The EU has long recognised that sustainable use of its marine environment requires recognition of wider ecosystem issues around exploitation and protects both the seas and the communities that they support. A research project co-ordinated by the University of Liverpool has been developing a framework to support sustainable, ecosystem-based, fisheries management in Europe

Fishing for success

The long-term sustainability of our oceans and the protection of its rich and diverse habitats is one of the most urgent ecological considerations that the world faces today.

The depletion of fish stocks in EU waters is one well-publicised concern but the issue of sustainability stretches far beyond the protection of individual species and new policies such as the Marine Strategy Framework Directive require that fisheries are managed appropriately to ensure they do not negatively impact the wider ecosystem. A healthy future for European waters requires an holistic approach and the consideration of the three pillars of sustainability: ecological, social and economic.

Research carried out by marine, social and political scientists, working in concert with stakeholders (e.g. fishers, environmental non-governmental organisations) in the North Sea in an EU FP-5 funded project (European Fisheries Ecosystem Plan, completed 2004) found that traditional fisheries management had created a problematic situation.

Stakeholders raised concerns about the bureaucratic rigidity of the EU and the Common Fisheries Policy, highlighting that the centralised, top-down structure of CFP management had made stakeholders feel isolated from the decision-making process. Equally, traditional fisheries management didn't allow for diverse regional concerns and stakeholders were sceptical of the scientific research that drove the decision-making. In short, traditional methods of management and governance of the fisheries had failed to be sustainable.

The European Fisheries Ecosystem Plan (EFEP) project went on to develop an ecosystem based fisheries management (EBFM) plan for the North Sea. EBFM as envisaged by EFEP would consider the whole complex web of the ecosystem, taking in target species and non-target fish species as well as other aspects of the ecosystem, including people.

Another key objective would be to ensure that management decisions are acceptable and achievable for all those with a concern in the fishing industry. Furthermore, stakeholders would be kept well-informed of scientific data and research and management would adapt a governance framework that would be inclusive and participatory at all levels.

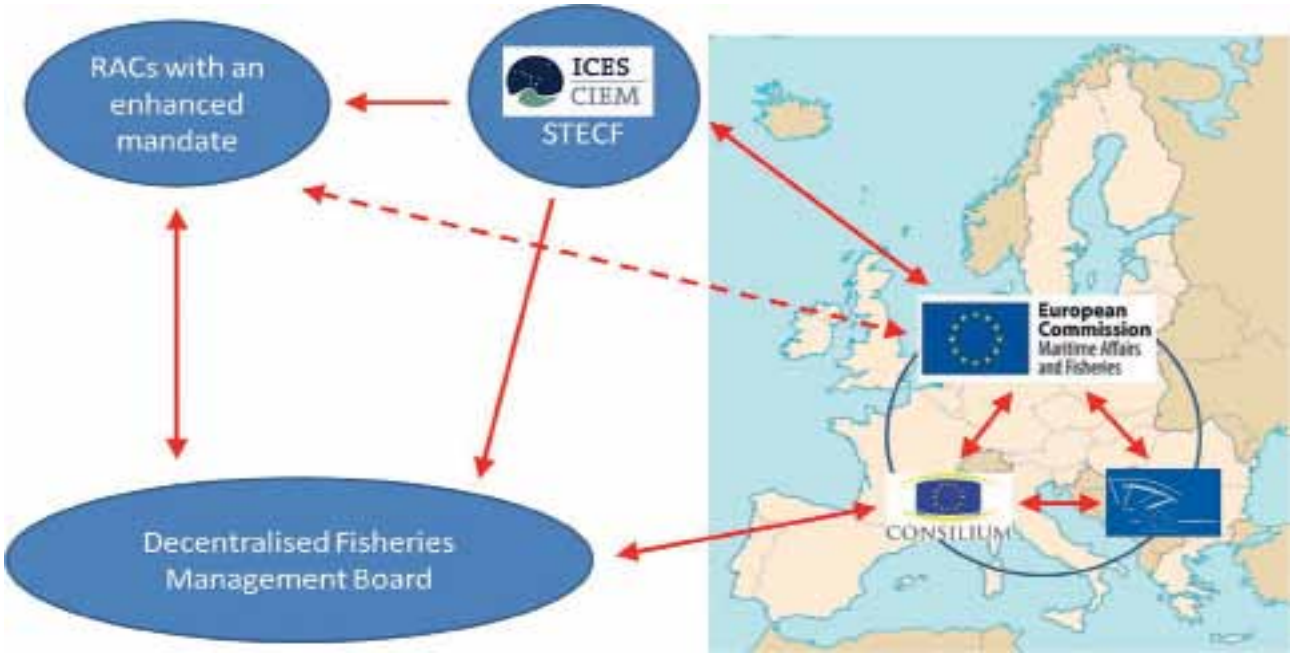
Putting plans into operation

MEFEPO, Making European Fisheries Ecosystem Plans Operational, is an EU-funded project that set out to further the development of operational Fisheries Ecosystem Plans (FEPs). Using three case study areas based on established Regional Advisory Councils the project cast its net over the North Sea, the North Western Waters and the South Western Waters.

