Lessons for co-management
Experiences from the FMSP programme
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Aim of this document:

The aim of this document is to communicate lessons for fisheries co-management that have emerged from a series of projects undertaken by the DFID Fisheries Management Science Programme (FMSP). It focuses on three examples of FMSP projects: ParFish, Adaptive learning and Co-designing data collection systems.

This document does not aim to give a comprehensive over-view of co-management but seeks to provide a viewpoint based on the experiences of the FMSP projects in question.

Target of this document:

This document is targeted to fisheries decision makers, managers and facilitators including government, industry and non-governmental organisations.

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The Fisheries Management Science Programme (FMSP) is one of ten research programmes funded by the UK Department for International Development (DFID) through the Renewable Natural Resources Research Strategy (RNRRS). The FMSP has been in existence for eleven years and during this time it has commissioned over 50 individual research projects addressing issues in the management of marine and inland as well as capture and enhancement fisheries in developing countries. These projects have provided a wide range of approaches, tools and information relevant and accessible to policy makers and managers in these countries. For more information, see the web-link below.

www.fmsp.org.uk
Introduction: Fisheries co-management

Small scale fisheries dominate the fisheries sectors in tropical developing countries, and provide full and part-time employment as well as a safety nets for the rural and urban poor. They also contribute to cash-based economies at the local scale and national revenue through taxes and exports.

While important for the many types of benefits they provide, it is also recognised that small scale fisheries are dynamic socio-ecological systems characterised by diversity and complexity in their biological, technical and human aspects. Management of small scale fisheries is complicated by these different aspects, their interactions and the multiple scales involved.

Centralised arrangements have not been able to meet the challenges of managing small scale fisheries, as management advice is often detached from those dependent on the resource and frequently narrowly focused on sustainability of the resource rather than wider objectives such as the improvement of local livelihoods (World Bank, 2004). At the same time, centralised management agencies often lack the resources to enforce decisions that have been taken centrally. Together this produces management that fails to meet the needs of those dependent on the resource and fails to result in sustainable fisheries.

The failure of centralised arrangements for small-scale fisheries has increased the interest in the potential of fisheries co-management (Pomeroy et al, 2001). Co-management represents the sharing of responsibility for management between resource users, other stakeholders and government.

Co-management arrangements occur in a variety of forms depending on the extent of the shared of responsibility and authority. The exact nature of the arrangement will depend on the local context, and even then is likely to change over time. Further to the discussions on the definition, there are on-going debates as to whether all forms of co-management are effective without a real sharing of decision making power (World Fish, 2005).

Co-management arrangements may be developed for a number of reasons, including the recognised failure of centralised arrangements and economically driven reforms and constraints. There is also the recognition that those dependent on the resource have considerable knowledge about the fishery and incorporating their needs and objectives into management can lead to improved decision making.

In addition it is argued that participation in management by those who are subject to regulation can improve compliance to regulations (Kaplan and McCay, 2004), reduce the costs of data collection, monitoring and enforcement, lead to empowerment of local communities (Pomeroy and Berkes, 2004) and assist in conflict management (Noble, 2000).

Developing successful co-management arrangements that provide sustainable fisheries and meet the needs of resource users is a challenge. This brief seeks to highlight some of these challenges, and how research through the DFID Fisheries Management Science Programme (FMSP) has sought to address these.

The FMSP projects highlighted in the brief, Adaptive Learning Approach; Data collection for co-management and ParFish (Participatory Fisheries Stock Assessment), have focused on constraints to developing, implementing and evaluating local management plans and have developed approaches, tools and methods to assist those interested or involved in fisheries co-management.
Challenges for successful co-management

Achieving success in co-management requires addressing a number of challenges. Some of these challenges cover constraints in understanding the resource at the local level and agreeing management decisions. Other challenges are related to provision of an enabling policy framework or implementation at a national and regional level.

Research under FMSP has focused on the challenges at the local level including:

- Achieving a shared knowledge base on the resource between resources users, scientists and government institutions

Too often resource users, scientists and government institutions have different perceptions on the state of the resource. This lack of a shared starting point sets up barriers to identifying and achieving management objectives. Resource users often have a wealth of knowledge on the resource (e.g. spawning areas, long-term history of the fishery) which can be of great value to managing the resource.

