

Final Technical Report – FMSP Project R8468

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PROGRAMME MANAGER / INSTITUTION	Prof. John Beddington, MRAG Ltd	
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2. Executive Summary

Fishery managers require stock assessment tools to guide responsible management decisions and to ensure that they achieve sustainable goals and objectives for their fishery. Many managers, however, are constrained in adopting good management practices and in choosing the best tools by their limited understanding of the benefits and needs of the many alternative options.

This project was designed to assist the uptake of those stock assessment tools and guidelines developed by over 20 previous FMSP projects. It has developed and tested a concise 'Managers Guide', showing step by step how to write a fishery management plan. Examples are given of different plans designed to deliver alternative biological, ecological, social and economic goals for a fishery. A complementary 'Stock Assessment Guide' has also been developed showing how the different stock assessment tools produced by the FMSP can be used to provide the scientific information needed to ensure biological sustainability of the fishery. The guide emphasizes how scientists need to provide advice from such tools that fully allows for the uncertainty in the assessment and that promotes precautionary and adaptive management approaches.

These new materials have been written for an audience of fishery managers and those charged with stock assessment in developing countries, many of whom have little previous (or at least recent) experience in quantitative stock assessment. The guides are compatible with and complement the longer, more technical guide produced by the previous Project R8360; they promote the FAO Code of Conduct for Responsible Fisheries; and are appropriate to a global target audience. Used correctly, the outputs should assist managers to maintain or improve livelihood outcomes for poor, fishery-dependent stakeholders.

Final, formatted versions of these guidebooks are now awaited from the publishers. On receipt, the new materials will be made available on the FMSP and oneFish websites, publicized in fisheries newsletters and e-groups, and made available in hard copy to target institutes and other selected recipients. The project's PowerPoint presentations will also be made available for use or development in running training or university courses.

The project has built capacity for the uptake of improved fishery management practices in India and the Caribbean by collaborating with target stakeholders in both the development and testing of the new materials. Project collaborators in the target Indian states (Andhra Pradesh, Orissa and West Bengal) have now started to develop management plans for selected fisheries, and to collect the data required for stock assessment. Benefits for poor people (achievement of the programme purpose) may only be expected some years after such management plans are developed and after any new rules and regulations start to take

effect.

3. Background

This project was commissioned by the FMSP to promote and build capacity for the uptake of the various stock assessment tools and guidelines produced by the programme over the last 10 years. These include the CEDA, LFDA, Yield and PFSA/ParFish software and other guidelines produced by over 20 FMSP stock assessment-focused projects. The software packages provide significant benefits over some other stock assessment options and should increase the likelihood of fishery analysts providing good advice to their managers, allowing for uncertainty and precaution. All of the packages are now well documented with their own help files and tutorials. CEDA and LFDA have been available for download from the FMSP website for several years with Yield and ParFish being added more recently. By 2004, CEDA and LFDA had been downloaded in 68 countries by at least 230 unique users.

Despite significant existing use, further demand for assistance with these stock assessment tools was reported by programme-level needs assessments. Within the geographic focus of the FMSP, programme level reviews and country visits (to Bangladesh, India, SE Asia and E Africa) consistently emphasized the need for guidance in the latest stock assessment approaches enabling sustainable fisheries management and improved livelihood outcomes. This project specifically addressed the demand expressed during those country visits, incorporated into the revised FMSP log frame as concept note call 05/04.

This demand had been partly fulfilled by FMSP project R4778G, in which training workshops were held in 2003 in the target locations of East Africa and Southeast Asia. These covered the use of the FMSP packages, CEDA, LFDA and Yield. In project R8360, a further training course held in September 2004 in Mangalore, India, covered the above software and the new ParFish tools. This built capacity of Indian users and trainers especially for the invited participants from the DFID target provinces of Andhra Pradesh, Orissa and West Bengal. All three states recognized their lack of up to date knowledge on resource status and potential as a significant constraint to responsible management, and confirmed their commitment to adopting more scientific stock assessment processes in future, e.g. using the FMSP tools at least for the main economically important species.

Project R8360 also developed a technical manual describing the use of the FMSP tools within a management framework supporting the FAO Code of Conduct for Responsible Fisheries. This emphasizes the use of adaptive, feedback-based and precautionary approaches to management, using the FMSP tools to estimate reference points and performance indicators as guides to appropriate management actions. The 280-page document is now being released as FAO Fisheries Technical Paper 487. Due to its length and detailed technical coverage, this is most appropriate for an audience of stock assessment scientists and trainers. Project R8360's September 2004 workshop confirmed the relevance of these tools to Indian resource managers and identified the need for continued training and support, and for simpler guidance to the FMSP stock assessment tools and guidelines, written for managers and others with less experience in stock assessment.

At a global level, improvements in fishery management practices are vitally important to livelihoods and food supplies. According to recent FAO figures (2004 SOFIA report), approximately 28 million people are employed in primary capture fisheries industries. Fish provide more than 2.6 billion people with at least 20 percent of their average per capita animal protein intake. Net export trade in fish provided developing countries with incomes of US\$18 billion in 2000. However, with increasing proportions of the world's fish stocks in fully or overexploited states, and the world's population steadily increasing, global per capita fish supply remains on a downward trend. Effective management of fish resources is clearly needed to maintain the benefits of our valuable but threatened fish resources.

4. Project Purpose

As defined in the project logical framework (see Section 10 below), the purpose of the project was *'the wide promotion of improved fisheries management that could benefit the poor, through the development, validation and dissemination of communication products related to existing FMSP stock assessment tools and management guidelines'*.

The project addressed the identified constraint to development by developing new materials showing clearly and concisely how stock assessment tools, including the FMSP software and guidelines, can contribute to the sustainable and responsible management of fisheries. The new guides emphasize the specific roles and responsibilities of fishery managers and stock assessment scientists, and promotes their collaboration in working to manage fish resources responsibly.

The new guides show how to ensure sustainability of fish stocks and associated livelihood benefits by prioritizing the goals of the fishery and using stock assessment to ensure that the social and economic goals are compatible with the biological and ecological constraints of the resource. Fishery managers are constrained in their aims by needing to achieve multiple policy goals, many of which are mutually incompatible. The guides show how multiple goals can be achieved, at least as far as possible, by careful design of a management plan that recognizes and addresses the inherent conflicts between different goals. Both the project and the new guides have promoted the development of such management plans, as called for by the FAO Code of Conduct for Responsible Fisheries, but still lacking in many places.

The new guides also attempt to simplify the selection of alternative stock assessment tools by presenting short case studies of their use and emphasizing their various pros and cons. The guides emphasize the importance of undertaking stock assessments that provide managers with the information they need on the state of fish stocks to make good management decisions. Stock assessment is inevitably a fairly complex, technical subject, with mathematical models and population dynamics beyond the experience of many managers in developing countries. With many different stock assessment models and software packages available, each with different data needs and potential outputs, and with some tools fulfilling only part of a stock assessment sequence, managers need to select and use appropriate tools from a confusing range of choices. Finding the best tool is thus constrained by the diversity of choices available and the difficulty of comparing the costs (input requirements) and benefits (type and precision of management advice) of each tool. As a result, many fisheries in developing countries are either not managed, or are managed with only nominal regulations and without any real assessment of the state of fish stocks. The new guides are designed to help developing country fishery managers to adopt responsible management practices based on scientific stock assessments, and thereby ensure that they maintain the many benefits of a healthy fishery resource.

The latest FMSP stock assessment tools have significant advantages over alternative products, allowing improved assessments and better incorporation of uncertainty. Building on project R8360, and its Fisheries Technical Paper 487, this project further assists fishery managers in developing countries to understand the advantages and disadvantages of the different options and to select and use the best available tools for their needs. Effective application of the FMSP tools as part of a good management plan may be expected to put fisheries on a sustainable track within a few years.

5. Outputs

The project was designed with three linked outputs, as listed below.

- **Output 1:** Capacity of Indian and Caribbean fisheries management institutions, and Indian fisheries training institutions increased.
- **Output 2:** Policy makers in India and the Caribbean are better equipped to understand procedures necessary for responsible fisheries management.
- **Output 3:** Fisheries managers, scientists and trainers around the world are aware of the availability, utility and advantages of FMSP stock assessment tools, as outlined in the existing synthesis guide, the new 'managers guide' and/or other new media products.

The main communication products produced by the project are two linked documents describing the key roles of managers and stock assessment in the responsible and precautionary management of a fishery. These products deliver Purpose OVI 1.2 of the project, albeit well behind the planned schedule.

- The 'Managers Guide' describes a simple, step by step process for writing and implementing a fishery management plan (see Annex 1 for Table of Contents; the final .PDF document will be available in due course to download on the FMSP web site).
- The companion 'Stock Assessment Guide' (see Annex 2) shows how stock assessment tools can support fishery managers in designing their management plans and in managing the fishery. In particular, it refers to those stock assessment tools developed by the FMSP.

As described in the Activities section below, these products have been developed in collaboration with partners in India and the Caribbean. The achievements of the project are reported against the Communications Matrix (given in Annex 6) in Table 1 below. Summary comments on the achievement of each output are given in the following paragraphs.

Output 1 – raising the capacity of Indian fisheries institutions – has mainly been achieved by the active participation of the Indian project partners and other communication stakeholders in the design, development and testing of these new guidance materials (see summary details of project planning and materials testing workshops in Annexes 3 and 4). The validity of the guides to the Indian partners was confirmed by workshop 1.2d and the feedback provided (see Section 6 / Annex 4) was fully incorporated into the final versions of the documents. The key Indian partners (Departments of Fisheries in the three target states, Andhra Pradesh, Orissa and West Bengal) are now actively applying their experience to the management of their priority fisheries. The tools are also now included in the training curricula of both the ICAR institutes (CMFRI and CIFE, who had already adopted the older LFDA and CEDDA five years ago) and those universities represented at the workshops. The PowerPoint presentations prepared by the project (building on those used in the Mangalore and preceding training workshops) have been passed on to partners in India and the Caribbean. They will be made available on the FMSP web site along with the new guides when they are ready.

In the Caribbean, FMSP tools have been previously used, e.g. in the 2004 CRFM First Annual Science Conference and during the development of the ParFish toolkit. In this project, they were promoted at the 2005 First Ad Hoc Methods Working Group (Activity 1.1, see Annex 5). Plans are now in place for further promotion of the FMSP outputs as a 'special lecture' at the March 2006 Third CRFM Annual Science Conference, depending on availability of CRFM funds. As anticipated in the RD1 Project Memorandum, full application of the FMSP tools in the Caribbean has not been possible in this project due to the timing of annual stock assessment working groups falling outside the short project period.

Output 2 – the raising of awareness among policy makers in India and the Caribbean – has also been achieved by the participation of policy makers (ministers, secretaries, commissioners of fisheries etc) in key sessions of project workshops and their subsequent interactions with project collaborators. Due to the lack of existing data for stock assessment, it has not been possible to analyse priority target country fisheries using the FMSP tools, as had been planned. Training has however been provided on stock assessment (at the R8360 Mangalore September 2004 workshop) and more recently on data collection (at Visakhapatnam, September 2005). The state collaborators have now started collecting stock assessment data with their own funding and the approval of their policy directors (see details below). Both the Managers Guide and the Stock Assessment Guide provide policy-level guidance material on the interpretation and use of stock assessment knowledge to be produced in due course by the analysis of such data.

Regarding **Output 3**, the global promotion of the FMSP stock assessment tools and new guidelines will involve the distribution of both hard copy and electronic versions of documents, as guided by the project log frame and communications plan (as revised for the first quarterly report - see Annex 6). Progress on this output has been delayed by the late completion of the final drafts of the documents. These have, however, now been approved by the FMSP external reviewer, after a few final modifications. At the time of this report, the finalized documents are being formatted for electronic (.PDF) and hard copy publication by the project's Indian partners Centre for Environmental Education (CEE). On receipt of the final formatted versions, promotional activities will be completed as described in Section 6 below.

Table 1. Summary of project communication products and promotion pathways used to achieve the project outputs for different communication stakeholders. To be read and compared with the full Communication matrix provided in Annex 6.

