Responses to the Green Paper Reform of the Common Fisheries Policy COM(2009)163 final

OCEAN2012
c/o The Pew Charitable Trusts
Square du Bastion 1A
1050 Brussels
Belgium

info@ocean2012.eu
www.OCEAN2012.eu

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LIST OF ACRONYMS

ACFA	Advisory Committee on Fisheries and Aquaculture
ACP	African, Caribbean and Pacific group of countries
CAP	Common Agricultural Policy
CFCA	Common Fisheries Control Agency
CFP	Common Fisheries Policy
CLA	Catch Limit Algorithm
EEA	European Environment Agency
EEZ	Exclusive Economic Zone
EFF	European Fisheries Fund
EPA	Economic Partnership Agreement
EU	European Union
FCR	Fisheries Compliance Review
FIFG	Financial Instrument for Fisheries Guidance
FPA	Fisheries Partnership Agreement
GES	Good Environmental Status
ICES	International Council for the Exploration of the Sea
ILO	International Labour Organisation
IMP	Integrated Maritime Policy
ITQ	Individual Transferable Quota
IUU	Illegal, unreported and unregulated fishing
IWC	International Whaling Commission
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
MSY	Maximum Sustainable Yield
PO	Producer Organisation
RAC	Regional Advisory Council
RBM	Rights-Based Management
RFMO	Regional Fisheries Management Organisation
RMP	Revised Management Procedure
SC	Scientific Committee
SROI	Social Return on Investment
TAC	Total Allowable Catch
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel Monitoring System
WTO	World Trade Organisation

ABOUT OCEAN2012

OCEAN2012 is an alliance of organisations dedicated to transforming European Fisheries Policy to stop overfishing, end destructive fishing practices and deliver fair and equitable use of healthy fish stocks.

OCEAN2012 was initiated, and is coordinated, by the Pew Environment Group, the conservation arm of The Pew Charitable Trusts, a non-governmental organization working to end overfishing in the world´s oceans.

The founding members of OCEAN2012 are: Coalition for Fair Fisheries Arrangements (CFFA), Fisheries Secretariat (FISH), nef (new economics foundation), The Pew Environment Group and Seas At Risk (SAR).

Our vision is of healthy oceans with abundant fish and wildlife contributing to human well being.

Our mission is to ensure that the 2012 reform of the EU Common Fisheries Policy stops overfishing, ends destructive fishing practices and delivers fair and equitable use of healthy fish stocks.

Our broad alliance of organisations employs scientific evidence and extensive experience in engaging decision-makers and stakeholders at all levels.

EXECUTIVE SUMMARY

The public debate on the third reform of the Common Fisheries Policy (CFP) began on April 22nd 2009 with the publication of the European Commission's Green Paper. With over 80 percent of assessed fish stocks in Community waters deemed overfished and the fishing industry stumbling from one crisis to another, the current CFP is widely perceived as being a failure. The situation is dire. Unless this reform addresses the main structural failings of the CFP, fish stocks will be further depleted, exacerbating the crises facing the fisheries sector, with potentially disastrous consequences for the marine environment as well as fishery-dependent coastal communities.

European Union (EU) fisheries are characterised by fleets that are able to catch more fish than are available, catch limits that are frequently set too high for reasons of political expediency, opaque decision-making procedures and a culture of non-compliance with the rules.

The 2002 CFP reform brought some improvements in the areas of long-term management, stakeholder participation, control and allocation of subsidies. However, it did not prioritise achieving environmental sustainability – a prerequisite for the socially and economically sustainable exploitation of marine resources.

The Commission stated in the Green Paper that it "believes that a whole-scale and fundamental reform of the CFP and remobilisation of the fisheries sector can bring about the dramatic change that is needed to reverse the current situation. This must not be yet another piecemeal, incremental reform but a sea change cutting to the core reasons behind the vicious circle in which Europe's fisheries have been trapped in recent decades."[1]

This contribution to the consultation responds to this challenge, proposing a fundamentally new, principle-centred approach to fisheries management in Community waters and for the EU fleet globally. It outlines the key issues that the OCEAN2012 alliance would like to see incorporated into a new CFP:

- Environmental objectives should be enshrined in the CFP as a prerequisite to fulfilling social and economic objectives; the precautionary approach and the ecosystem-based approach to fisheries management must form the fundamental basis upon which EU fisheries management is built.
- The CFP should define a decision-making framework ensuring that decisions are taken at the appropriate levels, differentiating between long-term strategic and operational management decisions.
- The CFP should define instruments and competencies which deliver sustainable fishing power[2] at EU and regional level; this should include legally-binding and time-bound

[1] COM(2009)163 final: Green Paper – Reform of the Common Fisheries Policy.

[2] In this context, fishing power is a measure of the properties of a fishing vessel, measured in terms of the *fishing mortality* the vessel causes in the fish stock(-s); it must not be confused with engine power.

fishing power limits per fishery, or group of fisheries, in a given area in the case of multi-species fisheries.

- Access rules should be based on a set of criteria that ensure a transition to, and support for, environmentally and socially sustainable fishing.
- The decision-making processes should be transparent and participatory.

While there are a great number of specific questions in the Commission's Green Paper, OCEAN2012 believes it is important to maintain, throughout the reform process, the focus on purpose. The purpose of this CFP reform must be more than tinkering at the edges and rectifying some perceived wrongs. It must be the creation of a foundation upon which future sustainable fisheries can be built.

Any management tools should only be applied in a framework that:

- includes a specific set of management objectives;
- sets criteria for resource access based on environmental considerations (preferential access to rights for environmentally-friendly fishing techniques);
- includes provisions on social equity (initial allocation, restrictions on quota transfers, priority to owner operators, protection of smaller scale interests etc.);
- involves all affected stakeholders in their design and implementation;
- restricts concentration of ownership or creation of fishing monopolies or cartels (e. g. caps on ownership to avoid excessive concentration of rights);
- provides for cost recovery; and
- contains a sunset provision/exit strategy (allowing for performance review and – in case of need –the reclaim of the right).

In addition, the implementation of any management tools should be in conjunction with:

- input and/or output limits based on scientific advice and local knowledge, and applied with a precautionary approach;
- consistent monitoring of all catch, bycatch and discards;
- adequate enforcement;
- regular review of the program against pre-determined objectives; and
- adaptive management (requires both short and long term impact monitoring); changes must be made if objectives are not being met.

We have, in our contribution to the consultation, focussed on answering the questions raised, where they are raised, at times with general observations preceding our answers. Occasionally we have referred to answers in other sections, and where we believe the questions have been leading we have stated so.

INTRODUCTION

The current CFP is widely perceived as a failure. The European Commission recognises that the situation is dire, and that a fundamental reform of the policy is urgently needed in order to ensure the future of the fishing sector and of marine biodiversity.

We are at the end of an era and the EU is at a crossroads. The EU can choose to make some difficult choices and embark upon the road to environmentally and socially sustainable fishing, or it can choose to make cosmetic changes only, continuing the downward spiral of its fisheries.

OCEAN2012 welcomes the Green Paper (COM(2009)163) and the invitation to stakeholders to express their views on the future of the CFP. Nevertheless, the content and several of the questions posed in the Green Paper point the reader in a certain direction, which we perceive as premature and which contradicts the premise that "no stone should be left unturned". For example, questions such as "Could transferable rights (individual or collective) be used more to support capacity reduction for large-scale fleets?" preclude discussions on different rights-based management approaches, some of which are based on non-transferable rights, and also steer away from alternative ways of managing capacity.

To achieve long-term sustainability, OCEAN2012 would like to see a reformed CFP applying a fundamentally new, principle-centred approach to fisheries management in Community waters and for the EU fleet globally. Therefore, in this contribution, OCEAN2012 will not limit its input to answering the questions posed in the Green Paper.

This time, reform must bring about a "sea change" in fisheries policy: from the setting of political objectives to the design of management measures, from compliance to consumer awareness. Therefore, it must be acknowledged that the reformed CFP will not deliver the vision described by the Commission immediately. Transitional measures will be needed in order to transform European fisheries into a forward-looking, responsible sector, which complies with international commitments and European legislation.

The Integrated Maritime Policy (IMP) will have a substantial role to play in making this happen, and it too will have to suffer some degree of reform. Up until now the IMP has focused on promoting growth in profitable maritime economic activities, but it will have to place sustainability at its very core, and give fisheries the attention they deserve in the context of stimulating Europe's maritime economy and heritage. In addition, the implementation of the Marine Strategy Framework Directive (MSFD) demands that environmental considerations are integrated at every step of policy and decision-making processes. Implementation of the IMP will have to actively contribute to achieving Good Environmental Status (GES), and the reform of the CFP needs to be a part of that effort.

Based on the above, OCEAN2012 wants to see a reform of the CFP which includes the following changes:

- environmental sustainability is enshrined as the over-arching principle, without which economic and social sustainability is unobtainable;
- the precautionary approach and the ecosystem-based approach to fisheries management form the basis upon which fisheries management is built;
- the CFP defines a decision-making framework that ensures decisions are taken at the appropriate levels, differentiating between long-term, strategic and operational management decisions;
- instruments and competencies are established which deliver sustainable fishing power, at EU and regional level, including legally binding and time-bound fishing power limits per fishery or group of fisheries in a given area. Fishing power is a measure of the properties of a fishing vessel, measured in terms of the *fishing mortality* the vessel causes on the fish stock or stocks; it must not be confused with engine power;
- access rules are based on a set of criteria that ensures a transition to, and support for, environmentally and socially sustainable fishing; and
- the decision-making processes are transparent and participatory.

THE CURRENT COMMON FISHERIES POLICY AND ITS OUTCOMES

We generally agree with the Commission's analysis of the situation of fisheries in the EU and the failings of the CFP, and in particular the need for a fundamental reform of the political decision-making process.

In 2001, after a long consultation process with stakeholders, the Commission published its far-reaching Green Paper: "The Common Fisheries Policy after 2002 (COM(2001)135)". Even then, it was abundantly clear that the CFP was not achieving the objective of conserving marine resources and that the EU was far behind the progress achieved through international instruments such as the 1995 UN Agreement on straddling and highly migratory fish stocks[3].

The Commission attempted to incorporate some of these international concepts in its proposals, such as the use of management reference points serving as targets and limits. But many of the Commission's ambitions were gradually weakened or eliminated in the process leading up to the final decision.

After months of negotiations, and despite Fisheries Commissioner Franz Fischler's determination, the basic Regulation (EC 2371/2002) that was adopted was a far cry from what the Commission had initially proposed.

Ironically, one of the preambles of the Regulation states: "*Given that many fish stocks continue to decline, the Common Fisheries Policy should be improved to ensure the long-term viability of the fisheries sector through sustainable exploitation of living aquatic resources based on sound*

[3] http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm

scientific advice and on the precautionary approach, which is based on the same considerations as the precautionary principle referred to in Article 174 of the Treaty."

Since 2002, this has only partially been accomplished and the upcoming reform must ensure that the revised CFP contains the necessary provisions to actually achieve the above objectives.

OVERCOMING THE FIVE STRUCTURAL FAILINGS OF THE POLICY

4.1. Addressing the deep-rooted problem of fleet overcapacity

We agree that the imbalance between fishing capacity and fishing opportunities is one of the main drivers of overfishing. Instruments used in the past have largely been ineffective, but the specific reasons for failure have yet to be analysed and so remain unclear. In fact, it seems that various attempts to reduce overcapacity could have contributed to a significant reduction if they had been better designed in the first place and more rigorously implemented. Without a proper analysis of past experiences, it seems folly to rush to adopt further instruments, such as transferable rights; especially as market-based instruments, once employed, are hard to reverse.

Currently, the amount of overcapacity is largely unknown, despite international and European obligations to assess it[4]. Progress on how to measure overcapacity has been made with the Commission's guidelines from 2008[5] for an improved analysis of the balance between fishing capacity and fishing opportunities, but there is still a need to discuss how capacity and/or overcapacity could be better measured.

However, any discussion about how to further improve measuring fishing capacity should not delay a much-needed assessment of overcapacity in the different fisheries. Such an assessment is a prerequisite for a more specific diagnosis of capacity in each fishery and would help to provide guidance on the necessary adjustments, based on a series of sustainable development criteria (see section 4.3).

In addition, we do not think that overcapacity should be exclusively limited to a 'size' problem *('too many boats chasing too few fish'*), as is stated in the Green Paper. The quantitative "one size fits all" solutions applied in the past frequently resulted in many smaller boats being scrapped, whilst the overall fishing capacity hardly decreased.
In Spain, for example, the majority of funding for fleet measures in 2000–2006 (under the Financial Instrument for Fisheries Guidance or FIFG) was used to modernise or build new vessels above 24 metres. Only a small fraction was used for the small-scale fishing sector and

[4]See for instance: IEEP (2009) '*Overcapacity – What overcapacity?'* available at http://www.pewenvironment.eu/resources/IEEP-Overcapacity-Report.pdf
[5]DG Mare, 2008. Guidelines for an improved analysis of the balance between fishing capacity and fishing opportunities. The use of indicators for reporting according to Article 14 of Council Regulation 2371/2002. Version 1, March 2008.

then mostly for scrapping. This kind of fleet management has had dramatic consequences for small-scale fishing communities in Europe, and has not helped to achieve the right balance between available resources and fishing capacity.

Overcapacity is also a qualitative problem, as different fleet segments and gears have different impacts on the marine environment, different fuel requirement, deliver different quality of fish and result in different social outcomes.

What is needed now is a frank discussion about what kind of fleet the EU should have in the future and which instruments would be most effective in achieving such a transition. Unfortunately, there is no single solution, and capacity management programmes must consist of a combination of approaches and instruments, such as gear restrictions, limited entry programs, individual quotas, collective fishing rights, buyback programmes and taxes.

Whatever management instruments are used, they should support the transition towards a more sustainable fleet and not – as with structural funds in the past – undermine or delay such a transition.

To ensure that capacity reduction measures are adequately designed and properly implemented, and to avoid decisions being influenced by short-term interests, socio-economic and environmental impact assessments should be undertaken for all measures proposed. Accompanying measures, to be discussed with stakeholders, should be proposed in order to mitigate negative effects on the social fabric of the fishing communities.

It needs to be stressed that efforts to reduce capacity within EU waters must not result in a transfer of capacity to other waters. Outside EU waters, in the Fisheries Partnership Agreements (FPAs) signed with third countries, the priority must be to balance capacity with "available" fishing opportunities while enabling these countries to develop their own fishing sector in a sustainable manner.

- **Should capacity be limited through legislation? If so, how?**

Yes, OCEAN2012 believes that legislation should be put in place obliging fisheries management bodies to meet capacity reduction targets within a clear timeframe.

Reduction targets should be based on both quantitative and qualitative aspects to achieve a sustainable fishing fleet. Different instruments could support such policy measures, such as transitional aid. In addition, priority access to resources based on environmental and social criteria, as outlined in Section 4.3, would create an incentive for more sustainable fleet reduction.

- **Is the solution a one-off scrapping fund?**

A one-off scrapping fund is one way to use public funding to support the transition towards a better balance between fishing capacity and fishing opportunities. However, it will not solve the problem if the underlying factors that lead to overcapacity are not adequately addressed. In addition, future imbalances created by technological creep or changes in fishing opportunities will not be helped by any kind of one-off fund.

Still, a one-off scrapping fund can play a crucial role in accelerating the transition to more sustainable fisheries and improved ecosystem health. As part of a package of transitional assistance and management changes, it can provide a window of opportunity to help transform the nature of fisheries, in particular in cases where urgent action is required, as is the case for many segments of the European fleet.

In the past, EU decommissioning schemes have failed to reach their objectives from both an environmental and an economic perspective. Any future one-off scrapping fund should therefore follow the OECD principles and guidelines for decommissioning schemes. For example, under the beneficiary pays principle, those who benefit from a decommissioning scheme should contribute to the costs of the scheme. A combination of industry and public funding can improve the incentives for co-operative management, as the remaining fishers have a stronger stake in the future of the fishery.

As mentioned before, there are also other ways in which public aid can support a reduction in fishing capacity. Public aid can provide retraining of fishers and support structural adjustments in the communities concerned. Investments in control and enforcement measures can increase pressure for non-sustainable operators to leave the sector without further public aid.

