

Fisheries Data Collection & Sharing Mechanisms for Co-management:

Final Technical Report

MRAG Ltd, London
February 2005



Front Cover : Discussion of results from catch composition surveys with users during field-testing of the guidelines in Lao PDR.

Photo: Thomas Augustinus.

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1 Executive Summary

With an emphasis upon participatory research involving key stakeholders at all levels of management, the purpose of the project was to identify, develop and evaluate participatory data collection and sharing mechanisms (systems) to improve the (co-) management of capture and enhancement fishery resources important to the livelihoods of the poor.

The project was designed with a strong emphasis upon participatory research activities, collaborating with stakeholders and institutions from all management and advisory levels, including DFID bilateral projects and programmes. This helped build knowledge and capacity whilst ensuring that the project outputs were demand-driven, thereby maximising the likelihood of their uptake by target institutions.

The project activities were structured around five stages: (i) project planning, (ii) the identification of system requirements (or user requirements analysis), (iii) the generation of systems (design proposals), (iv) system field-testing and evaluation, and finally (v) system dissemination and promotion (Figure 1).

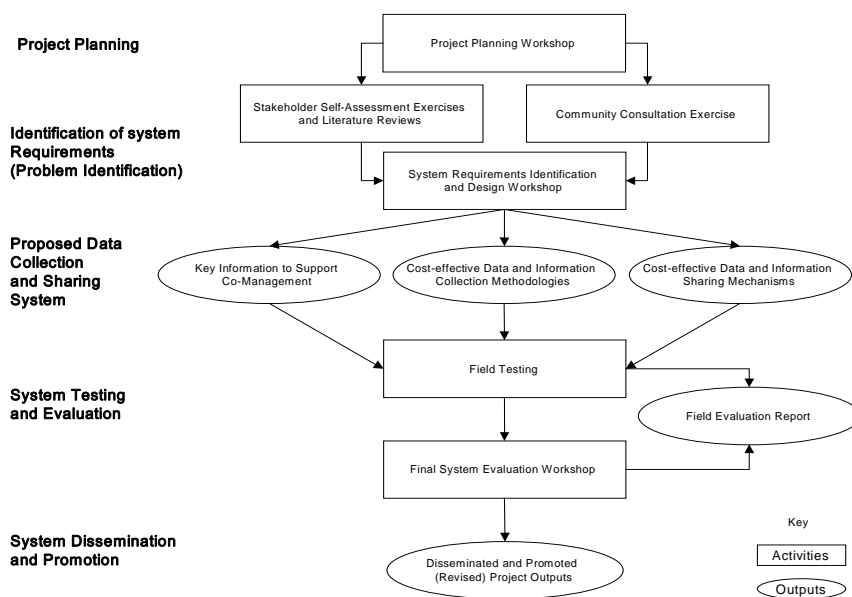


Figure 1. Project activities and corresponding outputs

It soon became apparent during the project planning period and workshop that a generic design for a data collection and sharing system for co-management was neither appropriate or achievable (see Project Planning Workshop Report in Annex 10.6). Instead, partners agreed that a more appropriate main project output would be a set of guidelines for developing context-specific systems tailored to meet local needs and capacity.

The content of these guidelines was identified and shaped on the basis of demand expressed in 14 *System Requirement Reports* (SRR) prepared by project partners

representing four levels of management (local, national, regional and international) by means of literature review, and consultations and discussions with relevant stakeholders including resource users. The SRRs included details of:

- Data and information requirements to support their (co-)management activities and advisory mandates based upon their management roles and responsibilities, resources and capacity.
- Existing and potentially appropriate and cost-effective sources, collection tools and methodologies, to provide the above.
- Existing and potentially appropriate data and information sharing mechanisms.

This material was summarised by the PI (see Annex 10.5), and a synthesis of key material presented at the Guidelines Development Workshop, at the MRC headquarters in Phnom Penh (see SRR Synthesis PPT PowerPoint files at <http://www.fmsp.org> Ref R8285). Through a series of presentations by project partners and working-group sessions, the key elements and scope of the data collection guidelines was agreed (see Guidelines Development Workshop Report in Annex 10.4).

The resulting *Technical Guidelines* were further developed by the PI and project partners drawing upon relevant material, including the output of previous DFID FMSP research, particularly R7042, and existing manuals and guidelines produced by FAO and other management and development organizations (see Annex 10.1).

The utility of these *Technical Guidelines* for designing data collection systems for co-management was evaluated in Thailand with a participatory planning and design exercise involving reservoir fishers, together with local and national management stakeholders. Further evaluation was undertaken with project partners at the Guidelines Evaluation Meeting in Dhaka, January 2005 (See Guidelines Evaluation Meeting Report in Annexes 10.2). A *Field Guide* containing key elements of the *Technical Guidelines* was a key output from this meeting (see Annex 10.3).

The *Technical Guidelines* (to be published in the *FAO Fisheries Technical Paper Series*) and *Field Guide* form the main project outputs.

These Guidelines are currently being promoted via partner's websites, newsletters and regional meetings. A follow-on project is planned to further evaluate the utility of these guidelines and promote their uptake by target institutions.

These guidelines will enable fisher community members (including women and youth) to make informed and empowered choices and decisions concerning the co-management of their resources to improve their livelihoods. The guidelines will also provide national fisheries departments with the means to generate relevant data and information to effectively formulate and evaluate (co-management) policy and development plans, meet national and international reporting responsibilities, and support and coordinate local management activities.

The process of participating in the development and evaluation of these guidelines has also helped build capacity among the participating project partners and stakeholders in relation to fisheries management and relevant information collection and use.

2 Background

Fisheries, particularly the small-scale type characterised by the use of low technology fishing gear over a limited range, are fundamentally important in many regions of the developing world, providing important sources of protein and livelihoods for coastal and rural communities.

The management of these fisheries has been undergoing a paradigm shift during the last two decades moving away from situations of laissez-faire management, revenue orientated access, or focus on maximising resource and economic output using rules or regulations selected on the basis of quantitative (single-species) bio-economic models, set and enforced by a centralised (government) administrative authority, towards more decentralised, collaborative and participatory approaches to sustainable management and development. This shift towards co-management comes as policy makers increasingly recognise that the underlying failures associated with the earlier approaches have often social, economic and institutional, rather than technical, origins. Moreover, the very diverse nature of many small-scale fisheries frequently characterised by multispecies assemblages exploited seasonally by dispersed resources users employing numerous different gear types, often makes the application of conventional “top-down” management approaches and models both inappropriate and unrealistic.

The use of data and information remains fundamental to the co-management process despite this change in emphasis, but now data collection systems or programmes must be designed to support the diverse needs of a range of potential stakeholders, tailored according to their objectives, capacity and available resources.

Cost-effective mechanisms for the collection and sharing of data and information to develop and sustain the (co-)management of these fisheries are, however, conspicuously lacking in most developing countries. This development problem is exemplified by a review by Coates (2002) of inland capture fishery statistics in South East Asia; one of DFID’s most important geographic targets. The review found that none of the existing data collection programmes in the region derive statistics from direct observations, many suffer from gross misreporting, fail to take account of ‘informal sectors’ particularly important to the poor, and at worst, are based upon guesswork. Resulting discrepancies between officially reported catches and estimates based upon independent surveys vary by a factor of between 4 and 21.

