with quota distributed on the basis of sustainability criteria and compliance.

Utilize a dynamic, highly adaptable approach to rights-based management in Europe. Fisheries across Europe are highly diverse, making no one rights-based management strategy appropriate for all. Adaptability is critical in all management systems and has been an important component of the success of rights-based management in the UK.

In the UK, expand the system of Producer Organizations to include all fishing vessels targeting quota stocks. Quota for vessels less than 10 metres in length in England and Wales are currently centrally managed by Fisheries administrations. Producer Organizations offer a fundamental industry organisational unit to foster self-management in the industry and also the possibility to protect more vulnerable fishing communities without the need for a separate differentiated system as proposed in the CFP Reform Green Paper. Many stocks, such as scallops, are also not currently regulated by quotas (non-quota species) and scientific stock assessments for many of these resources have not been completed. However, some non-industry organizations questioned the potential for improvement by expanding Producer Organization membership to include all vessels less than 10 metres in length as these vessels are currently included in pool or group quotas managed by the national fisheries authorities.

Target subsidies to improve sustainability

Subsidies should be linked to sustainable fishing and compliance. Some of the subsidies listed as “bad” by the MTAG may not necessarily be bad, such as modernization (improved gear and fuel efficiency), local food and fish processing, port construction and maximizing added value through processing. Agreement was not reached on fuel subsidies; some participants felt they made fishing artificially profitable, while others felt there could be a case for fuel subsidies when accounting for other socioeconomic values of the fishing industry e.g. tourism.

Subsidies should be used to invest in improved fisheries management. Some aspects of this include improved stock assessments and scientific advice, monitoring control and surveillance (MCS), and assistance for developing countries where UK and European fleets fish. Fishing rights and the allocation of subsidies could also be directly linked to sustainable fishing practise.

Transition to self-sustaining fisheries that are profitable without public support

Invest now in a better fisheries management system with incentives for an economically efficient and profitable fleet. The industry aims to be self-sustaining without the need for public support. This can be achieved through improved management.

IUU Fishing and Traceability

Recognize and support industry initiative to source legal and sustainable fish

The seafood trade industry in the UK is committed to developing a fully traceable supply chain and importing only legally-caught fish. The UK fish processing industry relies on imports, which make up the majority (roughly 65%) of seafood consumed in the UK. Industry members have initiated cooperative efforts to tackle problems with illegally-caught fish in the supply chain. Because sourcing legally-caught fish is important for seafood trade companies' reputations, they fully support the new EU IUU Regulations and the industry has engaged with a wide range of Intergovernmental Organizations (e.g. World Bank) and Non-governmental Organizations (e.g. Chatham House) to develop fully traceable, legal fish supply chains.

Build capacity overseas

Support third parties, particularly developing countries, to enable their compliance with the EU IUU Regulation. The industry strongly supports the use of electronic data submission and robust auditing of catch certificates to make implementation of the EU IUU Regulation efficient and effective. This will require support to developing country trade partners to enable their compliance with the new regulation. While there have been concerns over the European Commission's level of engagement with third parties, now more than 80 countries have been approved for trade with the EU. The industry supports the change in EU policy from simply securing fishing rights overseas towards capacity-building for sustainable fishing and a secure supply chain. UK government initiatives are also helping to increase capacity overseas such as DEFRA's input into DFID's Africa Fisheries Programme for tackling IUU fishing.

Continue developing EU measures to eliminate IUU fishing worldwide

Build on successes with the new EU IUU Regulation. Although it has only just taken effect, the new EU IUU Regulation has been successfully implemented and UK compliance levels are good. The Regulation is seen as a positive measure by the industry and is generally considered to be successfully reducing illegally-caught fish imports.

Resolve problems with the new EU IUU Regulation. There have been concerns over engagement with third parties, but these will diminish over time as more countries are approved for trade with the EU. The European Commission should provide funding and support to help third parties comply with technical measures such as electronic data submission. There is also a risk that illegal fish will enter the supply chain as inputs (fishmeal or fish oil) for imported aquaculture products as some of these products are not currently subject to the new regulation. This potential "laundering" of illegally caught fish should be monitored and IUU Regulations modified if necessary.