Communication stakeholder / group	Communication media and channels used and means of verification
1. Indian stakeholders	
Fisheries policy makers	<ul style="list-style-type: none"> • May workshop attended by policy directors of Andhra Pradesh and Orissa states (see Annex 3). • August workshop attended by 4 policy directors, of Andhra Pradesh, Orissa and West Bengal (x2) (see Annex 4). • No national level policy makers attended either workshop. • New guidebooks to be distributed in hard copy to 12 policy makers as listed in Annex 7, including 2 at national level. • Letter written by workshop collaborator promoting joint management of Bangladesh and West Bengal fish stocks (see Annex 13). • No 'policy papers' written by project partners, due to lack of existing data to allow stock assessments.
Fishery managers / stock assessment scientists at state level (several mid-level staff have joint duties)	<ul style="list-style-type: none"> • May workshop attended by 11 fishery managers/stock assessment scientists of Andhra Pradesh, Orissa and West Bengal states. • August workshop attended by 16 state level fishery managers / scientists. • New guidebooks to be distributed in hard copy to 14 state-level managers/scientists (see Annex 7). • PowerPoint presentations distributed to workshop participants as requested, also to be made available on FMSP website.
Stock assessment scientists / research institutes	<ul style="list-style-type: none"> • May workshop attended by 4 national level stock assessment / research scientists from CMFRI (Kochin), CIFE, CIFT, and FSI, and 5 state level scientists: SIFT, CMFRI (Visak) and Andhra University (x3). • August workshop attended by 3 national level stock assessment / research scientists from CMFRI (Kochin), CIFE (Mumbai) and CIFRI (Barrackpore), and 5 at state levels:

	<p>CMFRI (Visak), CIFE (Kolkata), Andhra University, Kolkata University and Nadia University.</p> <ul style="list-style-type: none"> • New guidebooks to be distributed in hard copy to 9 national level scientists (see Annex 7).
Education and training institutes	<ul style="list-style-type: none"> • May workshop attended by 6 trainers from CMFRI (Kochin), CMFRI (Visak), CIFE and Andhra University (x3). • New guidebooks to be distributed in hard copy to 15 education and training stakeholders (see Annex 7). • PowerPoint presentations distributed to workshop participants as requested, also to be made available on FMSP website. • FMSP tools and/or new project planning guidance incorporated into training curricula of ICAR institutes (CMFRI, CIFE) and Fisheries Departments of 4 universities (Mangalore, Andhra Pradesh, Kolkata and Nadia).
Others	<ul style="list-style-type: none"> • New guidebooks also to be distributed in hard copy to 8 regional, national and state-level NGOs and CBOs (see Annex 7).
2. Caribbean stakeholders	
Fisheries policy makers	<ul style="list-style-type: none"> • New guidebooks to be distributed in hard copy by CRFM to Caribbean fisheries ministers at April 2006 Fisheries Forum meeting.
Chief fisheries officers (CFOs) / Directors	<ul style="list-style-type: none"> • Management planning framework, new guidebooks (including R8360 FAO Fish. Tech. Paper 487) and PowerPoint presentations to be promoted to at least 8 CFOs at 2006 Annual Science conference or 2006 Ad Hoc methods working group (assuming CRFM funding available).
National and regional research institutes	<ul style="list-style-type: none"> • May workshop attended by 1 stock assessment / research scientist from CRFM (see Annex 3) • FMSP presentations at CRFM 2005 Ad Hoc Methods workshop attended by 5 reps from CRFM, FAO (x2), and UWI (x2) (see Annex 5). • Further promotion planned for 2006 as for CFOs above
Scientists in charge of stock assessment	<ul style="list-style-type: none"> • FMSP training at CRFM Ad Hoc Methods attended by 10 Caribbean country fisheries department staff, and by 6 US scientists working in Caribbean region (see Annex 5). • Further promotion planned for 2006 as for CFOs above.
3. Global stakeholders	
Fisheries managers, research and training institutes etc	<ul style="list-style-type: none"> • August workshop attended by 1 national level fishery manager from Bangladesh (currently on secondment to Fourth Fisheries Project). • September training workshop in Bangladesh attended by 13 DOF trainees (see Annex 8). • On receipt of final .PDF versions, new guidebooks, PowerPoint presentations and promotional leaflet (see Annex 9) to be posted on FMSP and oneFish websites for free download. Uptake to be monitored as number of downloads. • When posted to web site, availability of materials to be publicized in oneFish, NAGA and WIOMSA newsletters, and GCFI and Caribbean Fisheries e-groups.
Fisheries projects	<ul style="list-style-type: none"> • New guidebooks to be distributed to Fourth Fisheries Project staff in Bangladesh.
International organizations	<ul style="list-style-type: none"> • Promotional leaflet (precursor of version in Annex 9) distributed to participants of FAO/WorldFish Sep 2005 project meeting in Rome. • New guidebooks to be distributed to staff of Bay of Bengal Programme in India (included in Annex 7 list).
DFID Policy division and research programme	<ul style="list-style-type: none"> • Policy brief to be prepared in 'id21' format for distribution to DFID stakeholders with FMSP Policy Brief series.

6. Research Activities

Output 1. Capacity of fisheries management and training institutions increased.

In **Activity 1.1** of the project, the FMSP tools were promoted by R8468 Principal Investigator, Dan Hoggarth and ParFish developer, Paul Medley at the first CRFM Ad Hoc Methods working group, held in Barbados on 23-27 May 2005. Presentations were made on the FMSP software products and guidelines, with particular focus on the newer tools Yield and ParFish. The meeting was attended by 21 other persons including representatives of 9 country DOFs, UWI, CRFM and FAO (see Annex 5). Copies of the software on CD were provided to representatives of each country and institution. Both DH and PM have been previously involved in assessment of Caribbean fisheries using the FMSP tools. Adoption of these tools as recognized and approved CRFM methodologies (e.g. during future CRFM Ad Hoc Methods working groups, next one due in May 2006) will pave the way for their wide application and uptake within the region at future CRFM Annual Scientific Meetings.

Running in parallel with Activity 1.1, **Activities 1.2a-f** produced the Managers Guide and Stock Assessment Guide documents, as the main material outputs of the project. In Activity 1.2a, the needs of Caribbean fishery managers were first determined by the CRFM's Susan Singh Renton, based on a CRFM questionnaire survey data and analysis. Her analysis was presented to the project collaborators at the Project Planning workshop held in Viskhapatnam, Andhra Pradesh, India on 9-13 May 2005 and utilised in the preparation of the new guides.

Project Planning Workshop (Activity 1.2b)

The project planning workshop was attended by 18 staff of the Indian target institutes (Indian state fisheries departments from Andhra Pradesh, Orissa and West Bengal, plus, representatives of CIFE, CMFRI and other Indian national fisheries bodies), in addition to Dr Singh-Renton representing the Caribbean (see Annex 3). The workshop was also attended by stock assessment / fishery management team members from MRAG and Scales, and communication experts from the UK Field Studies Council and from the Indian Centre for Environmental Education.

The workshop participants agreed the basic structures and content of the two guides in addition to a mechanism for testing the draft documents in Activity 1.2d (see below). Considerable time was also given to developing an implementation plan for the project, including the needs for data collection training, leading up to the testing workshop.

Local arrangements for this first India workshop were made by Assistant Fisheries Director Gopi Venkata Raju of the Andhra Pradesh Department of Fisheries.

Materials Testing Workshop (Activity 1.2d)

Following the planning workshop, first drafts of the guides were produced over June and July, and distributed to the Indian collaborators for testing on 1 August 2005.

The materials testing workshop (Activity 1.2d) was then held 2 weeks behind schedule during the week of 8-12 August 2005. The workshop had two aims: firstly, to increase the capacity of the participants to assess and manage their own fisheries in future; and secondly, to provide feedback to improve the draft guides prior to final publication. As with Activity 1.1b, the workshop was attended by policy-makers, fishery managers, trainers and stock assessment scientists. The workshop programme, participants list and feedback are given in Annex 4.

For testing the new materials, it had been hoped that the project would support the

collaborators in making actual stock assessments for priority fisheries in each of the three states by selected FMSP or other methods. Significant efforts were made to assist the states in collecting the necessary data for testing the FMSP tools and guides in this way, using under-spent funds from the preceding FMSP Project R8360. Plans were initiated at the end of Project R8360 in late 2004 for the collaborators to collect short time series of length frequency data for application of the LFDA/Yield approaches, and to obtain multi-year time series of catch/effort data from previously available sources (e.g. from CMFRI or FSI) for testing the CEDA and/or ParFish tools. Due to delays caused by structural adjustments in the departments of the participating members, however, it took around nine months longer than expected to arrange a data collection training course to start this process (eventually implemented on 26-30 September 2005 – see below). Data are only now starting to be collected for the collaborating state fisheries.

The testing workshop then was restricted to testing the processes of designing a management plan and selecting which stock assessment tools and management measures to use, rather than undertaking detailed stock assessments. The testing workshop thus tested the application of the new guides rather than the use of the actual software, as had originally been planned. With hindsight, this was perhaps more useful anyway to assist with the production of useful guidebooks. The workshop led the participants through the guidebooks by developing management plans for real fisheries, as selected by each of the three target states. Rough contents were produced for management plans for three local fisheries which can now be developed by the local partners.

Feedback was provided by the workshop participants, using both a questionnaire approach (see format and responses in Annex 4) and during the 'hands-on' practical testing of the guides. Participants' feedback was incorporated into the final versions of the guides. As shown in the summary tables included in Annex 4, the respondents generally felt that the materials were mostly well explained and clear, with slightly higher scores being given to the simpler Managers Guide text. The contents and length of the text and the numbers of illustrations were agreed by most as 'about right'. The glossary in the Managers Guide was identified as useful and a second technical glossary was requested for the Stock Assessment Guide. In the end, most of the participants said the guides were good but some further improvements were needed. It is believed that such improvements have been made since the testing workshop in the final drafts now sent to press.

Local arrangements for the testing workshop were coordinated by Joint Directors Madhumita Mukherjee and Sukhendu Chakrabarti of the West Bengal Department of Fisheries, in collaboration with the Bonhooghly Fishermen's Co-operative Society.

To extend the influence of the project, the workshop was also attended by an invited representative of the Bangladesh DOF, Masood Siddique. Masood gave a presentation of the new collaborative management practices now being adopted in Bangladesh, where licensed co-management units are required to prepare their own local management plans including many of the elements recommended by the project guidebooks.

Although the testing workshop was not formally integrated with the ParFish workshop (held in the previous week in Andhra Pradesh), several of the participants from Andhra Pradesh attended both workshops, thereby providing useful linkages and experiences.

CMFRI Data collection training course - September 2005

As mentioned above, a training of trainers course on data collection for marine fisheries was also facilitated as part of the project. This was arranged on behalf of the project, using under-spent funds remaining from Project R8360, by the Regional Centre of CMFRI, based at Visakhapatnam, Andhra Pradesh. The training programme was held on 26-30 September 2005. It included classroom lectures, field visits and practical exercises, and covered time series data collection on both biological data (length frequencies, weight, maturity etc), and

catch and effort data. Guidance was provided on the raising of length frequency from day to month and year, and specific guidance was given on standard measurements for common Indian species of fish, crustaceans and cephalopods. Catch and effort data collection and analysis methods were based on a special publication recently released by CMFRI (Srinath et al, 2005), including relevant database software provided on an enclosed CD. Participants of the data collection workshop are listed below.

Participants from West Bengal

Pralay Mondal, DFO (ME &MS)
Kiron Lal Das, DFO, (Marine, Diamond Harbour)
Tapas Paria, DFO, Murshidabad.
Dilip Mandal ,DFO, Midnapore East.

Participants from Orissa

Subrat Dash(B), JFO, Assistant Director of Fisheries (Marine), Ganjam
Debendra Pradan Fishery Extension Officer ,MEU, Dhamara
D.Panda,Deputy Superintendent of Fisheries , AD of fisheries(Marine), Puri.
S.P. Panda, Fishery Extension Officer, AD of Fisheries (Marine) Ganjam.

Participants from Andhra Pradesh

P.Bhaskara Rao,AD, (Statistics) at HQ
T.Sumalatha FDO,Visakhapatnam
Hariprasada Rao,FDO,SIFT,Kakinada
A.V.Raghava Reddy, FDO,Guntur

Output 2. Policy makers better understand fishery management procedures.

In Activity 2.1, pathways were identified for the distribution of project materials to communication stakeholders at policy making and other levels. The updated communications matrix produced following workshop 1.2a and reported in the first quarterly report is included as Annex 6.

Guidance for policy makers was included mainly in the 'Managers Guide' document on the overall process to be used in managing a fishery and developing a fishery management plan. No specific policy briefs, leaflets or explanatory reports were produced as proposed in the RD1. It is believed however that Indian policy makers' capacity has been built as intended both by their attendance at key sessions of the project workshops, and their support of DOF activities since the workshops. The address list of Indian communication stakeholders (policy makers and others), as compiled at the project planning workshop (1.2b) for the distribution of hard copies of the guidelines is included as Annex 7.

It is hoped that policy makers' capacity in the Caribbean will also be built post-project at the forthcoming series of CRFM working group meetings (the remaining two Ad Hoc Methods Working Groups, as planned so far, and the Annual Science Meetings). On production, hard copies of the guidelines will be distributed by the CRFM's Dr Singh-Renton to the Chief Fisheries Officers and other key stakeholders in the Caribbean member countries of the CRFM (15 member states, plus 3 associate member states, plus observers at the Forum meeting – e.g. FAO, OECS, UWI, IMA).

Additional copies of the guidelines will be distributed by Bangladesh DOF's Masood Siddique to the participants of the Bangladesh training course (see Section 7 below and Annex 8) and other key Bangladesh policy makers.

Output 3. Global fisheries managers, trainers etc aware of FMSP tools and guides.

Progress with Output 3 – promoting the global awareness and uptake of the FMSP tools and guidelines – has been constrained by the delays in the production of the two new

guidebooks. Plans have however been made for promotion of the new guides when they are ready. Both the new guides and the latest PowerPoint training presentations (as used at the Bangladesh training course – see Section 8c and Annex 8) will be uploaded on to the FMSP and oneFish web sites. Such posting will be accompanied by announcements in the following newsletters and egroups.

- oneFish newsletter (monthly)
- WorldFish NAGA journal (next issue deadline 30 March 2006)
- WIOMSA newsletter (December 2005 issue)
- Gulf and Caribbean Fisheries Institute (GCFI) e-group
- Caribbean Fisheries e-group (via CRFM collaborators)

A leaflet has also been prepared describing the availability and content of the FMSP tools and the new guidebooks (see Annex 9). This may be handed out at conferences or meetings to provide quick information about the materials as a hard copy reminder. The leaflet will also be posted on the FMSP and oneFish web sites along with the other new materials. A draft version of the leaflet was handed out by Deputy FMSP Manager, Dr Chris Mees, at the September 2005, Rome meeting of the FAO/WorldFish project: '*Towards an Interdisciplinary Approach to the Assessment of Small-Scale Fisheries and its Role in Food Security and Poverty Alleviation*'.