Many of the shortcomings reflect the absence of active management regimes or a fundamental lack of understanding of the purpose of collecting statistics, exacerbated by the complex and dispersed nature of the fisheries and the general paucity of resources and institutional capacity in the region. In many countries, statistics were reportedly compiled simply to satisfy FAO or national reporting responsibilities. Whilst all countries included in the review recognise the importance of their inland capture fisheries to the livelihoods of poor rural communities and their contribution to national food security, uncertainty remains as to how to redress the inadequacies of their existing monitoring and evaluation systems.

Similar conclusions were drawn in September 2002 at the FAO/MRC Ad hoc Consultation on New Approaches for the Improvement of Inland Capture Fisheries Statistics in the Mekong Basin. Whilst some tentative recommendations for potential improvements to existing systems were made, explicit details of cost-effective programmes to meet the needs of all stakeholders, particularly those of local fishers under co-management regimes, remained outstanding.

Significant demand for advice and guidelines for designing and implementing data collection systems to support the co-management of fisheries resources was also highlighted as part of DFID Fisheries Management Science Programme (FMSP) development activities (see MRAG 2002). This review identified a number of key elements for consideration including identification of key information requirements for co-management, and evaluation of alternative cost-effective mechanisms for collecting data such as participatory modes.

This demand was also reflected in several ongoing or planned projects, programmes and associated activities with a focus on improving data and information for co-management such as the DFID-funded Regional Fisheries Information System (RFIS) Programme for the South African Development Community (SADC) and the Integrated Lakes Management (ILM) Project in Uganda. The FAO and Mekong River Commission (MRC) are also in the process of developing programmes to strengthen fisheries information systems in the Lower Mekong Basin with the aim of elucidating the role of inland fisheries in national economies and rural livelihoods of the poor.

These programmes are intended to provide models for future work on improving fisheries statistics in other countries advocating co-management policies. The MRC is also working with communities and department of fisheries (DoFs) staff at more than 20 project sites to establish information requirements and feedback systems to support evolving co-management arrangements in the region. Similar activities are being planned under the WorldFish Centre's ongoing 'Fisheries Co-Management Research Project (FCMRP)', which is working closely with local communities at sites in Bangladesh and Cambodia where participatory data collection systems are being piloted.

Whilst a vast pool of literature already exists that can help guide co-managers design and implement data collection programmes to support co-management, much of it has been written in the context of other sectors or with little emphasis on designing systems specifically for co-managed fisheries.

Standard field guides for designing fisheries monitoring programmes published by the FAO over the past three decades include Brander (1975); Bazigos (1983); Caddy & Bazigos (1985); Flewelling (1994) and FAO (1999) and Stamatopolous (1993).

FMSP project R7042 described by Halls et al (2001) reviewed co-management data and information requirements, and data collection sources methods and tools to support the co-management of fisheries resources drawing upon recently published co-management guidelines (Hoggarth et al 1999) and synthesizing much of the earlier FAO literature. Software (PISCES), developed under the R7042 provides a sophisticated system to store and process generic data requirements, offering an alternative and more flexible approach than that previously offered by ARTFISH (Stamatopolous, 1993). The conceptual framework for sharing data and information and coordinating management activities among fisher communities described in this report was further developed by Halls et al (2002) under FMSP project R7834. Easily measurable variables describing the interdisciplinary attributes and performance of co-managed fisheries were identified and multivariate approaches for developing models of co-management performance are proposed on the basis of a wide range of hypotheses. These literature resources offered excellent entry points for considering and formulating guidelines alongside the knowledge, experiences and voiced demand of participating local and higher-level management institutions.

Participatory approaches or participatory monitoring and evaluation (PM&E) offer considerable scope in the context of data collection and sharing systems for co-

management (Estrella & Gaventa, 1998; Guijt (1999). Whilst they are often regarded as distinct approaches synonymous with co-management and community-based initiatives, they often employ many of the same sources and methods as conventional enumerator-based methods. What distinguishes the two approaches is not necessarily the sources and data collection methods employed, but the extent to which local stakeholders are involved in choosing or selecting these sources and methods, the variables to be monitored, and ultimately benefit from the outputs and the act of participating.

As well as participation, the concept of learning is a major principle of PM&E where emphasis is on practical 'action-orientated' learning. Participants learn from experience, and thereby gain a greater understanding of the factors that affect their outcomes. When multiple stakeholders are involved in the process, the PM&E also encourages and promotes negotiation and builds trust. The process is regarded as empowering and encourages participants to increase their understanding of their own roles and responsibilities (Estrella & Gaventa 1998).

In spite of the fact that the approach is often viewed as a prerequisite for the entire process of implementing decentralised small-scale fisheries co-management, most fisheries applications have been confined to development or research projects, for example Ticheler & Kolding (1998). Berkes et al (2001) describe common methods and approaches employed in fisheries research adapted from Chambers (1997) including seasonal calendars, participatory mapping, transects and observation participant observation, interview approaches and focus group discussions. Other, approaches such as fish consumption surveys (Bayley & Petrere, 1989) are often appropriate to meet the data requirements of particularly groups of stakeholders.

3 Project Purpose

The purpose of the project was to identify, develop and evaluate participatory data collection and sharing mechanisms (systems) to improve the (co-) management of capture and enhancement fishery resources important to the livelihoods of the poor.

It soon became apparent during the project planning period and workshop that the development of generic design solutions for this purpose was neither appropriate or achievable (see Project Planning Workshop Report in Annex 12.6). Instead, project partners agreed that a more appropriate output would be a set of guidelines for developing context-specific systems tailored to meet local needs and capacity.

It was intended that these guidelines should complement, rather than replace, the existing relevant manuals, guides described in Section 2, draw on relevant elements of previous FMSP research and the participatory monitoring and evaluation literature, but most importantly, be largely shaped by the experiences and expressed needs of co-managers currently designing or preparing to design their own data collection systems.

It was hoped that the guidelines would promote the participatory design of data collection and sharing systems that will help local stakeholders to make informed and empowered choices and decisions concerning the co-management of their resources to improve their livelihoods. Systems developed on the basis of these guidelines are also expected to meet the information needs of government required to evaluate policy and development plans, meet reporting responsibilities and obligations and help support and coordinate local management activities.

4 Outputs

4.1 The main Project Outputs

Guidelines for Designing Data Collection and Sharing Systems for Co-Managed Fisheries form the main output of this research project (see Annex 10.1). The FAO have agreed to publish these guidelines in the *FAO Fisheries Technical Paper Series* following the next phase of field-evaluation planned under RXXXX (number to be announced shortly by DFID).

The guidelines are structured around 5 main sections and three annexes to answer four key questions: **who** needs data collection systems, and **why** (i.e. for what purposes), **what** data needs to be collected to generate this information and **how** might you design a data collection system that meets the needs of relevant stakeholders (Figure 2).