The EU IUU Regulations could form the basis for certification of sustainable fisheries. The feasibility of extending regulations aimed at certification of legally caught fish to include fish sourced from sustainably managed fisheries should be investigated. Such a certification scheme could be used to reduce or eliminate the supply of fish from fisheries that are legal but unmanaged or not managed in a sustainable manner (e.g. many high seas fisheries for deep-water species). Such a measure across the European Union, including the European fleet fishing abroad, could dramatically influence the levels of implementation of international agreements, codes and guidelines on fisheries management which have been signed up to by many nations but are not enforced in many areas of the ocean (e.g. UN Convention on Law of the Sea, FAO Code of Conduct for Responsible Fishing, various UN General Assembly Resolutions). Such measures would require a strict definition of a "sustainable fishery" (see below) and would have to be implemented in a way that did not contravene free trade. They would also require significant support for fisheries management in the developing world but could be critical as a part of a wider strategy to improve food security globally. Wild caught fish are one of the ultimate self-sustaining food sources if managed correctly.

Harmonize guidelines and standards for sustainable sourcing

In the long term, both public and private measures should aim for both legal and sustainable sourcing. Sourcing legally-caught fish guarantees it is caught according to national and international fisheries regulations but does not guarantee that the stocks are being fished sustainably. There are private certification schemes as well as public standards-setting bodies which have begun to develop sustainability guidelines. It is important to maintain the distinction between these different types of organizations and processes and utilize them where appropriate.

Develop commonly-agreed sustainability guidelines. There has been a great deal of difficulty among stakeholder groups (such as NGOs) in agreeing upon a common set of sustainability criteria. However, for the seafood trade industry to enact effective sustainable sourcing policies, such guidelines must be developed.

Use all available methods and sectors to tackle illegal fishing

Promote both public and private sector measures throughout the entire seafood supply chain to eliminate illegal fishing. The EU IUU Regulation aims to prevent illegally-caught fish from being imported or landed into the EU, while the EU Control Regulation aims to reduce illegal fishing in EU waters. These public sector measures provide increased monitoring, control and surveillance of fishing activities at sea, fish landings in ports and fish traded through processors and retailers. It is critical that these measures be adequately implemented throughout the EU, and that policymakers recognize and support additional private sector measures. Furthermore, incentives for compliance should be built into the fisheries management system, for example by increasing industry involvement in decision-making. The legality and sustainability of aquaculture products should also be investigated as a matter of priority.

Marine Protected Areas (MPAs) and Marine Spatial Planning

Approach Marine Spatial Planning holistically

Ensure fishing sector involvement in marine spatial planning, particularly in the development of a Marine Protected Area network. There is a strong feeling within the fishing industry and amongst politicians that fishers are not adequately involved in the marine spatial planning process or in the development of a Marine Protected Area network. Implementing decision-making protocols that ensure fisher involvement is critical to achieving credibility and compliance.

Address potentially negative impacts of displaced fishing effort and other marine activities resulting from the implementation of Marine Protected Areas. There is serious concern about the unintended effects of Marine Protected Areas, such as displaced fishing effort causing overfishing in other areas. Addressing these ecological impacts as well as potential socio-economic effects is an important part of holistic marine spatial planning. The MTAG recommendation to install MPA networks in combination with fisheries management measures such as reduced fishing effort was not discussed in detail by participants.

Ensure the marine spatial planning process is dynamic and focused on long-term objectives. Fisheries legislation must allow for flexibility and adaptation into the future, with adequate support for research to assess the success or failure of management measures and for adaptive management.

Clarify the purpose of a Marine Protected Area network

The primary purpose of the currently proposed network of Marine Protected Areas in the UK is the conservation of species and habitats. While permanent Marine Protected Areas can have many benefits to fisheries, in the UK and internationally they have been considered to be primarily a tool for the conservation of biodiversity and less as a fisheries management tool. However there is growing evidence that MPAs, including in temperate offshore waters, can be used as one of a range of tools to improve fisheries, particularly for benthic species such as shellfish but also for demersal finfish as shown on George's Banks. It is important to clearly define the objectives of an MPA network when enacting policy for marine conservation, fisheries or marine spatial planning. MPAs

are a very important tool but have to be used appropriately and as part of a wider strategy of management of activities in the marine environment.

'Real-time' closed areas are different from Marine Protected Areas and are an important fisheries management tool. A primary difference between areas closed to fishing and Marine Protected Areas is in their permanence. Areas closed to fishing are less permanent than Marine Protected Areas, and are implemented when and where needed for fish stock recovery. Another difference is in the activities allowed in each area. Marine planning and fisheries management bodies should consider the objectives of 'real-time' closed areas and Marine Protected Areas when determining which marine activities to permit.