- **Could transferable rights (individual or collective) be used more to support capacity reduction for large-scale fleets and, if so, how could this transition be brought about? Which safeguard clauses should be introduced if such a system is to be implemented? Could other measures be put in place to the same effect?**

Different types of rights-based management (RBM) can contribute to a transition to a more sustainable fleet. There are a large number of different approaches, such as limited non-transferable licensing; community catch quotas; individual non-transferable or transferable effort quotas, individual non-transferable or transferable catch quotas; vessel catch limits or territorial use rights in fisheries. Most Member States have already implemented some kind of RBM approach.[6]

Various RBM approaches might contribute to specific fisheries management objectives in selected fisheries. Therefore, we believe that transferable rights can play a role in capacity

[6]See for instance MRAG (2008) An analysis of existing Rights-Based Management (RBM) instruments in Member States and on setting up best practices in the EU.

reduction in certain cases. There is not, however, a particular RBM approach which works as a panacea for all fisheries.

For any RBM approach to be effective, it is OCEAN2012's view that it needs to be applied within a framework that:

- includes a specific set of management objectives;
- sets criteria for access to resources based on environmental and social considerations (preferential access for environmentally friendly fishing techniques and for the operators that are contributing most to coastal community development);
- includes provisions on social equity, such as initial allocation and restrictions on quota transfers;
- restricts concentration of ownership or creation of fishing monopolies or cartels;
- involves all affected stakeholders in its design and implementation;
- provides for cost recovery, i.e. those who benefit from the rights also pay for the costs;
- provides for adequate enforcement;
- ensures regular reviews against pre-determined objectives;
- includes adaptive management, meaning that changes must be made if objectives are not being met (this would require monitoring of both short and long term impact);
- limits the duration of the rights; and
- includes a sunset provision/exit strategy (allowing for performance review and, if needed, the possibility to reclaim the right).

We agree with the Commission that relative stability, as it has been implemented in the past, has been an incentive to emphasise short-term economic interests to the detriment of the common good, and we feel that this principle should be fundamentally reviewed.

- **Should this choice be left entirely to Member States or is there a need for common standards at the level of marine regions or at EU level?**

Whatever management body (or bodies) will be responsible for fleet management and the allocation of access rights (see section 4.3, on regionalisation), and whatever combination of instruments is used, there is a clear need for common principles, standards and frameworks. This includes, for instance, provisions to guarantee transparency, participation of stakeholders, and the integration of environmental and social criteria into fleet restructuring programmes.

4.2. Focusing the policy objectives

The Green Paper correctly identifies "*imprecise policy objectives resulting in insufficient guidance for decisions and implementations*" as one of the key failures of CFP. Unless this key issue is addressed, it will not be possible to reverse the current trend in the European fishing sector.

OCEAN2012 wants to see environmental objectives enshrined in the CFP as a prerequisite to fulfilling social and economic objectives; the precautionary approach and the ecosystem-based approach to fisheries management must form the base upon which fisheries management is built.

The reasoning is clear: there are fish without fisheries, but no fisheries without fish. Environmental sustainability of marine resources is a prerequisite to deliver social and economic benefits. Healthy marine ecosystems and fish stocks are a pre-condition for:

- building a robust EU fishing industry with greater economic resilience;
- securing the livelihoods of coastal fishing communities;
- contributing more to global food security; and
- increasing ecological resilience to climate change impacts.

- **How can the objectives regarding ecological, economic and social sustainability be defined in a clear, prioritised manner which gives guidance in the short term and ensures the long-term sustainability and viability of fisheries?**

Environmental objectives must be enshrined in the new basic Regulation and take precedence over all other objectives, as a prerequisite for achieving social and economic sustainability both in the short and the long term.

Success will depend on two main components:

1. The precautionary approach and the ecosystem-based approach to fisheries management must form the basis for fisheries management in the EU.
2. Recovery and long-term management plans must be shielded from political pressure to increase short-term fishing opportunities at the expense of the future sustainability of the industry.

The precautionary approach and the ecosystem-based approach are mentioned in the current CFP, and must remain basic principles underpinning any future policy. For this to happen in practice, they must be defined in an operational manner and be applied routinely in all fisheries management. The challenge is to find ways to ensure that the environmental objectives are maintained when designing and implementing specific targets and measures.

For example, measures to restore marine ecosystems may impose social and economic costs in the short term, resulting from reduced fishing opportunities. This generates political pressure to increase fishing opportunities at the expense of environmental objectives and hence the future sustainability of the resource and the industry. The new CFP needs to outline mechanisms to deal with this political pressure and identify new solutions to address the social and economic costs, without undermining the environmental objectives.

One option would be to develop and agree on a protocol for EU fisheries restoration that sets overarching limits to exploitation of marine resources, and defines clear caps and targets per fishery and Member State over the next five years. Targets and time frames would be set following scientific advice.

The Precautionary Approach

States and sub-regional and regional fisheries management organisations are called upon by the FAO Code of Conduct for Responsible Fisheries (1995)[7] to apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available.

The precautionary approach is referenced in a number of international agreements, including the Convention on Biological Diversity[8] and the 1995 UN Fish Stocks Agreement[9], both of which the EU has ratified and should be applying in all relevant policy areas. The UN Fish Stocks Agreement states that the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. It also includes a concise description of how the precautionary approach should be applied to fisheries management (Article 6 and Annex II).

The Ecosystem-based Approach

The effects of fishing go far beyond simply commercially exploited species, so its impact on all components of the marine ecosystem needs to be considered – target and non-targeted species, associated or dependent species, as well as the marine habitat. Applying an ecosystem-based approach also means that the impact of other human activities, including habitat destruction, climate change and pollution needs to be considered when making management decisions. The ecosystem-based approach is described in the Marine Strategy Framework Directive of 2008[10]:

"Marine strategies shall apply an ecosystem-based approach to the management of human activities, ensuring that the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations."

The new CFP must also help Member States deliver the target of Good Environmental Status under the Marine Strategy Framework Directive.

[7] http://www.fao.org/docrep/005/v9878e/v9878e00.HTM
[8] http://www.cbd.int/
[9] http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm
[10] Art. 1.3, Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

- **Should the future CFP aim to sustain jobs in the fishing industry or should the aim be to create alternative jobs in coastal communities through the IMP and other EU policies?**

Yes, sustaining jobs in the fishing industry is a desirable goal but it should not be fulfilled at the expense of environmental objectives. The future CFP should aim to restore fish stocks and marine ecosystems to healthy levels. If it succeeds in achieving these objectives, this will provide opportunities for long-term, profitable employment in the industry.

The CFP has been trapped in a vicious circle, where long-term objectives have been superseded by decisions mainly driven by political pressure to increase short-term fishing opportunities. While efforts should be made to sustain jobs in the fishing industry, securing the recovery of fish stocks and marine ecosystems could generate economic and social costs in the short term. The CFP has a role to play in addressing these costs.

When it comes to sustaining jobs and/or softening the impact that a transition towards sustainable fisheries could have in different fishing sectors, there are several potential solutions, for example:

- Restructuring the fleet towards a more job-intensive model, promoting fishing techniques which deliver lower catches per worker (reduced labour productivity) while reducing or at least not increasing environmental impacts. This would be easier to implement in those fisheries with enough margin to accommodate a higher number of workers. It would result in a net transfer of profits from the owner/investor towards helping meet a social goal; and
- Promoting job-sharing schemes; and
- Re-training fishermen for alternative jobs in their communities, for example, through programs similar to those currently available under priority Axis 4 of the European Fisheries Fund[11].

Whatever jobs are sustained or created should comply with International Labour Organisation (ILO) standards[12] on working conditions in the fisheries sector.

There is no "one-size-fits-all" answer. Ultimately, the new CFP should promote solutions which maximise the benefits to society. In some situations this will be achieved by sustaining jobs in the fishing industry; in others it will require the development of alternative jobs, at least during the transition period.

[11] Council Regulation (EC) No 1198/2006 of 27 July 2006 on the European Fisheries Fund
[12] http://www.ilo.org/public/english/dialogue/sector/sectors/mariti/standards.htm#heading1b

Achieving the recovery of fish stocks and marine ecosystems so as to deliver long-term employment will also require action by the fishing industry. In order to secure their long-term viability, vessels and businesses will need to operate within environmental limits. This will require changes to the way they fish today, and the adoption of more sustainable business models and strategies.

The new CFP needs to create a context that encourages sustainable business models and strategies by:

- rewarding businesses that move towards sustainability and penalising those that do not; and
- using all possible levers of change, such as public funding, regulation, fiscal policies and education, to facilitate this transition.

The transition is likely to result in significant changes in the sector. The new context will see some businesses disappear, while creating opportunities for new ones.

- **How can indicators and targets for implementation be defined to provide proper guidance for decision making and accountability? How should timeframes be identified for achieving targets?**

If, as OCEAN2012 advocates, environmental objectives are given priority, input and/or output limits[13] must be aligned with the biological limits of the marine ecosystem, with the aim of keeping both target and non-target species at levels ensuring their long-term abundance and the retention of their full reproductive capacity. This would minimise the risk of stock depletion or collapse, ensure that the fish stocks are maintained as a functioning part of the ecosystem and reduce management costs.

The EU is currently using Maximum Sustainable Yield (MSY) as a management target for fisheries, in accordance with the Johannesburg Declaration of 2002[14]. In theory, this corresponds to the largest average catch that can be made year after year without reducing the abundance of the stock. The common assumption is that this occurs when the fish stock has been reduced to less than half of the un-fished level. However, in fisheries science, there is a growing consensus that the exploitation rate that achieves MSY should be re-interpreted as an upper limit rather than a management target. This requires overall reductions in exploitation rates, which can be achieved through a range of management tools[15] (see also chapter 5.2).

OCEAN2012 does not consider MSY to be an appropriate ultimate target for fish stocks, just a step on the way. Fishing beyond MSY will not yield economic gains in the long term whereas fishing at a lower level will bring almost as much fish with much less effort, and is therefore economically more beneficial. MSY should only be considered an intermediate target to

[13] This can take the form of catch and/or effort limits, including fishing power
[14] http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm
[15] Worm, Hilburn et al. (2009) , Rebuilding Global Fisheries, in Science 31, pp. 578-585

achieving abundance, and alternative objectives of fisheries management must be developed that are more conservative and precautionary in nature.

There have been a number of efforts to compile different indicators for fisheries management, as well as for the wider marine environment. Some worth mentioning are the OSPAR work on Ecological Quality Objectives[16], the EU 6th Framework project INDECO[17] – Development of Indicators of Environmental Performance of the Common Fisheries Policy – and the European Environment Agency's (EEA) use of indictors in evaluating the state of different sectors[18]. OCEAN2012 recommends that this information and experience is put to use in selecting an appropriate set of indicators that will help guide both decision-making and evaluation of objectives, targets and timeframes.

Finally, it is also important to highlight that in order for the future policy to be effective in delivering environmental and socio-economic benefits, both targets for implementation and indicators need to cover the environmental, social and economic dimension of fisheries. This will require the development of tools that help reveal the full impact of different decisions and how these affect different stakeholders.

Social and environmental values are difficult to express in financial terms and these often escape the economic impact assessments that inform decision-making. Economic analysis also regularly omits the value of future benefits, thus favouring short-term over long-term gains. If we are to move towards a CFP that delivers benefits to society, other assessment models are needed to guide decision-making in this direction; tools that help decision-makers answer key questions such as: Which fisheries deliver the highest value to society? And which deliver the lowest? How can we structure the national and the EU fishing sector in such a way that we incentivise high-value sectors and reduce low-value ones?

The Social Return on Investment (SROI)[19] is a methodology that helps organisations and institutions demonstrate the social, economic and environmental impact of their actions. It provides a framework to measure and account for a much broader concept of value, incorporating social, environmental and economic costs and benefits. This is especially relevant when institutions seek to make every Euro count – a key priority for the public sector, even more so in the context of global financial crisis. The implementation of an SROI framework to fisheries policy seems an obvious first step towards improving decision-making in fisheries management.

[16] http://www.ospar.org/documents/DBASE/Publications/p00318_EcoQO%20brochure%20Towards%20a%20Healthy%20North%20Sea.pdf
[17] http://www.ieep.eu/projectminisites/indeco/index.php
[18] http://themes.eea.europa.eu/indicators/
[19] Cabinet Office of the Third Sector. A Guide to Social Return on Investment (SROI) is available from: http://www.sroi-uk.org/content/view/5/65/

4.3. Focusing the decision-making framework on core long-term principles

Decision-making in fisheries policy needs to be informed by what matters most to people, communities, the environment and society. Making visible and valuing hidden costs and benefits leads to more informed and better policy-making (see section 4.2), but it is not enough.

The current decision-making system in the EU suffers from a number of problems: it is highly politicised, with even detailed regulations being handled at the highest political level, favouring short-term interests. It is also mainly operating on a "one-size-fits-all" basis. Aside from the other short-comings, the adoption of the Lisbon Treaty, which will give the European Parliament co-decision, will make it difficult to continue in the same way.

OCEAN2012 therefore strongly believes that the decision-making process will have to change and that this is a key element of reform.

- **How can we clarify the current division of responsibilities between decision-making and implementation to encourage a long-term focus and a more effective achievement of objectives? What should be delegated to the Commission (in consultation with Member States), to Member States and to the industry?**

Currently, scientific advice on available fishing resources is not followed: catch limits agreed by the Council have exceeded scientific advice by approximately 48 percent in recent years, resulting in severe reduction of fish stocks. Therefore, short-term political interests need to be uncoupled from the determination of available fish resources and annual fishing possibilities. Once policy objectives have been set, scientists and managers can determine the amount of fishing resources available to be caught in any one timeframe, within a sufficiently robust management framework.

In order to achieve long-term sustainable fisheries, OCEAN2012 proposes that the decision-making structure and processes be fundamentally changed. We suggest that the Council of Ministers – and, under a ratified Lisbon Treaty, the European Parliament – focus on the over-arching vision, objectives and targets of the CFP and leave the detailed implementation to more appropriate bodies such as the Commission, Member States, or new bodies specifically created for the purpose.

OCEAN2012 asserts that there are different hierarchical steps in decision-making:

1. Setting overall, long-term policy objectives and targets (Which level of abundance should fish stocks be restored to and maintained at? When are stocks considered depleted and how should recovery be balanced with the continuation of fishing?);
2. Determining the fish resources available for fishing (How much fish can be caught while maintaining the stocks at the desired level of abundance?);

3. Determining the amount and type of fishing power (How should fishing take place? Options such as number of vessels, type of vessel and gear); and
4. Allocating access to the resource (Who should be allowed to fish? What kind of fish, where and how?).

OCEAN2012 recommends that in future only long-term policy objectives and targets be set by the highest decision-making bodies: the Council of Ministers and the European Parliament. These two bodies should:

- Jointly decide on long-term management objectives, such as the desired level of abundance of fish stocks, speed of recovery when stocks are depleted and other relevant aspects relating to the marine environment, in line with the 2008 Marine Strategy Framework Directive, the 1992 Habitats Directive and international agreements such as the Convention on Biodiversity;
- Agree a set of environmental and social criteria to allocate access to resources[20];
- Agree on standards and timetables for their implementation;
- Give a clear mandate (limited in time and regularly reviewed) to the European Commission, Member States, and/or other appropriate bodies to ensure delivery of these objectives based on the steps outlined below; and
- Create a system for regular evaluation of policies and implementation, making adaptive management with continuous improvements possible.

The process should be transparent and allow for equitable representation and participation of all stakeholders.

OCEAN2012 also recommends that future scientific assessment of fishing resources and the determination of fishing opportunities be based on a more conservative and precautionary policy framework:

- Using the precautionary approach as defined by the UN Fish Stocks Agreement from 1995 and the ecosystem-based approach as defined in the Marine Strategy Framework Directive, relevant scientific bodies should deliver advice on available resources: what and how much can safely be caught where;
- Scientific evidence should take into account traditional knowledge of the resources and their habitat;
- The scientific advice should be legally-binding to the relevant management bodies making subsequent decisions;

[20]How this translates in terms of capacity reduction, fleet restructuring and access allocation – decisions on who actually gets to fish – would then be taken on a fishery by fishery basis at a decentralised level (regional, national or local, depending on the fishery) within the overall limits that have been agreed according to the decision-making structure described above.

- Fishing limits (input or output limits) must be set to include all fish caught, not simply those that are landed. In other words, bycatch, discards and fishing mortality caused by recreational fishing must be taken into account in the scientific assessments.

OCEAN2012 proposes that decisions about access to fish resources and adequate fishing capacity are based on a set of transparent criteria for environmentally and socially sustainable practices, which would favour less destructive fishing gear and practices, low fuel consumption, greater employment, good working conditions and high quality products. For example:

- Selectivity – priority access should be given to fishers using more selective fishing methods with low bycatch;
- Less environmental impact – priority access should be given to fishers using gear and practices with a low impact on the marine environment;
- Lower energy consumption – priority access should be given to fishers using vessels and fishing methods consuming less energy per tonne of fish caught;
- Employment and working conditions – priority access should be given to fishing operators and fishing methods that provide more, good quality employment, as long as they are also less damaging for the environment. Working conditions should comply with relevant international standards, notably the 2007 ILO Work in Fishing Convention;
- Quality of product – priority access should be given to fishers using gear types providing the best quality fish, as long as they are also good for the environment; and
- History of compliance – past compliance with the rules of the CFP by fishers as well as Member States should be considered when allocating access to fish resources.