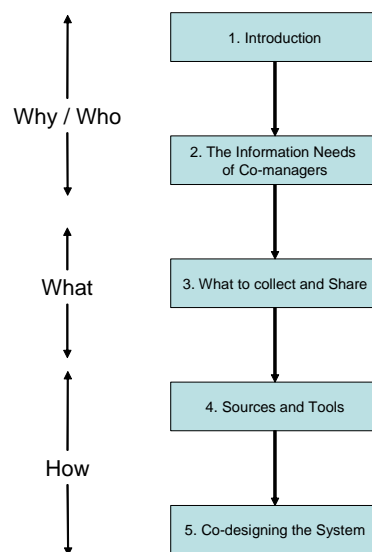


Figure 2 The Structure of the guidelines

Section 2 describes the co-management process and key stakeholders that might be involved, and identifies four basic categories of information required to support important information-dependent management roles that the key stakeholders might typically take responsibility for under co-management arrangements: (1) Information to formulate and evaluate national fisheries policy and development plans including performance of the co-management policy itself; (2) Information to formulate and adapt local management plans; (3) Information to implement management plans including enforcing rules and regulations, coordinating management activities and monitoring and resolving conflicts; and (4) Information to evaluate local management plans.

Important information pathways to facilitate the delivery and sharing of data and information to support these management roles and information requirements are also illustrated. In effect, Sections 1 & 2 therefore aim to answer the **who** and **why** questions.

What data is required to generate these four categories of information is the subject

of Section 3. The section begins with an explanation of some basic terms, concepts and ideas concerning information, indicators, data types and variable and decision-making processes. Four-sub sections then follow, providing examples of data types and variables that might be selected by co-managers corresponding to the four main categories of information identified in Section 2. Important factors to consider when selecting these data variables are also explained.

Section 4 begins to address the question of **How** to design a data collection system? by first providing a brief overview of the types of data sources and collection methodologies that might typically be available or applicable. Important concepts including participatory monitoring and evaluation, sampling and stratification are explained and important factors to consider when selecting sources and methods described. Summary tables provide guidance on what sources and methods might be appropriate for each data type of interest.

Finally, Section 5 describes an eight-stage participatory design process involving stakeholder analysis, local management plan formulation, identification of common stakeholder data needs and shortfalls, data collection and sharing strategy design, the development of information networks, the design of data recording and management systems, and finally implementation and refinement. The section cross-references material presented in Sections 1-4 and includes links to other sources of useful information and advice.

The guidelines are not intended to be prescriptive but rather offer a "toolbox" of options from which readers may wish to pick and choose according to their requirements and local context. The Guidelines are not a compendium of data collection methods. Some guidance on analytical procedures to evaluate management performance is provided but readers are advised to refer to relevant biostatistical analysis and FAO stock assessment manuals for this purpose including Sparre & Venema (1998) and Hoggarth et al (2005). To minimise the duplication of material and to keep the guidelines as brief as possible, links to web-sites, where relevant literature and resources can be accessed or downloaded, are provided throughout the manual.

In response to the evaluation of the utility of these Technical Guidelines in Thailand (see Section 5.5 below), a concise and simplified 20 page version of the manual was written by the PI and several of the project partners (see Annex 10.2). This *Field Guide*, which forms the second major output of the project and is intended to provide field practitioner's with a summary of the key elements of the full Technical Guidelines. Since frequent reference is made to the technical details contained in the full guidelines, we advise that both sets of guidelines are always distributed together.

The Field Guide is currently being translated into Thai, Laos, Vietnamese, Cambodian and Bangladesh in preparation for the next phase of field-evaluation planned under RXXXX.

The guidelines have, so far, been very well received by project partners and target institutions (see Guidelines Evaluation Meeting Report in Annex 10.3 and Section 6.1 below).

4.2 Other Project Outputs

The other outputs that accompany this FTR described below are annexed mainly for reference purposes. They could be regarded as *process documentation* describing some of the activities and outcomes that shaped the main project outputs.

Fourteen System Requirement Reports (SRRs) were written by project partners and target institutions representing four levels of management (local, national, regional and international) containing details of their (i) data and information requirements (ii) existing and potentially appropriate data sources and collection methodologies and (iii) existing and potentially appropriate data and information sharing mechanisms. These have not been annexed, but will be made available as a resource via the FMSP website (<http://www.fmosp.org>). These provide a useful reference for project partners to aid the process of developing their own local, national and regional data collection and sharing systems.

A summary of the reports for management levels 1 (local) and 2 (national) has been annexed (See SRR Summary Report Annex 10.4) along with the guidance notes and reporting structure issued to project partners to aid the compilation of the documents.

Partners agreed that it would be worthwhile publishing a multi-authored paper synthesising the material contained within the SRRs. Whilst not a planned output of the project, this will be undertaken as soon as possible.

The other documents annexed to the FTR comprise the three reports describing the workshop and meeting activities that shaped the guidelines and provided feedback on their utility for designing locally appropriate systems during the first phase of field testing:

- Data Collection and Sharing Mechanisms for Co-Management (R8285): Project Planning Workshop Report.
- Data Collection and Sharing Mechanisms for Co-Management (R8285): Guidelines Development Workshop Report.
- Design of Data Collection Systems for Co-Managed Fisheries (R8285): Guidelines Evaluation Meeting Report.

4.2.1 Improved Data Collection and Sharing System In Thailand

Evaluation of the Guidelines has also helped improve data collection and sharing systems, management planning and implementation activities and relations among stakeholders in Udon Thani Province Thailand (See Section 6.1.2)

4.2.2 Improved capacity

The application of the guidelines in Udon Thani has also helped build management capacity among local stakeholders. The workshop participants reported an improved understanding of reservoir resource management and the data and information needs of different stakeholders (See Section 6.1.3).

The process of developing the guidelines, particularly through the compilation of the System Requirement Reports has also helped build the capacity of the project's collaborator's and that of their own partners.

5 Research Activities

5.1 Overall Research Strategy

The project was designed with a strong emphasis upon participatory research activities, collaborating with stakeholders and institutions from all management and advisory levels, including DFID bilateral projects and programmes. This helped build knowledge and capacity whilst ensuring that the project outputs were demand-driven, thereby maximising the likelihood of their uptake by target institutions.

5.1.1 Collaborating Research Institutions and Projects

Table 1 Details of project collaborators

Management Level	Name	Institution	Country	Project/Programme	Local partners/Stakeholders*
1&2	Dr Paul Thompson and Dr Parvin Sultana	World Fish Centre	Bangladesh	Community-Based Fisheries Management (CBFM) Project	DoF Bangladesh, Local resources users participating in CBFM
1&2	Dr Kuperan Viswanathan	World Fish Centre	Malaysia	Fisheries Co-Management Research Project (FCMRP)	DoF and research institutions in Cambodia.
1, 2 & 3.	Mr Wolf Hartmann	Mekong River Commission (MRC)	Laos PDR, Vietnam, Cambodia and Thailand.	Mekong River and Reservoir Fisheries (MRRF) project.	DoF staff, resource users and local management institutions
1&2	Mr Chris Nannes Mr John Purves Dr Eric Verheij	MRAG/DFID	SADC countries, mainly Tanzania	Regional Fisheries Information System (RFIS)	DoF staff, resource users and local management institutions
1&2	Dr Jim Scullion Mr Dirk Lamberts	MRAG/DFID	Uganda.	Integrated Lake Management Project (ILM)	Dick Nyeko, Commissioner for Fisheries, Department of Fisheries Resources
4	Dr Devin Bartley; Mr Richard Grainger	FIRI and FIDI, FAO	International		Fisheries Departments of member states, regional fisheries organizations.
1-4	Dr Ashley Halls PI	MRAG Ltd	UK	R8285	NA

*Also see lists of contributors for SRR reports below (Table 2)

5.1.2 Activities and Outputs

The project activities were structured around five stages: (i) project planning, (ii) the identification of system requirements (or user requirements analysis), (iii) the generation of systems (design proposals), (iv) system field-testing and evaluation, and finally (v) system dissemination and promotion (Figure 1).