The current CFP is seen as a barrier to the implementation of MPAs in European waters and to the participation of the fishing industry in the designation process. The reformation of the CFP must allow the implementation of ecosystem-based fisheries management measures, including the designation of MPAs as fisheries management tools, or for other purposes, such as conservation of habitats or species, beyond territorial waters. It is critical that fisheries management, marine conservation and marine spatial planning are contiguous between waters under national jurisdiction and those that are accessible as a result of the CFP. The CFP should allow full and transparent participation of the fishing industry and fisheries managers in the marine spatial planning process as stakeholders on an equal footing to other industries.

Promote scientific research and communication

Address the disagreement between industry and scientists on the potential impacts of Marine Protected Areas in Europe. Although Marine Protected Areas are now a legal requirement in the UK, many associated with the fishing industry and government remain unconvinced of the benefits. A lack of appreciation of, or agreement with, current research relating to the fisheries benefits of MPAs is a part of this issue. However, there is undoubtedly a lack of research in the conservation and fisheries benefits of MPAs in European waters. This should be addressed through policies and legislation promoting further research into the impacts of current European MPAs and improved communication between marine industries and scientists. Specific thematic calls for research into MPAs would be appropriate under the European Framework for research funding and could be implemented immediately.

Global Fisheries Management

There was wide support for the expansion of intergovernmental fisheries management frameworks. The network of RFMOs across the high seas is fragmented and incomplete; whilst many fisheries are covered by RFMOs with little authoritative power, still more are left completely unregulated. New RFMOs must be established to cover those fisheries currently unregulated, and the powers and competency of existing RFMOs should be standardised.

There should be a 'Blueprint' for standardising RFMO good practice. Benchmark standards for RFMO responsibilities have been posited by the United Nations Fish Stocks Agreement, and the Food and Agriculture Organisation's Code of Conduct for Responsible Fisheries in 1995. However these standards are basic and generalised to suit the wide range of differing powers and responsibilities of RFMOs. Agreement must be reached on an enforceable 'Blueprint' for good practice, framing a code of conduct that all RFMOs should meet and be assessed against. RFMOs should be sufficiently funded and resourced to be able to meet the agreed standards.

RFMOs should be subject to independent international monitoring and review. RFMO performance should be monitored and assessed against international 'Blueprint' for good practice that covers environmental, social and economic standards. There should be an international 'blacklist' for those RFMOs who consistently and severely fail in their management duties. Under-performing RFMOs will need to improve their management to meet the agreed standards or face penalties.

Cross-cutting Issues

Devolve and delegate management responsibility

The industry strongly favours the devolution of management responsibility to regional, national and local levels combined with industry co-management. A great deal of fisheries management implemented at the European level could be more effective if implemented at the regional, national or local level. Furthermore, delegation of rights-based management to Producer Organizations in the UK has improved industry responsibility, self-policing and compliance. National producer organizations could have delegated responsibilities under a regional management approach which includes ecosystem-based management, greater transparency, and wide stakeholder participation. It is important to ensure fishers are involved in both fisheries management and marine spatial planning. However, non-industry representatives argued that delegated responsibility must also include accountability, transparency and financial responsibility for management costs.

Improve the role of scientific and industry advice in decision-making

Science must play a greater role in fisheries management in Europe. Industry representatives pointed out that there is limited scientific data to support the management of many fish stocks fished in European and adjacent waters. Additionally the consistent setting of total allowable catches (TACs) above scientific recommendations in Europe for short-term economic gain has been a major cause of failure of management of European fisheries. More resources should be directed at scientific assessment of fish stocks and scientific evaluation of management strategies. Scientific recommendations of TACs should not be exceeded and fisheries management should be evidence based. Where scientific data are lacking or are uncertain, the precautionary principal should be applied in accordance with international fisheries agreements. There is a need for much more transparency and wider participation in fisheries negotiations and management in the European Union.

Address the Industry-Science divide. There is currently a major gulf in communication and understanding between members of the fishing industry and scientists. It is important to integrate both scientists and the industry into the fisheries management process to enhance communication and cooperation between the two groups. One part of this may be through co-management arrangements and rights-based management, which give more management responsibility to the industry while creating incentives to invest in scientific assessments of the resource.

Increase participation of fishermen in the collection of scientific fisheries data. There was wide agreement that fishing industry participation in data collection would not only increase the accuracy of stock assessments but also stimulate better communication and trust between fishers and scientists.