As an addition to the planned project activities, the FMSP tools and guides have also already been promoted in Bangladesh by a training course requested by the Bangladesh Department of Fisheries and the Fourth Fisheries Project (see Annex 8). This was funded as a programme activity following Masood Siddiques attendance at the Mangalore and Calcutta workshops. The participants generally found the training course useful and relevant (see summary of responses in Annex 8). Given their limited previous experience with stock assessment, however, all of the participants felt they would need significant further assistance for successful application of the FMSP tools (or any other quantitative, stock assessment based management approaches).

Activity 4. Development of indicators for monitoring and evaluating project uptake

Cross-cutting the other project activities, Activities 4.1-4.3 were directed at designing and collecting data to monitor and evaluate the outcome of the project.

To evaluate the effect of the project on the Indian communication stakeholders, the project planned to carry out knowledge, attitude and practice (KAP) surveys at both the start and end of the project. The first KAP survey was completed at the start of the project planning (1.2b) workshop in Visakhapatnam in May 2005 (see Annex 10). The second survey was done at the end of the materials testing workshop (1.2d) in Calcutta in August 2005 (see Annex 11), but this did not cover the same questions for reasons given below. Some of the respondents participated in both workshops, and had thus been involved in both the design and testing activities in between the two surveys. Some of the respondents had also attended the Mangalore (R8360) workshop where detailed training on the stock assessment tools was provided.

The first May survey involved sixteen respondents, eleven of them directly involved in fisheries management and five in research and training. As it seemed that Section 3 (practices) had been initially interpreted by the interviewees in a general sense, respondents were asked to complete Section 3 a second time, this time providing answers specifically relating to their own local fisheries. Eleven people answered this section a second time.

The questions in the first survey (see Annex 10) focused on the respondents' knowledge and attitude towards stock assessment tools, and their practices in using stock assessment and managing fisheries. Since the project then went on to develop guidebooks on the *process of developing a fishery management plan* (and the use of stock assessment in such planning),

the questions in the second survey focused more on the respondents' knowledge and attitude towards that topic. The attitude sections in the two surveys included the same basic questions, except that the first set was directed at the 'FMSP SA tools' while the post-project set was directed at 'the proposed management planning processes'. The survey was modified in this way since no actual training had been provided in using the tools in between the two workshops, so no changes in 'KAP' were expected. Feedback was however required on attitudes towards the new guides (in addition to the practical editorial feedback described in the questionnaires reported in Annex 4). In the end, very similar answers were achieved for both the 'pre-' and 'post-' questionnaires, showing the generally positive attitudes towards both the FMSP tools and the management approaches suggested.

Under Activity 4, the participants of workshop 1.2d were also requested to develop lists of proposed activities by which the 'uptake' of the project could be measured in future assessments. As shown in Annex 12, the participants produced a fairly ambitious set of follow-up proposals. Some of these have now been achieved as reported in Section 7 below, while others are scheduled to begin in future years. Having been developed in only a short time slot at the end of Workshop 1.2d, these lists should be read only as rough indications of the types of activities that the respondents hoped would arise from the project. The proposals from the different state working groups and from individual respondents have been collated for this report (as in Annex 12), but have not been fully 'signed off' by the workshop participants.

7. Contribution of Outputs

7.1 Contribution to FMSP's purpose and outputs

This project was designed to build capacity for and promote the uptake of new and existing FMSP tools and guidelines via a range of communication channels, and thereby encourage responsible, pro-poor fisheries management, both in Indian target states and globally. The project communications matrix, as updated at Workshop 1.2b, is included in this report as Annex 6.

At the FMSP output level, the project will contribute to OVIs 4 and 5:

4. Fisheries assessment methods to inform sustainable management for improved livelihood benefits further developed with target institutions in at least two countries, widely promoted (nationally and internationally), by 31 March 2006.
5. Pro-poor capture fisheries management strategies actively promoted into at least four target institutions (including the DFID bilateral country programmes) in two target countries and widely promoted (nationally and internationally) by 31 March 2006.

The types of communications products intended for the project have all been produced, i.e.:

- The Managers Guide and Stock Assessment Guide documents
- A leaflet promoting the availability, uses and benefits of the FMSP tools
- PowerPoint presentations for running a FMSP Tools training course

The two new guides have been developed with partners from India and the Caribbean as intended, with particular focus on the Indian DFID target states, achieving Output OVI 4. The project has also led to requests for an additional training workshop in Bangladesh. Uptake of the knowledge promoted is described below. Following the publication of the two guidebooks, plans are now in place to announce these materials and the software tools to global stakeholders on relevant websites, in newsletters, and through e-groups. Towards OVI 5, the tools have already been promoted to several target institutions in India (three DFID target state Fisheries Departments, CMFRI and CIFE and their regional sub-offices in

Calcutta and Visakhapatnam); and to the DFID Fourth Fisheries Project in Bangladesh (who's staff coordinated the Bangladesh September 2005 training course).

On application of the outputs, the project will contribute to the FMSP's Purpose OVI 1, 2 and 3 for *capture fisheries*, and especially to OVI 1: *Less variable capture fisheries production, and yield stabilised at sustainable level to support sustainable livelihoods*. The FMSP tools and new guidebooks particularly emphasise how to use stock assessment tools to ensure the sustainability of capture fisheries, and thereby to promote continued livelihoods from the fisheries sector, for poor fishers and related trades. Successful application will achieve OVI 2, at least in the sense of good management sustaining fisheries employment, compared to the alternative likely trajectory of declining yields and livelihoods. Regarding OVI 3, the guidebooks strongly promote participatory approaches to management with consultation of stakeholders both in the development of management plans and in future decision making based on feedback from the fishery.

Knowledge uptake in India

In India, the project collaborators are also the key targets for uptake promotion – the Fisheries Departments of the three target Indian states, Andhra Pradesh, Orissa and West Bengal. These state-level agencies are responsible for stock assessment and fishery management within their regions, but have minimal previous experience in this role.

The project has also involved representatives of the national ICAR fisheries research and education bodies, CMFRI and CIFE, and of state universities in the development and testing of the new guidelines.

The pre-project KAP survey carried out in May at Workshop 1.2b (see Annex 10) confirmed the participants moderate experience in stock assessment and quantitative approaches to fishery management, but also confirmed their positive attitude towards the development and use of such approaches in their fisheries. The knowledge section of the questionnaire was answered with mostly 'low' or 'medium' responses (see Annex 10). Respondents were generally aware of the principles of stock assessment and of which tools to choose in which circumstances, but they were less aware of exactly how to use specific tools, particularly the newer Yield and ParFish software. The attitudes section (part 2) of the questionnaire confirmed that the respondents felt the tools would be useful in their fisheries, but that further training and policy support would be needed for successful uptake. The practices section (part 3) confirmed the findings of Project R8360, that stock assessment is currently little used by state Fisheries Departments and that management measures are generally restricted to technical measures such as mesh size limits and closed seasons. Training has not previously been provided by the state Fisheries Departments on the FMSP or other stock assessment tools, with only the CMFRI/CIFE respondents giving training in these areas.

The post-project Workshop 1.2d evaluation survey (Annex 11) confirmed the Indian participants' positive attitude towards the proposed planning approaches developed in the new guidebooks. All of the respondents 'agreed' or 'strongly agreed' that the use of these management planning processes would help improve the sustainability of fish stocks. Only 3 out of 20 respondents felt that the proposed processes were too complex to use, although several people clearly had limited experience in the technical aspects of stock assessment. Answers given to the questions, '*As a result of the programme, what do you feel you will do better/differently/that you did not do before*', generally confirm the respondents' intention to apply the knowledge gained in the project (see Annex 11, Section C). The session review (Section A) confirmed that the sessions were mostly clear and appropriate with good content. The workshop sessions (3-7) devoted to developing the core details of the management plans were seen as most valuable (see Annex 11, Section B) and several respondents felt that more time should have been given to these sessions. Several respondents also suggested that more detailed examples should have been given to clarify the use of indicators and reference points etc. Such examples have now been developed

and included as an annex in the final version of the Managers Guide.

In terms of actual follow up (the 'contribution of the outputs'), the lists of activities proposed by the Indian project collaborators further illustrate their positive intention to implement the project's recommendations over future months and years. The project has already built additional capacity for uptake in India by the data collection training as below.

- 12 trainers from 3 Indian target states trained in fisheries data collection at workshop, 26-30 September 2005, led by CMFRI Visakhapatnam Regional Centre, funded by project R8360 (see Section 6).

Following this workshop, the collaborating **West Bengal** Department of Fisheries have reported further uptake activities as listed below.

- The State Fisheries Department has approved and funded a special project on "Stock Assessment of shark and Hilsa fisheries" supervised by R8468 joint collaborator, Dr. Madhumita Mukherjee. The project has now started, with staff recruited and data collection surveys begun for catch effort and length frequency data.
- DOF has started to collect data for Hilsa and pomfret fisheries (the species used as case studies in developing management plans at the testing workshop), supervised by R8468 joint collaborator, Sri Sukhendu Chakraborty. Lecturer, T.S. Nagesh, of Nadia University has also confirmed his department is now collecting data for situation analyses (biological, technical and economical interactions) and stock assessments of Hilsa and silver pomfret in the Diamond Harbour region.
- 125 state fishery officers have been trained since the August workshop as listed in Table 2 below. Proposals are also in place for training another 275 DOF officers on data collection needs for stock assessment and responsible fishery management in West Bengal.
- Proposals have been made to the Secretary of the Department of Fisheries for creating ministerial-level linkages between West Bengal and Bangladesh to promote the responsible collaborative management of their shared fishery resources (see Annex 13).

Table 2. Numbers of West Bengal DOF staff trained in fisheries data collection, management and stock assessment following the project.

Date	Venue	No. of trained officers
12.9.05-26.9.05	Kalyani State Fishery Training Centre Pailan Training Centre (by Dr. Madhumita Mukherjee) Digha (by Dr. Utpal Sar, Asst. Director of Fisheries)	20 18 25
17.10.05-31.10.05	Kalyani State Fishery Training Centre	42
14.11.05-25.11.05	Kalyani State Fishery Training Centre	20

In **Andhra Pradesh** state, uptake by the collaborating Department of Fisheries (DOF) has focussed on a case study using the ParFish approach, supported by parallel FMSP project R8464. This has involved fishers and managers in collecting data and developing management plans for the mud crab (*Scylla serrata*) fishery in the Coringa mangroves near Kakinada, East Godavari District. Andhra Pradesh DOF and the regional offices of SIFT (State Institute of Fisheries Technology) and UFA (United Fishermen's Association) have held meetings with the fishermen to apply the ParFish approach and interviews. The results have suggested that greater benefits could be obtained with approximately 15% less fishing effort than currently applied. Stakeholder meetings to discuss the results have unanimously agreed to adopt community-based fishery management practices to begin improved management of the fishery.

Reports by the AP collaborators also mentioned the particular value of collaborating with the ICAR scientists and university academics in developing the necessary skills for managing their resources. They further hoped that the future preparation of management plans in accordance with the guidelines would be a collaborative procedure emphasising the skills and capacity of each of these different institutes.

In **Orissa** state, a detailed project report has been prepared by the collaborators for the implementation of the FMSP tools in the management of their commercially important species. This has yet to be transmitted to the government, however, for approval and placement of funds. It is hoped that the status of such proposals in Orissa can be updated in time for the impact assessment questionnaire in December.

Knowledge uptake in Bangladesh

The project has also led to additional promotion and uptake in Bangladesh as follows.

- 13 senior staff of Bangladesh Department of Fisheries trained in FMSP stock assessment tools and management practices, including data collection needs, at FMSP programme-funded workshop at BDOF Savar Training Facility, Dhaka, Bangladesh on 19-25 September 2005. The positive responses of the workshop participants to the training is described in the questionnaire analysis included in Annex 8.
- Since this workshop, local coordinator Masood Siddique has reported that policy-level decision makers in Bangladesh have been briefed on a number of occasions about the the necessity to introduce stock assessment in Bangladesh. Towards this aim, discussions are now underway on the very significant task of updating the DoF's Fisheries Resources Survey System (FRSS) to provide reliable quantitative data for stock assessment and management. Capacity building of DoF staff is also reported to be in progress.

7.2 Impact of the project

Progress towards the project's Purpose level OVI is indicated by the various uptake activities above. At this stage impact may be measured more as a change in attitude and capacity than as any specific change in policy. Support by policy makers for self-funded data collection and new stock-assessment projects as in West Bengal, nevertheless indicates the positive attitude now in place towards for such responsible management practices.

Given the nature of the project and the challenges involved in developing a working management plan for a fishery, it is clear that the Purpose OVI may not be achieved for several years from now. With data collection and situation analyses now initiated for selected fisheries in West Bengal, it may be expected to take at least two years for any new management plans to be developed and implemented with legal support. Yields and employment in those fisheries may then be sustained or increased following that time.

7.3 Further activities needed to promote the outputs

In India, the project has raised significant enthusiasm for applying stock assessment tools and developing management plans using the new guides when they become available. Some capacity now exists for this, but uptake would be assisted by further targeted support for the development of at least the first plans in each state. As with projects R8360 and R8468, such support should facilitate the collaboration of the state Fishery Departments with the national and regional ICAR fisheries assessment experts, and with fisheries academics and others with particular local knowledge in each state.

