

Dill, Peter et al.

## Conference Paper

# Managing marine resources

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## The Global Environment

# Managing Marine Resources

### The Challenges

Three quarters of the global marine fish stock are deemed fully exploited or overfished.

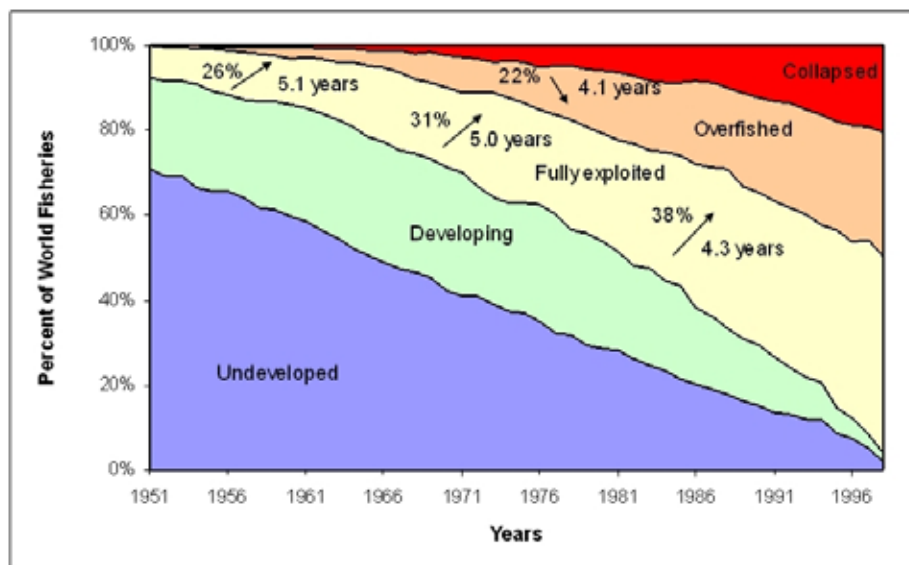
Consequently, fish stocks are declining worldwide and several fish stocks haven even already collapsed, further stocks will do the same in the near future.

Declining or collapsing fish stocks do not just imply the lost of economic benefits but imply the lost of livelihood for many people in developing countries.



Consequently, the global challenge is to come up with management approaches to sustain the global fish stock in the future without withdrawing the basic food for developing countries in the present.

Overfishing is driven by mismanagement. Approaches to overcome the common property problem are still rare. Consequently, the joined effort of the academic sector, the policy sector and the business sector is needed to challenge this problem. The academic sector has to come up with solutions regarding the allocation and design of property rights system, which have to be fitted to the various fish stocks. The policy sector has to come up with solutions regarding the introduction of such systems within their economic zones and with global agreements regarding the fish stocks in the open oceans. The business sector has to come up with solutions regarding the business opportunities of labeling sustainable fishing and of including sustainable farming of non-predatory fish within the global food provision.



Quelle: Froese and Kesner-Reyes, ICES 2002





## **Proposed Solutions**

### **Peter Dill**

*CEO, Deutsche See*

I agree with the “Preliminary Solutions” proposed in your outline. In addition, I would like to add the following issues to the list.

#### **1. Stop “discard”**

Discarding already “caught fish” is one of the most urgent issues that needs to be addressed. About 25–30% of all catch is discarded according to estimates of various sources. This is especially relevant in EU waters and much less so for well managed fisheries like in Norway and Iceland where “Discard” is prohibited. Various methods can be applied, e.g., more selective fishing gear, change of the current EU quota system, a mandate to land all caught fish, etc.

#### **2. Setting adequate quota oriented at long term sustainability, improving control mechanisms and apply appropriate sanctions.**

The current quota setting procedure, especially within the EU, is more of a “political process” than oriented towards sustainably managing marine resources. In addition, the current control mechanisms are neither technologically up-to-date nor are sufficient resources applied. This also includes appropriate sanctions in case of violations. Sanctions are irrelevant if the related cost are not substantially higher than the market price of overfishing.