- Linking knowledge on the resource to management decisions

Learning or research on a resource base is often undertaken without direct links to management or policy making. Information collected may not address management objectives and therefore cannot be used to assess whether objectives have been met and what actions need to be taken. Research undertaken by external researchers may provide valid information on the resource but it will fail to guide management or policy if it is not accepted by policy makers or resource users.

- Broadening the focus of fisheries management to cover social and institutional issues as well as biological aspects

For co-management to achieve set objectives such as increased sustainability of fisheries and enhance livelihoods of resource users, there is a need to understand social and institutional issues of the system as well as the biological aspects of the resource. It is important to understand the underlying drivers behind resource users’ behaviour and the institutional constraints that may prevent an equitable or sustainable use of the resource. The challenge is to develop methods that can provide more comprehensive assessments of fisheries and can be used as the basis for decision making.

- Ensuring meaningful participation in the management process

Both the type of participation (consultative, collaborative or informative) and the level of participation (individual participation or representation) will depend upon a number of factors including the scale of the resource system, the available capacity and financial resources and the administrative level at which these exist and the existing institutional arrangements. The challenges here are to ensure that stakeholder groups are identified and involved or legitimately represented, and that there is a commitment to providing resources to support participation, develop capacity and empower these groups.

Some of the wider challenges that have not been directly addressed through FMSP projects include the need to establish an enabling policy environment and legal empowerment for shared decision making, and the need to reduce the vulnerability and poverty within fishing communities.

- Creating an enabling environment through policies and legislation

There is a need for a legislative framework that supports co-management, and within which local rule making can occur with the full backing of the law and with support for monitoring and enforcement. The challenge here is to develop and implement legislation that supports devolved management, ensures compatibility of local plans with national and international requirements, sectoral objectives and through which training, communication, conflict resolution and extension services are provided and/or supported.

- Reducing the vulnerability of fishing communities

The success of co-management rests on the basis that resource users have an incentive to ensure the sustainability of the resources upon which they depend. However this depends on whether they perceive the future state of the resource as a key threat to their livelihoods and whether they have the capacity or empowerment to take part in management. In many cases it may be necessary to address poverty, vulnerability and marginalisation of resource users before they can effectively engage in co-management (SFLP, 2005).
Principles applied through FMSP research

The FMSP has commissioned projects to address some of the challenges that face co-managed fisheries. The projects have generated new knowledge, developed and tested approaches, methods and applied certain principles for improving the planning and implementation of co-management. The principles listed below have applied within FMSP research. They are drawn from a growing understanding of the conditions required for successful co-management (e.g. World Bank, 2005; Pomeroy et al., 2001; Nielsen et al., 2004), and focus primarily on addressing local management planning, implementation and evaluation constraints rather than institutional and policy issues.

- **Stakeholder involvement**: Involving stakeholders in setting management objectives, data collection, evaluation of plans and decision making.

- **Effective communication**: Ensuring effective information flows between stakeholders as a basis for learning, coordination and consensus on decisions.

- **Using local knowledge**: Forming agreement on the state of the resource and allowing the use of local knowledge supports a shared understanding of the resource and greater agreement on management options.

- **Adaptive**: Recognising that learning and management cannot determine optimal outcomes at the outset but will need to adapt and change as new information is obtained.

- **Appropriate**: Ensuring that learning and research is relevant to stakeholders and resource users and the outcomes are of direct use to resource users and management of the resource.

- **Empowering**: Commitment to empowering stakeholders through ‘training & explaining’, and ensuring that stakeholders have sufficient understanding to contribute to the learning process and management decisions.

- **Integrated**: Recognising that managing resources is not only about the biology of the stock but requires and understanding of social and institutional aspects of the system.