Once the overarching criteria have been agreed, they would be operationalised and used to allocate access to resources on a fishery-by-fishery basis at a decentralised level (regional, national or local, depending on the fishery) within the overall limits.

Use of these criteria would help to create more sustainable EU fisheries to the benefit of both the marine environment and the communities that depend on it. If formulated and implemented as described above, the EU's fisheries policy could become a global model. These criteria should be developed and applied gradually, giving fishing operators the opportunity to adapt. A transition period will be needed in order to implement any agreed criteria.

The criteria should have the advantage of creating positive competition between fishers; those who fish in the most environmentally and socially sustainable way would be given preferential access to resources. This would provide a very strong incentive for change and, in the longer term, such an approach would transform EU fisheries. OCEAN2012 is currently assembling more detailed and technical information on how environmental and social criteria have been used elsewhere to provide preferential access to fisheries resources, and how such criteria could be

used within the EU context. We intend to submit this information to the consultation process in due time.

- **Do you think decentralised decisions on technical matters would be a good idea? What would be the best option to decentralise the adoption of technical or implementing decisions? Would it be possible to devolve implementing decisions to national or regional authorities within Community legislation on principles? What are the risks implied for the control and enforcement of the policy and how could they be remedied?**

As long as clear objectives, principles, targets and evaluation procedures are in place, aspects of fisheries management, such as the type of capacity which will be allowed in a given fishery (type of vessels, fishing gears and methods based on above criteria), may be best decided in a decentralised manner, with appropriate stakeholder input (i.e. government, fishing sector, trade unions, NGOs). Strict control and enforcement would be a prerequisite and would require oversight by a central authority.

Once the Council and European Parliament have established criteria, decisions on the allocation of access to fish resources could be heavily decentralised. This could be done on an ecosystem/regional/local basis depending on the fishery and fish stocks concerned. People from a given region should have primary access. Fishing interests from outside the eco-region are free to apply for access if they can demonstrate that their fishing operations benefit the region. Access would be granted based on the criteria outlined above. Such decentralised decision-making processes will require good governance, transparency and accountability.

- **How could the advisory role of stakeholders be enhanced in relation to decision-making? How would Advisory Committee on Fisheries and Aquaculture (ACFA) and the Regional Advisory Councils (RACs) adapt to a regionalised approach?**

Decision-making must be transparent and provide for appropriate stakeholder participation. In 2009, the FAO published guidelines on stakeholder information and participation, which could provide guidance for the CFP reform.

Efforts should be supported to build knowledge and skills to ensure better participation in governance of, for example, coastal fishing communities. Examples include providing training, raising awareness, opening and maintaining dialogue (e.g. training on how science is conducted, as well as on environmental and social concerns).

We do not believe that ACFA and the RACs should be given decision-making power; nor should participation of stakeholders be restricted to the existing structures.

4.4. Encouraging the industry to take more responsibility in implementing the CFP

First of all, there is no such thing as ***the industry***, but rather a variety of fishing sectors and communities, which can and do have different needs and play different roles. There is also the question of what it is that has to be managed at what level. Examples of self-imposed management measures exist in certain fisheries, such as the Koster-Väderö fjord in Sweden, and need to be encouraged. However, such self-imposed measures do not, and should not, replace management by public authorities.

The reformed CFP must support the transition towards sustainable fisheries. Such a crucial and most probably difficult transition cannot just be delegated to the fishing sector. Rather, those in the fishing sector who are willing to contribute to such a transition should be supported and encouraged, and if successful benefit from this through the new access allocation criteria (see section 4.3).

- **How can more responsibility be given to the industry so that it has greater flexibility while still contributing to the objectives of the CFP?**

In our opinion this is a leading question. The first question to ask is "Should the industry be given more responsibility?" Setting management objectives and targets for common resources must remain the responsibility of public authorities. However, actors such as the fishing sector should be encouraged to participate and contribute to the development of conservation and management measures and their implementation.

Incentives should be created which could include preferential access to reward initiatives which contribute to enhancing the environmental and social sustainability of fishing activities. Greater responsibility must be combined with clear objectives and measurable targets, as well as rigorous control and enforcement.

- **How could the catching sector be best structured to take responsibility for self-management? Should the Producer Organisations (POs) be turned into bodies through which the industry takes on management responsibilities? How could the representativeness of POs be ensured?**

As stated above, setting of management objectives and targets for common resources must remain the responsibility of public authorities. Sector interests should play an active role in designing and implementing conservation and management measures at the appropriate level.

- **What safeguards and supervisory mechanisms are needed to ensure self-management by the catching sector does not fail, and successfully implements the principles and objectives of the CFP?**

As stated in Section 4.3 on decision-making structures, the new CFP must contain tools to regularly evaluate the implementation of objectives, targets and timelines. Greater sector responsibility to design and implement conservation and management measures in order to meet overarching objectives must be controlled through appropriate evaluation procedures. In addition, effective control and enforcement mechanisms must be in place that act as a deterrent and ensure compliance. Self-enforcing systems which support compliance would be preferable.

Consultation and participation of various stakeholders in the development of conservation and management measures should also greatly contribute to adequate implementation. While other actors could use incentives and sanctions to make self-management effective, public authorities need to be able to impose sanctions to guarantee compliance with objectives, targets and timelines.

- **Should the catching sector take more financial responsibility by paying for rights or sharing management costs, e.g. control? Should this only apply to large-scale fishing?**

Some kind of financial contribution or access fee should be considered, but it is important to differentiate between access fees and other financial contributions to management costs. For instance, to allow new entries and smaller operators to fairly compete for access, it might be better to use a tax on landings or profits, or to set aside a percentage of the quota, rather than to ask for fees before fishing operations start.

In general, the fishing sector should contribute to a fund to support management costs; a fund which would be managed by public authorities.

In the case of external waters, access fees should be paid by the catching sector. In order to ensure a level playing field for all countries who want to participate in fisheries on the high seas and in third country waters, fees should be based on transparent and non-discriminatory criteria.

- **When giving more responsibility to the industry, how can we implement the principles of better management and proportionality while at the same time contributing to the competitiveness of the sector?**

The best way for the EU fleet to remain competitive is to apply higher environmental and social standards, not to compete with lower standards. Higher environmental standards will lead to higher catches in the medium and long term.

In addition, higher quality products, with low environmental impact and good social practices, gain better access to and prices on the EU market. This can already be observed, with several retailer chains and Member States making commitments to sell only seafood which complies with stricter environmental criteria.

- **Are there examples of good practice in particular fisheries that should be promoted more widely? Should incentives be given for the application of good practices? If so, which?**

OCEAN2012 is currently assembling examples of allocation options which could provide inspiration, guidance and lessons learnt. These might include the snapper and lobster fishery in New Zealand, the Torres Strait Island Lobster and Finfish fisheries in Australia and Papua New Guinea, the shrimp fishery in the Koster-Väderö fjord area on the west coast of Sweden, or the South Georgia Patagonian toothfish fishery. We will submit more detailed information on these and other cases in due time.

4.5. Developing a culture of compliance

The credibility of the CFP lies in effective compliance by Member States and the various segments of the fishing industry. While the CFP control system just underwent a thorough reform which should result in strengthened control of fishing activities, the Community's fisheries policy still lacks measures designed to enforce some of its key principles and fundamental objectives.

As noted by the European Court of Auditors "*the Community control system is limited primarily to the control of quota uptakes and technical measures in the fishing process and neglects the other aspects of the CFP*".[21]

OCEAN2012 therefore recommends that, in addition to the enforcement obligations laid out in the Control and IUU regulations, the reformed CFP sets out additional procedures and mechanisms to ensure compliance of decision-making bodies and national management systems. They should be evaluated against agreed guiding principles and objectives necessary to achieve sustainable fisheries, such as:

- the application of ecological sustainability as the primary objective for fisheries management decisions;
- legally-binding fishing power limits per fishery;
- the introduction of participatory and transparent processes in decision-making;
- adherence to scientific advice as a basis for policy and management decisions; and
- access rules based on a set of criteria that ensure a transition to, and support for, environmentally and socially sustainable fishing.

Member States and other decentralised management bodies should be required to establish Fisheries Compliance Reviews (FCRs) to improve the individual and collective performance in

[21]European Court of Auditors (2007) Special Report No. 7/2007 on the control, inspection and sanction systems relating to the rules on conservation of Community fisheries resources.

fisheries decision-making and management, identify compliance and enforcement weaknesses and remedial actions. The FCRs could be developed according to the following goals:

1. Help individual governments assess progress by establishing baseline conditions, trends, policy commitments, institutional arrangements and routine capabilities for carrying out national evaluations;
2. Promote compliance and enforcement improvements and a continuous policy dialogue among stakeholders, through a peer review process as well as transfer of information on policies, approaches and experiences of reviewed countries; and
3. Stimulate greater accountability of Member States to the EU, to stakeholders and the public.

These reviews should be conducted by the national audit authority or by a public or private body independent of the managing and certifying authorities. This body would carry out its work taking account of internationally accepted standards and evaluations of the Fisheries Control Agency, based on a set of Community-wide compliance standards.

The conclusions and recommendations of each country's review would then be discussed with relevant stakeholders before submission for endorsement to a European Commission Working Party on CFP Compliance. Once approved, the national FCRs should be publicly available on Member States' and Commission's websites.

- **How can data collection systems be improved in the short and medium term to ensure coherent information for enforcement purposes?**

OCEAN2012 supports the 'risk management' approach to control operations at sea set out in the new Control Regulation (COM(721)2008). However, this should be based on a set of legally binding criteria and methodologies, such as alert thresholds based on cross-checking of vessel monitoring system (VMS) and other data, as well as target benchmarks for inspection activities, which Member States must use to develop risk-based control plans under the supervision of the Commission and/or the Common Fisheries Control Agency (CFCA). In addition, OCEAN2012 would support a wider introduction of video surveillance technology in combination with the electronic logbook to complement inspections at sea.

Furthermore, Member States' data collection may be improved by sharing standardised computerised systems. Although complete standardisation may be unobtainable, standardisation in some areas could be achieved. This would partly correct a situation where data collected from different control authorities is generated in isolation. The Commission should consider integrating fisheries data collection systems with the framework proposed under the Maritime Policy, striving towards full standardisation.

The harmonisation of EU-wide inspection standards and reporting would avoid major discrepancies among Member States, which in turn has an impact on the quality of data

collected. Member States must review relevant national legislation and regulations, and amend them to ensure full compatibility with EU inspection standards.

Additionally, an EU-wide observer scheme would be an essential complement to other methods of gathering data and detecting infractions. The United States, Canada, Norway and New Zealand use observers on vessels to collect scientific data but also to note infringements.

- **Which enforcement mechanisms would in your view best ensure a high level of compliance: centralised ones (e.g. direct Commission action, national or cross-national controls) or decentralised ones**?

It has been clearly demonstrated that sanctions imposed by most Member States for serious infractions are not dissuasive. In its Communication on serious infringements detected in 2006[22], the Commission stated that: "*The level of penalties allows the fishing industry to consider disbursements imposed for infringements to the CFP rules simply as an ordinary running cost of the enterprise and this removes any real incentive for them to comply*".

In addition, "*The Commission notes the significant disparities of the sanctions imposed by the different Member States for the same type of serious infringements and underlines the fact that the overall penalties imposed are not a sufficient deterrent, as they provide no real incentive to comply*". The Court of Auditors concurs by stating that: "*The lack of Community integration and harmonisation impairs the effectiveness of sanctions*".

Despite the fact that it has been clearly demonstrated that sanctions applied by Member States need to be more dissuasive and harmonised across the EU, most Member States have opposed proposals by the Commission to that effect, referring to the principle of subsidiarity. Indeed, this was one of the main areas of the proposed new Control Regulation that was not supported in the end.

OCEAN2012 urges Member States to overcome political, legal and administrative obstacles to the harmonisation of sanctions, without which conservation and management objectives of the CFP cannot be fulfilled.

Additionally, OCEAN2012 strongly supports the adoption of measures enabling the Commission to take swift action to ensure greatly enhanced implementation of the CFP by Member States. We also support the proposed expansion of the Control Agency's mandate, including audits, inspections of national control systems, organisation of operational co-operation, assistance to Member States and the possibility of setting up emergency units where a serious risk to the CFP exists.

[22]Communication from the Commission to the Council and the European Parliament (Nov 2008) – Reports from Member States on behaviours which seriously infringed the rules of the Common Fisheries Policy in 2006.

Another key aspect that the EU should consider is granting environmental NGOs legal standing before the European Court of Justice. NGOs can, and often do, play an important role in contributing to legal implementation efforts. In cases where the European Commission is unable, or politically unwilling, to take legal action against parties flouting EU laws, NGOs should have the right to pursue Member States failing to respect their control obligations.

- **Would you support creating a link between effective compliance with control responsibilities and access to Community funding?**

Yes, OCEAN2012 supports the full integration of environmental requirements into all aspects of the CFP and the introduction of conditionality of public aid in respect of such requirements. We support the idea that the Commission should be able to withhold public aid to Member States who do not exercise control and enforcement efficiently, as well as the idea that operators not complying with the rules should be banned from receiving public funding.

The principle of conditioning public aid through cross-compliance has already been introduced in EU policy, such as in the Common Agricultural Policy (CAP) reform of 2003. In order to receive contributions from the EU, farmers must respect existing environmental and animal welfare laws and regulations. Under CAP, non-compliance can result in a reduction or cessation of financial support.

Similarly the reformed CFP should contain provisions for the suspension of Community aid to the fisheries sector, including the granting of fishing rights under Fisheries Partnership Agreements, if an operator fails to respect the rules and regulations. In addition to the current Commission's European Fisheries Fund (EFF) compliance assessments concerning the proper function of management and control of Member States' operational programmes, community funding should be directly linked to the approval of the national Fisheries Compliance Reviews. Another option to consider is to link compliance to access to resources.

- **Could increasing self-management by the industry contribute to this objective?**

Self-management mechanisms are of course welcome but only to complement control and enforcement measures by public authorities, not to replace them. It would be in the industry's interest to ensure that those operators who flout the rules to the detriment of those who respect them are excluded from fishing activities. Consequently, EU POs should ensure that those responsible for repeated offences are denied membership.

On the other hand, actors that develop and effectively implement initiatives to ensure compliance could be rewarded with preferential access to fishing (see comments to section 5.3 below). For instance, Article 17.3 of the United Nations Agreement on straddling and highly migratory fish stocks[23] states that: "*Such fishing entities[24] shall enjoy benefits from participation*

[23]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.

in the fishery commensurate with their commitment to comply with conservation and management measures in respect of the stocks". Although the UN Agreement provision only applies to States that are not members of relevant Regional Fisheries Management Organisations (RFMOs), one could argue that such a principle should apply to any state whose fleets are engaged in a fishery, including the EU Member States.

- **Can management at the level of geographical regions contribute to the same end? What mechanisms could ensure a high level of compliance?**

Regional compliance mechanisms should not be ruled out. This could be: shared responsibility for quota compliance between different Community fleets avoiding a situation where the infringements of the few impact the many; or regional inspectors and coast guard units with the authority to perform unrestricted controls on fishing vessels in critical areas or on stocks regulated by management plans and reporting to the CFCA or the Commission.

5. FURTHER IMPROVING THE MANAGEMENT OF EU FISHERIES

5.1. A differentiated fishing regime to protect small-scale coastal fleets?

Small-scale fisheries represent the overwhelming majority of fishers in all EU Member States, engaged in a wide range of activities. However, under the current management system they are often discriminated against. For example, small-scale interests are poorly represented in decision-making and advisory fora, as well as unfairly treated in access to resources and public aid.

At subsistence level, seasonal and labour intensive activities may provide important additional sources of food and income to fishing families, whilst at the other extreme highly commercial, semi-industrial, technology-intensive activities may have serious environmental effects, with implications for sustainable development.

Under conditions that allow for full and active participation of the actors and with appropriate support, the small-scale and artisanal sector does have great capacity for employment in decent work, potential to distribute the benefits from fishing in an equitable manner, lower fuel requirements, as well as ability to adapt seasonally, annually and multi-annually to changing circumstances.