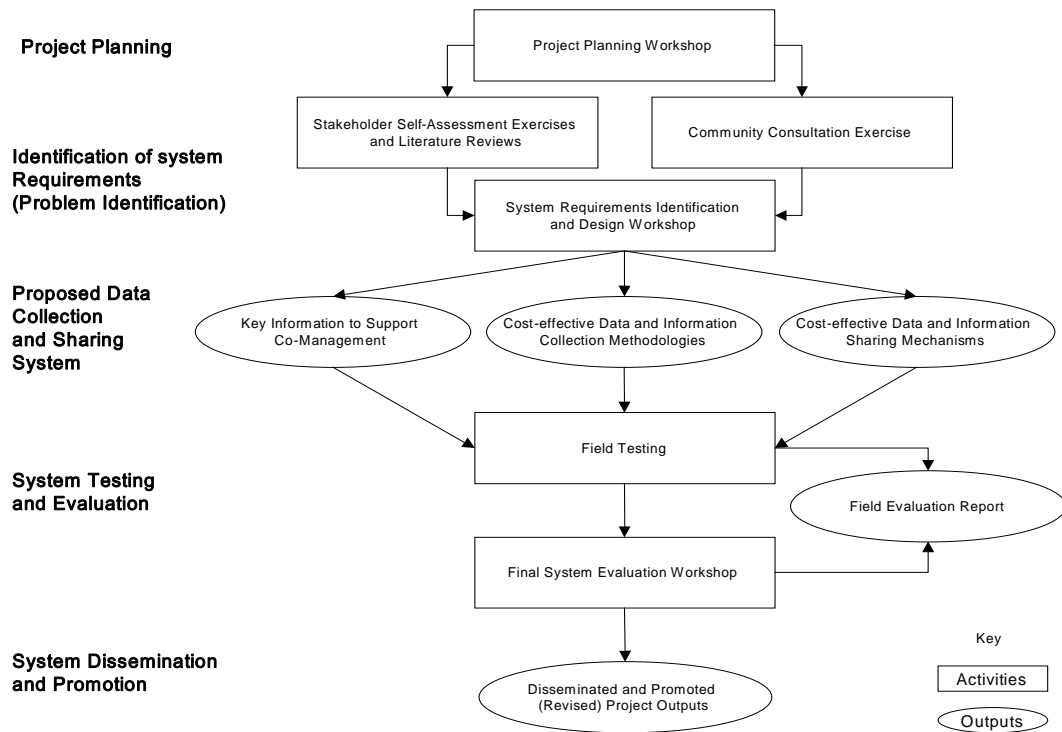


Figure 1. Project activities and corresponding outputs

5.2 Project Planning Phase

The project planning phase centred upon a meeting held at FAO, Headquarters, Rome, 28-30th April, 2003. Eight delegates attended the workshop from the 7 institutes collaborating on the project. Dick Coutts of the SFLP and Tim Bostock (SIFAR +10) also attended for short periods to advise on the activities and outputs. The meeting provided an opportunity to clarify the roles and responsibilities of each collaborator, draw up timelines for activities and deliverables and deal with any outstanding administrative matters (see Report in Annex 10.6).

An important conclusion drawn at the meeting was that, rather than attempting to develop and field test some form of generic data collection and sharing system to meet the needs of all stakeholders, the project should instead seek to develop guidelines or a manual, emphasising processes for designing, developing and implementing locally-appropriate data collection and sharing systems that satisfy information needs at each management level. It was agreed these guidelines should be published in the FAO Fisheries Technical Paper series to complement existing relevant guidelines and manuals including FAO (1999).

The required content of System Requirements Reports (see Section 5.3), was also finalised at this meeting.

5.3 Preparation of System Requirement Reports (Problem Identification)

The content and scope of the guidelines described in Section 4.1 were identified and shaped on the basis of demand and institutional capacity expressed in 14 *System Requirement Reports* (SRR) prepared by project collaborators (Table 2) by means of literature review, and consultations and discussions with relevant stakeholders and local project partners (See Annex 10.5).

For a range of geographic areas, environmental regimes, and fisheries types, the content of the SRRs aimed to provide, at four hierarchical management levels, a broad picture of the (i) range of data and information requirements that exists, (ii) typically available manpower, resources and institutional capacity, (iii) structure and operations of co-managed fisheries, (iv) existing and potentially appropriate data collection tools, sources and methods, (v) existing data storage and processing methods (if any), (vi) requirements and opportunities for data and information sharing and (vii) lessons and experiences of previous or existing attempts to develop data collection and sharing mechanisms. The four management levels were:

- Level 1 – Local Management Institutions (Fisher Communities)
- Level 2 - National Management Institutions (Fisheries Departments)
- Level 3 - Regional Level Management Bodies (eg SADC, MRC)
- Level 4 – International Management Advisory Bodies (FAO)

The information included in the System Requirements Reports was, wherever possible compiled in a participatory manner with the management institutions that were the focus of the reports. The content aimed to reflect the outcome of careful thought and discussion between the management institutions and the project staff responsible for submitting the report. Focus management institutions were encouraged to justify wherever possible the system requirements or opportunities they identified, or opinions they expressed, particularly in the context of their management roles and responsibilities and available institutional capacity.

Collaborators were guided towards a number of documents and supplied with guidance notes to help them complete each section of the report (See Annex 10.5)

Report authors were also encouraged to record *process notes* to accompany each section of their SRR to include important issues that arose when compiling the information with project partners that would be relevant to include in the final Guidelines. These included problems encountered by partners attempting to identify/provide the required information and successful approaches that were adopted to resolve them, including useful tips for conceptualising and addressing problems or issues.

In order ensure that the reports included relevant and to facilitate comparisons, the SRRs were structured around tables of contents agreed by the project collaborators during the Project Planning Workshop (See Section 5.2 and Annex 10.5).

5.3.1 Summary of the SRRs prepared by project collaborators and their partners

Table 2 Details of the SRR prepared by project collaborators and their own local partners