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Features of good practice in co-management (World Bank, 2005)

- A government policy establishing a co-management regime
- Clearly defined and legal stakeholders rights to manage
- Constant attention to the composition of the stakeholder group to ensure social equity outcomes
- Adequate monitoring and enforcement rules
- Widespread communications of the co-management partnership and the new management rules.
- Significant initial education and assistance to communities and stakeholders
- Adequate provision and sharing of information and technical assistance to stakeholders
- Broad publication of the rules that have been formulated

Conditions affecting the success of fisheries co-management (Pomeroy et al., 2001)

**Government level**
- Enabling policies and legislation
- External agents

**Individual and household level**
- Incentives

**Community level**
- Appropriate scale and defined boundaries
- Clearly defined membership
- Group homogeneity
- Participation by those affected
- Leadership
- Empowerment, capacity building and social preparation
- Community organisations
- Long-term support from government
- Property rights over the resource
- Adequate financial resources
- Partnerships
- Accountability
- Conflict management
- Clear objectives
- Management rules enforced

Issues to consider for successful co-management institutions (Neilsen et al., 2004)

1. Empowering communities to help define management objectives
2. Integrating local knowledge in co-management decision making
3. Appreciation for the role of co-management in managing conflicts over fisheries resources
Putting principles into practice

Throughout the implementation of the FMSP programme there has been the opportunity to put identified principles for co-management into practice. A variety of case studies are provided here as examples from the three highlighted FMSP projects: Adaptive Learning; Information Collection for co-management and ParFish.

Adaptive Learning in Lao PDR

The approach

This is an approach to learning that recognises that the most effective way of improving management of a resource is to make ‘learning an objective of doing’ and involving the stakeholders, who are dependent upon the resource, in using management actions as a means to learn more about the resource system in order to improve management in the future.

The approach recognises the importance of establishing links and channels between stakeholders, as information only becomes useful when it is communicated to those who can act on it. The approach seeks to maximise consensus and manage conflicts through sharing decisions on setting objectives and management measures.

Applied principles

- Stakeholder involvement
- Promotes communication
- Adaptive
- Appropriate
- Empowering
- Integrated approach

In practice in Southern Lao PDR

The approach was applied in community fisheries in southern Lao PDR. Many water bodies in the area are managed as community fisheries where they can provide a vital source of income for villages and also food for poorer families in times of stress (e.g. funerals). However villages are uncertain as to the best stocking strategies for their water bodies and, being isolated, opportunities for shared learning is restricted. On the other hand the government is unsure as to what advice to give to villages.

The adaptive learning process provided an opportunity to develop a working relationship between villages, researchers and fisheries governmental staff in order to address some of these uncertainties and to generate and share information that could lead to real improvements in village managed water bodies.

Discussions were held with village representatives, provincial and district fisheries staff to determine the current resource outcomes and the major knowledge constraints. Tools were used to consider both the institutional and biological aspects of the resource and how they interact. Through this, the constraints to management were identified and channels for shared learning between stakeholders identified.

A shared learning strategy was developed through a process that involved stakeholders from 38 villages in identifying the key constraints in managing their fishing ponds and their priority research questions. A series of ‘passive’ and ‘active’ experiments were set up based on the different management regimes and creating different pond stocking methods. This required considerable discussion and flexibility to ensure that the plan was acceptable. ‘Contracts’ between the stakeholders were established that clearly specified their roles in the learning exercise to ensure transparency and accountability.

The results of the experiments determined the most effective mix of fish species to improve production and village incomes. Involving resource users in the learning from the beginning developed their skills and knowledge, made the research more relevant and meant they were better able to make use of the results and apply the recommendations.
Putting principles into practice

Co-design of data collection systems in Thailand

The approach
A set of guidelines for data collection have been published through FAO, and provide an approach to data collection systems that promotes sharing and ensures relevance of data to fisheries management or policy formation.

Principles applied
- Stakeholder involvement ✓
- Promotes communication ✓
- Appropriate ✓
- Empowering ✓
- Integrated approach ✓

In practice in Thailand
A participatory review of data collection systems for the Huay Luang reservoir in Thailand revealed that there was a lack of information on fish catch, illegal fishing, and the conditions of water bodies required to take management decisions and plan for the sustainability of the fisheries. Local management institutions, the fisheries department, resource users and wider stakeholder groups were aware that they needed a robust annual monitoring programme that would tell them of the key problems, how to address them and whether the community management approach was providing long-term benefits.