This is highlighted by the small-scale fisheries of many EU Member States, including the Hastings inshore fishery and the South West Handline fishery in the UK, the small-scale fisheries

[24] A State which is not a member of a sub-regional or regional fisheries management organisation or is not a participant in a sub-regional or regional fisheries management arrangement, and which does not otherwise agree to apply the conservation and management measures established by such organisation or arrangement.

in the French Mediterranean, self-regulated by the Prud'homies de Pêche, the pesca de bajura and shellfish gathering activities in North Spain.

Small-scale fisheries could play a vital role in placing EU fisheries on a more sustainable footing, and in cushioning fishery dependent communities from the economic and social consequences of the current fisheries crisis facing the EU, as well as the measures required to address it.[25]

It is crucial that the review and reform process considers the role of women in fisheries, and in the wider social and economic contexts of Europe's fishery dependent coastal communities. Women play a vital, though often hidden, role in the fishery production and post-harvest processes. While being wives and mothers of fishermen, they are also physically, economically and socially engaged in the administration of small fishery enterprises, providing input, as well as engaging in fishing, fish processing, fish vending and marketing.

Women provide a vital link between fishing activities at sea and community life and economy ashore. There is no explicit mention of the role of women in the Green Paper. This needs to be remedied.

A reformed CFP needs to recognise and respect the role of women in fisheries: valorise the contribution they make to the fisheries sector and to the wider community; accord them their proper status as collaborating spouses and economic actors; and recognise the importance of the social, cultural and economic activities they engage in.

- **How could a differentiated regime work in practice?**

Each part of the fishing sector – large or small-scale – has its own problems which must be addressed, and cannot be solved through a "one-size-fits-all" solution.

For example, the need for capacity reduction in one part of the sector should not result in the losses of fishing opportunities, employment or other benefits in others; the environmental, social and economic problems caused by one part of the fishing sector should not mean that other parts get penalised. Likewise, providing tradable rights to large-scale fishing companies should not threaten or otherwise erode the rights of small-scale fishing operators.

It is vital that rights-based policies and rights-based approaches to the management of small-scale fisheries take account of the collective nature, as well as the social and cultural dimensions of their activities. The small-scale fishing sector (local small-scale fishers, shellfish gatherers and their communities) should be involved, based on existing good practices[26], in the

[25] In recent years, small-scale fishing communities have been increasingly recognised for their contribution to the development of responsible fisheries. See for instance: Meeting document COFI/2009/7 "Securing sustainable small-scale fisheries: bringing together responsible fisheries and social development", available at http://www.fao.org/fishery/about/cofi/meeting-docs/en

[26] Initiatives include the Prud'homies de Pêche in the French Mediterranean, the marine reserves of Lira and Cedeira in North Spain, the Iroise National Park in West France, and the Mid Channel/Inshore Potting Agreement between France, UK and Belgium.

design and implementation of marine protected areas, fishing reserves and area-based management in such a way that their access rights are protected.

Such a differentiated approach should valorise local fisheries, ecological and oceanographic knowledge, and promote collaboration and information-sharing between fishers and scientists in the process of informing decision-making in fisheries.

The 12 mile zone, which is a derogation of the principle of equal access to a common resource, should be strengthened by reserving and, where appropriate, extending it for fishery activities that are small in scale, environmentally benign, socially equitable, and which provide important cultural and economic contributions to the local communities.

The interests of small-scale fishers are largely under-represented at national, regional and European level. Existing national and pan-European institutional arrangements tend to be biased towards larger, more economically powerful interests. This marginalises the small-scale sector in consultation and decision-making processes, leaving them less well informed about relevant developments, from policy changes, new regulations and international trade to climate change.

Improved documentation and research of how they are contributing to sustainable fisheries (from a social, environmental and economic perspective) would strengthen the contribution of small-scale fisheries in decision-making and advisory fora.

Whilst decisions concerning small-scale fleets should be taken as close as possible to the coastal community, there is also a need to ensure that small-scale fishing communities are involved in higher level decision-making – decisions taken on long-term principles also have a bearing on the future of small-scale fishing communities.

- **How should small-scale fisheries be defined in terms of their links to coastal communities?**

Adapting fisheries management to the requirements of the small-scale sector implies that there is consensus on what constitutes small-scale fisheries. Currently no such consensus exists at EU level, other than a view that vessels under 10 metres are small in scale.

A major challenge of the reform process is to agree on criteria to define small-scale fishing, transcending physical size and fishing capacity; it should seek to incorporate and otherwise make explicit the economic and social linkages that make small-scale fishing so vital to the economies, social fabric and cultural traditions of coastal communities.

This defining of small-scale fisheries should be done and applied at the most relevant level, be it regional, national or local. Such definitions should take account of technical aspects (fishing capacity), environmental aspects (e.g. low discards, low seabed impact, low energy use) and

social aspects (e.g. decent work, high degree of benefit sharing, and links with local shore-based activities and local employment).

- **How can overall fleet capacity be adapted while addressing the social concerns faced by coastal communities taking into account the particular situation of small- and medium-sized enterprises in this sector?**

Also, in some mixed small-scale and industrial fisheries, allocation of access to resources should be in accordance with the FAO Code of Conduct for Responsible Fisheries (Art 6.18), i.e. priority access for small-scale fisheries.

We are concerned that some rights-based management tools, particularly Individual Transferable Quotas (ITQs), could marginalise the small-scale fishing sector. Even in a system where ITQs would only apply to industrial fisheries, there is a risk of marginalising the small-scale sector in cases where both groups are accessing the same resources – a property right such as an ITQ, with some monetary value attached to it, may well take precedence over other access rights at times when further limitations are necessary.

- **What level of guidance and level playing field would be required at EU level?**

Access to training and support to form organisations should be provided to small-scale operations.

Provisions should be made for the vulnerability of fishing communities in the reform process. Real alternative activities and livelihood diversification schemes should be provided and promoted, based on detailed impact assessment studies and baseline community profiles. These should be linked to local realities and capacities for change and adaptation to changing circumstances.

Particular attention should be paid to the role of women in fishing communities and ensuring that alternative livelihood options are open to them.

It is important to valorise sustainable small-scale fisheries by ensuring that their products secure a good price on the market, so that fishing communities can continue to live decently from their fishing activities. In the current context, local products coming from small-scale fisheries are in competition with cheap imports (from aquaculture particularly).

5.2. Making the most of our fisheries

The MSY concept was accepted by all Member States at the 2002 World Summit on Sustainable Development as an objective to achieve by 2015 at the latest. The concept is also enshrined in the ***UN Convention on the Law of the Sea*** (UNCLOS) – Articles 61.3 and 119.1(a) – to which the

EU and all its Members are Party. Footnote 2 on page 5 of the Green Paper contains a definition of MSY:

"Maximum Sustainable Yield is the maximum annual catch which on average can be taken year after year from a fish stock without deteriorating the productivity of the fish stock. Fishing above MSY in the short term will lead to lower catch opportunities in the longer term as the fish stock is fished down."

That definition is not satisfactory, as "*without deteriorating the productivity of the fish stock*" is scientifically meaningless. The UNCLOS definition is also unsatisfactory because, for example, it refers to "*levels*" of populations, ignoring the fact that high sustainable yields depend also on the composition of populations.

There is an ambiguity in the concept that needs clarification. That is between "*sustainable use*" (which can apply to a wide range of stock and fishing effort levels), and "*maximum*" or "*optimum*" sustainable exploitation.

The idea of "*ecosystem management*" is not explicit but is nevertheless barely concealed in these five questions. This term has many meanings, some well-defined, others not. Again, some clarification will be provided further down. Lastly, we need to look at whether the definition of the precautionary approach given in Article 6 of the Straddling Stocks Agreement is adequate for the application of that principle and for identifying "*stock specific reference points*" in a reformed CFP.

- **How can long-term management plans for all European fisheries be developed under the future CFP?**

To answer this question, we would like to draw attention to the experience of the International Whaling Commission (IWC) in the 1990s in developing its Revised Management Procedure (RMP) and, within that, the Catch Limit Algorithm (CLA) for baleen whales. Even though the question above concerns fish and not whales, the IWC example is relevant given that it was the first, and by far the most fully explored, approach to management of marine life based on the results of complex computer simulations. There, although the IWC's Scientific Committee (SC) was fully involved, the major work was done by small groups of scientists several of whom were drawn from outside the SC. Four such groups essentially engaged in a competition to find the best, most efficient and robust algorithm for establishing long-term exploitation rules. The rules of the 'competition' by which "candidate procedures" would be tested by computer simulation were agreed collectively. An important feature of this exercise was close interaction with the IWC itself to formulate management objectives that could be tested numerically. An essential point was that certain objectives, when formulated in absolute terms, were mutually incompatible[27] so that the process had to allow the setting of various priorities for different partial objectives, all of which were expressed in terms of probabilities.

[27]For example IWC Commissioners wanted the probability of inadvertently depleting a stock to be zero yet at the same time wanted to maximise catches.

Our suggestion is that the CFP adopt a similar strategy, with the International Council for the Exploration of the Sea (ICES) probably serving the equivalent role as the IWC/SC (with participation also of Commission specialists), with the Commission bringing in some independent specialists in the same role as the IWC/SC Development Group. An advantage of ICES involvement would be that ICES Members include some non-EU European countries whose Exclusive Economic Zones (EEZs) include segments of important fish stocks that straddle the Community's EEZ. Ensuring that this is done will call for a substantial commitment in funds and professional time by the Commission.

- **Should the future CFP move from management plans for stocks to fisheries management plans?**

The Green Paper does not provide a definition of what is understood by "fisheries" in this context. The term is widely used to include fish populations, as well as the fishing units that exploit them. But many combinations are possible and usage varies. For example, a fishery can consist of a fleet of similar vessels using essentially the same gear (together each making a *fishing unit*) primarily to target a single species in a defined area. But more often it refers either to one or more fleets using a particular gear-type exploiting a range of species with similar habits (e.g. trawlers fishing for plaice, soles, flounders, dabs in the southern North Sea) or a number of fleets of vessels using a variety of gears to catch one main target species (e.g. a cod fishery in which trawlers and lines are employed) or a combination of any of these.

Regardless of how it is defined, a fisheries management plan is not an alternative to a management plan; both are needed, especially if sustainability is to be achieved.

- **Should we consider reforming the CFP in two steps, with specific measures to move to MSY prior to 2015 followed by measures to maintain MSY as the upper exploitation level after that date?**

Although it might turn out to be useful to reform the CFP in two or even more stages, we see no advantage in the particular two-stage process suggested here. There is a lack of clarity, and possible ambiguity, in the phrase "*maintain MSY as the upper exploitation level*". MSY is not, itself, "a level". It is, if anything, a quantity, and a quantity that may or may not be reachable by 2015 – that depends entirely on the state of each stock and the changes in the coming years. Regardless of how it is done, or when, the essential requirement is that the fishing mortality of stocks that are considered to be over-fished (i.e. below MSY as currently defined) be reduced and that the fishing mortality of stocks considered to be at or near to MSY levels is at least stabilised.

Further consideration of this question calls for a deeper look at the MSY concept. We will not try to do that here, but two things should be noted:

1. If there is such a thing as a population that can provide a maximal continuing yield it is essential to specify and take measures to ascertain not merely a "level" but the particular composition of stock, e.g. (and particularly) size and age of fish, sex ratio and sexual maturity. (N.B. Otherwise similar populations with the same biomass could have completely different biological productivity and hence yield potential.) This is reflected in the 2008 EU MSFD's descriptor of GES of commercially exploited stocks of fish and shellfish.
2. Exploitation of a population that is sustainable, or even maximally sustainable, will not necessarily be profitable. Hence, in certain cases the attainment of MSY will be economically unviable (or require subsidy), and in all cases will be economically sub-optimal.

We see the MSY concept, with the highlighted weaknesses, as a first step towards sustainable management of our fisheries resources. MSY should only be considered an intermediate target to achieving abundance. Alternative objectives of fisheries management must be developed that are more conservative and precautionary in nature.

- **How could the MSY commitment be implemented in mixed fisheries while avoiding discards?**

There is no way of avoiding the capture of unwanted fish or other organisms: the challenge is to minimize it. Furthermore, as long as the setting of Total Allowable Catch (TACs) is the main regulatory method, the problem of discards remains insoluble. If the method adopted for attaining sustainability, maximal or not, were to be the limitation in some way of fishing effort, then the fundamental problem of mixed fisheries – by which we assume is meant more than one target species being taken by the same fishing units[28] – becomes one of deciding whether the desired fishing mortality rate is about the same for all species (taking into account the relative efficiencies of the fishing unit in capturing the various species). If not, it will be necessary to adopt a compromise fishing mortality rate (hence permitted fishing effort).

In that case, the fishing mortality rate will be sub-optimal for all of the targeted species, but it would not be necessary to treat any of the catch as discards. It will be important, however, to adjust the selectivity of the gears (e.g. mesh or hook sizes, modes and places of operation) in such a way as not to cause unwanted effects on, for example, immature fish and hence risk adverse effects on recruitment.

We would like to stress here that we do NOT support an effort management regime that would simply manage days at sea. Such mechanisms have in other parts of the world led to increased efficiency and consequently higher catch than originally assumed for the purpose of stock management.

[28] defined as vessel plus gear plus operational fishing method

- **What should the main management system be for Community fisheries and to which fisheries should it apply? Catch limitations? Fishing effort management? A combination of the two? Are there any other options?**

These are the most important questions in this series and they must be taken together. Neither catch limitations nor fishing effort control in isolation can guarantee sustainability. This has been demonstrated by simulations of management procedures and borne out by reality (e.g. the state of Community fisheries using TACs and the New England cod fishery through days at sea management). Both could possibly play a part in a system which is based essentially on fishing power limits.

Fishing power is a measured property of a fishing unit, defined in relation to a particular target species or associated group of species, and deployed in an economically optimal way. It takes into account the type of vessels, fishing gears and methods and is a feature of a single unit (or of a group of units if they operate in concert). The fishing power of a fleet of units is simply the sum of the fishing powers of all of them. Subsequently, *fishing effort* is essentially the amount of time in a fishing season in which the fishing unit of a defined power is active[29].

Attempts to prevent over-fishing by limiting fishing effort but not limiting the fishing power of the fleet or of its components have led to extreme inefficiency and hence to economic loss. The classic example is the regulation of the halibut fishery off the west coast of Canada and the USA, without limiting the fleet size, resulting in the vessels being confined to just a few days fishing in the season in order to correct over-fishing.

Documents of the European Commission and others frequently refer to the notion of *fishing capacity*. This has been defined by FAO as: *"The amount of fish (or fishing effort) that can be produced within a period of time (e.g. a year or a fishing season) by a vessel or a fleet if fully utilised and for a given resource condition."* To use such an important term alternatively as a quantity of fish (output) or an amount of fishing effort (input) introduces counter-productive ambiguity into discussions of management. We shall avoid it, preferring to use well-defined terms in the scientific literature of fisheries management. But if "capacity" is to be used at all it should probably be as a quasi-synonym for "power".

The fishing power of a fishing unit is the fishing mortality rate it would cause in the target population(s); it must not be confused with the engine power of fishing vessels: hp or kW. Thus the fishing power of the fleet should, by management, be adjusted so as to cause, when normally deployed, the desired fishing mortality rate that will ensure sustainability. In this case the mortality rate must be defined not as a percentage but as an instantaneous rate, as used in

[29] *Fishing effort* has been defined by the European Commission for a specific purpose as ***kW-days***, where kW is the total engine power of the fleet, days is total days by all vessels operating at sea in a particular area. That is far too restricted a definition for the purpose of discussion here, and not appropriate as a primary management tool.

all population modeling,[30] so that the rates exerted by the various units are additive with regard to the effective power of the fleet.

Fishing power requires calibration to deal with differences among vessels in the fleet and with changes (usually improvements in efficiency) over time. The methods for doing this when only one type of unit is being deployed (beam trawl or long-line for example) are fairly well established; two methods can be used – comparative fishing experiments and analysis of catch and effort statistics – and both are generally necessary.

Determining relative fishing powers of different types of fishing unit employed in the same fishery is more complicated but possible; the main difficulties arise from the different selectivities (by fish size, for example) by the different types of unit – remembering that the unit is defined with respect to the vessel, the gear, and the mode of operation, including the location.

Management by control of fleet fishing power also calls for good statistics concerning the operation, for example to distinguish time spent actually operating the gear from time spent searching for fish, raising and lowering gear, travelling to and from fishing grounds, and the like. It is relevant to mention here that one of the reasons that the setting of catch limits (that is, regulating output rather than input) became popular as – unfortunately – the commonest method of fisheries management was simply that catch statistics were generally available (and often wrongly assumed to be reliable) whereas input statistics, whether in financial or substantive terms, were rarely continuous, were fragmentary and often were also unreliable even when not confidential.