Country	Level	Ecosystem	Report Title	Project Collaborator and Institution	Contributors
	1	Riverine	Case Study Report – Kali Nadi, Bangladesh	WorldFish Centre, Parvin Sultana	Beel Management Committee Local Stakeholders PROSHIKA NGO
		Floodplain (Beel)	Case Study Report – Ashur Beel, Bangladesh	WorldFish Centre, Parvin Sultana	Beel Management Committee Local Stakeholders CARITAS NGO
		Floodplain (Beel)	Case Study Report – Goakhola-Hatiara Beel, Bangladesh	WorldFish Centre, Parvin Sultana	Beel Management Committee Local Stakeholders Branchte Sekha NGO
		Floodplain (Beel)	Case Study Report – Dhum Nadi Beel, Bangladesh	WorldFish Centre, Parvin Sultana	Beel Management Committee Local Stakeholders BRAC NGO
		Floodplain (Beel)	Case Study Report – Rajdhala Beel, Bangladesh	WorldFish Centre, Parvin Sultana	Beel Management Committee Local Stakeholders CARITAS NGO
Uganda	1	Lake (George & Kyoga)	Integrated Lake Management Project. Level 1 Local Management Institutions	MRAG, CARE	Dirk Lamberts, Charlotte Howard
Laos Cambodia Thailand Vietnam		Floodplain River	Information Needs of local management institutions in the Lower Mekong Basin.	Mekong River Commission, Wolf Hartman	Khim Kaing, Chhoun Kimchea, Resource users and DoF staff from Kandal, Kampong and Chhang Provinces, Sommano Phounsavath, Thomas Augustinus, Resource users and DLF staff from Vientiane Municipality and Bolikhamsay Province, Kanokporn Deeburee, Malasri Khamsri, Resource users and DOF staff from Udon Thani, Khon Kaen and Sakhorn Nakhorn Provinces, Ha Phuong Truong, John Sollows, Resource users and staff from DARD and People’s Communes from Daklak Province
Cambodia	2	Floodplain River	Information needs of the Cambodia Department of Fisheries for the co-management of fisheries	FAO/STREAM	Malene Felsing, Chan Ratana, Chan Tho, Chheun Sarik, Chhun Sony, Chhun Vannak, Deap Polin, Dy Moeun Naryin, Eric Meusch, Graham Haylor, Haiko Meelis, Heng Ponley, Kaing Khim, Keo Sovathepheap, Kou Huleang, Nao Thuok, Nem Kano, Nouv Buntha, Nut Ly, Paul Bulcock, Pech Bunna, Sam Nuov, Sem Viryak, Soeung Salinin, Somony Tha, Souk Vin, Srun Lim Song, Thach Pannady, Thor Sen Sereyath, Tit Phea Rak, Un Kanika Un Veng, Ung Rachana, Ung Soleakhena, William Savage, Yath Sim, Yo Vichny.
Lao PDR	2	Floodplain River	Report on Systems Requirements for National Management Institutions (“Level 2”) in Lao PDR	MRC (MRRF)	Wolf D. Hartmann, Somphanh Chanpensay et al.
Philippines	2	All	System Requirement Report for Level 2 – National Management Institutions, for the Bureau of Fisheries and Aquatic Resources in	FAO/STREAM	Malene Felsing, Bernadette Soliven, Carmencita Tocino, Felipe Hilan Nava, Florendo Baragan, Grace Lopez, Graham Haylor, Jojo Razon, Jose Paclibare, Lilia Pelayo, Maria Christina Canlas,

			the Philippines		Marjorie Grutas, Miguel Bumagat, Muriel Camu, Nelson Canlas David, Nory Eleserio, Paul Bulcock, Prescilla Regaspi, Reuben Ganaden, Rex Margen, Rodrigo De Vera, Rogelio Amatorio, Romeo de Sagun, Romeo Recide, Rosarie Areza, Villamor Santos, William Savage, Winifredo G. Amandy
Tanzania	2	Marine	Levels 1 And 2 Fisher Communities And District Level Managers Within The National Framework: Tanga Region, Tanzania	RFIS Project	John Purves
Vietnam	2	All	Report on Systems Requirements for National Management Institutions ("Level 2") in Viet Nam	MRC (MRRF)	Wolf Hartmann (MRRF), Nguyen Van Trong, Research Institute of Aquaculture No. 2 in Ho Chi Minh City, John Sollows, Consultant, MRRF, Davide Fezzardi, Socio-economic Advisor and Erland Jensen, FMIS Advisor, STOFA, MOFI, Danida, Hanoi.
Mekong Basin Countries	3	Riverine & Floodplain	Report on Systems Requirements for Regional Management Organizations ("Level 3"): The Case of MRC	MRC	Wolf Hartmann
International	4	All	Level 4 – International Management Advisory Bodies	FAO	Richard Grainger; Devin Bartley

The reports can be individually downloaded at <http://fmisp.org>. Level 1 and 2 reports were summarised in preparation for the Guidelines Development Workshop (see Section 5.4 below). Level 2 reports for Cambodia and the Philippines can also be downloaded from the STREAM website: <http://www.streaminitiative.org/Library/>. A synthesis of the material was also presented at the Guidelines Development Workshop in the form of a series of PowerPoint Presentations. These can also be downloaded at <http://fmisp.org> (see SRR Synthesis PPT files).

5.4 Guidelines Development

The development of the Guidelines continued at the Guidelines Development Workshop, held at the MRC headquarters in Phnom Penh between 26 and 30 April 2004. The workshop was attended by more than 20 participants from the WorldFish Centre, FAO, MRC, and DFID funded co-management projects: RFIS; SFLP, R8292 and the ILM project. The participants also included staff from the Fisheries and related research Departments of Cambodia, Philippines, Vietnam, Laos, and Thailand.

The overall objective of the workshop was to identify simple guidelines or processes to help co-managers design and implement data collection systems to meet their evolving needs that are appropriate to the local characteristics and available resources.

The key elements and scope of the guidelines were agreed following a number of formal presentations, and working group and plenary sessions. Baseline information (SRR reports) was presented in the first two days followed by a series of synthesis presentations by the PI (see SRR Synthesis PPT PowerPoint files at <http://www.fmisp.org> Ref R8285). Plenary and group discussions on specific issues and themes followed.

A framework for identifying data requirements and opportunities for data sharing in the context of key management functions was identified around which the Guidelines are structured. This generic framework allows for variation in stakeholder capacity and responsibility for the various management functions. A process for designing context-specific data collection and sharing systems on the basis of this framework was also outlined.

Opportunities for field-testing the guidelines in Uganda, Tanzania, Thailand, Bangladesh, were also identified. Full details of the workshop, including descriptions and the outcomes of each session, and the participant's evaluation of the workshop are described in the 'Guidelines Development Workshop Report' (Annex 10.4).

Following the workshop, the text of the guidelines was written with inputs from several project collaborators drawing upon the contents of the SRRs, the outcome and conclusions of the workshop, relevant elements of previous FMSP research, and the participatory monitoring and evaluation literature.

5.5 Guidelines Evaluation

Guidelines were evaluated on the basis of desk-based reviews by project collaborators and planned field activities designed to evaluate the utility of the guidelines for assisting the *process* of designing appropriate data collection and sharing systems for co-managed fisheries in a participatory manner with key stakeholders. The outcomes of these evaluations activities were reported at the Guidelines Evaluation Meeting, held at WorldFish Headquarters, Dhaka, 25-27 January 2005 (see Annex 10.3).

Overall, the comments received on the guidelines were very positive. There was a general consensus among the project partners that the guidelines were very useful or were likely to be very useful for designing data collection systems for co-management. However, there was a general consensus the guidelines are rather technical and too detailed for field practitioners. The *Field Guide* described in Section 4.1 was developed to address this concern.

Field evaluation activities had been planned to take place under the CBFM project in Bangladesh and the Tanga Coastal Zone Conservation and Development Project (TCZCDP) in Tanzania. However due to staffing problems under these two projects reported in the Quarter 4 (2004-05) Report, field evaluations of the guidelines were undertaken only at Huay Luang Reservoir in Udon Thani Province, Thailand by Wolf Hartmann, under the "Management of Rivers and Reservoir Fisheries in the Mekong Basin Component (MRRF)" of the MRC Fisheries Programme.

For this evaluation in Thailand, a two stage workshop was implemented with 55 representatives of local resources users, the local management institution (Or Bor Tor) and administrative levels of government to identify data needs of different stakeholder groups and thereby common needs, identify indicators, and formulate a joint data collection and sharing strategy.