### **Rainer Froese**

*Senior Scientist, IFM-Geomar Leibniz-Institute for Marine Sciences*

#### ***Additions to the preliminary solutions***

About 40% of global catches are not used for human consumption but rather reduced to fishmeal for animal feed, with typically poor protein-protein conversion-ratios. A solution is to reduce the overall amount of reduction fisheries and divert an increasing proportion to direct human consumption.

Reduction fisheries include many species that can be consumed directly by humans, such as sardines, anchovies, sprats, and mackerels, and which are a traditional protein source for poor people in developing countries. Other species, such as sandeel, can also be processed into healthy products for direct consumption, such as the crab-meat surrogate surimi.

Thus, global fisheries can easily increase their role as source of high quality low-cost protein by diverting reduction fisheries to human consumption.

#### ***Give quotas in numbers***

There is a recurring call for new ideas to solve the fisheries crisis, although most of the 'old' ideas have never been fully implemented. Anyway, here is a new idea: Most of the fish we eat are babies, i.e., they had no chance to reproduce before being caught. This stems from the fact that intensive fishing reduces the likelihood of fish reaching an old age and corresponding large size. Minimum landing sizes and net-properties are typically set such that they catch fish as soon as they can be caught, well below the size of first maturity.

In quota-regulated fisheries, fishers (or their boats) get permission to land a certain weight of fish in a given year. Here I propose to express this quota rather in number of individual fish that a fisher can catch. A cod of 38 cm, the current minimum length in the Baltic, weighs about half a kilo. A cod of 80 cm length weighs about 5 kilo. Since ex-vessel income is by weight,



fishers, thus, have a strong incentive to target adult fish and spare juveniles. It has been formally shown that a fishery that lets all fish spawn can not be overfished.

## **Ichiro Nomura**

*Assistant Director General, Fisheries and Aquaculture Department, FAO*

### ***The Challenges***

Fish is vital for world food security. One and a half billion people rely on fish for a fifth of their animal protein intake. Fish makes up at least 15% of that protein intake for 3 billion people. Yet, capture fisheries are under threat. Up to eighty percent of the world fish stocks are already fully exploited or even overexploited. Access to fisheries must be restricted if they are to continue to feed the world's population, to generate wealth and to help alleviate poverty. Effective and efficient management of the world's fisheries is crucial.

The world financial crisis, and fluctuations in food and energy prices, combined with the effects of climate change, are recasting the global landscape. The complex social and economic impacts pose unprecedented challenges. For fisheries and aquaculture, this requires strategies to take advantage of new opportunities and to minimize threats. Ensuring responsible and sustainable fisheries and aquaculture is the key to overcoming those multifaceted challenges. Some preliminary solutions have already been identified.

### ***Preliminary Solutions***

#### **1. Reconcile fisheries utilization and conservation so that responsible and sustainable fisheries and aquaculture coexists with sound environmental management and protection of ecosystems**

A policy framework already exists to ensure sustainable fisheries utilization, the conservation of biodiversity, and ecosystem integrity. That framework includes a suite of legally binding and non-binding instruments. The FAO Code of Conduct for Responsible Fisheries (CCRF) and the respective International Plans of Action (IPOAs) for reducing the incidental catch of sea-birds by fishers, for better managing sharks, for managing fishing capacity, and for combating illegal, unreported and unregulated (IUU) fishing are some of the main thrusts toward responsible and sustainable fisheries. The problem is that these instruments and the overall policy framework are still not being adequately applied across the globe. The challenge is to effectively direct political will to achieve the dual goals of sustainable fisheries utilization and the conservation of aquatic resources and ecosystems.

The Ecosystem Approach to Fisheries (EAF) was addressed by the 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, and the 2002 World Summit on Sustainable Development (WSSD) Plan of Implementation. These both reflected a desire to see the impact of fishing in a broader context than simply focusing on fishers and their target species. The challenge for the future will be to develop and use:

- reliable, robust and cost-effective means of assessing and monitoring the status of ecosystems and their resources, and
- rapid means for detecting any undesirable and excessive impacts, from whatever source, that threaten sustainable fisheries use.

This information can be used to determine and implement suitable and effective fisheries management as well as to identify the effects of climate change and to strengthen the resilience to it.