MEFEPO's objectives were two-fold: to develop a governance structure that would include stakeholders more effectively in decision-making and to create a management tool to allow the potential impacts of management decisions on the three pillars of sustainability to be evaluated.

"The project was designed to develop a framework that could be used to support the transition to ecosystem based fisheries management in Europe," explains Dr Helen Bloomfield, a research scientist at Liverpool University and a member of the MEFEPO team. "Ecosystem based management requires a balance between the three pillars of sustainability, so we were looking at trying to draw together ecological data with social and economic data. The objective was to develop a framework to support that process, and to develop a governance framework to enable successful implementation."

The scope of the MEFEPO project was ambitious. The project needed to take into consideration a huge amount of data for each region and on a geographical level the team was looking at an area stretching from the Shetlands to the Azores. The project



Governance model for regionalisation of the Common Fisheries Policy developed by stakeholders at a series of MEFEPO project workshops. For further details please refer to the Key operational challenges to the introduction of an ecosystem approach to fisheries management: Workshop report (van Hoof et al. 2011) on the project website: http://www.liv.ac.uk/mefepo/reports-and-outputs/wp6

partners reflect the scale of MEFEPO and it can boast contributions from a diverse collaboration of experts across the EU including scientists at the University of Liverpool, Innovative Fisheries Management in Denmark and researchers at Instituto Nacional de Recursos Biologicos in Portugal, amongst many others. "It was an interdisciplinary team; different partners had responsibility for different aspects of the project but we worked closely together to ensure that the different project components complemented one another," says Helen. "Our governance team was led by a cohort in Denmark; they interviewed stakeholders through the Regional Advisory Councils to examine preferences for different governance models. The project took the preferred options back to a workshop in Haarlem last year (April 2011) and with stakeholders developed a proposal for a new operational, regionalised, governance structure" *(see governance model above)*.

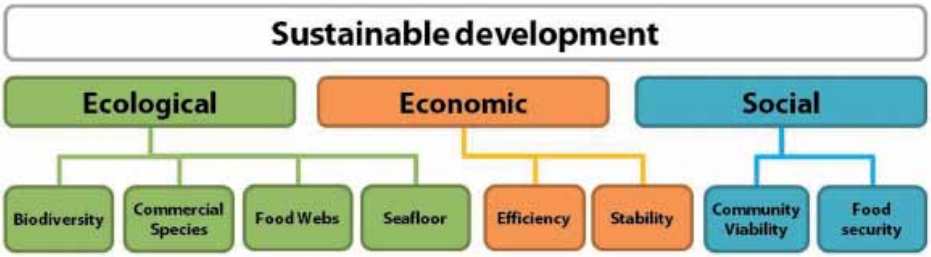
The development of a framework to combine information from the three pillars of sustainability to support the key objectives of EBFM was led by researchers at the University of Liverpool and the Institute for Marine Resources and Ecosystem Studies (IMARES), the Netherlands *(see framework overleaf)*.' The team developed a matrix-style decision support tool that would allow simultaneous consideration of the ecological, social and economic implications of management decisions. "The idea is that the content of the decision-support tool can be modified depending on objectives," Helen explains. "So you might decide in one region that you have a specific social objective that is very important and you can use that within your decision-making framework. You can then assess what the impact of a proposed management measure would be across this, and other objectives - ecological, social and economic. People had concerns about how decisions were being made in fisheries management," she continues "and this is a tool that allows the management process to be more transparent. It forces managers and others involved in decision-making to acknowledge the other impacts of management-decisions."

The MEFEPO team have gone on to document the application of the matrix approach using case study fisheries from each of the regions. This was discussed with stakeholders from the European Commission, industry and non-governmental organisations in Brussels in November 2011. "It was good to be able to show people how the decision-support tool could work, and to get people talking about what the potential impacts of a range of management measures on ecological, social and economic aspects of the ecosystem," says Helen. "We see it as a starting point to allow people to start talking about, and trying to resolve, the challenges for EBFM."