The process revealed little understanding or appreciation among participants of the data needs of different stakeholder groups and the current lack of data sharing and information feedback among them. The process resulted in agreement to update the reservoir management plan. Obstacles to the implementation of the plan were determined and monetary and technical support requirements of government

agencies and the OBT were identified. Major obstacles to effective management were identified as stemming mostly from inefficient and ineffective information flow and the lack of coordination with regard to the issues of importance to most stakeholders.

The guidelines helped identify common data and information needs among the stakeholder groups which were summarized graphically. These common needs included information relating to fish production by species, information to determine the best stocking strategies and environmental information, particularly relating to the water levels and quality within the reservoir. The guidelines also helped stakeholders identify and agree upon a potential data and information sharing strategy which was also summarized diagrammatically.

Data collection strategies to meet the needs of the stakeholders were also discussed. These will be examined further during the next planned meeting in March 2005. In the meantime, the OBT agreed to prepare a proposal to develop a data collection system with technical contributions from the Inland Fisheries Research and Development Center (IFRDC) and relevant agencies, together with a supporting budget after reviewing what relevant data and information already exists.

This multi-stakeholder planning exercise also raised awareness among government bodies of the widespread interest of resource users to diversify their livelihoods to include tourism-related income generating activities.

Participants agreed to organise workshops of this type at least once a year, and suggested that next time, other OBTs and government agencies should also attend, including staff who can make management decisions such as heads of Or-Bor-or (federation of OBTs) and the various heads of OBTs.

In summary, the workshop participants reported an improved understanding of data and information requirements of different stakeholders involved in the management of the reservoir. They also reported improved knowledge of reservoir resources management, and were able to use the guidelines of identify potential data sharing systems and methods for data collection. Subsequently, they reported being able to develop an action plan for piloting a data collection strategy to meet their needs.

The process of employing the guidelines helped raise awareness of the need to consider other sectors when formulating and evaluating management plans and activities. It also empowered and raised the capacity of communities and helped them express their ideas and concerns. The workshop facilitators also concluded that a simplified version of the guidelines in local language is required to provide users with the opportunity to fully utilise the relevant and helpful tools contained in them.

5.6 Dissemination and Promotion

See Section 6.2

6 Contribution of Outputs

6.1 Contribution of Outputs Towards DFID's Development Goals

6.1.1 Improved Livelihoods Resulting from Data Collection and Sharing Systems

This project has developed useful guidelines for helping co-managers at all management levels design and implement cost effective and appropriate data collection and sharing systems to support the co-management of their resources. Context appropriate systems developed with these guidelines will empower fisher communities with improved knowledge and information to enable them to make informed decisions concerning the best means of utilization of their capital assets in the context of their fisheries resources and thereby improve their livelihoods in a sustainable manner.

The guidelines will also increase the capacity of national fisheries departments to generate relevant data and information to improve understanding of fisheries-dependent livelihood outcomes in response to inter- and intra-sectoral management and development activities at different spatial scales. This improved capacity and understanding can also be used to more effectively formulate and evaluate (co-management) policy and development plans, meet national and international reporting responsibilities, and support and coordinate local management activities. Iterative improvements to these policies and development plans will further help to improve the livelihoods of the poor.

6.1.2 Improving Data Collection and Sharing Systems and Management Plans

Uptake of the guidelines by the MRRF project in Thailand has already begun to improve existing data collection systems employed by reservoir fishers, the local management institutions and the Inland Fisheries Research and Development Center, and thereby the effective management of reservoir resources. The process of applying the guidelines has also resulted in agreement among the stakeholders to update the reservoir management plan and address obstacles to its effective implementation. The process has also helped to strengthen relations among key stakeholders and raised awareness among government bodies of the widespread interest among resource users to diversify their livelihoods (Section 5.5).

The development of a number of new or improved data collection and sharing systems is anticipated during the next phase of field evaluation in Bangladesh, Vietnam, Cambodia, Laos and possibly Kenya under the follow-on evaluation and uptake promotion project RXXXX.

6.1.3 Improved Institutional Capacity

The application of the guidelines in Udon Thani Province, Thailand has also helped build management capacity among local stakeholders. The workshop participants reported an improved understanding of data and information needs of different stakeholders involved in the management of the reservoir. They also reported improved knowledge of reservoir resources management and raised awareness of the need to consider other sectors when formulating and evaluating management plans and activities.

The process of developing the guidelines, particularly through the compilation of the System Requirement Reports has also helped build the capacity of the project's collaborator's and that of their own partners.

6.2 Promotion of Outputs

6.2.1 Distribution of Guidelines

Draft versions of the guidelines have already been distributed to the following:

- Project collaborators, workshop participants and other workers acknowledged in the Guidelines.
- Members of the Lake Victoria Expert Panel Meeting including the Lake Victoria Fisheries Organisation (LVFO), DoF staff from Uganda, Tanzania and Kenya, Reading University Centre for Statistics, and IDDRA.

Further distribution of the guidelines will occur following the next phase of evaluation and revision, and publication in the FAO Fisheries Technical Paper Series, planned under the uptake promotion project RXXXX (see Section 6.2.3).

6.2.2 Publications and Other Communication Materials

List the publications and other reports, communications materials and other outputs, according to the following categorization:

Peer-reviewed publications (published)

No papers have yet been accepted for publication in a peer-reviewed journal.

Peer-reviewed publications (in press or submitted)

The FAO have agreed to publish the Technical Guidelines in the FAO Fisheries Technical Paper Series, following the next phase of field evaluation under Project RXXXX. This series has a wide circulation, particularly among fisheries departments.

Non peer-reviewed publications and reports and communications materials

Halls, A.S., Arthur, R., Bartley, D., Felsing, M., Grainger, R., Hartmann, W., Lamberts, D., Purves, J; Sultana, P., Thompson, P. Guidelines for Designing Data Collection and Sharing Systems for Co-Managed Fisheries. Draft *FAO Fisheries Technical Paper*. No. XXX. Rome, FAO. 2005. XXp.

Halls, A.S., Arthur, R., Bartley, D., Felsing, M., Grainger, R., Hartmann, W., Lamberts, D., Purves, J; Sultana, P., Thompson, P. (2005) Guidelines for Designing Data Collection and Sharing Systems for Co-Managed Fisheries: *Field Guide*. London, MRAG Ltd. 23p.

MRAG (2005). Design of Data Collection Systems for Co-Managed Fisheries: Guidelines Evaluation Meeting Report, WorldFish Centre, Dhaka, January 25-27th 2005, MRAG Ltd, London, 52p.

MRAG (2004). Data Collection and Sharing Mechanisms for Co-Management (R8285): Guidelines Development Workshop Report. MRC Headquarters, Phnom Penh, April 26-30 2004, MRAG Ltd, London, 22p (excluding annexes).

MRAG (2003). Data Collection and Sharing Mechanisms for Co-Management (R8285): Project Planning Workshop Report. FAO Headquarters, Rome, 28-30th April 2003, MRAG Ltd, London, 28p.

MRAG (2004) Guidelines for Designing Data Collection and Sharing Systems for Co-Managed Fisheries: System Requirements Reports – Description and Summary Of Reports for Level 1 and 2, MRAG Ltd, London, 97p.