Limiting exertion of fishing effort by a regulated fleet can be used as a secondary corrective measure, provided it is not used in such a way as to undermine the economic viability of the fishery. Limitations of catches may be used similarly, and monitoring the catches is a way to detect unexpected changes in the fishery and so could guide any necessary revision of the fishing power limitations, as well as suggest possible changes to the gear or operational procedures needed to reduce the catch of non-target (and unmarketable) species.

W. M. Getz and R. G. Haight, in their discussion of how the stochastic reality of fish populations (that is the fact that growth, mortality and reproduction parameters are subject to random variation as well as possible trends over time and uncertainties in estimating them) may detract from the efficiency of regulation based on single species deterministic models,[31] characterise three general approaches as follows:

[30]That is because percentages are not additive, whereas instantaneous (exponential) rates are. This is easily seen if one considers two fleets, each of which, alone, would cause a 60 percent mortality of the fish they exploit. If they both operate the mortality caused has still to be less than 100 percent, not 120 percent.

[31]Getz, W. M. and Haight, R. G. (1989) Population Harvesting: Demographic Models of Fish, Forest and Animal Resources. 391pp. Princeton Univ. Press, New Jersey. Several other titles in the literature of the science of fisheries management refer to the advantages of limiting fishing power or effort. Getz and Haight cite E. K. Pikitch's study of a US West Coast demersal fishery as a successful example: "Use of a mixed-species yield-per-recruit model to explore the consequences of various management policies for the Oregon flatfish fishery" *Can. J. Fish. Aq Sci*. **44**, (Supp. 2): 349-59.

1. A *fixed-escapement* policy is designed to stabilise the stock but only at the expense of the catch, possibly even closing down the fishery in years when the stock is particularly weak.
2. A *constant-catch* policy requires that we allow the stock to fluctuate and, in the long run, if a constant-catch policy does not respond to severe weaknesses in the stock, it can destroy the fishery altogether.
3. A *constant-effort* policy has the advantage of stabilising labour and capital invested in the fisheries operation, but at the expense of transferring variability from the stock to the catch.

Getz and Haight then consider how costs can be assigned to variability. They further claim that "*the standard (single-species age-structured) models can easily be extended to a technology-linked multi-species setting to account for mixed species catches or landings at the dock.*" Their reference to "escapement policy" is originally to that adopted on the North American West Coast for the conservation of salmon, subject to river and estuarine fishing on their spawning runs. It has however been taken on, partially, in definitions of such quantities as "minimum spawning biomass" below which a fishery should either be closed or the allowable catch and/or effort drastically reduced.

- **What measures should be taken to further eliminate discards in EU fisheries? Could management through transferable quotas be useful in this regard?**

Transferable quotas are essentially an aspect of commodification of the resource (i.e. of its "ownership"), not of managing its use. We cannot see how any manipulation of them can eliminate discards, or even substantially reduce them. Discards arise from a multiplicity of causes: TACs in mixed fisheries, inappropriate gears and modes of operating them, seasons and locations of operation, selectivity of markets, and so on.

There is no way of completely eliminating bycatch. Discards, however, are ultimately generated by market forces, although those forces are modulated by regulatory measures such as season and partial area closures, legal minimum sizes of fish, specifications of gears affecting their selectivities, and catch quotas set by species or other specification of type or state of fish.

Regulation of effort through limitation of seasons and areas of operation, as well as technical adjustments of permitted fishing gears (affecting selectivity and other catch-features) and modes of operation (for example by depth in the case of trawls and other submerged gears) are likely to be necessary and effective.

Area closures can evidently be seasonal, temporary or permanent – usually by designating Marine Protected Areas (MPAs) – and used to reduce fishing intensity on (fishing mortality of) less valuable or unwanted species, certain stages of the population (immature animals, spawning aggregations, juveniles and so on) and, of course, endangered populations and species. A judicious combination of several technical and operational regulations is likely to be

far more effective than emphasis on any particular one of them, a supposed "panacea".

Please see the Annex 1 for further comments on the MSY concept, sustainability and precaution.

5.3. Relative stability and access to coastal fisheries

While EU Member states have come to live with the concept of distributing access to fishing resources based on the mathematical mechanism of relative stability, it has also been recognised that relative stability is a driver in overfishing, as Ministers need to battle for retention of historical catch quota rather than supporting scientific advice. In addition, access to fish resources based on historical catches is increasingly challenged, especially by developing countries, most of which have been largely excluded from major fisheries so far. This debate dominated the proceedings of the second meeting of tuna RFMOS, held in 2009 in San Sebastian, Spain (see also section 5.8).

- **How could relative stability be shaped to better contribute to the objectives of the CFP? Should it be dismantled or if not should it become more flexible and if so, how? How could such alternatives be set up?**

Today, the division of TACs into national quotas of fish that can be caught and kept is based on historical catches. This process does not take environmental and social performance into account.

In principle-centred decision-making, the current quota allocation regime (relative stability) should be replaced by a system that contributes to environmental sustainability; a more equitable distribution of access to the available fishing resources and a culture of compliance. The right to fish should be granted to those who contribute to the overarching objectives of the CFP.

Access to fish resources should be based on a set of transparent criteria as described in point 4.3, which should include:

- Selectivity: different fishing methods result in different amounts of bycatch which are (currently) often discarded. Fishers using fishing methods with low bycatch should be given priority access to the available resources;
- Environmental impact: the impact of different gears and practices on the environment vary widely, for example damage to the sea bed and pollution. Fishers using less destructive fishing methods should be given priority access;
- Energy consumption: some gear and vessel types require enormous amounts of energy compared to the fish they catch, most notably some types of trawlers and seiners.

Fishers using vessels and fishing methods consuming less energy per tonne of fish caught should be given priority access;

- Employment and working conditions: fishing methods that provide more employment should be favoured, as long as they are also less damaging for the environment, and should be given priority access. Working conditions should comply with relevant international standards, notably the 2007 ILO Work in Fishing Convention;
- Quality of product: the gear type used affects the quality of the fish caught. Fishers using gear types providing the best quality fish should be given priority access;
- History of compliance: past compliance with the rules of the CFP by fishers as well as Member States should be considered when allocating access to fishing rights.

- **Should access to the 12 nautical mile zone be reserved for small-scale fishing vessels?**

The 12 mile zone, which is a derogation to the principle of equal access to a common resource, should be strengthened by reserving and, where appropriate, extending the 12 mile zone for fishery activities that are small in scale, environmentally benign, socially equitable and which provide important cultural and economic contributions to the local communities.

The inshore area is vital for marine biodiversity conservation, and is also the most intensely used and most polluted marine area. It is therefore important to connect activities in the coastal zone with conservation initiatives, taking account of both fishery and non-fishery activities that threaten or promote marine biodiversity conservation, healthy fish stocks and sustainable fishing livelihoods, as well as sustainable social and economic development in coastal communities.

5.4. Trade and markets – from catch to consumer

In a global context of decreasing fish resources, the way fish trade is conducted can play an important role in supporting the transition towards sustainable fisheries in European waters and beyond.

We feel there are three important aspects to be looked into in the process of reform:

1. promoting sustainable fisheries through EU trade (imports) policy;
2. ensuring a fair price for the producers; and
3. promoting a change of the consumer's attitude and adapting labelling accordingly.

Promoting sustainable fisheries through EU trade (*imports*) policy

In as much as the EU fish market is the world biggest market for fish products and relies heavily on imports (*up to 90 percent for some categories*), we feel that access conditions to the EU market can play an important role to contribute to sustainable fisheries both in Europe and in

third countries, ensuring that such trade does not lead to environmental degradation or undermine the rights and food security of fishing communities.

In many cases, fish imports (from aquaculture in particular) compete, directly or indirectly, with EU products, and when imports do not have the same level of compliance with social and environmental standards, this can introduce an element of unfairness in the market. Often, such imports are cheaper than EU products, and this situation doesn't provide the right conditions for ensuring decent revenues and working conditions for EU and/or third country producers.

However, particularly when these third countries are developing countries, it is crucial that, before any conditionality is introduced to access the EU market, an efficient, user-friendly, transparent co-operation programme is put in place, to ensure such conditionality does not become a non-trade barrier for third country producers and to ensure compatibility with World Trade Organisation (WTO) rules.

Lessons can be drawn from the long standing partnership experience between the EU and the African, Caribbean and Pacific group of countries (EU-ACP), where access to markets has been accompanied by support programmes, with mixed results. A more recent experience is the introduction of the catch certification scheme (part of the regulation on Illegal, Unreported and Unregulated (IUU) Fishing)for third country products, where a whole set of initiatives has been taken to accommodate the specific needs of developing countries (e.g. flexibility for products from the third country artisanal sector and information seminars).

Another example is the *Generalised System of Preferences* (GSP +) where third countries, in order to access the EU market duty free, have to sign 27 international conventions related to sustainable development in its wider sense (including human rights aspects etc). Again, in this case, no efficient co-operation scheme seems to be in place to ensure the third country has the capacity to implement these conventions.

The introduction of '*sustainable development conditionalities'* should also apply to aquaculture products imports, which are increasingly important supply sources for the EU market and often compete with EU products, such as salmon from Chile and *basa* from Vietnam.

In the case of Chile, although the EU-Chile free trade and co-operation agreement signed in 2003 promotes sustainable development and human rights, the Chilean salmon-producing industry does not respect the rights of workers, neither does it respect environmental good practice and basic standards.

This calls for more coherence between EU trade, fisheries and development policies.

Ensuring a fair price for the producers

We feel that, to move towards sustainable fisheries, there needs to be a paradigm shift, moving from high volumes/low value fisheries to low volumes/high value fisheries. Given the state of stocks in Europe and in third countries, there is a need to reduce the volume of catches[32].

Therefore, in a situation where the volumes of catches are reducing, and where we want producers and fishing communities in Europe and third countries to enjoy decent revenues, working and living conditions, we need to look at how to improve fish quality to get a higher value for the product, and ensure a fair share of this value comes to the producers and fishing communities. It's only if the producers supplying EU markets, either in Europe or in third countries, receive a fair price for their fish that they will be able to catch less and contribute to the establishment of sustainable fisheries.

An important element, in order for fishermen to get better prices for their fish, is to be better organised and better informed about the structure and the evolution of prices. A monitoring system for fish prices, as proposed by some professionals, combined with an appropriate support for producers to organise themselves, could give them more strength to influence the price they get. Particular attention should be paid to how the dynamic between producers and big retailers, i.e. retailers who force down the wholesale prices paid to producers, can be improved.

This type of situation – where fishermen do not receive a fair price for their fish – also exists in third countries with which the European Union has partnerships (either Economic Partnership Agreements (EPAs), interim EPAs or FPAs). In the support granted to these third countries for promoting sustainable fisheries, similar topics should be discussed for potential EU support, for example, better organisation of the fishermen, particularly small-scale fishing sector, price observatory and emphasis on quality production.

It is also crucial to look at ways to improve the quality of the fish – or better preserve it – as it is often said 'once out of the water, fish starts to lose value'. Efforts still need to be made to improve the intrinsic quality of the fish (e.g. hygiene, organoleptic qualities) and it is therefore necessary to ensure a constructive dialogue and good coordination with the other EU Directorates (DGs) dealing with development, food and market issues having an impact on fishery and aquaculture products (DG SANCO, DG TRADE, DG DEV, DG ENV).

Finally, there is a need to rethink what 'high quality' is and not to limit it to the intrinsic characteristics of the fish but also to look at quality in terms of compliance with environmental and social standards. There is a need to recognise that 'quality' can have different elements:

[32]We do not think aquaculture can fill the gap of diminishing wild resources available for the market, if aquaculture has to comply with sustainable development basic principles – see chapter on aquaculture

sanitary quality (e.g. frozen, defrosted) and nutritional qualities, but also environmental qualities (e.g. species, fishing area).

Promoting a change of the consumer's attitude and adapt labelling accordingly

There is a need for a fundamental change of the consumer's approach to fish consumption, to be compatible with an environmental and socio-economically sustainable fishing model that favours low volumes of catches and better prices for the fishermen. European consumers should be encouraged to eat high quality fish products, and pay a fair price for it.

Public awareness campaigns should highlight the importance of eating quality fish products rather than quantity. There is a need to demystify quantitative fish consumption ('two portions a week to get your omega 3 supply…').

To achieve that, the first step should be to ensure better traceability of fish products, including imports, so that consumers can make an informed choice. The current labelling rules need to be reviewed to achieve this, making the requirements more stringent for fish products. Labelling should allow the consumer to make more informed choices based on whether a product comes from an over-fished stock or a healthy stock; a product is sold fresh or has been defrosted; a product coming from fish farming and one caught in the wild; a product that has been produced with minimal carbon emissions and one which has not. Consumers also need to be able to assess the nutritional value of the fish they buy.

- **How could market mechanisms be used to encourage the development of fisheries that are market efficient as well as sustainably exploited?**

Achieving sustainable and responsible fisheries requires the implementation of a sustainable and responsible trade in fish. Whilst it is important that fish catches are responsive to market demands, it is vital that markets do not place unsustainable demands on fish resources on the one hand, and on the other do not use their influence to drive producer prices down to levels below which a decent living can be made.

In this sense, we understand that market efficiency means a win-win scenario, where optimum benefits accrue to both producers and consumers, while environmental sustainability is assured.

In a highly globalised market, cheap imports of fish products, often produced in environmentally unsustainable and socially unjust conditions, can have a negative impact on markets by depressing prices and disrupting local economies. There is therefore a need to establish a clear set of minimum criteria for environmentally and socially sustainable seafood, to be applied to both imports and EU produced fish.

- **How can the future CFP best support initiatives for certification and labelling? How can traceability and transparency in the production chain be best supported?**

EU initiatives to establish a regulatory framework and define standards for eco-labelled seafood are important.

It is essential that work on fisheries ecolabels include both environmental and social aspects. It is also important that standards are applied throughout the lifecycle of the product, "from cradle to grave", to cover pre- and post-harvest, and include criteria such as sea or air miles, carbon footprint, and so on.

There needs to be a continuum of information from the producers to the consumers. Information of interest gathered at boat level should be passed through the chain and be available to the consumer (such as name of the species, catching area and gear used).

- **How could the EU promote that fisheries products come from sustainably managed fisheries, providing a level playing field for all?**

There is a specific issue to address concerning fish products coming from developing countries, where 'providing a level playing field' will include developing support programmes to help these country's producers match the sustainable development criteria set by the EU.

The EU has partnerships (either EPAs, interim EPAs or FPAs) with many of these developing countries. In the support granted to these third countries for promoting sustainable fisheries, particular attention should be given on how to help these countries meet environmental and social sustainable fisheries criteria. For example through support for fisheries management, for better organisation of the fishermen, particularly small-scale fishing sector, price monitoring system and emphasis on quality production.

This calls for improved co-ordination between DGs dealing with fisheries, development, food and market issues that have an impact on fishery and aquaculture products (DG SANCO, DG TRADE, DG DEV, DG ENV).

- **How can the POs better work to match production with market needs? Which new market based policy instruments could be implemented through POs? How can fishermen improve their position towards processing and distribution?**

Support should be provided to POs and other representative organisations, particularly to the small-scale sector which is not always fairly represented in POs, so that they can be better organised and informed (e.g. setting up of a price observatory).

However, caution is needed as invariably the interests of players in the market and those of producers do not coincide, particularly where the market is dominated by large retailers whose

buying power allows them to source globally at the lowest available prices. This has a negative impact both for the producers and the environment; with producers forced to fish harder to catch more in order to remain viable.

- **What is the role of trade policy in balancing the interests of producers, consumers and our relations with exporting countries?**

Trade policy should first and foremost support the establishment of sustainable fisheries: producers have to receive a fair price so that they can turn to less intensive fishing; consumers have to be informed about the importance of quality consumption; and programmes need to be put in place so that exporting developing countries receive adequate support to match environmental and sustainable fishing criteria put in place in the EU.

A key message for a consumer-oriented fisheries trade policy should be: buy local, buy direct, buy in season, and buy quality.

5.5. Integrating the Common Fisheries Policy in the broader maritime policy context

The current CFP has made no real attempt to implement an ecosystem-based approach. This needs to change; the future of fisheries relies on its successful application. The MSFD provides a starting point in committing Member States to achieving GES by 2020 (see box on the next page). The Directive specifically mentions the need for coherence with the CFP (and other EU policies). In order for the Member States to implement the MSFD, its requirements need to be integrated into all relevant policy areas. The future CFP must therefore be formulated and applied in a way that it delivers the fisheries-related aspects of GES, thus contributing to the achievement of overall GES by 2020.

Fisheries play a pivotal role in the European maritime context. Fishing has sustained generations of Europeans and remains a traditional activity in several regions. While constituting a very small percentage of GDP or of the employed workforce, fishing continues to be a very important economic activity in many regions of Europe.