## **2. Establish robust and effective management systems for responsible and sustainable fisheries and aquaculture**

A lack of good governance and perverse incentives for stakeholders are key factors in the overexploitation of fisheries. The key principles underpinning good governance in any management system are openness, participation, accountability, effectiveness and coherence. Effective participation of all stakeholders in fisheries is especially important. Ensuring appropriate representation and input from the fishing industry as well as interest groups, while ensuring that broader societal goals are met, are fundamental components of responsible fisheries management. Effective participation ensures that decision-making is a learning and adaptive process. Moving forward requires governments and stakeholders to work together to ensure that their institutional and legal frameworks are able to incentivise effective fisheries management and that the human and other resources required to effect policy decisions and to ensure ongoing good governance are available.

Right-based management approaches could provide effective incentives for fishers to participate in responsible management systems. Contrary to media coverage of the use of property rights in fisheries management, rights-based fisheries systems are not limited to individual transferable quota (ITQ) systems. In reality all fisheries management systems are based on some sort of “user rights.” There is not one style of rights-based system to fit all fisheries. Rights-based management systems need to be purpose built; designed to reflect and build upon the norms and governance structures that the participants and their communities consider legitimate and acceptable. Moreover, when rights-based systems are applied to fisheries where there is overcapacity (too many fishers and/or fishing vessels operating) and overfishing, the impacts of transitioning to rationalized fisheries need to be addressed. That means dealing with impacts on livelihoods, on employment and on the economies of local fishing communities. The ultimate goal is for fishers and their communities to sustainably generate the wealth that fisheries have to offer, both now and in the future.

## **3. Link fisheries management with trade and marketing standards to ensure responsible and sustainable fisheries and aquaculture**

Over the past decade, eco-labels have become a feature of international trade and marketing of fish and fish products. Eco-labels are a market-based mechanisms designed to provide incentives for more sustainable fisheries management by encouraging buyers, from large scale retailers to individual consumers, to only purchase fish and seafood certified as having come from a sustainable fishery. Commitments to sustainable fish sourcing have become increasingly common in the procurement strategies and corporate social responsibility strategies of large-scale retailers and commercial brand owners.

The challenge is to ensure that the pressure and momentum generated by this market-based instrument can be harnessed to complement public measures for sustainable and responsible fisheries management. This means aligning the various incentives so that the private sector, NGOs and governments, both at the national level and internationally, can work together towards the mutual goal of sustainable fisheries management. Eco-labels provide a nexus between product marketing and resource management and are an increasingly important part of the fisheries sustainability equation.

FAO brought the world’s attention to fisheries subsidies as a potential stimulus to overcapacity and overfishing. There is broad agreement in the international fishing community that in the absence of effective fisheries management, certain forms of fisheries subsidies incentivise overcapacity and over-fishing and consequently threaten the continued well-being of wild fish stocks.

The responsibility for fisheries subsidies rests ultimately with national governments. But the impacts can have international consequences for fish stocks and international fish trade. Governments are currently negotiating new disciplines governing the use of subsidies in the fisheries sector in the framework of the World Trade Organization’s (WTO) Negotiating Group



on Rules. That group was set up under the Ministerial mandate from the WTO's meeting in Hong Kong (2005) which directed the group to "strengthen disciplines on subsidies in the fisheries sector, including through the prohibition of certain forms of fisheries subsidies that contribute to overcapacity and over-fishing" and, to establish "appropriate and effective special and differential treatment for developing and least-developed Members". As part of the current negotiations, FAO has been mandated by its member countries to provide technical expertise and cooperation to complement the work of the WTO Negotiating Group on Rules.

#### **4. Ensure responsible and sustainable aquaculture development**

Aquaculture is a fast growing food production sector, providing income and employment as well as contributing to global food security. Aquaculture now accounts for almost half of fish for food supply. Farmed fish can offer a safe and wholesome alternative to wild-capture fish. However, where aquaculture is not properly managed, it has caused some negative social, economic and environmental impacts, raising concerns about the overall sustainability of the sector.