In the Caribbean, the CRFM's First Ad Hoc Methods working group meeting in May 2005 (attended as Activity 1.1 of this project) attempted to develop guidelines and procedures for

the selection and use of stock assessment tools in the data-limited fisheries in the Caribbean. Progress towards this aim was constrained by the diversity of terminology used to describe fisheries goals and objectives and the need for a defined process of 'unpacking' fisheries policy statements to give clear guidance on management aims and needs. A suitable and simple process for this has now been devised and included in the Managers Guide produced by this project. It has been proposed by CRFM that this should be presented as a special lecture at the next (Second) Annual Science Conference, now scheduled for 6-15 March 2006. CRFM funds are being sought to cover the costs of such presentation, but are in limited supply. FMSP funding could also be considered to cover FMSP trainers to attend this workshop, in addition to the next CRFM Ad Hoc Methods working group in late May 2006.

Beyond these project sites, there remains a great need for improved understanding of the roles of stock assessment and management amongst fisheries scientists and managers in many developing countries, and an equal need for capacity building in these topics. As confirmed by the project's external reviewers, additional and sustained training is badly required in most developing countries and the products of this project could serve as useful materials for such purpose.

8. Publications and other communications materials

(a) Peer-reviewed publications (published)

None

(b) Peer-reviewed publications (in press or submitted)

Hindson, J., D.D. Hoggarth, M. Krishna, C.C. Mees and C. O'Neill, 2005. How to Manage a Fishery - A Simple Guide to Writing a Fishery Management Plan. Centre for Environmental Education, Ahmedabad, Gujarat, India. XXpp.

Hoggarth, D.D., J. Hindson, M. Krishna, C.C. Mees and C. O'Neill, 2005. A Guide to Fisheries Stock Assessment using the FMSP Tools. Centre for Environmental Education, Ahmedabad, Gujarat, India. XXpp.

(c) Non peer-reviewed publications and reports and communications materials

FMSP, 2005 (September). Leaflet on preparation of new materials by project R8468, circulated to participants of the September 2005 meeting of the FAO/WorldFish project: '*Towards an Interdisciplinary Approach to the Assessment of Small-Scale Fisheries and its Role in Food Security and Poverty Alleviation*'.

FMSP, 2005 (November). Leaflet publicising the availability of FMSP R4868 guidelines and related materials for free download on FMSP site (see draft version, Annex 9).

PowerPoint presentations for running a training course on FMSP stock assessment tools, as presented at the Bangladesh training course, and to be made available for download on the FMSP project web page:

- (0) Course outline
- (1) Fishery management
- (2) Stock assessment and the FMSP tools
- (3) Data collection for stock assessment
- (4a/b) LFDA theory and practical
- (5a/b) Yield theory and practical
- (6a/b) CEDA theory and practical
- (7) ParFish one day course

- (8) Empirical and other approaches
- (9) Fishery management (course summary and wrap up)

(d) Verbal presentations & project dissemination and other workshops

May 2005. Project design workshop, Visakhapatnam, Andhra Pradesh, India (see Annex 3).

May 2005. Presentations on Yield and ParFish software at CRFM Ad-Hoc Methods workshop (see Annex 5).

August 2005. Materials testing workshop, Kolkata, India (see Annex 4).

September 2005. Data collection training workshop. CMFRI Regional Centre, Visakhapatnam, Andhra Pradesh, India (see Section 6, Output 1).

September 2005. FMSP Stock Assessment Tools Training Workshop, DOF Training Facility, Savar, Dhaka, Bangladesh (see Annex 8).

(e) Other types of project output (eg literature reviews, databases, software etc)

Following submission of this Final Technical Report, it has been agreed that a policy brief will be prepared about the FMSP Tools cluster for DFID policy makers. This will be in the 'id21' format requested by the programme, and will be included in the programme level 'FMSP Policy Briefs' series.

The FMSP software packages, LFDA, CEDA and Yield are included on the CD enclosed with CMFRI Special Publication 86 (Srinath, 2005).

9. References

Srinath, M., Somy Kuriakose and K.G. Mini, 2005. Methodology for estimation of marine fish landings in India. *CMFRI Spl. Publ.* No. 86. 57pp.

10. Project Logframe

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
Goal			
Existing FMSP research outputs relating to: the contribution of <u>capture and enhancement</u> fisheries to the livelihoods of the poor; fisheries management tools and strategies that could benefit the poor; and, the means to realise improved management, further developed, disseminated and promoted to relevant stakeholders at all levels.	Fisheries assessment methods to inform sustainable management for improved livelihood benefits further developed with target institutions in at least two countries, widely promoted (nationally and internationally), by 31 March 2006.	<ul style="list-style-type: none"> • Programme Management review • Project FTRs • Programme highlights • Publications and other communications materials • Teaching materials • Fisheries management tools • Quarterly and annual reports • FMSP project database • FMSP Website • Requests for manuals and guidelines received • Uptake of research 	<p>Policy makers remain receptive to information on fisheries management</p> <p>Government policies continue to support co-management</p> <p>Government policies continue to support pro-poor approaches</p> <p>Target beneficiaries remain receptive to management approaches proposed.</p> <p>Stock enhancement</p>

		products by target institutions monitored and reported in Annual Report <ul style="list-style-type: none"> National statistics and publications International networks, databases and publications 	process cost effective and socially appropriate. Target beneficiaries adopt and use strategies
Purpose			
Improved fisheries management that could benefit the poor widely promoted through the development, validation and dissemination of communication products related to existing FMSP stock assessment tools and management guidelines.	<p>1.1 By 30 June 2005 (date to be confirmed by CRFM), existing FMSP tools and guidelines (including R8360 synthesis) validated and recommended for use by CRFM in future stock assessment working groups, including at the next (2nd) Annual CRFM Scientific Meeting in November 2005.</p> <p>1.2 By 27 August 2005 a globally relevant, generic Managers Guide to stock assessment and fisheries management (and/or other generic tools) developed, based on existing FMSP products, and as guided by Caribbean and Indian users, and tested by application to at least 3 local fisheries in targeted Indian states.</p> <p>1.3 By 29 July 2005, capacity for fisheries management increased in fisheries departments of three target states in India; and by November 2005 in the Caribbean, as shown by stock assessments of Indian and Caribbean fisheries, prepared by country collaborators, based on use of FMSP tools.</p> <p>1.4 By March 2006, at least one relevant fisheries training institution in India has incorporated FMSP stock assessment tools into their curriculum.</p> <p>2. Awareness of the possibilities for more scientific and responsible fisheries management raised amongst Indian fisheries policy makers by October 2005, and Caribbean policy makers by April 2006, by exposure to results of FMSP tools-based stock assessment.</p> <p>3. By end October 2005, relevant national fisheries management institutions, and regional fisheries management bodies around the world aware of user-friendly, manager-level guidance on the use and applicability of FMSP tools and guidelines through outreach activities of at least two major international organisations, targeting of at least two donor led projects, and via hard copy distribution.</p>	<p>1.1 CRFM Working Group Meeting report, available from Dr Susan Singh-Renton at CRFM, St Vincent and the Grenadines.</p> <p>1.2 Copies of new products and report of Indian testing phase.</p> <p>1.3 Project quarterly reports, including Indian stock assessment analyses as appendices.</p> <p>1.4 Direct enquires to relevant institutions (e.g. CIFE, Mangalore College).</p> <p>2. Reports of Indian testing, CRFM Fisheries Forum reports, and using indicators developed in Activity 4.</p> <p>3. Direct contacts with communication stakeholders, and using indicators developed in Activity 4.</p>	<p>Project is successful in placing tools / management guidelines on CFRM agenda for future use.</p> <p>Project is successful in placing tools and guidelines into Indian management and training institutions for their future use.</p> <p>Target users have sufficient capacity to apply the products.</p> <p>Policy makers are receptive to the fisheries management messages of the project.</p> <p>International outreach organisations are receptive to the needs of the project.</p>
Outputs			
1. Capacity of Indian and Caribbean fisheries management institutions, and Indian fisheries training institutions increased.	<p>1.1 By 30 June 2005 existing FMSP tools and guidelines are presented at CRFM first Ad Hoc Methods Working Group meeting, thereby raising awareness of Caribbean regional fisheries scientists and their advisors.</p>	<p>1.1 Project quarterly reports.</p>	<p>CRFM meeting occurs as planned.</p> <p>Indian institutions are able to apply and test FMSP products within the timeframe set by the</p>

<p>2. Policy makers in India and the Caribbean are better equipped to understand procedures necessary for responsible fisheries management.</p> <p>3. Fisheries managers, scientists and trainers around the world are aware of the availability, utility and advantages of FMSP stock assessment tools, as outlined in the existing synthesis guide, the new 'managers guide' and/or other new media products.</p>	<p>1.2c By 17 June 2005, draft managers guide and/or other tools developed, in collaboration with partners, based on R8360 synthesis guidelines for use of existing FMSP tools, relevant to both Indian and Caribbean users.</p> <p>1.2d By 29 July 2005, new materials tested in India by application of FMSP tools, to at least 3 case study fisheries, and lessons learned documented.</p> <p>1.2f By 14 October 2005, new materials finalised and ready for global dissemination.</p> <p>1.3 By 29 July 2005, capacity of Caribbean and Indian fishery scientists and managers increased by participation in development and testing of new materials.</p> <p>1.4 By 29 July 2005, capacity of Indian trainers increased by participation in development and testing of new materials.</p> <p>2.1 By 14 October 2005, policy relevant communications products developed and disseminated for target country situations.</p> <p>3.1 By 21 October 2005, FMSP products promoted into national fisheries institutions and regional bodies and programmes through: fisheries projects (e.g. FFP, WASFLP), outreach activities (e.g. STREAM, FAO One Fish); direct mailing, fisheries e-groups, publications in relevant media etc.</p>	<p>1.2 Project quarterly reports, including Indian stock assessment analyses as appendices.</p> <p>1.3 Project quarterly reports, and using indicators developed in Activity 4.</p> <p>1.4 Project quarterly reports.</p> <p>2.1 Project quarterly reports.</p> <p>3.1 Project quarterly reports, with details verifiable where possible on internet.</p>	<p>project.</p> <p>Lobbying of key decision makers is successful</p> <p>Fisheries projects and outreach organisations agree to promote FMSP products.</p>
Activities	Budget and milestones		
<p>1.1 Promote use of existing FMSP tools at first CRFM Ad Hoc Methods Working Group meeting to be held at UWI by 30 June 2005.</p> <p>1.2a Based on CRFM questionnaire survey data and analysis, and report of the Caribbean Fisheries Forum meeting in March/April 2005, evaluate needs of Caribbean fishery managers and determine relevance to preparation of FMSP guidance materials.</p> <p>1.2b In participation with key Indian and Caribbean stakeholders, develop structure, technical basis and initial materials of draft Managers Guide or other products (e.g. for fisheries field staff, promoting regular, reliable, unbiased data collection), as required by users, and agree a mechanism for the testing phase.</p> <p>1.2c Develop first drafts of new materials as guided by above workshop.</p> <p>1.2d Test Managers Guide or</p>	<p>1.1 DH and PM to participate in CRFM WG by 30 June 2005</p> <p>1.2a Evaluate CRFM reports ready for presentation at start of 1.2b workshop below.</p> <p>1.2b By 13 May 2005, hold one week workshop in India, to be attended by Indian, Caribbean and UK collaborators, and to be coordinated with ParFish field activities in adjacent week.</p> <p>1.2c By 17 June 2005, first draft new materials produced.</p> <p>1.2d By 29 July 2005, apply new guidelines and FMSP tools to data</p>	<p>Indian and Caribbean collaborators are able to meet project deadlines.</p>	<p>Adequate data are</p>

<p>other materials in target Indian states via mechanism agreed in 1.2b.</p> <p>1.2e Adapt and finalise Managers' Guide and any other products, based on documented results of testing phase.</p> <p>1.2f Produce electronic and hard copies of new materials.</p> <p>2.1 Identify local communication stakeholders and appropriate pathways for delivery of information to policy makers.</p> <p>2.2 Prepare and deliver information briefs for policy makers in India and the Caribbean, including explanatory materials to accompany stock assessments from 1.2d.</p> <p>3.1 Identify global communication stakeholders, investigate options for wide global dissemination of products, and confirm with relevant outreach institutions and projects (eg FAO, STREAM) appropriate formats for delivery of information.</p> <p>3.2 Develop and promote communications products according to media and communications channels identified in communications plan (e.g. including briefs, newsletter articles, web pages).</p> <p>3.3 Contribute to Programme-level uptake promotion activities as required.</p> <p>4.1 Cross cutting all other activities, indicators developed as required to monitor and evaluate achievement of all OVIs.</p> <p>4.2 Indicator data collected as required.</p> <p>4.3 Project achievements evaluated and reported.</p>	<p>collected by Indian collaborators since R8360 Mangalore workshop, coordinating as appropriate with ParFish field activities in adjacent week.</p> <p>1.2e By 27 August 2005, final draft Manager's Guide produced.</p> <p>1.2f By 14 October 2005, .PDF format and hard copies of new materials produced.</p> <p>2.1 By 20 June 2005, update communications plan for first quarterly report.</p> <p>2.2 By 14 October 2005, deliver policy briefs.</p> <p>3.1 By 20 June 2005, update communications plan for first quarterly report.</p> <p>3.2a By 30 September 2005, develop new products</p> <p>3.2b By 21 October 2005, post / submit / upload or otherwise electronically disseminate materials</p> <p>3.2c By 21 October 2005, hard copy materials posted to global recipients.</p> <p>3.3 By 21 October 2005</p> <p>4.1 By 13 May 2005, indicators to evaluate change in capacity in fisheries management and training institutions, outcomes at policy level, and global uptake and awareness identified (e.g. including before and after knowledge-attitude-practice questionnaires, citations, or evidence of use of tools in published materials).</p> <p>4.2 By 13 May 2005, methods for collection of appropriate data agreed with partners and implemented.</p> <p>4.3 By project end (October 2005), results analysed and reported in FTR.</p> <p><u>Budget allocations:</u></p> <table border="0"> <tr> <td>Output 1</td> <td>£71,164.80</td> <td>including part costs for Outputs 2 & 3</td> </tr> <tr> <td>Output 2</td> <td>£2,269.80</td> <td></td> </tr> <tr> <td>Output 3</td> <td>£6,764.40</td> <td></td> </tr> <tr> <td>M&E</td> <td>£2,940.60</td> <td></td> </tr> <tr> <td><u>Final reporting</u></td> <td><u>£1,857.60</u></td> <td></td> </tr> <tr> <td>Total</td> <td>£84,997.20</td> <td></td> </tr> </table>	Output 1	£71,164.80	including part costs for Outputs 2 & 3	Output 2	£2,269.80		Output 3	£6,764.40		M&E	£2,940.60		<u>Final reporting</u>	<u>£1,857.60</u>		Total	£84,997.20		<p>available for analysis since the Mangalore workshop.</p> <p>Appropriate indicators can be designed to monitor awareness of global users.</p>
Output 1	£71,164.80	including part costs for Outputs 2 & 3																		
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Output 3	£6,764.40																			
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<u>Final reporting</u>	<u>£1,857.60</u>																			
Total	£84,997.20																			