OCEAN2012 would like to see vibrant coastal communities, which exploit sustainable marine resources, providing quality fish to their communities and beyond, while preserving that resource to the benefit of those communities. The IMP can and should play a role in achieving that. It can create valuable synergies and generate benefits for the marine environment, the activities which depend on it and the communities who rely on those activities for their livelihood.

In order to do that, the implementation of the IMP must continue to integrate environmental considerations across sectors, contributing to the compliance with Article 11 of the Treaty of Lisbon. The IMP will also play a decisive role in the implementation of the MSFD and in so doing

will have to apply an ecosystem-based approach to the management of human activities. The role of the IMP in achieving Good Environmental Status is thus crucial.

Good Environmental Status – Marine Strategy Framework Directive (MSFD), Art. 3:

'Good environmental status' means the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations.

ANNEX I
Qualitative descriptors for determining good environmental status (Art. 3(5), 9(1), 9(3) and 24)

1) Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
2) Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
3) Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
4) All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
5) Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.
6) Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
7) Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
8) Concentrations of contaminants are at levels not giving rise to pollution effects.

- **In which areas does the fishing industry interact closely with other sectors? Where specifically is integration within the IMP required?**

The fishing industry interacts with several other sectors. Fishing activities are highly mobile and therefore interact with most users of the maritime space, from aquaculture to (renewable or non-renewable) energy extraction, cables, shipping lanes and ports, as well as marine protected areas. On land, fishing activities are part of the socio-economic fabric of the regions where they take place and often contribute to trade, tourism and cultural heritage, among others.

Considering all these interactions, the need to integrate fisheries-related considerations within the IMP is self-evident. Such integration can bring benefits to fisheries, the environment, and the people who rely on them. By considering all maritime activities under a single integrated framework, the IMP will be instrumental in the application of the ecosystem-based approach in

the management of human activities, as provided for by the MSFD. Therefore, any developments, in the context of the CFP or of any other policy area, must contribute to, and not hamper, the achievement of GES by 2020.

OCEAN2012 recommends that all sectoral initiatives under the IMP be designed using a set of criteria similar to the one developed in this paper for fisheries (see section 4.3). Coastal and maritime activities should thus have a minimal impact on the environment (including emissions), provide employment and decent working conditions, supply quality products or services and comply with all relevant legislation. Sectoral policies should be devised with long-term objectives in mind, respecting the carrying capacity of the environment, scientific information, where available, and applying the precautionary principle where scientific information is not available.

A truly integrated maritime policy should take into account the importance and the impacts of fishing activities in the marine sphere and contribute to sound conditions for coastal fishers who fish in a responsible manner. This would provide high quality products and contributing to the heritage and tourism potential of coastal regions, while ensuring that fishing activities do not have a negative impact on ecosystems. The IMP should also ensure that such sustainable fishing activities do not get displaced or replaced by other maritime developments.

Finally, the IMP can contribute to solving conflicts of use between fishing and other activities for marine space, and to creating alternative jobs for fishermen who lose their right to fish. It may also bring benefits in terms of data collection and monitoring, by bringing together dispersed resources and creating common databases for these activities.

- **How can the future CFP contribute to the continued access of fisheries, including both fishing fleets and aquaculture, to marine space, within an integrated spatial planning framework?**

Marine spatial planning is a key tool for solving conflicts of use and ensuring that economic activities take place in the most suitable marine areas, while allowing for the protection of biodiversity through spatial measures. The latter are mentioned under the MSFD as a tool contributing to the achievement of GES:

"Programmes of measures established pursuant to this Article shall include spatial protection measures, contributing to coherent and representative networks of marine protected areas, adequately covering the diversity of the constituent ecosystems, such as special areas of conservation pursuant to the Habitats Directive, special protection areas pursuant to the Birds Directive, and marine protected areas as agreed by the Community or Member States concerned in the framework of international or regional agreements to which they are parties."[33]

[33] Article 3 §4 Marine Strategy Framework Directive

In order to ensure that marine spatial plans are complete and adequate, involving all stakeholders, a transparent debate from the inception is key. Fishers fear that revealing their most productive fishing grounds will lead to immediate closure of those areas or that plans will assign all available space to more profitable economic activities and leave no room for their highly mobile fishing activities. It is important to include fishers, as well as all other relevant stakeholders, in the debate so that decisions are not taken without their input.

As mentioned above, fishers who conduct their activity in a responsible and sustainable manner, and who play an important role in their community, should not be forced to abandon their activity to make space for other economic activities. Another aspect to take into account is that fishers have considerable knowledge of the marine space and can make a valuable contribution to marine spatial planning processes.

Aquaculture is seen as a sector of growing importance, particularly taking into account declining catches of wild fish. Nevertheless it is essential that fish farms be sited in suitable and contained areas where they do not risk spreading diseases or polluting the gene pool of wild fish. Farms should be sited well away from the migratory routes of wild fish. Pollution from fish farms must also be eliminated.

- **How can the future CFP best ensure consistency with the Marine Strategy Framework Directive and its implementation?**

The reformed CFP will have to deliver the fisheries-related aspects of the descriptors of GES under the MSFD. This means that impact assessments for each fishery must be conducted, in order to explore its effects on biological diversity, food webs and sea floor integrity for example. If any fishery is shown to have a negative impact according to these criteria, it must cease operations and measures must be taken to eliminate these impacts before the fishery is allowed to continue (reversal of the burden of proof similar to the one adopted by the Regulation on Vulnerable Marine Ecosystems in areas beyond national jurisdiction.[34]

The MSFD foresees an ecosystem-based approach to human activities, which means that fisheries will have to comply with each and every descriptor. This includes not only the biodiversity-related descriptors of GES, but also the descriptors on, for example, quantities and properties of marine litter (lost fishing gear, fishing equipment thrown overboard) and on underwater noise (using sonar to locate schools of fish). Information must be given to fishers on these legal requirements. The future CFP will have to adopt technical measures to ensure that the MSFD provisions are complied with.

The MSFD foresees a regional approach to the implementation of its provisions, encouraging co-operation between Member States and third countries sharing the same marine basin. Therefore, a more regionalised CFP, with differentiated provisions according to the bio-

[34] EC 743/2008: Council Regulation on the protection of vulnerable marine ecosystems in the high seas against the adverse impacts of bottom fishing gears.

geographical characteristics of the different European sea basins, could contribute to simplify the policy, make it more understandable to stakeholders, and assist in the application of an ecosystem-based approach to the management of fisheries in Europe's regional seas. The role of the RACs under such a regionalised structure need to be suitably adapted to reflect effective stakeholder participation and transparency, and perhaps new management bodies will be needed.

- **How can the future CFP support adaptations to climate change and ensure that fisheries do not undermine the resilience of marine ecosystems?**

Oceans and seas have a pivotal and complex role in regulating the planet's climate. Depending on the actions we take, they can help minimise the impacts of climate change or contribute to global warming. Oceans and seas have been shown to warm up faster than land, which means that the effects of climate change will be felt first in the marine sphere. Ocean acidification is one of the consequences of rising levels of carbon dioxide in the Earth's atmosphere, but changes in temperature, salinity, stratification and oxygen levels are equally worrying. The potential effects of these changing environmental conditions on marine ecosystems are not yet fully understood, and more scientific knowledge is needed. However, we already possess enough information to start acting, as research has already demonstrated that acidified marine areas contain considerably lower bio-diversity and biomass[35].

While climate change is a worrying threat to the marine environment, marine ecosystems are already under severe pressure from human activities. Fisheries cause the most significant damage by removing too much biomass from the system, both of target and non-target species, and by destroying vital habitats for the survival and reproduction of marine species. In addition, the fishing sector's own contribution to climate change is considerable – fisheries account for at least 1.2 percent of global oil consumption: an average of 1.7 tonnes of CO_2 are emitted for each ton of live-weight landed fish[36]. Manmade pollution, eutrophication, waste and introduction of alien species are placing additional pressure on the marine environment. Bearing in mind that the only way to enhance the marine environment's capacity to adapt to a changing climate is to strengthen its resilience to large-scale ecosystem change, it is necessary that we reduce additional stress factors. Preserving diverse and abundant marine life is paramount to maintaining and strengthening this resilience[37].

The Commission's White Paper on adaptation to climate change[38] asserts that "Priority should be given to adaptation measures that would generate net social and/or economic benefits irrespective of uncertainty in future forecasts (no-regret measures). Priority should also be given to measures that are beneficial for both mitigation and adaptation." This statement undoubtedly applies to fisheries policy. Removing the pressure of overfishing and destructive

[35]Hall-Spencer, J. M. *et al* (2008) Volcanic carbon dioxide vents show ecosystem effects of ocean acidification. Nature 454, pp. 96–99.
[36]Thrane, M. (2006) LCA of Danish Fish Products: New Methods and Insights. Int. J. LCA 11.
[37]Brander, K. (2008) Tackling the old familiar problems of pollution, habitat alteration and overfishing will help with adapting to climate change. Marine Pollution Bulletin, Volume 56, Issue 12, December 2008, pp. 1957–1958.
[38]COM(2009)147: WHITE PAPER. Adapting to climate change: Towards a European framework for action

fishing will help recover the fish stocks on which the industry depends and contribute to both adaptation and mitigation; generally speaking, the most destructive and least selective fishing methods are also the most fuel-intensive[39].

A reform of the CFP which contributes to climate change adaptation in respect of the marine environment must therefore entail:

- A clear objective to reduce overfishing, taking into account not only the removal of target species, but of non-target species as well;
- Measures to ensure a shift from current fuel-intensive and destructive fishing methods such as beam and bottom trawling to more climate friendly, low-impact fisheries;
- Measures to ensure a reduction of fishing pressure and habitat destruction, including a reduction and restructuring of the current fleet, with a view to obtaining a fleet using low-impact and less fuel intensive fishing methods;
- A coherent network of Marine Protected Areas (MPAs) of sufficient size and geographic distribution to grant species a safe haven, where they are protected from human pressures; and
- A clear commitment not to displace fishing effort to other stocks/species or other parts of the world, as this would negate efforts made at EU level.

Applying the sustainability criteria mentioned above (see section 4.3) to grant access to the resources would contribute to these objectives.

5.6. The knowledge base for the policy

- **How can conditions be put in place to produce high-quality scientific research regarding fisheries in the future, including in regions where it is currently lacking? How can we best ensure that research programmes are well coordinated within the EU? How can we ensure that the resources are available and that young researchers are educated in this area?**

High-quality scientific research depends largely on the human resources involved. One of the best ways to generate interest in this research area is to increase its importance and role in the decision-making process – why invest time and energy in research if it is going to be overturned by political whim? Currently, scientific advice on a number of issues, most notably the annual catch limits decision, is, by and large, ignored. This has negative impacts on the reputation of fisheries scientists in general. Making sure that fisheries managers follow scientific advice would significantly help to attract promising scientists into this research area.

[39] Seas At Risk (2008), Climate and the Oceans: the Carbon Footprint of Fisheries (brochure), http://www.seas-at-risk.org/1mages/Carbon%20footprint%20brochure%20final%20final.pdf

- **How can the resources available best be secured and utilised to provide relevant and timely advice?**

One key factor for relevant and timely advice is the availability and quality of data. In that respect, it is crucial that catch limits, and therefore also reporting, focus on catches and not on landings. Ultimately, it is of greater importance what is taken out of the sea than what is landed. To this end, fishers should be encouraged to provide better data for stock-assessments and other research. This could be done through more participatory research projects but also through creating incentives such as preferential access to resources.

- **How can we better promote stakeholder involvement in research projects, and incorporate stakeholder knowledge in research-based advice?**

Transparency is one of the main factors to promote stakeholder involvement and to ensure sustainable policies. In fact, recent research suggests that the conversion of scientific advice into policy through a participatory and transparent process is at the core of achieving fisheries sustainability, regardless of other attributes of the fisheries.[40]

To facilitate mutual understanding and bridge traditional divides it would be helpful to set up short training courses for all participants in stakeholder bodies. These could touch upon economic, social and environmental aspects of fisheries management, the creation of scientific advice, as well as the workings of the policy-development and decision-making process. Similar training sessions are already done and indeed compulsory for participants of the US Regional Management Councils.

5.7. Structural policy and public financial support

It is a paradox that public aid has in the past not only failed to help the fisheries sector to become more sustainable, but to a large extent contributed to the problem of overfishing. This was recognised by the World Summit on Sustainable Development in Johannesburg as well as in the WTO, where fisheries subsidies are currently under negotiation. In line with the negotiating mandate agreed by WTO ministers in Hong Kong, the EU should immediately prohibit subsidies that contribute to overcapacity and overfishing. That would entail in particular all “basic subsidies”, i.e. subsidies to fishing capital (physical capacity) and operating costs. This should also include other core subsidies with direct commercial relevance to fishing and to fish products, such as processing and price supports. Delaying the phasing out of these subsidies will only worsen the situation and increase the pain of adjustment later.

Given the wide range of financial instruments used to support the European fisheries sector, such as structural funding, access under Fisheries Partnership Agreements without full cost recovery, state aid above and below the *de-minimis*, contributions to social security and the

[40]Mora et. al. (2009) Management Effectiveness of the World’s Marine Fisheries. In PLoS Biology. Volume 7, Issue 6.

fuel tax exemption, the exact amount of subsidies provided to the European fisheries sector is unknown.

Within the framework of the Sustainable Development Strategy, the EU committed to removing environmentally damaging subsidies and announced that the Commission would put forward a roadmap for their elimination, sector by sector, by 2008. The Commission itself identified on several occasions that subsidies have been detrimental to the environment, contributing to the problems that the EU fishing sector now faces. The EU should seize the opportunity of the CFP reform to end all subsides that contribute to overcapacity and overfishing, not only through structural funds, but through all instruments. Such a move would constitute a win-win situation and contribute to the recovery of fish stocks, reduce pressure on the marine environment, improve the economic basis of the fishing sector and add to the EU's credential in global conservation efforts.

- **What should be the top priorities for future public financial support and why?**

Top priorities for future subsidies should be goods and services that benefit society and would only be produced below the desired level without interference in the market. This could include independent scientific research for stock assessments, reduction of impacts on marine habitat and ecosystems and aid for control and enforcement. It would not include aid to individual fishing operations for vessel modifications.

- **What changes can the sector not manage to bring about on its own and therefore require public financial support?**

The elimination of overcapacity is likely to go along with a reduction in the number of employees in the catching sector. Public aid will be necessary to soften this transition. However, it should not be forgotten that the remaining actors in the fishery will greatly benefit from a balance between capacity and available fish stocks and should therefore significantly contribute to any financial burden (beneficiary-pays principle).

- **How can we change the focus of EU financial resources to promote innovation and adaptation to new policies and circumstances? Do any new policy areas require funding? Should public financial support be focused on specific transitions such as eliminating discards in the fishing industry?**

A robust fishing sector, based on healthy fish stocks, is best positioned to innovate and adapt to new policies and circumstances. As a result, the priority of public finance should be to strengthen the sector through a better management of fisheries and control and enforcement. It might also be helpful to support training, knowledge exchange and independent scientific research for more environmentally-friendly fishing techniques and ecosystem-based management. The provision of preferential access to fish based on sustainability criteria could provide a strong incentive to develop and deploy innovative solutions even without public aid.

- **How can synergy and coherence of possible CFP funds with other EU and national instruments be ensured?**

Synergies and coherence of CFP funds with other instruments can best be ensured through clear objectives, transparency of the funding and regular evaluations as to what extent the aid has contributed to achieving measurable results. The recent increase in *de-minimis* by the European Commission runs against all of these good governance principles.

- **How can a synergy between the pillars of a future CFP be achieved? Should public assistance be conditional on Member States' achieving policy objectives?**

Public assistance should be conditional on Member States' adequate implementation of the CFP – or whatever regional body will be in charge with the management of fisheries. Currently, for instance, a number of Member States fail to adequately assess and report overcapacity in their fleets but continue to spend EU funds on their modernisation.

- **How can EU financial resources be developed to provide the flexibility needed to respond swiftly when a crisis occurs?**

The question is misleading as it is first anticipating future crises in the fishing sector and secondly implies a need for public intervention in case such a crisis should occur. First, healthier fish stocks that are targeted with a fleet that is not operating with overcapacity (partially due to the fact that there are no more subsidies for overcapacity or overfishing – see above) are much more robust and resistant. As a result, it is less likely that a crisis will occur. Secondly, operations should factor in the remaining risks of crisis. Promising public aid for a potential future crisis is counter-productive as it will reduce the incentive to innovate and adapt to a changing environment and therefore delay the necessary restructuring of the sector.