Irresponsible use of chemicals and antibiotics in aquaculture has caused public health threats and raised concerns about the impacts on biodiversity. In some areas the industry is not subject to adequate regulation. FAO is working with its Members to promote the responsible use of chemicals and antibiotics in aquaculture through better management of aquatic biosecurity. Efforts are also being made to address relevant environmental concerns through capacity building (including skills development for both fish farmers and authorities) and developing technical guidelines including those on aquaculture certification. The sector needs more effective mechanisms for environmental management, including the application of environmental risk assessment, and an ecosystem approach to management.

FAO is also working with other international fora to promote implementation of the CCRF, which includes specific reference to aquaculture (Article 9). FAO is organizing a Global Conference on Aquaculture on 9-12 June 2010 in Bangkok to address the social, economical and political challenges facing the sustainable management and development of the sector over the coming decade.

#### **5. Enhancing the engagement of developing countries in responsible and sustainable fisheries and aquaculture**

The need for legal and institutional reforms to ensure improved fisheries management is well recognized in developing countries. Yet some have struggled to keep up with the fisheries management requirements of the CCRF and related instruments while trying to redirect their policy focus away from "productivism" (increasing volumes of production) in favour of increasing the value of catches within sustainable production limits. This shift in focus requires:

- strong national political will to support responsible fisheries and aquaculture management;
- international cooperation to help developing countries develop the means and know-how to implement collaborative and sustainable fisheries and aquaculture management; and
- international cooperation to further engage developing countries in international decision-making fora and to expand regional cooperation for fisheries and aquaculture management.

FAO is working with developing countries on all of these fronts.



## **Jonathan Peacey**

*National Manager Fisheries Operations, Ministry of Fisheries, New Zealand*

### ***Accountability, incentives, risk and value***

#### **Improve fishery manager accountability**

Those responsible for managing fisheries – whether national or local governments, regional fisheries management organisations, or stakeholders – must be held accountable for their performance in managing fisheries. For too long fishery managers have managed fisheries badly without any official sanction. It has mostly been left to non-government parties to highlight poor fisheries management performance.

Recent moves to review the performance of regional fisheries management organisations are positive although it is unclear how much this will improve their fisheries management performance. The performance of most fisheries managers – including national governments – is not officially reviewed. An improved system of accountability is required, initially focusing on measuring and reporting fisheries management performance – including against strong environmental and sustainable utilisation standards – and then requiring improved performance.

#### **Improve incentives for fishers**

Fishers respond to incentives and, therefore, fisheries managers must ensure bad incentives are reduced and eliminated and good incentives established and enhanced.

#### **Examples of bad incentives:**

- **Open access** encourages too many fishers to enter a fishery and results in excess fishing capacity.
- **Subsidies** encourage fishers to continue fishing despite their fishing operations being uneconomic, put additional stress on fisheries management systems, and result in overfishing and increased environmental impacts.
- **Competitive catch limits** encourage fishers to invest in too much fishing capacity and fish in ways that reduce the value of their catch and compromise safety.

#### **Examples of good incentives:**

- **Secure long-term fishing rights** encourage fishers to fish in a responsible manner because they can be confident that they will receive future benefits from their stewardship. Where practicable, individual transferable catch entitlements provide a strong fishing right and can encourage stewardship.
- **Providing relevant information** enables fishers to adopt good fishing practices.
- **Environmental certification** can increase the value obtained by fishers operating in well-managed fisheries and encourage them to support good fisheries management practices.
- **An appropriate compliance programme**, including both encouraging voluntary compliance through support and respect for the fisheries management system, and creating effective deterrence through enforcement action.

#### **Focus on managing risk and value**

For many fisheries in developed and developing countries there is insufficient information to support current management within an acceptable level of risk – both to fish stocks and the marine environment. Common responses are to undertake more research or maintain current management with insufficient information. However, fisheries research is often expensive and the cost of obtaining the information necessary to support current management may not be justified by the value of the fishery – however value is measured. Maintaining current manage-





ment with insufficient information presents an unacceptable risk to fish stocks and the marine environment.

An alternative is to adjust management measures to reduce risks to an acceptable level. Adjustments could include reducing fishing mortality, maintaining fish stocks at higher biomass levels, and establishing non-fishing areas. The key change is to view both fisheries management measures and investment in research as variables to be manipulated to achieve acceptable levels of risk. This approach encourages levels of investment in research appropriate for the value of the fishery.