Undertaking a stakeholder analysis revealed over 30 groups affected or interested in the state of the water bodies. Their involvement in the design of a new data collection programme ensured that the issues covered were not solely focused on fisheries but also concerned environmental and social issues.

Following the eight-stage process recommended in the FAO Guidelines stakeholders were able to identify information requirements and agree a data monitoring programme. Involving stakeholders at the design phase ensured that there was a real participation in selecting indicators that could be used to measure changes in the fishery and successes or problems with management. Rather than only being involved in collecting the data, resource users were actively involved in what data needed to be collected and why.

The stakeholders identified the key areas that needed to be monitored and between them identified where information needs were shared and how responsibilities for data collection and analysis could be covered by the stakeholders present. It was also an opportunity to test data collection forms and revise them so that they were easy and quick to fill in. 10 villages volunteered to collect data and pass this on to the fisheries analysis office, based on the understanding that the fisheries office would feed back the information on a regular basis.

Given the success of the planning exercise there are high expectations that the monitoring programme will prove to be sustainable and that information on trends and impacts of management will be passed on to stakeholders to inform their decision making. A key challenge will be to maintain the incentives for on-going data collection and ensure that the identified communications channels are used to provide feed-back and data and information flow between stakeholders.
Putting principles into practice

Participatory Fisheries Stock Assessment (ParFish) in Kizimkazi Zanzibar

The approach

ParFish is a promising approach to enable the rigorous use of local knowledge in combination with data collected from other sources such as catch-effort or fishing experiment data. The holistic nature of ParFish ensures that stock assessment is not divorced from management and seeks to answer the questions that are the main concern of stakeholder rather than focusing on the biology or sustainability of the resource.

Principles applied

- Stakeholder involvement ✓
- Promotes communication ✓
- Uses local knowledge ✓
- Empowering ✓
- Adaptive ✓
- Integrated approach ✓

In practice

ParFish was applied to a multi-species fishery in the waters off the Kizimkazi village of Zanzibar. Fishers from local communities use hand lines, traps, and some nets to fish on the fringing and patch coral reefs.

A key principle of ParFish is to involve all relevant stakeholders from the beginning of the assessment and data collection to achieve consensus and acceptance of the results. In Zanzibar the process began by engaging with the fishers and understanding the broad context of the fishery. Fishers were involved in collecting data on the fishery and participated in interviews to share local knowledge of the resource and their preferences for management options depending on the outcome on the resource.

The results from the analysis were discussed in a multi-stakeholder workshop where there was an opportunity to understand how the assessment had worked. The process built a relationship of trust between the fishers and scientists, and all stakeholders agreed with the results that effort needed to be reduced by 10-15% and management options were put forward on steps to achieve this.

The main difficulty that now faces the fishery is implementing these management measures. Local communities lack the legal backing and resources to implement measures on their own and there is also the need to manage potential conflicts of interest with migratory net fishers.
Fisheries co-management: lessons from FMSP research

Lessons learned

The FMSP projects have focused on the constraints faced in planning, implementing and monitoring local co-management plans. They identified a range of principles for addressing these constraints and have applied them through the development and use of tools and approaches such as the adaptive learning approach, data collection for co-management and ParFish (Participatory Fisheries Stock Assessment).

Lessons have been learnt both on the benefits of applying certain principles and on the best ways of applying these principles in practice.

Benefits

Some of the key benefits of applying the principles to the FMSP projects have included:

- Cooperative or joint research recognises the expertise of different stakeholders, increases the transparency of the research process and results in an increased atmosphere of trust and improved communications between stakeholders.
- Improving communicating flows and using local knowledge leads to improved success in achieving a shared understanding of the resource.
- Establishing a common perception of the current state of the resource and what affects it leads to a shared vision on what management is required and how to measure success or failure.
- Involving stakeholders at the design phase of any plan (management, data collection or research) rather than only during implementation ensures that the plans are feasible and the outcomes are relevant to stakeholder needs.