Make scientific advice interdisciplinary. Fisheries face many social, economic and ecological challenges. These challenges are dynamically integrated and will require an interdisciplinary approach to meeting them. The lack of such integration in the past has negatively contributed to the political dimension in fisheries management. The Common Fisheries Policy aims for three pillars of sustainability: social, economic and ecological. To achieve these aims, fisheries management should more strongly integrate natural and social sciences.

Comments from the UK All-Party Parliamentary Fisheries Group

Address the Science-Industry divide at a global level

Members of the UK APPFG are concerned about the lack of trust and communication between scientists and the fishing industry. Members sought to recognize the progress industry had made recently towards sustainable fishing and develop policy mechanisms to enable the two groups to work together to develop socially, economically and ecologically sustainable solutions to fisheries management problems. This will require greater transparency, interdisciplinary dialogue and the creation of multi-stakeholder groups at the management level.

Address the problems with intergovernmental fisheries management

Members of the UK APPFG see many of the problems with the Common Fisheries Policy to be rooted in the intergovernmental framework. Failures of the CFP mirror failures of Regional Fisheries Management Organizations (RFMOs) in the sustainable management of fish stocks due to issues of national control and collective decision-making. It is important to create a decision-making framework for fisheries management that is fully based on science and is protected from national interest and politics.

Members of the UK APPFG support industry-government co-management of fisheries. There is weakness in the current management structure in which industry involvement is minimal. Devolution of management to the national or local level is important but improved inclusion of industry in decision-making must be a part of this.

Marine Protected Areas are necessary but not sufficient

Members of the UK APPFG pointed out that while Marine Protected Areas are an important tool in marine ecosystem conservation, they alone are not sufficient to ensure sustainable resource use. Significant reform of the Common Fisheries Policy is critical to achieving sustainable fisheries and the designation of temporary fisheries closures and permanent Marine Protected Areas are just one aspect of that reform.

The socio-economic side of fisheries management

Members of the UK APPG were concerned that the socio-economic effects of changing fisheries management were not addressed in detail during the discussions and stated that this aspect of fisheries must be adequately assessed and factored in to any proposals and plans for fisheries in the future.

Annex 4 European Fisheries Policy Workshop Meeting Agenda

DRAFT AGENDA

International Commission on Land Use Change & Ecosystems
European Fisheries Policy Workshop

Tuesday 23rd March
European Parliament, Brussels
Meeting Rooms A5G-1 & A1E-3

11h00 to 16h00 = Open to all MEPs
16h45 to 18h = GLOBE group only

Room A5G-1

1100 **Introduction: A *Marine Fisheries Recovery Plan***
Hon Barry Gardiner MP (UK), Vice-President, GLOBE International, and Co-Chair, International Commission on Land Use Change and Ecosystems

1110 **Europe's Common Fisheries Policy: The Need for Reform**
Isabella Lövin MEP (Sweden), EP Fisheries Committee

1120 **Overview: What GLOBE Policy Recommendations for Marine Fisheries Mean for Common Fisheries Policy Reform**
Presentation by Dr Alex Rogers, ZSL / Chair, GLOBE Marine Technical Advisory Group (MTAG)

1140 **Respondant: Isabella Lövin MEP (Sweden)**

1200 **Panel 1: Addressing Fleet Overcapacity**
Chair : Maria do Céu Patrâo Neves MEP (Portugal)
Dr. Alex Rogers, ZSL/MTAG; Dr. Jill Wakefield, University of Warwick/MTAG; Professor Antonio Garcia Allut, Co-Founder of Lonxanet Foundation for Sustainable Fishing; Professor Michel Kaiser, University of Bangor/MTAG.

Subsidy reform, rights-based management, transitional measures, alternative livelihoods and Cap & Restore approach, Marine Protected Areas

1300 **Panel 2: Developing a Culture of Compliance**
Chair : Raül Romeva i Rueda MEP (Spain)
Andrew Read, Isle of Man /MTAG; Hélène Bours, Coalition for Fair Fisheries Arrangements - CFFA

Responsibility/Accountability, IUU Fishing, Control and Enforcement Reform (MCS), Certification of Sustainable Fisheries

Room A1E-3

1400	**Lunch**
1400	**Panel 3: The External Dimension** **Chair: Barry Gardiner MP (UK)** Matthew Gianni, DSCC/MTAG; Béatrice Gorez, Coalition for Fair Fisheries Arrangements - CFFA *RFMOs, Third Country Agreements and UNCLOS*
1500	**Comments by Directorate-General for Maritime Affairs and Fisheries (DG-MARE)** Representative TBC
1515	**Questions & Discussion**