## **Wilfried Rickels**

*Kiel Institute for the World Economy*

### **1. Adjust and reduce subsidies for the fishery industry**

Governments and in particular the EU have to adjust and reduce subsidies so that the fishing fleets become efficient with respect to the total costs (e.g., marine diesel).

The worldwide fishing fleets are too large. Even with stable fish stocks, the annual technological development of fishing equipment would require to scrap boats in order to obtain a sustainable industry. However, the opposite takes place. Subsidies, and in particular subsidies for marine diesel, has sponsored the usage of better engines, improved hull designs, more efficient nets and electronic gadgets, which leads the today's fishing fleet straight and much faster to the fish. And it results in a lock-in effect for the fishermen. Decades of falling catches have induced them to travel farther to fill their holds whereby the availability of subsidies allowed them to equip their boats for the run on the remaining fishes and did prevent the consolidation of this industry.

### **2. Increase the share of ITQs and sustainable management system in worldwide fisheries**

Overcome the common property right by allocating individual property rights so that the incentives change and the fishermen become stewards and policemen of the resource.

Today, only 121 of the world's 10,000 fisheries contain ITQs. The study by Costello, Gaines and Lynham (2008) shows that the introduction of ITQs halted the collapse of fisheries and halves the chances of a collapsing. Increasing the share of ITQs requires the development of appropriate mechanisms for the initial allocation of ITQs which should be done by independent allocation panels. Additionally, other sustainable allocations of property rights should be used, like a spatial approach which allocates fishing spots to fishermen. The best choice of the management system has to rely on the value and the underlying biology of the fishery.

### **3. Prohibition of fishing in international waters by appropriately changes of the law of the sea**

Due to incentive problems within management systems for international waters, fishing should be completely prohibited here.

Management systems and in particular ICQs systems are hard to implement in international waters because it is too easy to cheat. However, regarding the fact, that 90% of the world's fish are caught in national waters, this action might not be as hard as it sounds.



#### **4. Direct demand towards sustainable caught fish**

Include the consumers and retailers by labelling sustainable caught fish.

Overfishing is not just characterized by an overall too large amount of landed fish, but as well by catching too small fishes (baby fishes) and catching without sufficient consideration of bycatch. Consequently, increasing the information and by that the awareness of the problem at the consumer and retailer side, does not just allow to direct demand towards fish species which stocks are not yet overexploited but it also allows to direct demand towards sustainable caught fish with a minimum size. Consequently, labelling sustainable caught fish (e.g., MSC label) is key element of an information strategy for the consumer and retailer side.

#### **5. Extend sustainable farming of non-predatory fish**

Extending farming of fish is controversially because the feeding of predatory fish with fish meal does not solve the problem of overfishing. Additionally, the use of antibiotic and hormone residues is a problem for consumer healthiness and for the marine ecology around the farms. However, regarding the increasing worldwide increase demand for food and in particular for high-protein food with low-carbon emissions in production requires the inclusion of fish in the world wide menu. Consequently, sustainable farming of non-predatory fish should be extended, including labelling with respect to food safety and with respect to the marine ecology.

### **Ussif Rashid Sumaila**

*Associate Professor and Director, Fisheries Centre, University of British Columbia*

#### **Reduce poverty in fishing communities to sustain marine resources**

In many developing coastal communities poverty is a big problem. Research has shown that high levels of poverty, everything being equal, results in high levels of impatience and, therefore, high private discount rates. This means that for poor people, conserving marine resources is simply a luxury as they are hard pressed to “fill the stomach” now.

A key solution to this problem is to educate, train and provide alternative means of livelihoods for poor fishers. The benefits of doing this will be immense given that virtually all developing economies and even developed ones need trained people in many sectors of their economies (e.g., health, technical and educational services). Hence, educating poor people in fishing communities will not only increase our ability to manage marine resources sustainability, it will help us provide the needed human resources to grow developing economies for healthy and sustainable living.

A beneficial way to partly fund this solution is to divert current harmful fisheries subsidies that run in the tens of billions annually and which only undermines the fish and fishers, to educate, train and equip fishers for alternative, more benign, livelihoods.