Achieving the benefits in practice

- Effective involvement of stakeholders management requires capacity building. All the FSMP projects found that it was essential to bring stakeholders to a certain level of understanding before they could effectively engage in the process. ParFish developed tools for communicating complex concepts to stakeholders in simple and effective ways. The adaptive learning approach undertook analysis with stakeholders so they had a real understanding of the implications of different management actions.
- Co-management arrangements need to be flexible so they can respond to the lessons learned through implementation. Applying the adaptive learning approach in Lao revealed that the ability to change plans was a key element to the final success of the shared learning exercise.
- Individuals will participate if they see the benefits clearly. The review of data collection programmes across co-managed fisheries revealed that for stakeholders to participate, they require incentives or compensation so that short-term benefits exceed costs.
- Co-management arrangements are more effective when they are built on strengths rather than weaknesses. There are always existing systems that can be built on rather than starting again.
- Enhancing communications flows is as important as generating new information. The lack of information sharing, due to problems arising from the unsuitable timing, location, methods and formats of communication or poor data management, is often one of the major bottlenecks to effectively co-managing a resource.
Wider lessons for co-management

Although the FMSP projects have focused on achieving shared knowledge and shared learning for local management planning, there are also lessons that reinforce some of the wider principles for successful co-management.

- There needs to be legal empowerment for co-management to be implemented. Although it is possible to achieve progress in understanding the fishery, agreeing management objectives and improving communication flows, this is less likely to be sustained or translated into management actions if there is no supporting legal framework. Applying the management actions identified in Zanzibar through the ParFish approach will require a legal framework in which stakeholders can act.

- It is important that decision making associated with management planning occurs at a scale that matches the scale of the resource and the resource users. Determining the most appropriate scale for decision making is complex with fishers involved in both part time and full time work. There is also the issue of migratory fishers, who often make use of fisheries resources in certain area and seasons as part of their livelihood strategies. When applying ParFish in Zanzibar, discussions on management objectives for the resource are only addressing part of the issue if migratory fishers from the mainland are not involved.

- Supportive communications networks for shared decision making may require fundamental changes in institutional arrangements. Changing the way institutions and stakeholders communicate with each other, or strengthening networks may require fundamental changes in institutional arrangements so that there are forums to share information horizontally as well as allowing for feedback both up and down stakeholder levels. In applying the adaptive learning approach in Lao PDR the most desirable networks were found to be non-hierarchical structures that enable communication between villages and between government departments at the district and government level. This requires organisational changes to provide the resources and forums for this communication to take place.

- Although resource users may be aware of the ‘optimal’ management strategies, they may be unable or unwilling to implement these because of wider constraints. The lack of resources or power to enforce management rules, such as closed areas, can make resource users reluctant to support them. Underlying vulnerabilities such as a reliance on the resource for income may also be a constraint that reduces the ability to engage in learning or support management measures that reduce access to the resource. The lack of enforcement is a key constraint in Zanzibar for implementing management actions. In India the use of adaptive learning revealed that the information provided to resource users was based on erroneous assumptions about user objectives. This meant that the information, while correct, was not relevant to their circumstances. Gaining an understanding of user opportunities and constraints is therefore vital if useful practical support is to be provided.

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This document is based on experiences from three projects undertaken within the Fisheries Management Science Programme (FMSP) supported by the UK Department for International Development (DFID), and managed by Marine Resources Assessment Group.

Further information on these projects and a number of other projects related to research to improve the livelihoods of the poor reliant on fisheries resources can be accessed from the FMSP website. Alternatively it is possible to contact MRAG for copies of any of the reports related to these projects.

Related Documents

A series of related documents are available that provide additional information on the projects highlighted here and all are available from the FMSP website. This document is an overarching brief that provides an introduction to the projects and their relevance to co-management. Further to this there are three synthesis documents that take some of the issues raised here into further detail. The final layer of information are the tools or guidelines that provide the technical detail to implementing the approaches. This is described in the diagram below.

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