11. Keywords

Fishery management planning, FMSP stock assessment tools, precautionary approach, uncertainty and risk assessment, India, Caribbean

12. Annexes

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Annex 3. Project design workshop (Activity 1.2b)

Date: 9-13 May 2005,

Venue: Hotel Punnam, Visakhapatnam, Andhra Pradesh, India

Workshop programme (as scheduled)

Sunday 8 May – Arrivals

14.00 Planning team meetings at hotel

18.00 Registration of participants at Hotel Punnam (until 19.00)

Day 1 – Monday 9 May

08.00 Registration (if missed last night)

09.00 Opening ceremony

10.00 *Coffee break*

Session 1. Introductions and Background

10.30 Introduction of participants Round table

10.45 Review and adoption of workshop agenda and schedule DH

11.15 Overview of Project R8468 plans, logical framework, time line, budgets and reporting..... DH

12.00 Linkages and integration with FMSP 'ParFish' project, also in Andhra Pradesh..... GVR

12.15 Comments and questions

12.30 *Lunch*

Session 2. Overview of the FMSP tools and guidelines

13.30 Management framework - FAO Fisheries Technical Paper produced by project R8360 DH

14.15 LFDA and Yield software CM/CON

15.00 *Coffee break*

15.30 CEDA and ParFish software DH

16.15 Questions and discussion of FMSP tools, fishery management and stock assessment

17.00 *Close*

Underlining in following schedules indicates tea breaks at 10.30 and 15.00, and lunch at 12.30-13.30

Day 2 – Tuesday 10 May

Session 3. Communication stakeholders – knowledge, attitudes and practices (KAP)

09.00 Summary of Indian practices & needs as identified by project R8360 DH/GVR/SC/SKB

09.30 Caribbean regional fishery management process and managers' information needs SSR

10.00 Summary of current draft project communications plan and matrix CON

11.00 Identification of key communication stakeholders (personal contacts etc)..... CON

11.30 KAP survey of participants / others (to enable update of comms matrix)..... CON

Session 4. How could the project communicate with different stakeholders?

Brainstorming and demos of appropriate media, channels (pathways) and products ...

13.30 For fishery managers and trainers (Output 1, e.g. 'managers guide' to complement FAO doc).. DH

14.00 For policy-level pathways and media for India/Caribbean (Output 2)..... CM/SSR

14.30 For global-level pathways (Output 3)..... CON

15.30 Options, costs and constraints for publication of materials..... JH/MK

Session 5. Planning for the production of new materials

16.00 In working groups, develop structures/outlines/content of selected products, showing formatting/styles etc, and begin drafting materials (note need to ensure that the project / tools provides maximum benefits to the poor)

Chairs: Output 1 – DH/MK?; O2 – CM/SSR; O3 – CON or to be identified

Day 3 – Wednesday 11 May

Session 5 continued

09.00 Working groups to continue developing product outlines, and to identify tasks, responsible persons and milestones for next phase (production of first draft products by 8 July for testing)

Day 4 – Thursday 12 May

Session 5 feedback and review

09.00 Working groups to feed back to plenary for comment Chairs as above / or to be identified

Session 6. Planning the materials testing phase (scheduled for 9-29 July)

- 11.00 State reports on species/fisheries selected for testing, progress with data collection etc GVR/others
 11.30 Brainstorm options for testing process (workshop options, postal options etc for users with and without previous experience of FMSP tools), identify pros and cons of each, and select preferred option..... DH
 12.00 Planning - allocate tasks, responsibilities, travel arrangements etc DH/GVR/SC/SKB

Session 7. Planning for project monitoring and evaluation

- 13.30 Introduction - FMSP needs for project reporting and evaluation CM
 13.45 Brainstorming and identification of M&E indicators for project OVIs CON
 14.15 Agreement on who to collect which data for indicators..... CON/GVR/SC/SKB
 15.30 Free time / preparation for final day

- 19.00 Workshop dinner at Visakhapatnam cable car mountain

Day 5 – Friday 13 May

Session 8. Workshop conclusions and wrap up

- 09.00 Working groups to present revised plans for final comments by team..... Participants and/or chairs
 10.30 Presentation of revised communications and M&E plan for final comment..... CON/JH/MK
 13.30 Windup session, confirmation of agreements, next steps, AOB etc, and workshop evaluation... DH
 15.00 *Workshop close*

Presenters/facilitators/chairs:

CM – Chris Mees; CON – Catherine O’Neill; DH – Daniel Hoggarth; GVR – Gopi Venkata Raju; JH – James Hindson; MK – Mohan Krishna; SC – Sukhendu Chakravarty; SKB – Satyajit Kumar Bhuyan; SSR – Susan Singh-Renton

List of participants

	Name	Address	Phone	Email
Indian stakeholders (national and state), attending full meeting				
1	Dr. M. Srinath	Head, Fishery Resources assessment Division, CMFRI, Kochi - 682018	0484 - 2394867 (o), 2375789 (r)	mudumdy@yahoo.com
2	Dr. R.S. Biradar	Head, Fisheries informatics, Technology evaluation and transfer, CIFE, Versova, Mumbai - 400061		rbiradar@hotmail.com , rsbiradar50@rediffmail.com
3	Ch. Seshasayana rao	Joint director of Fisheries, O/O the Commissioner of Fisheries, Santhi Nagar, Masab Tank, Hyderabad	040 - 23308585, 23308586, Mobile 9440814705	seshasayanac@yahoo.com
4	Mr. G. Venkata Raju	Asst. Director of Fisheries, O/O the Commissioner of Fisheries, Santhi Nagar, Masab Tank, Hyderabad	040 - 23308585, 23308586, Mobile 9440814708	gvraju_fisheries@yahoo.co.in
5	Mr. Arjun Charan nayak	Dy. Director of Fisheries, Marine south, Cuttack, Orissa	0671 - 2614002, Mobile - 9437209131	-
6	Dr. K. K. Samal	Asst. Director of Fisheries, Chilika lake, P.O. Balugan, Khwada dist. Orissa	06756220429, mobile 9437308906	-
7	Dr. Satyajit Kumar Bhuyan	Fisheries extension Officer, o/O the asst. director of Fisheries, PO Kujang, Jagathsinghpur Dist. Orissa		satyajit10@yahoo.co.in , satyajit99@rediffmail.com
8	Mr. Uttamkumar Ranja	Dy. Director of Fisheries, Western Zone, Midnapur, Meenbhavan, PO Midnapur, West Bengal	03222 - 275610, Mobile 9434004342	-
9	Mr. Suchendu Chakraborty	Joint director of Fisheries, 60A, colootala street, Kolkata - 700073	033 - 22156711, Mobile 9433183263	wbjdmams@vsnl.net
10	Dr. Goutham Sarkar	Dy. Director of Fisheries, Central Zone, Meenbhavan, Berhampur, Murshedabad Dist. West Bengal	03482-252286, Mobile 9434162161	-
11	Dr. Prasantha Kumar Jana	Dy. Director of Fisheries, O/O Joint director of Fisheries, 60A, colootala street,	033 - 22156711	wbjdmams@vsnl.net

		Kolkata - 700073		
12	Dr. Mudhumita Mukherjee	Joint director of Fishries, Aquatic resources, Health Management centre, DH road, Pilan, Kolkata 700109	033-29978209 (O), 24534777 @, Mobile 9433104500	madmita@cal.vsnl.net.in
13	Dr. M.S Chakravarty	Professor, Dept. of marine Living resources, Andhra university, Visakhapatnam	0891 – 2844736 (O), 2702131 @, 9866043843	-
14	Mr. U. Sreedhar	Scientist (senior scale), Visakhapatnam centre of CIFT, Ocean view layout, panduranagapuram, Visakhapatnam 530003	0891 - 2567856, 9848613201	usreedhar@rediffmail.com , utravalli@yahoo.com
15	Prof. A. Shameem	Professor and Head, Dept. of marine Living resources, Andhra university, Visakhapatnam	0891 - 2564711	-
16	Dr. G. Syda Rao	Scientist in charge, Regional centre of CMFRI, Visakhaoatnam, 530003	0891 - 2543154	gsydarao@yahoo.co.in , cmfrivsp@sancharnet.in
17	Mr. Premchand	Zonal director, Fishery survey of India, Beach Road, Near fishing harbour, Visakhapatnam		-
18	Mr. P. Rammohan Rao	Asst. Director of Fisheries, State institute of Fisheries technology, Kakinada 533002	0884 2378552, 9885144557	rammohanrao_p@sify.com , mohanrrp@hotmail.com
Indian State Commissioners and others, attended only inauguration etc				
19	Dr P. Krishnaiah	Commissioner of Fisheries, Andhra Pradesh	040 2337 6255	comfish@pol.net.in
20	Mr N.B.S. Rajput	Director of Fisheries, Orissa.	0671 261 4061	nbsrajput@hotmail.com
21	Prof. P. Veerraju	Principal, College of Science and Technology, Andhra University		
22	Dr K.R. Prasad	President, Confederation of Fisheries & Aquaculture Industry and Welfare Org., Visakhapatnam, Andhra Pradesh 530 003	0891 555 8868	matsyatech@yahoo.com
23	Mr J.V.H. Dixitulu	Chief Editor and Publisher, Fishing Chimes, Visakhapatnam, 530 017	0891 278 4419	info@fishingchimes.com
Caribbean stakeholders				
24	Dr Susan Singh-Renton	CRFM Secretariat, Corea's Building, Halifax Street, St. Vincent & the Grenadines	+ 1784-457-3474	ssinghrenton@vincysurf.com
Project staff				
25	K. Mohan Krishna	Programme Officer, Centre for Environmental Education, Thaltes Tekra, Ahmadabad 380054	07926858002 to 09	mohan.krishna@ceeindia.org
26	Dr James Hindson	Director, Environmental Education Unit Field Studies Council Preston Montford, Montford Bridge, Shrewsbury, SY4 1HW, UK	+44 1743 852 100	james_fscee@hotmail.com
27	Dr Dan Hoggarth	SCALES Inc., #3, C3-12 Graeme Hall Park, Christ Church, Barbados	+1246 434 0919	dhoggarth@sunbeach.net
28	Dr Chris Mees	MRAG Ltd, 18, Queen Street, London, W1J 5PN, UK	+44 (0)20 7255 7783	c.mees@mrag.co.uk

Annex 4. Materials testing workshop (Activity 1.2d)

Date: 8-12 August 2005

Venue: Great Easter Hotel, Calcutta, West Bengal, India

Workshop programme (as scheduled)

Objectives

- To review what activities have taken place between the last workshop and this one
- To receive written and verbal feedback on the Guides
- To build participants understanding of the process of writing a Fishery Management Plan (FMP)
- To give participants practice in the key skills needed to write a FMP
- To enhance participants understanding of the key role and place of Stock Assessment Tools (SAT) in the FMP process.
- To provide participants with examples of good management plans
- To assist participants in identifying how they can develop a FMP for their fishery

Things to do before the Workshop

- We shall email you draft copies of the Management Guide and the Stock Assessment Guide – it would be good to read these before the workshop.

Things to bring to the Workshop

We shall be going through the process of writing a simple management plan and we would like you to do this for a fishery that you manage. In this way the outputs of the workshop will be helpful for you in the future. Please bring with you

- Your copies of the FAO Fisheries Technical Paper on the FMSP Tools
- Examples of any Fishery Management Plan that has been developed for your State.
- Fishery data you think might be helpful during the workshop.