> "There's a lot of enthusiasm from the stakeholders to be involved in taking the next step towards implementing operational EBFM" Helen Bloomfield, University of Liverpool

Clear communication

A lack of transparency and poor communication between scientists, management and stakeholders had been identified as one of the problems in traditional top-down fisheries management in Europe. Clear and effective dissemination of information lies at the heart of the MEFEPO approach



MEFEPO approach to the development of regional Fisheries Ecosystem Plans. This framework was developed to combine information from the three pillars of sustainability (ecological, social and economic) to support the key objectives of EBFM in the context of sustainable development. Descriptors were identified for each pillar to allow the potential impacts of different combinations of management measures on the ecological, social and economic status of the system to be explored."

and the team has been conscientious in its efforts to ensure that those involved at all levels of the fishing industry across the EU are fully informed of developments. MEFEPO has produced regional summary documents for stakeholders to outline the proposed governance structure and application of the matrix approach, as well as regional atlases outlining ecological, social and economic concerns, and their website (www.liv.ac.uk/mefepo) boasts a comprehensive library of all the project's reports and outputs.

The project focussed on developing a framework, and the supporting evidence base (natural and social science), to integrate the MSFD objectives within a reformed CFP in the context of EBFM.

Understanding of the links between ecological, social and economic systems is essential in order to ensure that management decisions are appropriately informed and the transition to EBFM has considerable implications for the knowledge base required to support management.

"We wanted to be able to communicate to the stakeholders and not just to the traditional decision-makers sitting in Brussels," says Helen.

"All the way through the project we've tried to develop information that's accessible to all stakeholders rather than it all being very technical in focus." Helen says that ultimately the MEFEPO team would "like to see the industry sit down with environmental NGOs, fisheries biologists and decision-makers and actually work to fill in the decision support tool together". Clear communication and transparency, implemented through an appropriate governance structure, is key to that objective becoming a reality.

The next step

The MEFEPO project has come to a close, but Helen says there is plenty of scope for moving the project forward. "While there has been progress in the development of EBFM, operational EBFM has yet to be achieved."

The MEFEPO team is clear that this will require further research.

"We would really like to take forward some of the challenges we have identified, for example trying to identify descriptors and objectives for the social and economic pillars that are comparable to those being developed for the ecological pillar through the Marine Strategy Framework Directive."

So far, response from the stakeholders has been encouraging.

"There's a lot of enthusiasm from the stakeholders to be involved in taking the next step towards implementing operational EBFM," says Helen. "We are looking forward to building upon the progress made by MEFEPO."

Helen Bloomfield

Helen Bloomfield is a Research Associate at the University of Liverpool (UK); she has an multidisciplinary (natural and social science) background in fisheries research. Her work focuses on fisheries impacts on the marine environment and effects of management on ecological and socio-economic systems.

Chris Frid

Chris Frid is Professor of Marine Biology at the University of Liverpool (UK); his expertise originally focused on the ecology of the sea floor but more recently broadened to include ecosystem dynamics, and human impacts on marine ecosystems and their management.

At a glance

Project Information

Project Title:
MEFEPO: Making the European Fisheries Ecosystem Plan Operational

Project Objective:
The MEFEPO project was designed to further development of a framework, and the supporting evidence base (natural and social science), required to integrate the Marine Strategy Framework Directive (MSFD) objectives within a reformed Common Fisheries Policy (CFP) in the context of sustainable ecosystem based fisheries management (EBFM).

Project Duration and Timing:
3 years 3 months, September 2008 to November 2011

Project Funding:
FP7 EU funding – Collaborative Project (small or medium-scale focused research project)

Project Partners:
* University of Liverpool (UK)
* Instituto Nacional de Recursos Biologicos I.P. INRB (Portugal)
* Wageningen Institute for Marine Resources & Ecosystem Studies (Netherlands)
* Université de Bretagne Occidentale (France)
* Marine Institute (Ireland)
* Universitetet i Tromsø (Norway)
* Centre for Environment, Fisheries & Aquaculture Science (UK)
* Institute of Fisheries Management (Denmark)
* Instituto do Mar (the Azores, Portugal)
* Instituto Español de Oceanografía (Spain)

Contact
Main contact name:
Helen Bloomfield

Tel: +44 151 795 4652
Email: h.j.bloomfield@liv.ac.uk
Web: www.liv.ac.uk/mefepo