- **Should public financial support apply equally to all sectors (small and large scale)? Should the European Fisheries Fund continue to distinguish between convergence and non-convergence regions?**

Public financial support should primarily be used to enhance fisheries management through support to independent scientific research and control and enforcement. Such aid will support all actors in the fishing sector. Aid used to mitigate social side-effects during a transition towards a more sustainable sector should be targeted towards those regions and communities that suffer most from the transition, independently of whether that is in a convergence or a non-convergence region; or a small-scale or a large-scale operator. Regional development in coastal areas should be done through other instruments, such as the Regional Development Fund, or through the maritime policy.

- **Should indirect support such as services related to fisheries management (access, research, control) continue to be provided free to all sectors of the industry?**

The main priority is that a number of services related to fisheries management, including research and control, remain independent. As a result, research and control should not be directly financed by the industry. However, it could be beneficial to ask industry to support fisheries management services. These fees should be transparent and applied in a non-discriminatory manner. For instance, a percentage of the quota or tax on catches could provide funding for a fund to fully or partially recover management costs.

Also, access to fisheries should only be given on the condition that the sector provides evidence of compliance with the rules and good stewardship. This should include data on catches. In cases where evidence is not sufficient, access rights should be withdrawn. Fisheries should pay the full costs of access to third country waters.

- **Should permanent fisheries subsidies be phased out, maintaining, on a temporary basis, only those aimed at alleviating the social impacts of the restructuring of the sector?**

This depends on the type of subsidies due to their different impacts on overcapacity and over-fishing or enhanced management:

- Structural funding should be phased out, as well as agreements with third countries without costs recovery, tax exemptions on fuel, *de-minimis* aid for operating costs and all other basic subsidies;
- Temporary aid should be provided to alleviate social impacts caused by the transition towards a more sustainable fishing sector; and
- Aid might support services related to fisheries, such as monitoring, control and enforcement, independent scientific research, stakeholder presentation in consultation bodies etc.

Any future subsidies should not undermine the progress made to find agreements in the context of the WTO negotiations.[41]

5.8. The external dimension

The future EU-ACP fisheries relations require the development of a framework for fisheries governance, through establishing a dialogue on how sustainable fisheries can be promoted in the third (ACP) countries. This should be based on the third country's fisheries management priorities, as well as on other key policy areas including food security, the integrated

[41] See TN/RL/W/232 http://www.wto.org/english/tratop_e/rulesneg_e/rules_may08_e.doc

development of coastal communities, value-added processing, and regional/international trade operations.

In the marine context, good governance in EU relations with developing countries implies a more regional approach. This can be achieved either through regional cooperation (for surveillance, research, laboratories for testing food safety, etc.) or through harmonisation (access conditions to resources).

This regional framework should include the financial instruments necessary to achieve common objectives and mobilise various EU sources, including development funds. However, access costs to third countries' waters within such a framework should be fully paid by EU boat owners.

Conditions for access should also be introduced; with access for EU vessel owners restricted to those operators who can demonstrate that their operations match with sustainability criteria (use of selective gears, compliance, number and quality of jobs created, etc.) and where there is no competition with the local small-scale sector. The latter should be given priority access in line with the FAO Code of Conduct for Responsible Fisheries.

Mechanisms should be put in place to prevent EU nationals and companies avoiding EU standards by reflagging vessels to third countries. Criteria and requirements related to vessel activities should also apply to activities of EU nationals and companies.

- **The core objective of the CFP is to promote responsible and sustainable fisheries. Is there any reason why the external dimension of the CFP should be driven by different objectives?**

The objective of the external dimension of the CFP should be exactly the same as for the other dimensions of the CFP, i.e. to contribute to the establishment of responsible and sustainable fisheries, in particular through the EU participation in RFMOs and through bilateral agreements with developing countries.

- **How could the EU strengthen its role on the international stage to promote better global governance of the sea and in particular of fisheries?**

Currently the EU's role on the international scene is affected by a lack of trust created by the EU's lack of credibility: The EU is often perceived by third countries as 'not doing what it says, and not saying what it does' with respect to good governance in fisheries management and applying double standards. The EU could strengthen its role on the international stage by improving its credibility with its international partners, particularly developing countries. This entails the need for the EU to effectively address such issues as IUU fishing, in internal and external waters, and the overcapacity of its own fleets.

- **How can the EU cooperate with its partners to make RFMOs more effective?**

One of the main challenges for RFMOs is to establish a new basis for the equitable allocation of access to diminishing fish resources, taking account of new players. Increasingly, developing states are claiming their right to exploit fish stocks under the management responsibility of RFMOs, while many fish stocks are showing signs of overexploitation. New entrants cannot be accommodated, and overcapacity cannot be reduced unless the current players, such as the EU, give up part of their access share and reduce the capacity of their fleet. The necessary reduction in fishing capacity within RFMOs in many ways reflects the discussion in the Green Paper and the CFP reform. In the Green Paper, the Commission questions the utility of the continued use of relative stability, considering that it can contribute to over-exploitation. If the EU is to be consistent, this is the position that it has to advocate in international and regional fora.

Simultaneously, transparency needs to be increased, the decision-making process improved and control and enforcement enhanced. This is particularly true for highly migratory species such as tuna, and high seas fishing for small pelagic species, where problems are particularly pressing.

Some experiences, particularly in the Pacific (Parties to the Nauru agreement, Pacific Islands Forum Fisheries Agency, Western and Central Pacific Fisheries Commission) show that with appropriate technical support, developing countries can become more active and responsible players in RFMOs. The EU should support such regional dynamics through the various tools at its disposal (EPAs, FPAs, development cooperation) as a way to improve the efficiency of RFMOs to develop sustainable fisheries.

- **Contrary to the current free access principle in international waters, should fishermen pay for the right to fish in the high seas under the governance provided by RFMOs?**

Paying for the right to fish will alone not deliver sustainable high seas fisheries. It is more important to establish and implement fishing limits, technical measures and criteria for access reflecting environmental and social concerns, and to reserve a share of the access/catches for coastal developing states, in order to give them the space to develop. In that sense, we agree with the assertion of the Long Distance RAC that "it is necessary to find a balance between all the actors involved, and that access to tuna fisheries should be analysed through a system of transparent and non-discriminatory criteria determining the responsible aspirations of stakeholders such as history of compliance, employment created/working conditions, environmental impact, etc"[42].

There is no particular reason why fishermen should not pay for the right to fish in the high seas. Fish – in national or international waters – is a public good. Decisions on access fees should be discussed and settled within RFMOs.

[42]LDRAC advice tuna RFMOs, April 2009
http://www.ldrac.eu/component/option,com_docman/task,cat_view/gid,105/Itemid,80/lang,en/

- **How can objectives such as investment promotion (creation of joint-ventures, transfer of know-how and technologies, investments and capacity management for the fishing industry …), creation of jobs (on vessels, in ports, in the processing industry) or promoting good maritime governance be pursued in the framework of future international fisheries agreements?**

Developing countries need investments in their fisheries, mainly to safeguard the future contribution of their fisheries sector to poverty alleviation and regional economic development. Investment is needed to improve the management of natural fish stocks (research, training, capacity-building, etc) and to enhance fish trade in domestic, regional and global markets.

Economic Partnership Agreements (IEPAs and EPAs) already include provisions on investment that could be used to secure EU investment to improve development countries' fish-landing, hygiene, transport, and processing infrastructures. At the same time there is a need for caution: the promotion of EU investments should not be at the expense of local small and medium-scale enterprises, labour standards, quality of life, resources conservation and the local environment. For this reason, all provisions related to fisheries should be under a specific chapter within these agreements.

A particular issue to highlight is the case of investments linked to the transfer of EU fishing capacity. In the past, such investments have not brought the expected social and economic benefits to the receiving developing countries and they have tended to aggravate the state of over-exploitation of resources, increasing also the competition with the local small-scale fisheries sector (in West Africa for example). We feel that, as a rule, support to EU investments in developing countries fisheries should exclude the transfer of fishing capacity.

Another area where there have been important EU investments in developing countries' fisheries is onshore investments for processing facilities, particularly in the tuna sector. A 2009 briefing from the FFA highlights that the rationale behind this was, on the side of the developing country, to create jobs and 'spin-off' economic benefits such as investments in port and transport infrastructure and new businesses related to the tuna processing investments.[43]

Using this rationale, several ACP countries have secured onshore processing facilities in their countries, often by promising valuable fishing licenses in exchange. However, there have been some concerns expressed that onshore investments have been secured without fully assessing the net benefits of the projects relative to the pressure placed on tuna resources and local communities and environments. There is concern that governments are granting fishing licenses based on promised facilities that might never materialise and that plans do not include comprehensive analyses of resource sustainability or the net socio-economic returns that the plants will deliver. The briefing also mentions that conflicts between communities and the processing facilities have arisen (disputes over working conditions, land rights and pollution). Such conflicts not only have the potential to negatively impact the long term success of the

[43] http://www.ffa.int/node/251

investments, but also call into question the overall net benefits of onshore investment without ensuring socio-economic 'returns'.

Therefore, even for investments that, a priori, correspond to the needs of developing countries (job creation in particular) there is a need to set up mechanisms in EU FPAs/EPAs to fully assess the net costs and benefits of such projects. This includes: developing a methodology for avoiding overcapacity in the fishing sector, developing accountability measures for investors to ensure that facilities deliver promised benefits, calculating net foreign exchange benefits, assessing how such developments will impact local communities, and developing mechanisms to avoid and mitigate conflicts before they arise and assessing levels of benefits to processing facility workers.

- **Are the FPAs the best instrument to achieve sustainability beyond EU waters or should they be replaced by other forms of cooperation? Should the regional perspective be explored and either substitute or complement a streamlined bilateral one?**

Good governance in EU relations with developing countries implies a move towards regionalisation of our relations. Current Fisheries Partnership Agreements should be replaced by a regional framework for fisheries governance to establish a dialogue on how the CFP can contribute to fulfil the third countries' priorities for the sustainable development of their fisheries sectors. This framework should account for fisheries management and resource conservation, but also food security, support for integrated coastal communities development and value added in processing and trade operations. Through this dialogue, the EU should promote transparency and stakeholder participation, recognised as two crucial aspects of responsible and sustainable fisheries by the FAO Code of Conduct for Responsible Fisheries.

As mentioned before, various EU sources should be mobilised in order to achieve objectives jointly decided through this framework. This includes development funds and requires good co-ordination between all EU services dealing with third countries fisheries issues (DG SANCO, EuropeAid, DG DEV, DG Trade, etc.) as well as with EU Member States fisheries development programmes in these countries or regions. Access costs to third countries' waters within these regional governance frameworks should be fully paid by EU vessel owners. Access should be conditional upon compliance with sustainability criteria. In case there is competition, priority access should be given to the local small-scale sector in line with the FAO Code of Conduct.

In the past, positive elements have been introduced into FPAs which should remain part of any governance agreements. The clause of exclusivity should remain in order to ensure that EU flagged vessels cannot operate outside these frameworks. There should be an evaluation of the implementation of social clauses, in order to assess whether the objective of fair treatment for third countries' workers on board EU vessels, in line with the 2007 ILO Convention, has been achieved, and, if not, how it could be improved.

However, vessels of EU origin are also active in developing countries with which there is no agreement (or no agreement protocol in force). In such cases, the EU should propose to these

countries the signing of a governance agreement, or, if this is not possible, the EU should look at ways in which such vessels and operators which originate in the EU can be given similar treatment as under governance agreements. To that end, international references, such as the OECD guidelines for investments by multinationals, could be of interest.

A regional governance framework between the EU and developing countries could significantly enhance research as well as monitoring, control and surveillance activities. This can be achieved either through regional co-operation (for surveillance, research, laboratories for testing food safety, etc.) or through harmonisation (access conditions to resources).

- **How could we make scientific research to assess the sustainability of fish stocks and the control of the fishing activity more transparent and efficient?**

Effectiveness of research and control of fishing activities can be enhanced through co-operation at regional and international level. Transparency is one of the main factors to promote stakeholder involvement and to ensure sustainable policies. In fact, recent research suggests that the conversion of scientific advice into policy through a participatory and transparent process is at the core of achieving fisheries sustainability, regardless of other attributes of the fisheries.[44] Disclosure of data, such as information on all landings by all vessels, aggregated VMS data, information on infringements and subsequent fines and penalties, as well as impact assessments and evaluations should be publicly available.

- **How can we assure better cooperation and compliance with new regulations in developing countries?**

A priority should be to use the possibility to put in place administrative cooperation agreements, so that the EU can help the third countries to better respect regulations. Such possibility already exists within FPAs but has not been used so far. For instance, an administrative cooperation agreement for exchanging data on authorised vessels, arrests, etc, would contribute to the implementation of the IUU fishing regulation.

- **Should EU operators cover all the costs of their fishing activities in third country waters or should the Community budget continue to support part of these costs?**

Access costs to third countries' waters within new frameworks should be fully paid by EU vessel owners. In addition, access for EU boat owners should be restricted to those operators who can demonstrate that their operations match with sustainability criteria and where there is no competition with the local small-scale sector.

[44]Mora *et al.* (2009) Management Effectiveness of the World's Marine Fisheries. In PLoS Biology. Volume 7/Issue 6.

- **How could we contribute to increasing the fisheries management capabilities of developing countries, e.g. through targeted assistance?**

Targeted assistance can enhance fisheries management in developing countries. However, effective fisheries management requires that a framework for good governance be in place that assures transparency and accountability. Assistance in the absence of such a framework may only result in greater corruption.

- **Should the integration of European fishing fleets and interests in third countries be actively pursued as an objective of the external dimension of the CFP with a view, in particular, to support the development of the concerned partner countries?**

The integration of European fishing fleets and interest in third countries should not be an objective in itself. Any investment in third countries should take place within a framework of good governance and mutually agreed priorities.

- **How can we reinforce the synergies between the different forms of support and the different partners in the fisheries sector and the development strategies of coastal states?**

A formal mechanism for ensuring coherence between the activities of the different DGs dealing with aspects of fisheries and development (DG Mare, DG DEV, DG SANCO, DG Trade, etc.) should be established in the framework of the EU initiatives for Policy Coherence for Development.

- **Should aquaculture be included in future partnership agreements?**

As regards the external dimensions of the CFP, the promotion of EU aquaculture interests, particularly in developing countries, should not be at the expense of local sustainable development. In this regard, the promotion of export-oriented, fishmeal dependent aquaculture requiring high external inputs is inappropriate. Lessons can be learned from the environmental, social and economic crisis currently affecting salmon aquaculture in Chile, or shrimp aquaculture in Asia and Latin America.

A number of aquaculture projects in developing countries have been linked to a range of social concerns, including loss of access to traditional food sources and fishing grounds, forced land seizures without compensation, poor working conditions and low wages in farms and processing plants.[45] The aforementioned mechanism for ensuring coherence between the activities of the different DGs dealing with aspects of fisheries and development could help to design policies promoting socially and environmentally sustainable aquaculture ventures.

[45] http://www.greenpeace.org/raw/content/international/press/reports/red-criteria-unsustainable-aquaculture.pdf

How could the potential of small-scale fisheries in third countries for sustainability, ecological and social benefits be enhanced?

According to the declaration of the FAO Conference on Small-Scale Fisheries in Bangkok (2008), the best way for the EU to support the enhancement of that sector's potential should include:

- Respecting the priority access rights of small-scale fisheries to resources, as recognised by the FAO Code of Conduct for Responsible Fisheries (art 6.18), and therefore ensuring EU fleets do not compete with that sector, for resources, for space, for investments/aid;
- Supporting monitoring, control and surveillance activities for the coastal zone;
- Opening up a dialogue with third country stakeholders about the need to ban unselective and destructive fishing from the coastal zone;
- Supporting mechanisms that will enable small-scale fishing communities and organisations to be properly informed and to participate in the dialogue on fisheries governance (appropriate information, capacity-building programmes, and participation mechanisms, including a dialogue with the EU Long-Distance Fleet RAC.

5.9. Aquaculture

The new EU aquaculture strategy (2009)[46] notes that aquaculture provides huge opportunities and raises considerable challenges, particularly in relation to environmental sustainability of production as well as to the quality and safety of the products. It bemoans the fact that seven years on from 2002 and the adoption of the EU's sustainable aquaculture strategy, overall EU aquaculture production has stagnated, in stark contrast with the high growth rate for the rest of the world.

A key reason for this contrasting state of affairs may be that a significant proportion of EU aquaculture production is aimed at wealth creation first, and food production second. Prominence has also been given to the production of carnivorous species, highly dependent on large scale, intensive, high-tech production systems, which are highly vulnerable to parasite and disease infestations. We feel therefore that the new European aquaculture strategy again places too much emphasis on the intensive farming for carnivorous species, at the expense of other forms of more traditional aquaculture.