System Requirement Reports (SRR)

- Sultana, P. (2003a). Identification of System Requirements: Report in Preparation for the Guidelines Development Workshop: Level 1- Local management Institutions (Fisher Communities): Case Study Report: Ashura Beel, Bangladesh, 22p.
- Sultana, P. (2003b). Identification of System Requirements: Report in Preparation for the Guidelines Development Workshop: Level 1- Local management Institutions (Fisher Communities): Case Study Report: Dhum Nadi Beel, Bangladesh, 30p.
- Sultana, P. (2003c). Identification of System Requirements: Report in Preparation for the Guidelines Development Workshop: Level 1- Local management Institutions (Fisher Communities): Case Study Report: Goakhola-Hatiara Beel, Bangladesh, 27p.
- Sultana, P. (2003d). Identification of System Requirements: Report in Preparation for the Guidelines Development Workshop: Level 1- Local management Institutions (Fisher Communities): Case Study Report: Kali Nadi, Bangladesh, 30p.
- Sultana, P. (2003e). Identification of System Requirements: Report in Preparation for the Guidelines Development Workshop: Level 1- Local management Institutions (Fisher Communities): Case Study Report: Rajdhala Beel, Bangladesh, 25p.
- Lamberts, D. (2004). Integrated Lake Management Project. Identification of System Requirements: Report in Preparation for the Guidelines Development Workshop. Level 1- Local management Institutions (Fisher Communities). Report prepared in contribution to DFID FMSP project Data Collection and Sharing Mechanisms for Co-Management (R8285), MRAG, London, 41p.
- MRRF (2004). Data Collection and Sharing Mechanisms for Co-management. Report on Systems Requirements for Local Management Institutions ("Level 1") in the Lower Mekong Basin, MRC, Phnom Penh, 59p.
- Felsing, M. (2004a). System Requirement Report for 'Level 2' – National Management Institutions, for the Bureau of Fisheries and Aquatic Resources in the Philippines. A report conducted by the NACA STREAM Initiative under a Letter Of Agreement from the Food and Agriculture Organization of the United Nations to the Network of Aquaculture Centres in Asia-Pacific (NACA) Bangkok, Thailand, (PR No. 28333), January 2004, 56p.
- Felsing, M. (2004b). System Requirement Report for 'Level 2' – National Management Institutions, Fisheries Department in Cambodia. A report conducted by the NACA STREAM Initiative under a Letter Of Agreement from the Food and Agriculture Organization of the United Nations to the Network of Aquaculture Centres in Asia-Pacific (NACA) Bangkok, Thailand, (PR No. 28333), January 2004, 51p.
- Purves, J. (2004). Identification of System Requirements: Report for the Guidelines Development Workshop: LEVELS 1 AND 2: FISHER COMMUNITIES And DISTRICT LEVEL MANAGERS Within The NATIONAL FRAMEWORK: TANGA REGION, TANZANIA. Report Prepared As A Contribution To DFID-FMSP Project R8285: Data Collection And Sharing Mechanisms For Co-Management. April 2004, 59p.
- MRRF (2004). Data Collection and Sharing Mechanisms for Co-management: Report on Systems Requirements for National Management Institutions ("Level 2") in Viet Nam, MRC, 54p.
- Hartmann, W., D. (2004). Data Collection and Sharing Mechanisms for Co-management: Report on Systems Requirements for Regional Management Organizations ("Level 3"): The Case of MRC, MRC, 47p.
- FAO (2004). DFID Project on Data Collection and Sharing Mechanisms for Co-

Management. Identification of System Requirements. Report in Preparation for the Guidelines Development Workshop. Level 4 – International Management Advisory Bodies. Fisheries Department, Food and Agriculture Organization of the United Nations, 8p.

A multi-authored paper synthesising the material contained within the SRRs will be submitted for publication in *Fisheries Management and Ecology* as soon as possible.

Power Point Presentations

Four PowerPoint presentations prepared for the Guidelines Development Workshop that summarise and synthesise key material contained within the SRRs. These will be uploaded onto the FMSP website.

Promotion Activities

The MRC has agreed to publish a short article in the June edition of their *Catch and Culture Magazine* in English, Thai, Khmer, Vietnamese and Lao to publicise and promote the uptake of the forthcoming final version of the guidelines.

FAO (FIRI) also agreed to publish a similar article in their bi-annual *FAO Aquaculture Newsletter*.

WorldFish intend to write an article about the guidelines for the March edition of WorldFish Centre's CBFM Quarterly Newsletter.

Presentations

Details of the project were presented at the Lake Victoria Expert Panel Meeting, held at MRAG in November 2004 which was attended by members of the Lake Victoria Fisheries Organisation (LVFO), DoF staff from Uganda, Tanzania and Kenya, and staff from the Reading University Centre for Statistics and IDDRA. Draft versions of the manual were also distributed to the delegates.

Details of the project were recently described at the MRC's 2004 Regional meeting in Phnom Penh. Richard Grainger is currently exploring the possibility of promoting the guidelines at regional workshops as part of the FAO's STF strategy.

Websites and Communication Networks

The reports and draft guidelines listed above will be made available on the FMSP website (<http://www.fmsp.org>) as soon as possible.

The final draft versions of the Technical and Field Versions of the Guidelines will be also be uploaded on to the websites of FAO, MRC, and WorldFish Centre in the near future.

Richard Grainger is currently exploring the possibility of promoting the draft guidelines via the STREAM Communication Network and website.

6.2.3 Recommended Follow-Up Action/Research

Funding has been secured to further evaluate the guidelines and promote their uptake under RXXXX. Further field testing is planned under the MRRF project in Laos, Cambodia, Thailand and Vietnam, and in Bangladesh under the Fourth Fisheries, MACH and CBFM2 projects.

The draft *Technical Guidelines* and *Field Guide* will be revised according to feedback

from these evaluations. The *Technical Guidelines* will then be published in the *FAO Fisheries Technical Paper Series* and distributed to fisheries departments and associated research institutions of member states. A communication specialist will work alongside the PI to further develop and promote highly visual versions of the *Field Guide* and other communication products tailored according to the needs of non- or less technical stakeholders such as NGOs and policy makers and others who have a stake in the design and implementation of data collection and sharing systems to support co-managed fisheries. See RD1 05/03 for full details of the proposed communications strategy.