Room A5G-1

1600	**Coffee**

GLOBE ONLY

1620	**A European Response to GLOBE Fisheries Policy Recommendations** Presentation by Dr Alex Rogers ZSL / Chair, GLOBE MTAG and Isabella Lövin MEP
1640	**Finalisation of GLOBE European Recommendations**
1730	**Workshop Ends**

Annex 5 European Fisheries Policy Workshop List of Participants

23 March 2010

Chairs

Ms Isabella Lövin MEP (SE)	Rapporteur on the Commission's vision on the CFP reform European Parliament Committee on Fisheries, European Parliament
Mr Raül Romeva i Rueda MEP (ES)	Committee on Fisheries
Hon Barry Gardiner MP (UK)	Vice President, GLOBE International Co-Chair, GLOBE International Commission on Land Use Change and Ecosystems UK House of Commons

Legislators

European Parliament	Hon Satu Hassi MEP (FIN) Chair of the Environment Committee
European Parliament	Ms Ulrike Rodust MEP (DE) Committee on Fisheries
European Parliament	Maria do Céu Patrão Neves MEP (PT) Rapporteur on the Commission's vision on the CFP reform, Committee on Fisheries
European Parliament	Raül Romeva i Rueda MEP (PT) Committee on Fisheries
European Parliament	Kriton Arsenis MEP Committee on Fisheries
European Parliament	Hon. Ricardo Cortés Lastra MEP
Denmark	Hon Steen Gade MP President of GLOBE Europe, Danish Folketing
Denmark	Hon Sophia Rossen MP Danish Folketing
France	Frédéric Cuvillier National Assembly of France
Greece	Hon Kostas Kartalis President of the Standing Committee on Environment, Hellenic Parliament
Greece	Hon Georgios Kasapidis
Italy	Senator Roberto Della Seta Standing Committee on Land, Environment and Environmental Resources, Italian Senate
Portugal	Hon Ulisses Manuel Brandão Pereira MP Rapporteur on the EC Green Paper on the Reform of the CFP, Assembly of the Republic of Portugal
UK	Hon Barry Gardiner MP Co-Chair of GLOBE International Commission on Land Use Change and Ecosystems, UK House of Commons

International Commission on Land Use Change & Ecosystems

23 March 2010

Expert Advisors

Ms Hélène Bours	Coalition for Fair Fisheries Arrangements
Professor Antonio García Allut	Lonxanet Foundation for Sustainable Fisheries, University of Coruña
Mr Matthew Gianni	Political and Policy Advisor, Deep Sea Conservation Coalition
Ms Béatrice Gorez	Coalition for Fair Fisheries Arrangements
Dr Simon Harding	Marine Scientific Advisor, Institute of Zoology, Zoological Society of London
Professor Michel Kaiser	Bangor University
Dr Andy Read	Fisheries Director, Isle of Mann
Dr. Alex David Rogers	Reader, Institute of Zoology, Zoological Society of London Chief Marine Scientific Advisor to GLOBE
Dr. Jill Wakefield	School of Law, University of Warwick

Ex Officio

Mr Adam C.T. Matthews	Secretary General, GLOBE International
Mr Chris Stephens	Director, GLOBE International
Ms Beth Gardiner-Smith	Policy Advisor, GLOBE International
Ms Elizabeth Clark	Postgraduate Research Assistant, Zoological Society of London

Annex 6 Acronyms and Abbreviations

CFP, Common Fisheries Policy; DEFRA, Department for Environment, Farming and Rural Affairs; DFID, Department for International Development; EU, European Union; FAO, Food and Agriculture Organization of the United Nations; G20, The Group of Twenty; GLOBE, Global Legislators Organization; ICLUCE, International Commission on Land Use Change and Ecosystems; ITQ, Individual Transferable Quota; IUU, Illegal, Unreported and Unregulated Fishing; MEP, Member of the European Parliament; MP, Member of Parliament; MPA, Marine Protected Area; MTAG, Marine Technical Advisory Group; NGO, Non-Governmental Organization; RFMO, Regional Fisheries Management Organization; TAC, Total Allowable Catch; UK, United Kingdom; UN, United Nations; UNCLOS, United Nations Convention on the Law of the Sea; UNEP, United Nations Environment Programme; UNFSA, United Nations Fish Stocks Agreement; ZSL, Zoological Society of London.