[46] COM(2009) 162 final: Communication from the Commission to the European Parliament and the Council: Building a sustainable future for aquaculture - A new impetus for the Strategy for the Sustainable Development of European Aquaculture

- **What role should aquaculture have in the future CFP: should it be integrated as a fundamental pillar of the CFP, with specific objectives and instruments, or should it be left for Member States to develop on a national basis? What instruments are necessary to integrate aquaculture into the CFP?**

Aquaculture should be integrated as a fundamental pillar of the CFP, with the main objective to promote environmentally sustainable and socially responsible fish production. The main tools to be used to reach that objective are:

- To develop a strategy to support the development of traditional freshwater and marine fish and shellfish farming: We feel that the EU should consider the potential for developing other types of aquaculture. For example, traditional systems of freshwater and marine fish and shellfish farming have been developed throughout Europe over the last centuries. Pond farming operations assist the maintenance of wetland areas and live bivalve molluscs help combat eutrophication and maintain a good sanitary quality of coastal and estuarine areas.
- To require closed containment for industrial aquaculture for carnivorous species in order to minimise impacts on the marine ecosystem: Closed containment, which prevents the transmission of diseases and parasites, could offer some solutions to the many environmental problems caused by such aquaculture. Closed containment can also eliminate escapes and discharges of wastes into the ocean (Escaped farmed fish such as salmon can adversely affect their wild counterparts by interbreeding and causing genetic dilution in subsequent generations, making them less fit to survive in their environment). The farmed salmon industry has resisted closed containment systems even though all salmon must be raised in tanks for the first 12-18 months. The crux of the issue is cost. A 2005 study suggested that closed containment technologies could be financially viable, if measured against the actual environmental costs of net pen salmon farming.[47]
- To forbid the introduction of alien species for aquaculture in the open: The physical containment of non-native species or genetically engineered fish cannot be guaranteed under most commercial conditions and any escapes into the environment can have devastating effects on wild fish populations and biodiversity. Escaped fish threaten native species by eating their juveniles, competing for food or habitat, spreading disease, and/or posing a threat to the genetic diversity of wild populations.
- To ban the sourcing of eggs or juveniles from the wild: Some aquaculture relies on juvenile fish or shellfish being taken from the wild to restock the culture ponds. This is unsustainable in cases where taking juveniles further depletes wild stocks, or where the catching method is destructive to other species or the ecosystem.

[47] L. Pendleton et al., "Closing in on Environmentally Sound Salmon Aquaculture: A Fresh Look at the Economics of Closed Tank Systems," A Report by the UCLA Program Environmental Science and Engineering, David Suzuki Foundation, Conservation Strategy Fund, Friends of Clayoquot Sound and the Raincoast Conservation Society for the Coastal Alliance for Aquaculture Reform, 2005. http://www.farmedanddangerous.org/?action=d7_article_view_folder&Join_%20ID=82852

Juveniles are taken from declining stocks of European eels and Mediterranean bluefin tuna, and then grown for aquaculture.

- To restrict the production of fish feed to sustainable sources: The farming of carnivorous species (most popular farmed species in Europe such as salmon, trout, bass & bream) relies upon a source of marine protein and oil to form the basis of their concentrated diet. These proteins and oils are derived from both wild capture feed fisheries and trimmings and waste from fish processing for human consumption. The input of wild-caught fish via feed can exceed the output of farmed fish and therefore result in a net loss rather than a net gain of fish protein. Fish feeds should be using primarily trimmings and waste from fish processing. The use of vegetal proteins, although they may provide a valuable solution to the wild-fish feed problem, raises other environmental sustainability issues, particularly when genetically modified species are used. Genetically modified crops are associated with a number of potential environmental impacts, particularly genetic contamination of non-genetically modified crops. They may also represent a threat to wild environment: for example, vast areas of rainforest have been destroyed to make way for soya crops, which is increasingly used in fish feeds as an alternative protein source to wild fish.

ANNEX 1: SOME GENERAL COMMENTS ON MSY, SUSTAINABILTY AND PRECAUTION

The terminology of population dynamics, ecosystem dynamics, and fisheries theory, assessment and management is in some disarray. We have drawn attention, above, to a few specifics. Where possible we have used the common terminological practices of fisheries science, but these now have to be supplemented by less common terms, and for this we have drawn mainly on the book by Getz and Haight, published in 1989 and cited in Footnote 16.

That was, however, published two decades ago. There have been some more recent developments to which we must give attention. Nevertheless there has, to our knowledge, been no later publication providing such a comprehensive view of modelling choices, types of fisheries, diverse fishery situations and types of regulation.

Getz and Haight employ some moderately difficult mathematics but also provide clear verbal explanations of most of their reasoning and conclusions. Furthermore, they have described and analysed numerous case histories available to them at the time (including, for example, cod and anchovies); several others could now be cited and it would be useful for those responsible for revising the CFP to be fully aware of them.

The idea of a population at a particular place and time having a 'sustainable yield' is an illusion and a dangerously misleading one. A common, but simplistic, understanding of such a notion is that the sustainable yield is that which, if taken, will leave the population at the same size, and in the same state next year; taking less will allow some recovery if the population has already been reduced by exploitation. But even if, next year, the size of the population is unchanged, its composition (for example by age or size of its constituents) and hence its potential biological productivity will not be unchanged.

It is a common error, also, to think that the composition of the population (or, for that matter of the ecosystem of which it is a component) will only change if the removals are selective. But in fact even non-selective removals will change the composition; this is because composition is determined in part by the recruitment; populations, and ecosystems, are open systems. However, we seek to find definitions allowing us for certain purposes to treat them as closed systems and apply closed-system models to them. Selective and unselective fishing both change the composition of the exploited population.

A sustainable yield can only be defined by some sort of average over time. But no average can be calculated over infinite time, only over a defined, finite time. This leads to consideration of what Getz and Haight called *T* – the ***planning horizon***, referring to *x(T)* as the ***endpoint condition*** – that is the expected size and state of the exploited population at the horizon. Selection of that calls for decisions about ***endpoint constraints*****.**

The developers of the International Whaling Commission's (IWC's) Revised Management Plan/Catch Limit Algorithm (RMP/CLA) understood this and conducted simulations for a planning horizon of 100-years; this was determined roughly by the generation time of whales

and the practical limits to computation, but is possibly longer than justified by the duration of human management arrangements. The endpoint constraint was that it was not permitted to increase the average catch by taking a massive one-off catch from the recovered population when the horizon was reached. The catch that the IWC scientific groups sought to maximize was the cumulative catch during the specified, finite management period; this is, of course, the same as maximizing the mean catch during the period.[48] This gives the essential clue to how to define MSY in an operational way rather than as some ideal and unreal number.

To continue description of the important IWC experience, we recall that the management objective of seeking to maximize the cumulative catch over a specified period is a conditional one, since there will usually be at least one other objective: to minimize the probability that the stock will accidentally be reduced below a certain critical level at least once during the pre-determined management period.

Simulation of a candidate management procedure to meet that criterion calls for specifying both the critical level and the acceptable probability. The critical level might be one for which scientific evidence suggests depletion might be irreversible, or an arbitrary minimum spawning stock size, or – in the case selected by the IWC – a much higher level based on a previous management procedure using deterministic population models[49]. In fact there can in principle be more than one specified critical stock level with different management actions triggered when and if one of them is accidentally crossed. Everything said here about stock levels applies, naturally, also to stock composition; for example, an unexpected development that drastically changes the sex ratio in the stock to one with reduced females or the biomass of spawners.

We have given the IWC example prominence simply because it was the first and by far the most fully explored approach so far to management based on the results of complex computer simulations (see, for example, J. G. Cooke's 1999 description[50]). An important feature of that exercise was that the management procedure which emerged from it did not require the availability of vast new series and types of data, though it does require information about stocks other than that obtained by sampling commercial fisheries, e.g. scientific cruise data.

It was also devised to be as independent as possible of particular population models that is robust to errors in assumptions about stock dynamics and also as far as possible to data errors, and to unexpected environmental changes, both in the long and short term. However,

[48]R. C. Myer (cited by Getz and Haight) proposed that the measure whose sum or average should be maximised might rather be a *Yield Utility Function* (YUF) and suggested that could be defined as, for example: *U(Y) = Y/(1+c*y)* where c is "an appropriately chosen constant".

49 Deterministic models are mathematical models in which outcomes are precisely determined through known relationships among states and events, without any room for random variation. In such models a given input will always produce the same output, such as in a known chemical reaction. In comparison, stochastic models use ranges of values for variables in the form of probability distributions. For example, the planets move around the sun according to Newton's laws and their position can be predicted with great accuracy well into the future. In practice, a totally deterministic relationship is unlikely due to unpredictable factors - for example, a previously unknown comet moving through the solar system could perturb some planets. Where the influence of several unknown factors is sizable, exact prediction is not possible, but it may be possible to predict to within a known confidence interval - or to predict the probability that a particular value will be observed at a particular time. This is called a stochastic (or probabilistic) process.

[50]Cooke, J. G. (1999). Improvement of fishery-management advice through simulation testing of harvest algorithms. In Confronting Uncertainty in the Evaluation and Implementation of Fisheries-Management Systems. *Edited by* A. I. L. Payne. ICES J. Mar. Sci. 56: 797–810.

population models (with stochastic elements) are needed to generate "data" to be used in simulations.

The IWC exercise used a modified version of a crude "surplus yield" model that has been used for managing many fisheries – to our mind with some disastrous results. This was driven by the reluctance of the Commission to consider management objectives other than maximizing numerical catches, rather than biomass and hence commodity production as recommended by scientists. A similar problem may arise in the case of Community fishery management which seeks to maximize the gross weight of species catches rather than, for example, their value. But there is no doubt that age- or stage-structured models must be used for most fishes and shellfishes. The one given in the examples compiled by Getz and Haight is in nearly all cases the basic yield-per-recruit model of Beverton and Holt, 1957, combined with one of four or five well-known equations relating the recruitment to the spawning stock size.[51] Holt has described how this exercise could be done in a recent paper.[52]

Since the IWC work, and also since Getz and Haight published their book, some other studies have been made that are more directly relevant to the problem now facing the Commission. Two of these are worth special mention. One was a study by a group led by Dr Laurie Kell, commissioned by the Commission and available as ICES documentation. The other was by Drs. Andrew Constable and William de la Mare (one of the IWC/RMP Development Group) in the context of fisheries management by the Commission for the Conservation of Antarctic Marine Living Resources, who have published a General Yield Model with practically universal application.[53]

At this point, we think it is necessary to comment on a matter that has appeared in recent years in efforts by management bodies and scientific groups to categorise the states of fish stocks and to base management procedures on such categorisation. In the 20th century it became common to describe a fish stock as overfished,[54] or underfished, or optimally fished or some such term. This idea was embodied in the IWC's decision in 1974 to classify each whale stock in this way and to apply different decision rules to each category, a process labelled the New Management Procedure. In the context of the EU and ICES such classifications have been further elaborated, resulting in the plethora of categories and multiple decision rules. This evolution is related to efforts made over the years to escape the strict MSY criterion that was

[51] "On the Dynamics of Exploited Fish Populations" Fourth printing, 2004, Blackburn Press, New Jersey. Also Beverton, R. J. H. and Holt, S. J. (1964) Tables of yield for fishery assessment. *FAO Fish. Tech. Pap*. 38, 49pp.

[52] New Policy Objectives and Management Procedures for EU Fisheries: A Commentary and Suggestions to The Greens/European Free Alliance in the European Parliament. 21pp, February 2007. An extended version with the same title, dated January 2007, was written for the European Policy Office of the WWF, 40pp.

[53] A generalised model for evaluating yield and the long-term status of fish stocks under conditions of uncertainty. *CCAMLR Science*, 3 (1996): 31-54.

[54] *Overfishing* became sub-categorised as *growth overfishing* in which the fishing mortality rate was so high as to leave few individuals to attain full-size, and *recruitment overfishing* in which a population was reduced so far that there were substantial effects on recruitment into the next generation.

being imposed – for mainly political reasons – on management and of which most scientists have been very critical.[55]

One route of escape was to define other *Stock-specific Reference Points*.[56] This was an approach favoured especially by former scientific staff of the FAO Department of Fisheries (which is why it has such prominence in the UN Fish Stock Agreement), but it carries with it quite serious problems. The Reference Points can only be defined for operational purposes with respect to a particular population model – usually a deterministic one – the selection of which requires knowledge we generally do not have.

Secondly it encourages the definition of strict boundaries between classification categories of stock state which, as the IWC found, generates endless controversies about the classification of stocks – and hence the decision rules applying – that are assessed to be close to boundaries. And the more stock classes there are the more the boundary problems arise.

The approaches used by Cooke, Kell, Constable and de la Mare – and similar others such as by Dr D. Butterworth in relation to South African fisheries – avoid these pitfalls or, by the application of probabilities in stochastic models, blur the boundaries so that small changes in assessments do not result in big changes in regulations. They also give us an operational way of dealing with the application of the precautionary principle and with caution under uncertainty in general. This is through the judicious choice of the probabilities assumed in the stochastic models used for simulating and testing candidate management procedures. We cannot eliminate error, but we can decide whether we want, for example, the probability of a stock not being reduced accidentally below some critical threshold once in the planning period to be 99% or are we content to go along with 95 percent or even 90 percent? The bigger the acceptable risk the higher will be the near-term catches. Possible adjustment of the distance of the planning horizon and the location of critical thresholds all interact to give different patterns of precaution; alternatives can be – must be – evaluated by simulations. How these simulations are to be organized and evaluated by the Commission and its scientific advisors is a major question, beyond the scope of this comment.

An advantage enjoyed by the scientists engaged in the IWC's RMP development process was that the commercial whaling moratorium that came into effect in 1986 released them from the burden of assessing the state of every whale stock annually and calculating appropriate catch limits based on the new management procedure, and they were thus enabled to devote more time to evaluation of revised proposals. (It is also significant that several of the specialists most responsible for the new procedures were not governmental nominees.) The scientists associated with the future management of Community fisheries can expect no such luxury. Nevertheless a way will have to be found to assign sufficient scientific resources to the process

[55] For an account of this imposition see paper by Holt "The Evolution of the Objectives, Science and Procedures of Fisheries Management" contributed to the 12th Conference of the North Atlantic Fisheries History Association (NAFHA), Norfolk, Virginia, 19-22 August 2009. The theme of which was Fisheries Management in a Historical Perspective.

[56] See for example the OCEAN 2012 Discussion Paper On the reform of the Common Fisheries Policy, with reference to the UN Fish Stocks Agreement, available at: http://www.ocean2012.eu/resources/view/id/14024?download=true

of developing the new management rules, which will surely take several years, while continuing to apply the minimum of present rules.

One further technical point has political implications: it is an absolutely essential feature of the management process we have outlined here that authorities (e.g. governments, the Commission, Parliament) accept the process once and for all, and that from then on the application of the decision rules is automatic, not negotiable. Of course, some arrangement for dealing with completely unexpected major events or errors has to be in place, as well as rules for identifying such circumstances, but the deviations from the agreed procedures must be quite exceptional, not routine. The agreed rules might be applicable year-to-year but they would be formulated in such a way as to maximize the attainment of the overall catch objective (the modified MSY) of the planning period. In fact fishing power limitation would obviously not be an annual decision, but its deployment as fishing effort might be.

We have not discussed here in any detail the alternative objective of conditionally maximizing or at least ensuring and increasing net economic value (profit, or at least the difference between the market value of the catch and the cost of taking it), rather than physical yield in weight or even in value. A biologically sustainable yield is not necessarily a profitable one, and it is certainly not economically optimal except by pure chance. Even if an economically optimal yield might be desirable, the obstacles to achieving it are clearly high. But at least a management procedure which seeks somewhat less than the conditional physical maximum, even arbitrarily less, would be advantageous and that option should be explored. The recent study by the World Bank and FAO entitled "Sunken Billions" has pointed the way, globally.[57]

Implementation of an 'ecosystem based approach' is complex and we are far from operationalising this concept in EU fisheries policy. An adaptive system for managing the exploitation of single species populations, or of mixed species, can be devised and implemented in such a way that ecosystem dynamics are generally respected. This is because the interaction of each target stock with its biological neighbours or associates can be treated as an environmental factor or a suite of such factors, and management procedures can be devised that are robust to environmental changes. The essential is that the biological "environment" of the target species must be closely monitored to detect significant changes that may arise from the interactions between species, so that the management algorithms can be modified accordingly, if necessary, in a timely fashion.

[57] http://www.globefish.org/files/Sunken%20Billions%20Report%20Advance%20Edition_659.pdf