DAY ONE – MONDAY	
Session	Proposed Activities (process)
09.00	Session 1 Welcome and Introduction (a) General Welcome from the Project Manager and Other Dignitaries and Officials (b) Presentation of workshop objectives and programme – feedback and agreement (c) Review of recent activities – Each participant will be asked to say what they have done related to the project since the last workshop.
10.30	Break
11.00	Session 2 Feedback on the Guides (a) Participants should work individually and read and comment on the Management Guide . They will be asked to complete a questionnaire and also to mark any specific comments on a copy of the Guide – to be handed in at the end of the week (see below).
13.00	Lunch
14.00	(b) Participants should work individually and read and comment on the Stock Assessment Guide . They will be asked to complete a questionnaire and also to mark any specific comments on a copy of the Guide
16.00	Break
16.30	(c) Participants should work in groups of four/or separate groups for each state and make a flip chart presentation of the key feedback they have for both Guides. This can be divided into things that are great – things that are ok but could be improved and things that we need to change – such as language changes.. During the workshop we shall have “Suggestions Book” open all the time for participants to record other feedback comments

DAY TWO - TUESDAY	
	Session 3 Writing a Management Plan – what makes a good plan <i>Phase One - Where are we Now?</i>
09.00	(a) Introduction to Management Planning – a short presentation going through the process in the Managers Guide. We shall also introduce the process of working for the day – that is – introducing the key parts of the Management Planning Process and giving the participants an opportunity to practise doing these key components. The participants will work in groups for the whole day.
09.30	(b) New Policy Requirements for Fishery Management Plans in Bangladesh – a presentation by Bangladesh DOFs Masood Siddique including some examples of Management Plans
10.15	(c) Introduction to Stock Assessment – a short presentation going through the process in the Stock Assessment Guide.
10.45	Break
	<i>Each of the activities in Sessions 3 -6 will follow a similar pattern: Activity – review the answers – examples from real Management Plans. We shall ask participants to work on data and information about their own fisheries – and during the workshop they will build up a basic management related to that fishery. Groups will work on their own selected local fishery where possible.</i>
	Session 4 Writing a Management Plan <i>Phase One - Where are we Now?</i>
11.15	(a) Stakeholder Analysis - the participants work in groups to identify the key stakeholders and draw a stakeholder diagram and make suggestions about stakeholder consultation processes.
12.30	Lunch
13.30	(c) Situation Analysis – choosing the SAT to identify trends and issues. Each group will have to draft a short situation analysis for their Fishery and select which SAT they could use to identify trends in the fishery, and what data they would need.
15.30	Break
	Session 5 Writing a Management Plan - <i>Phase Two - Where do we want to be?</i>
16.00	(a) Purpose and Goals (i) A short introduction to the relationship between purpose goals and objectives using the examples in the Guide. The importance of the precautionary approach will be stressed. (ii) The groups will be asked to develop a Purpose Statement and Goals for their Fishery..
DAY THREE - WEDNESDAY	
	Session 5 continued
09.00	(b) Objectives. Following on from the previous evening, the groups will develop the objectives related to their Goals. We shall focus on biological/ecological goals and objectives
10.30	Break
	Session 5 continued
11.00	(c) Deciding the Management Standards. The groups will work out indicators and reference points for the Objectives related to their Fishery. The groups will have to select which SAT they could use to estimate their selected appropriate reference points
13.00	Lunch
	Session 6 Writing a Management Plan - <i>Phase Three – How do we get there?</i>
14.00	(a) Deciding Management Measures. The groups will work with their objectives and management standards and have to work out their management measures and decision control rules. The groups will be asked to consider which possible management measures would be feasible for their fishery and which SATs they could use to guide the process of deciding on management measures and decision control rules (DCRs) .

	SAT at this point are used to give strategic advice on which of the possible measures (or levels of measures) would best achieve the objectives. In thinking about the DCRs, groups should also consider the role of uncertainty and precaution at this point.
16.00	Break
16.30	(b) Holding a Stakeholder Meeting – at the end of the day we shall hold a role play. We shall ask one of the groups to present their Management Measures and DCRs to a pretend meeting of stakeholders. The other groups will act the roles of stakeholders and give their feedback!
DAY FOUR - THURSDAY	
09.30	Session 7 Writing a Management Plan - Phase Four – How do we know we are there (a) A short presentation about the importance of monitoring and reviewing Management Plans, followed by a decision making activity. The groups will be asked to discuss what might happen to their fish stocks and fishing industries in the future, and the likely effect on their objectives, and to suggest how they would monitor this using SAT or other indicators.
11.00	Break
11.30	Session 7 continued
12.30	Lunch
13.30	Session 8 What do we do next? (a) This session allows the groups to look at their current situation and do a force field analysis (or use another technique) that allows them look at the challenges they will face in developing a management plan and using SA tools and then sharing how these might be overcome .
15.00	Break
15.30	Session 9 Reviewing the Management Guide and Stock Assessment Guide A final session to give more feedback on the two Guides based on the use of the Guides during the workshop.
DAY FIVE – FRIDAY	
09.00	Session 10 Planning for follow up and support with initial steps Detailed plans to be agreed with group at workshop – e.g. to develop a policy brief based on the weeks' work Planning for project level M&E of uptake or changes in KAP etc...

List of participants

	Name	Address	Phone & Fax	E-mail
1.	Dr. Daniel D. Hoggarth	66b Creffield Road, London W3 9PS. UK	+ 44 208 992 0275	dhoggarth@btinternet.com
2.	Dr. Chris C Mees	MRAG Ltd., 18 Queen Street, London, W1J 5PN, UK	+44 207 255 7783	c.mees@mrage.co.uk
3.	Dr. James Hindson	Director, FSC Environmental Education Preston Monford, Shrewsbury, Shropshire, SY4 1HW, UK	+44 1743 852160	James_Fscee@hotmail.com
4.	Mr. K. Mohan Krishna	Programme Officer, Centre for Environmental Education, Thactes Tekra, Ahmedabad-380054	029 2685 8002-09	Mohan.krishna@ceeindia.org
5.	Dr. M Srinath, Head,	Fishery Resources Assessment Division, Central Marine Fisheries Research Institute, Kochi- 682018	2394867, 2394909	meedemby@yahoo.com
6.	Dr. R.S Biradar,	Fisheries Informatics Technology, Central Institute of Fisheries Education, Seven	26361446, 26363404	rbiradar@hotmail.com

	Name	Address	Phone & Fax	E-mail
		Bungalows, Versoba, Mumbai-400 061		
7	Dr. G Syda Rao	Pr. Scientist & Scientist –in-Charge, CMFRI Panduranga Puram, visakhapatnam-530003	2543154, 2543793	gsydarao@yahoo.co.in
8	Mr. T. K. Behera	Add. Director of Fisheries Govt. of Orissa Jobra, Kolkata- 753007	0671-2614256 FAX- 0671-2610521	
9.	Mr. P Sundara Kumar	Commissioner of Fisheries Govt. of Andhra Pradesh Matsya Bhavan 4 th street, Shanthinagar Massabtank, Hyderabad-500028	23376255, 23376250	Skumar1950@yahoo.com
10.	Prof. M. S. Chakravarty	Department of marine Living Resources Andhra University Visakhapatnam-530 003	2702131 9866043843	Chakri_mlr_ah@yahoo.com
11.	Mr. G. Venkata Raju	Assistant Director of Fisheries Govt. of Andhra Pradesh Matsya Bhavan 4 th street, Shanthinagar Massab tank, Hyderabad-500028	9440814708	Gvraju_fisheries@yahoo.co.in
12.	CH. Seshasayana Rao	Joint Director of Fisheries C/O Commissioner of Fisheries Govt. of Andhra Pradesh Matsya Bhavan 4 th street, Shanthinagar Massab tank, Hyderabad-500028	23376255 23376256	Seshasayana@yahoo.com
13	Mr. A.C. Naik,	Dy. Director (M) Govt. of Orissa	2614002 FAX 06712610521	
14	Mr. Subrat Dash	Junior Fishery Officer, Govt. of Orissa	9437114090 FAX 0671- 2614002	
15	Dr. Satyajit Kumar Bhuyan	F.E.O., Govt. of Orissa	06722-2362433	Satyajit10@yahoo.co.in Satyajit99@rediffmail.com
16	Mr. Sukhendu Chakraborty	Joint Director of Fisheries, Govt. of West Bengal, Kolkata	033-22256711	wbjdmems@vsnl.net
17	Dr. Madhumita Mukherjee	Joint Director of Fisheries, Govt. of West Bengal, Kolkata	94333104500 24534777	
18	Mr. Gautam Sarkar	Deputy Director of Fisheries, Govt. of West Bengal, Kolkata	03482-252286	goutamsar@rediffmail.com
19	Mr. Bijan Kr. Mandal,	Deputy Director of Fisheries, Govt. of West Bengal, Kolkata	033-25828746	
20	Mr. Barin Krishna Mitra,	Deputy Director of Fisheries, Govt. of West Bengal, Kolkata	22430463	
21	Mr. R.P.F. Lepcha	Deputy Director of Fisheries, Govt. of West Bengal		
22	Mr. S.K.Mandal	Principal Scientist, Central Inland Fisheries Research Institute, Barrackpore	2592-1190, extrn. 240	Skm47@indiatimes.com
23	Dr. R.C. Das	CIFE, 32-GN Block, Sector V, Salt Lake Kolkata-91	23575269 23573893 FAX-23573469	drrcdas@hotmail.com
24	Dr. Abhijit Mitra	Marine Science Department Calcutta University	9831269550	abhijit_mitra@hotmail.com
25	Mr. T.S. Nagesh Lecturer	Faculty of Fishery Science, W. B. University of Animal & Fishery Science, Mohanpur, Nadia	9330961430	tsnagesh1@rediffmail.com
26.	Masood Siddique	Dept. of Fisheries, Bangladesh	880 2956 0653	masood@fisheries.gov.bd
27	Siddhartha Sarkar Asst. Director of Fisheries	Office of the Dy. Director of Fisheries (M&P) At./PO –Pailan, DH Road, Kolkata-104	033 2497 8209	

	Name	Address	Phone & Fax	E-mail
28	Dr.Utpal Sarkar Asst. Director of Fisheries Midnapore East, West Bengal		03220 255204	
29	Debasish Pradhan (Student)	Pailan Mean Bhavan		
30.	Mukut Roy Choudhury W.B JR.Fisheries Service Grade- II	C/O Directorate of Fisheries, 63,N.S.Road,Kolkata-108	033-25664284	
31.	Chiranjib Adhikary FEO(Tr.), South 24 PGS & CEO,Bonhoogtl y FCS Ltd.	Bonhooghly FCS Ltd. 105,B.T.Road,Kol-108	2577-6565 98 3060 8275	
32.	Mr. Kironmoy Nanda	Minister in Charge of Fisheries Government of West Bengal, Writers Building, Kolkata – 700 001, West Bengal	Tel: 033 2214 5755 (o) Fax: 033 235 1959	
33.	Mr. R.P.S. Kahlon	Secretary, Department of Fisheries, Govt of WB, as above	Tel: 033 2214 5777 (o) Fax: 033 2214 1346	

Questionnaire used for feedback on the Managers and Stock Assessment Guides, as handed out on Day 1 of the workshop.

Name _____

Please tick one answer for each of the questions below and provide additional comments as requested. We really need your honest feedback so please don't be too kind - unless you mean it!

1. Language Level

The Guide is aimed at both first and second language English speakers

1	Much too difficult – it needs significant rewriting	
2	Difficult but understandable – it needs simplifying	
3	About right – no changes needed	
4	Easy – it could be made a little more complex	
5	Much too easy and simple – it needs significant rewriting	

Additional comments _____

2. Clarity of explanation

This refers to how well technical concepts were explained

1	I could understand all the explanations very well	
2	I could understand most of the explanations (over 75%)	
3	I could understand about half of the explanations (50%)	
4	Most of the explanations were too difficult to understand (25%)	
5	I found the explanations in the Guide almost impossible to understand!	

Please list the terms and explanations you could not really understand easily.

3. Structure

This refers to how the Guide is divided into different chapters to explain the Management Planning process.

Is the structure of the Guide

1	Very clear and helpful – I could follow it easily	
2	Generally clear – I could follow it most of the time – but some sections need improving	
3	Quite clear – but I did get lost a number of times – it needs quite a lot of improvement	
4	Unclear – I could not follow it easily at all.	

Please say which sections need improvement and how

4. Content and Length

The Guide is:

1	Much too long	
2	Too long	
3	About right	
4	Too short	
5	Much too short	

For answers 1,2 - how many pages would you delete (and which ones?)

For answers 4 and 5 – how many pages would you add – and about what?

5. Number of illustrations

1	There are not enough illustrations	
2	The number of illustrations is about right	
3	There are too many illustrations	

If you answered 1 - which illustrations would you add?
If you answered 3 - what more illustrations would you delete?

6. References and Bibliography

Is the style of references ok? Yes / No

Have we missed any key references (books or web sites). Can you list them here?

7. Glossary (Managers Guide Questionnaire)

1	The glossary is too long	
2	The glossary is about the right length	
3	The glossary is too short	

7. Glossary (Stock Assessment Guide Questionnaire)

1	Is it adequate just to have a glossary in the Managers Guide?	
2	Should there be a glossary in this Guide	

8. Number of Examples

1	I found the real life examples in boxes helpful	
2	I did not find the real life examples helpful	

1	There are not enough real life examples	
2	The number of real life examples is about right	
3	There are too many real life examples	

If you answered 1, please give references of other examples. If you answered 3, please say which examples you would delete.

9. Linkages between the guides

1	There should be more linkages between the two Guides	
2	The linkages made between the two Guides are about right	
3	There should be fewer linkages between the two Guide	

10. Would you read it?

1	I found /would find the Guide really useful and could follow the process – after reading it I feel I could develop a management plan	
2	The Guide was good, but there need to be some improvements to make it more useful – I could probably write a management plan after reading it .	
3	The Guide was ok but needs quite a few improvements before I would feel confident writing a management plan	
4	The Guide was not good - after reading it I don't understand how to write a Management plan.	