7 References cited in FTR Sections 1-7

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8 Project Logframe

Narrative Summary	OVI	MOV	Assumptions
8.1.1.1 Goal			
Benefits for poor people generated by application of new knowledge to fisheries management systems.	In target countries, increased livelihood benefits to communities by increased and less variable capture and enhancement fisheries production, improved fisheries employment and access to knowledge by 2005.	National and local level surveys, reports and statistics. Evaluation of fisheries management programme.	Poor People invest benefits to improve livelihoods
8.1.1.2 Purpose			
Development, testing and promotion of improved fisheries data collection methodologies and information sharing mechanisms to support and improve the co-management of capture and enhancement fisheries important to the poor.	Improved field-tested and cost-effective fisheries data collection methodologies and information sharing mechanisms to support the co-management of capture and enhancement fisheries promoted. Ultimately, improved livelihoods in south-east Asia and Africa.	Project Final Reports, publications. Uptake of outputs by target institutions. National fisheries statistics.	Existing systems can be improved. Target institutions are receptive to outputs.
8.1.1.3 Outputs			
<ol style="list-style-type: none"> 1. Agreed details of project activities and outputs. 2. Key information to support the (co-) management of capture and enhancement fisheries 3. Cost-effective data and information collection methodologies to provide (1.). 4. Cost-effective data and information sharing mechanisms for (1.). 5. Field evaluation of Outputs 2-4 above. 6. Disseminated and promoted project results. 	<ol style="list-style-type: none"> 1. By month 1, Planning Workshop Report. 2 - 4. By month XX, literature reviews, local stakeholder consultation exercises and System Requirements Identification and Design Workshop completed. Cost-effective data and information collection and sharing mechanism proposals finalised in preparation for field evaluation. 5. By month XX, field evaluation of system proposals completed. 6. Production of supporting field manuals. Final System Evaluation Workshop. Quarterly, Annual and Final Technical Reports, publications, websites...etc. 	<ol style="list-style-type: none"> 1. Planning Workshop Report 2 - 4. Local stakeholder consultation and workshop reports. System requirements reports from DoFs, regional bodies and the FAO. System Requirements Identification and Design Workshop Report. Draft System Design and Implementation Manual. 5. Field Evaluation Report 6. Final Systems Evaluation Workshop. FAO Fisheries Technical Paper describing system design and implementation guidelines. Quarterly, Annual, and Final Technical Reports, other publications, websites...etc. 	<p>Consensus can be achieved among collaborators.</p> <p>Cost-effective data collection and sharing mechanisms can be developed on basis of user requirements analyses, literature reviews and community consultations.</p> <p>Target beneficiaries are committed to devolution of management responsibility.</p> <p>Field evaluation is possible within the project period.</p>
Activities			
<ol style="list-style-type: none"> 1. <u>Project Planning Workshop</u> to agree on details and timings of activities and outputs. 2. <u>Identify key information requirements and required format</u>; 2.1 Project collaborators to undertake assessment of their own specific requirements associated with the management level they represent. Review the literature for data and information requirements to support the co-management of fisheries, including specific requirements at each major management level they represent. 2.2 Discussions/consultations with local fisher communities in established or evolving co-managed fisheries to identify data and information requirements and their formats that are acceptable to, understandable to, and meet the needs of, local fisher communities. 2.3 System Requirements Identification and Design Workshop involving project collaborators to present and discuss the results of the above activities and agree upon a set of generic data and information requirements that meet the needs of stakeholders at all management levels. 	See Financial Summary.	<ol style="list-style-type: none"> 1. Planning Workshop Report 2. Local stakeholder consultation and workshop reports. System requirements reports from DoFs, regional bodies and the FAO. System Requirements Identification and Design Workshop Report. Draft System Design and Implementation Manual. Quarterly, Annual and Final Technical Reports. 	<p>Collaborators requirements are representative.</p> <p>Local communities are willing and able to participate.</p> <p>Generic or common requirements exist.</p> <p>Collaborators have the capacity to identify their requirements.</p>

Narrative Summary	OVIs	MOV	Assumptions
<p>3. <u>Formulate cost-effective data and information collection methodologies:</u></p> <p>3.1 Review the literature for sources, collection tools and methodologies to provide the generic data and information requirements identified by Activity 1. This will include evaluations of previous and existing participatory data and information collection systems (see Section 4A). Project collaborators to identify methods to meet their specific requirements.</p> <p>3.2 Discussions/consultations with local fisher communities in established or evolving co-managed fisheries to identify data and information collection methodologies (including participatory) that are acceptable to, understandable to, and meet the needs of, local fisher communities identified by Activity 2.</p> <p>3.3 System Requirements Identification and Design Workshop involving project collaborators to present and discuss the results of activities 3.1 and 3.2 and formulate an agreed range of cost-effective data collection methodologies, including appropriate sources and collection tools, to generate the information requirements identified by Activity 2.</p>		<p>3. Local stakeholder consultation and workshop reports. System requirements reports from DoFs, regional bodies and the FAO. System Requirements Identification and Design Workshop Report. Draft System Design and Implementation Manual. Quarterly, Annual and Final Technical Reports.</p>	<p>Local communities are willing and able to participate.</p>
<p>4. <u>Propose cost-effective data and information sharing mechanisms:</u></p> <p>4.1 Review the literature on existing fisheries data and information sharing mechanisms including specific requirements at each management level. Project collaborators to identify mechanisms that will meet their specific requirements.</p> <p>4.2 Discussions/consultations with local fisher communities in established or evolving co-managed fisheries to identify data and information sharing/feedback mechanisms that are acceptable to, understandable to, and meet the needs of, local fisher communities.</p> <p>4.3 System Requirements Identification and Design Workshop involving project collaborators to present, discuss and synthesise the results of activities 4.1 and 4.2. Agree upon proposals/designs for cost-effective data and information sharing mechanisms that meet the requirements.</p>		<p>4. Local stakeholder consultation and workshop reports. System requirements reports from DoFs, regional bodies and the FAO. System Requirements Identification and Design Workshop Report. Draft System Design and Implementation Manual. Quarterly, Annual and Final Technical Reports.</p>	<p>Local communities are willing and able to participate.</p> <p>Data collection and sharing mechanisms can be developed on basis of user requirements analyses, literature reviews and community consultations.</p> <p>Field-testing can be effectively undertaken during the life of the project.</p>
<p>5. <u>Field Test and Evaluate Proposed Systems:</u></p> <p>5.1 Field test the proposed data collection and sharing systems identified through Activities 2-4.</p> <p>5.2 Final System Evaluation Workshop to draw conclusions about success of proposed system and make recommendations for improvements / further work and wider promotion if applicable.</p>		<p>5. Field Testing Report describing preliminary results of the implementation of proposed systems or guidelines with participating fisher communities, DoFs and regional bodies. Quarterly, Annual and Final Technical Reports.</p>	
<p>6. <u>Disseminate and promote the outputs from the project:</u> Disseminate and Promote the results of the project.</p>		<p>6. Final Systems Evaluation Workshop Report. FAO Paper describing system design and implementation guidelines. Quarterly, Annual and Final Technical Reports, publications, websites.</p>	

9 Keywords

Co-Management, Monitoring, Evaluation, Data, Information, Sharing, Fisheries.

10 Materials Annexed to FTR

- 10.1 FAO Fisheries Technical Paper (Draft): Guidelines for Designing Data Collection and Sharing Systems for Co-Managed Fisheries**
- 10.2 Guidelines for Designing Data Collection and Sharing Systems for Co-Managed Fisheries: FIELD GUIDE (DRAFT).**
- 10.3 Design of Data Collection Systems for Co-Managed Fisheries (R8285): Guidelines Evaluation Meeting Report.**
- 10.4 Data Collection and Sharing Mechanisms for Co-Management (R8285): Guidelines Development Workshop Report.**
- 10.5 System Requirements Reports – Description and Summary Of Reports for Level 1 and 2.**
- 10.6 Data Collection and Sharing Mechanisms for Co-Management (R8285): Project Planning Workshop Report.**

NOTE: Four copies of the draft final technical report must be submitted to the Programme manager to be refereed. Once referee's comments have been incorporated, two copies of the finalised report should be sent to the Programme manager. Project Completion Reports and Final Technical Reports are also required by DFID in electronic format, for storing on the 'NARSIS' database. These should be submitted to the Programme Manager in either Word or Word Perfect formats. Where possible, portable display format (PDF) copies of the reports should also be submitted.