Summary of responses to questionnaire on Management Guide

Question	Response (see questionnaire for full text in each case)				
1. Language level	Too difficult	Difficult but OK	About right	Easy but OK	Too easy
	0	2	5	1	0
2. Clarity of explanation	All clear	75% clear	50% clear	25% clear	Not clear
	4	4	0	0	0
3. Structure	Very clear	Mostly clear	Quite clear	Not clear	
	6	1	1	0	
4. Content and length	Much too long	Too long	About right	Too short	Much too short
	0	1	6	1	0
5. Number of illustrations	Not enough	About right	Too many		
	1	5	1		
6. Style of references	Yes OK	No, not OK			
	7	0			
7. Glossary	Too long	About right	Too short		
	0	6	2		
8a. Value of examples	Helpful	Not helpful			
	7	0			
8b. Number of examples	Not enough	About right	Too many		
	3	3	1		
9. Linkages	Need more	About right	Need fewer		

between guides	4	2	0		
10. Would you read it?	Yes, useful	Needs some improvement	Needs lots of improvement	No, not good	
	2	6	0	0	

Summary of responses to questionnaire on Stock Assessment Guide

Question	Response (see questionnaire for full text in each case)				
1. Language level	Too difficult	Difficult but OK	About right	Easy but OK	Too easy
	0	7	6	0	0
2. Clarity of explanation	All clear	75% clear	50% clear	25% clear	Not clear
	2	11	0	0	0
3. Structure	Very clear	Mostly clear	Quite clear	Not clear	
	2	11	0	0	
4. Content and length	Much too long	Too long	About right	Too short	Much too short
	1	2	9	1	0
5. Number of illustrations	Not enough	About right	Too many		
	0	12	0		
6. Style of references	Yes OK	No, not OK			
	11	0			
7. Glossary	Only in MG	Include in SAG also			
	3	10			
8a. Value of examples	Helpful	Not helpful			
	12	1			
8b. Number of examples	Not enough	About right	Too many		
	1	11	0		
9. Linkages between guides	Need more	About right	Need fewer		
	3	9	1		
10. Would you read it?	Yes, useful	Needs some improvement	Needs lots of improvement	No, not good	
	2	8	2	0	

Date: 23-27 May 2005

Venue: University of the West Indies, Cave Hill Campus, Barbados

Participant List

1. Babb-Echteld, Yolanda

Fisheries Department
Ministry of Agriculture
Cornelis Jonqbawstraat 50
Paramaribo, Suriname
Tel #: 597-476741
Fax: 597-424441
yolbabb@yahoo.com
visserijdienst@sr.net

2. Brooks, Elizabeth

NOAA Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida, USA
Tel #: 305-361-4243
Fax: 305-361-4562
liz.brooks@noaa.gov

3. Fanning, Paul

FAO
2nd Floor UN building
Hastings, Barbados
P.O. Box 631c
Tel #: 246-426-7110
Fax: 246-427-6075
paul.fanning@fao.org

4. Ferreira, Lara

Fisheries Division
35 Cipriana Boulevard
Port of Spain, Trinidad and Tobago
Tel #: 868-634-4504/5
Fax: 868-634-4488
mfau@tstt.net.tt

5. Gittens, Lester

Department of Fisheries
Government of the Bahamas
East Bay Street
Nassau, Bahamas
Tel #: 242-393-1777
Fax: 242-393-0238
lestergittens@bahamas.gov.bs

6. Hoggarth, Dan

Scales Inc
C3-12 Graeme Hall Park
Christ Church, Barbados
Tel #: 246-434-0919
Fax: 246-434-0919
dhoggarth@sunbeach.net

7. Hubert, Patricia

Fisheries Department
Ministry of Agriculture, Forestry & Fisheries
Castries, St. Lucia
Tel #: 758-468-4145
Fax: 758-452-3853
deptfish@slumaffe.org

8. Issac, Crafton J.

Fisheries Division
Ministry of Agriculture
Ministerial Complex
Botanical gardens
St. George's, Grenada
Tel #: 473-440-3831
Fax: 473-440-6613
crafton.isaac@gmail.com

9. Kleisner, Kristin

University of Miami
4600 Rickenbacker Cswy
Miami, Florida 33149, USA
Tel #: 305-421-4924
Fax: 305-361-4457
kkleisner@yahoo.com

10. Lockhart, Kathy

Department of Environmental & Coastal
Resources
South Caicos
Turks & Caicos Islands
Tel #: 649-946-3306
Fax: 649-946-3710
klockhartdecr@tcwayway.com

11. Mahon, Robin

CERMES
University of the West Indies
Cave Hill Campus, Barbados
Tel #: 246-417-4570
Fax: 246-424-2404
rmahon@uwichill.edu.bb

12. Martin, Louanna

Fisheries Division
35 Cipriani Boulevard
Port of Spain, Trinidad and Tobago
Tel #: 868-634-4504/5
Fax: 868-634-4488
mfau@tstt.net.tt

13. Masters, June

Fisheries Division
Ministry of Agriculture
Marcus Garvey Drive
Kingston, Jamaica
Tel #: 876-9238811-3
fisheries@cwjamaica.com
dof_jamaica@yahoo.com

14. Medley, Paul

Sunny View
Main Street, Alne
UK YO61 1RT
Tel #: +44 1347838236
paul.medley@virgin.net

15. Nowlis, Joshua Sladek

NOAA Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida, USA
Tel #: 305-361-4222
Fax: 305-365-4104
joshua.nowlis@noaa.gov

16. Ortiz, Mauricio

National Marine Fisheries Service
75 Virginia Beach Drive
Miami, Florida 33149
Tel #: 305-361-4288
Fax : 305-361-4562
mauricio.ortiz@noaa.gov

17. Oxenford, Hazel

CERMES
University of the West Indies
Cave Hill Campus, Barbados
Tel #: 246-417-4571
Fax: 246-424-4204
hoxenford@uwichill.edu.bb

18. Porch, Clay

NOAA Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida, USA
Tel #: 305-361-4232

clay.porch@noaa.gov

19. Renton-Singh, Susan

CRFM Secretariat
Corea's Building
Halifax Street
St. Vincent & the Grenadines
Tel #: 784-457-3474
Fax: 784-457-3475
ssinghrenton@vincysurf.com

20. Scott, Gerald

NOAA Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida, USA
Tel #: 305-361-4596
Fax: 305-361-4561
gerry.scott@noaa.gov

21. Soomai, Suzuette

Fisheries Division
35 Cipriani Boulevard
Port of Spain, Trinidad & Tobago
Tel #: 868-634-4504/5
Fax: 868-634-4488
mfau@tstt.net.tt
ssoomai@hotmail.com

22. Walters, Randolph

FAO – SLAC
2nd Floor UN building
Hastings, Barbados
P.O. Box 631c
Tel #: 246-426-7110
Fax: 246-427-6075
randolph.walters@fao.org

23. Willoughby, Stephen

Fisheries Division,
Ministry of Agriculture and Rural Development
Princess Alice Highway
Bridgetown, Barbados
Tel #: 246-427-8480
Fax: 246-436-9068
fishbarbados@caribsurf.com

Annex 6. Project communications matrix (as updated for First Quarterly Report). See Table 1 in Section 5 for evaluation of achievements.

1. Indian stakeholders

Local communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome of communication / promotion	Communication channels and media in which research product will be communicated	Approach to monitor and evaluate implementation of communications
Fisheries policy-makers					
<p>State: Minister of Fisheries (varies from state to state)</p> <p>State: Secretary (FD)</p> <p>State: Commissioner / Director</p> <p>National: Minister of Ag.</p> <p>National: Secretary and Joint Secretary (Fisheries) of Dept of Animal Husbandry, Dairying and Fisheries (under Min. Ag.)</p>	<ul style="list-style-type: none"> ▪ Responsible fishery management ensures livelihood security. ▪ Benefits of scientific management, including precautionary approach, allowing for uncertainties in assessments. ▪ Awareness of international conventions and obligations re fisheries management. 	<p>Variable depending on whether more experienced in fisheries or administration</p>	<ul style="list-style-type: none"> ▪ Raised awareness of alternative management options, and how assessments can provide information for decision-making, leading to more scientific and 'responsible' management in future 	<ul style="list-style-type: none"> ▪ Interaction with researchers and managers at policy meetings (or workshops), supported by policy papers, as developed by Indian partners ▪ Policy papers to be based on templates for policy advice or policy briefings provided in Managers Guide document. ▪ Presentation of policy papers by Indian collaborators to national and state Ministers/Secretaries and Directors of ICAR institutes at next Central Board of Fisheries meeting 	<ul style="list-style-type: none"> ▪ Distribution lists for dissemination of guidelines ▪ KAP surveys conducted at start and end of project ▪ Monitoring references to products in policy materials (post-project end): <ul style="list-style-type: none"> ▪ Draft proposals sent to Commissioners ▪ Responses from Secretary ▪ Instructions for use of products issued by policy-makers

Local communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome ...	Communication channels and media ...	Approach to monitor and evaluate ...
Fisheries managers					
<p>State: Director / Commissioner / Secretary of fisheries (head of dept – varies between states)</p> <p>National: Fisheries Development Commissioner of Min. Ag., Dept of Animal Husbandry, Dairying and Fisheries</p>	<ul style="list-style-type: none"> ▪ <u>'Managers Guide'</u>, including mechanisms for developing participatory management strategies, involving local, national and international stakeholders as necessary to allow management of unit stocks; ▪ including templates for communication products for key stakeholders, ▪ and including case studies showing successful use of FMSP tools. ▪ <u>Leaflet</u> summarising availability, uses and benefits of FMSP Tools (if budget allows) ▪ Availability of key slides from <u>PowerPoint training</u> presentation to assist managers to communicate with policy makers and/or other stakeholders 	<ul style="list-style-type: none"> ▪ Management usually based on simple technical rules (size limits or closed seasons), often with little scientific basis, and usually with little or no monitoring of achievement of goals. ▪ Most managers aware of need for stock assessment to drive management but little practical experience 	<ul style="list-style-type: none"> ▪ Increased understanding of fisheries assessment tools and guidelines to assist in stock assessment ▪ Use of FMSP products to improve management of their fisheries ▪ Inclusion of stock assessment activities in remit of Technical Monitoring Committee 	<ul style="list-style-type: none"> ▪ Participation in development and testing the application of the draft guidelines and PowerPoint training summaries, through: <ul style="list-style-type: none"> - Initial project planning workshop - Implementation of testing phase - Direct communication ▪ Distribution of final hard copy outputs via local project partners. ▪ Web sites for access to electronic versions of products and updated versions of software and guides. ▪ State governments to present proposals for collaborative management plans to National Secretary at national biannual advisory Technical Monitoring Committee of Min. Ag. Dept of Fisheries, including stock assessment (currently only consider catch assessment). 	<ul style="list-style-type: none"> ▪ Project-end monitoring through direct communications ▪ KAP surveys conducted at start and end of project ▪ Distribution lists for dissemination of guidelines ▪ References in minutes of state & national-level meetings

Local communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome of communication / promotion	Communication channels and media in which research product will be communicated	Approach to monitor and evaluate implementation of communications
Stock assessment scientists and research institutes					
<p>State: Stock assessment scientists within fisheries departments</p> <p>State research institutes:</p> <ul style="list-style-type: none"> ▪ WB: Aquatic Resource Health Management Centre, PAILAN ▪ WB: FW Fishery Research, KALYAN ▪ AP: State Institutes of Fisheries Technology – (SIFT) <p>National: CMFRI (provide advice and research for stock ass't and training in catch ass't)</p> <p>National: CIFRI</p> <p>National: FSI (responsible for estimating catches and for national-level stock assessments, and for providing training in stock ass't)</p> <p>National: CIFE</p>	<ul style="list-style-type: none"> ▪ '<u>Stock Assessment Guide</u>', advising on use of FMSP tools, and how to prepare and communicate management advice etc. ▪ <u>FMSP Tools leaflet</u> (if budget allows) ▪ Availability of key slides from <u>PowerPoint training presentation</u> to assist communication with managers 	<ul style="list-style-type: none"> ▪ Varying levels of stock assessment capabilities and use, but including use of existing FMSP tools at some locations 	<ul style="list-style-type: none"> ▪ Increased understanding of FMSP tools and guidelines and how they assist in stock assessment ▪ Increased ability to provide precautionary scientific management advice to managers and policy-makers 	<ul style="list-style-type: none"> ▪ Participation in development and testing the application of the draft guidelines and PowerPoint training summaries, through: <ul style="list-style-type: none"> - Initial project planning workshop - Implementation of testing phase - Direct communication ▪ Distribution of final hard copy outputs via local project partners. ▪ Web sites for access to electronic versions of products and updated versions of software and guides. 	<ul style="list-style-type: none"> ▪ Distribution lists for dissemination of guidelines ▪ KAP surveys conducted at start and end of project ▪ Project-end monitoring through direct communications

Local communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome of communication / promotion	Communication channels and media in which research product will be communicated	Approach to monitor and evaluate implementation of comm.s plan
Education and training institutes					
<p>State level training institutes</p> <p>State: Fisheries colleges of agricultural or animal sciences universities</p> <p>National: CIFE</p>	<ul style="list-style-type: none"> ▪ <u>Managers' Guide</u> ▪ <u>Stock Assessment Guide</u> ▪ <u>PowerPoint</u> presentations for training on use of FMSP Tools including step by step procedures (including existing presentations on each software tool from Mangalore and Visak workshops) ▪ <u>FMSP Tools leaflet</u> (if budget allows) 	<ul style="list-style-type: none"> ▪ Aware of existence of FMSP tools, with some experience in use, but would benefit from process-type training materials 	<ul style="list-style-type: none"> ▪ Incorporation of products into government and university training courses, thereby building long term national capacity for fisheries management 	<ul style="list-style-type: none"> ▪ Participation in development and testing the application of the draft guidelines and PowerPoint training summaries, through: <ul style="list-style-type: none"> - Initial project planning workshop; - Implementation of testing phase; - Direct communication ▪ Distribution of final hard copy outputs via local project partners. ▪ Web sites for access to electronic versions of products and updated versions of software and guides. 	<ul style="list-style-type: none"> ▪ Distribution lists for dissemination of guidelines ▪ Direct communication ▪ KAP surveys conducted at start and end of project ▪ Products and tools incorporated into training courses

2. Caribbean stakeholders

Local communication stakeholders	Research product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome of communication / promotion	Communication channels and media in which research product will be communicated ¹	Approach to monitor and evaluate implementation of communications plan
Fisheries policy-makers					
<p>Regional: CRFM Ministerial Council National: Ministries responsible for fisheries</p>	<p>Same as given to fishery managers</p>	<p>Generally aware of international obligations to more responsible fishery management based on scientific feedback and precaution, but not yet operationalised in any country (CRFM now developing processes and methods in new 'Ad Hoc Methods Working Group, following first meeting in May 2005)</p>	<p>Raised awareness of alternative management options, and how assessments can provide information for decision-making, leading to more scientific and 'responsible' management in future</p>	<ul style="list-style-type: none"> ▪ Distribution of project products ▪ PowerPoint presentation during meetings (and workshop when possible) 	<ul style="list-style-type: none"> ▪ Distribution lists for dissemination of guidelines ▪ KAP surveys conducted at start and end of project ▪ Monitoring references to products in policy materials (post-project end)

1. Other than distribution of the project's products, Caribbean communications activities will be implemented by CRFM and other Caribbean stakeholders, and some will occur beyond the life of the project.

Local communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome of communication / promotion	Communication channels and media in which research product will be communicated ¹	Approach to monitor and evaluate implementation of communications plan
Fishery Managers					
Chief Fisheries Officers (CFOs) / Directors	<ul style="list-style-type: none"> ▪ Printed '<u>Manager's Guide</u>', ▪ Availability of <u>PowerPoint</u> training presentation for use in communicating key ideas and messages, and highlights of a worked example <p>Messages:</p> <ul style="list-style-type: none"> ▪ Remind of international obligations (pursuant to instruments) ▪ Show appropriateness for application to tropical species ▪ Emphasize tools' capability to allow safe but flexible options to be offered to fishers and policy makers, because these tools give precautionary options while also maximizing social and economic benefits and making good use of fishing opportunities ▪ Highlight key outputs of 1-2 worked examples and examples of how management recommendations are developed from these different outputs 	As for policy makers above	<ul style="list-style-type: none"> ▪ Increased understanding of fisheries assessment tools and guidelines to assist in stock assessment ▪ Use of FMSP products to improve management of their fisheries 	<ul style="list-style-type: none"> ▪ PowerPoint presentation at annual meeting of Caribbean Fisheries Forum ▪ National Department staff seminars and meetings 	<ul style="list-style-type: none"> ▪ Project-end monitoring through direct communications ▪ KAP surveys conducted at start and end of project ▪ Distribution lists for dissemination of guidelines ▪ References in minutes of regional & national-level meetings

Local communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome ...	Communication channels and media ...	Approach to monitor and evaluate ...
National and Regional Research Institutes					
CRFM: Caribbean Regional Fisheries Mechanism (secretariat) UWI: University of the West Indies (NRM depts) IMA: Institute of Marine Affairs	<ul style="list-style-type: none"> ▪ Printed <u>Manager's and Stock Assessment guides</u> and R8360 FAO paper with software packaged on CD to facilitate training in assessment ▪ PowerPoint training presentation Messages: <ul style="list-style-type: none"> ▪ International obligations (pursuant to instruments) ▪ Show appropriateness for application to a variety of aquatic species/resources ▪ Emphasize tools' capability to offer flexibility in management strategies within determined safe margins, and to facilitate application of the precautionary approach 	Now promoting adoption of science-based stock assessment (including FMSP tools), adapted as relevant to existing 'data poor' Caribbean situation and integration with stronger planning and participatory processes	<ul style="list-style-type: none"> ▪ Increased understanding of FMSP tools and guidelines and how they assist in stock assessment ▪ Increased ability to provide precautionary scientific management advice to managers and policy-makers 	<ul style="list-style-type: none"> ▪ Seminar/meeting ▪ e-mail group ▪ FMSP website 	<ul style="list-style-type: none"> ▪ Distribution lists for dissemination of guidelines ▪ KAP surveys conducted at start and end of project ▪ Project-end monitoring through direct communications
Scientists in charge of stock assessment					
Regional: CRFM Secretariat staff National: Fisheries Officers in national fisheries departments	Same as research institutes	Same as policy makers	Same as research institutes	Present at annual scientific meeting, and CRFM Methods WG meeting Present and discuss during in-house training workshops held in national fisheries departments e-mail group	Same as research institutes

3. Global stakeholders

Global communication stakeholders	Research Product / message to be communicated	Current knowledge, attitude, practice of stakeholders	Communication objectives: Desired outcome of communication / promotion	Communication channels and media in which research product will be communicated	Approach to monitor and evaluate implementation of communications
Fisheries managers (state, national & regional, eg MRC, SADC/BENEFIT)	Finalised FMSP stock assessment tools and management and stock assessment guidelines and PowerPoint materials	Varies by location	Use of FMSP products to improve management of their fisheries	<ul style="list-style-type: none"> ▪ Promotion on relevant websites (including FAO, OneFish, ID21, WorldFish, STREAM, WIOMSA and others) ▪ Articles in fisheries newsletters (including NAGA, STREAM, and others) ▪ Promotion through fisheries e-groups ▪ Direct mailing (electronic and hard copy) 	<ul style="list-style-type: none"> ▪ To be developed, but may include (post-project): ▪ monitoring hits on websites ▪ monitoring distribution lists for newsletters ▪ direct communications
National and regional fisheries research institutes			Use of products to provide appropriate management advice to policy-makers		
National training institutes			Incorporation of products into training courses, to build national capacity for fisheries management		
Programmes / projects Eg 4 th Fish, WASFLP, LVFMP, BOBP	Availability of software tools and guidelines	Often more focused on specific activities or priorities of own project. Need to also consider broader, integrated, feedback-based approaches	Additional promotion of products through their use during project/programme		
International organizations (e.g. FAO, WorldFish Centre)			Additional use and promotion of products		
DFID Policy Division & Research Programme		Aware of existence of tools, but could be encouraged to promote these more widely through their own projects / programmes and country offices	Additional promotion of products		

Annex 7. List of Indian communication stakeholders to be used for hard copy distribution of Managers and Stock Assessment Guides.

Stakeholder category	Position / title	Name	Role / responsibility	Address	Tel/Fax/Website
Fisheries policy-makers					
National	IT Secretary (Fisheries)			Ministry of Agriculture, Department of Animal Husbandry Dairying & Fishery, Krishi Bharran, N. Delhi 110001	
State: Andhra Pradesh	Minister for Fisheries	Md. Farududdin	Policy decision	Secretariat, Dept. of Animal Husbandry, Dairy Development and Fisheries, Hyderabad, Andhra Pradesh	Tel: 040 2345 0649 www.ap-fisheries.org
	Principal Secretary	Dr S. Chellappa, IAS	Policy maker		Tel: 040 2345 2270 Fax: 040 2345 2059
	Commissioner of Fisheries	Dr. P. Sundara Kumar, IAS	Planner and Policy advisor	Dept. of Fisheries Matsya Bhavan, Masab Tank, Santhinagar Hyderabad 500 028, Andhra Pradesh	Tel: 2337 6255 Fax: 2337 6256
State: Orissa	Minister of Fisheries & Animal Resource Development	Golak Bihari Naik	Highest policy decision making authority	Government of Orissa Secretariat, Bhubaneswar, Orissa	Tel: 0674 253 6899
	Commissioner Cum-Secretary Fisheries & Ard. Dept.	C. J. Venu-Gopalan, IAS	Policy & decision maker acceptance of policy		Tel: 0674 253 6985 Fax: 240 0681
	Director of Fisheries	N.B.S. Rajput, IAS	Policy recommendations	Directorate of Fisheries, Govt. of Orissa, Cuttack 753007, Orissa	Tel: 0671 261 4061 Fax: 261 0521
	Addl. Director of Fisheries	Sri Tapan Kumar Behera		Directorate of Fisheries, Dry-Dock Jobra, Cuttack 7, Orissa	0671 261 4256
State: West Bengal	Minister In Charge of Fisheries	Mr. Kironmoy Nanda	Policy-maker of major decision takers	Government of West Bengal, Writers Building, Kolkata – 700 001, West Bengal	Tel: 033 221 5755 (o) Tel: 98 3006 2981 (m) Fax: 033 235 1959
	Secretary, Department of Fisheries	Mr. R.P.S. Kahlon	Highest signing authority of all departmental policy order		Tel: 033 2214 5777 (o) Fax: 033 2214 1346
	Director of Fisheries	Mr. Anoop Kumar Agrawal	Highest executive authority of departmental order	63 N.S. Road, Jessop Building, Kolkata-1, West Bengal	Tel: 033 2213 5710 (o) Fax: 033 2213 5773
Fisheries managers					
National	Fisheries Development Commissioner		Manager to all India fisheries and subsidies	Ministry of Agriculture Department of Animal Husbandry, Dairy & Fishery, Krishi Bharan, N. Delhi – 110001	
State	Directors / Commissioners / Secretaries of fisheries, as above				
Stock assessment scientists and research institutes					
National: CMFRI	Director	Prof (Dr). M.J. Modayil	Provide advice and research on stock ass't, and training on	CMFRI P.O. Box 1603, Ernakulam North P.O., Cochin 682 014	0484 239 4867 www.cmfri.com
	Principal	Dr. M.			

Stakeholder category	Position / title	Name	Role / responsibility	Address	Tel/Fax/Website
	Scientist and Head Fish. Res. Ass't. Div.	Srinath	catch ass't		
	Principal Scientist	Dr. G. Syda Rao	Regional office	CMFRI, Pandurangapuram (behind Aqua complex), Visakha-patnam 530 003, Andhra Pradesh	254 3154 254 3793
National: CIFRI	Director		Inland capture fisheries assessment	Central Inland Fisheries Research Institute, Barrackpore, West Bengal	2592-1190, extrn. 240
	Principal Scientist	Mr. S.K.Mandal		CIFRI, Reservoir Fisheries Division, Bangalore Unit, Hesaragatta, Bangalore 560 089 Karnataka	
		Mr. M. Karthikeyan			
National: FSI	Director General		Estimating catches, national-level stock ass'ts, and training in stock assess't	Fisheries Survey of India, Sir. P. M. Road Botawala Chambers Mumbai 400 001	022 2261 7146 / 145 022 2261 7101 Fax 02222702270
National: CIFE	Director		Research on fish stock assessment and modeling	Central Institute of Fisheries Education (ICAR), Versova, Mumbai 400 061	022 2636 1446 022 2636 3404
	Principal Scientist and Head BIPD	R.S. Biradar			
State	Stock assessment scientists, extension officers etc within fisheries departments, c/o Directors / Commissioners etc as above, including project collaborators and participants as below				
State: Andhra Pradesh	Assistant Director of Fisheries	Gopi Venkata Raju		Andhra Pradesh Department of Fisheries, Masab Tank, Hyderabad-500028, Andhra Pradesh	Tel: 040 2330 8585
	Joint Director of Fisheries	Ch. Seshasayana rao			
	Prof. & Head, Dept of Marine Living Resources	Prof. Shameem	Research Coordinator	Andhra University, Dept. of Marine Living Resources, Visakhapatnam, Andhra Pradesh	Tel: 0891 284 4731
	Professor, Dept of Marine Living Resources	Prof. M. S. Chakravarty			
	Zonal Director	Premchand		Fishery survey of India, Beach Road, Near fishing harbour, Visakhapatnam, Andhra Pradesh	
	Principal	Sri. M. Ramgopal Rao	Initiator and decision maker	State Institute of Fisheries Technology (SIFT), Jagannaickpur, Kakinada, Andhra Pradesh	Ph. 237 8552 Fax: 387 370 www.apsift.com
State: Orissa		Satyajit Kumar Bhuyan		c/o Asst. Director (M) Kujang, Jagatsingpur, Orissa	0672 223 6243
		Arjun Charan Nayak			0671 261 4256 0671 261 4002
		Dr. K.K. Samal			0675 622 0429
State:	Deputy	Dr.	Research,	Pailan Research Centre,	033 2497 8209 (O)

Stakeholder category	Position / title	Name	Role / responsibility	Address	Tel/Fax/Website
West Bengal	Director of Fisheries (M&P, Pailan Research Center)	Madhumita Mukherjee	evaluation, productivity management and policy	DH Road, Kolkata 700 104, South 24 Parganas, West Bengal	033 2323 7614 (O) 94 3310 4500 (M)
	Joint Director of Fisheries (Monitoring, Evaluation and Marketing and Statistics)	Sukhendu Chakraborti	Collection of all departmental project supporting statistics etc	60A Colootala Street, Kolkata 700 073, West Bengal	033 2215 6711 (O) 94 3318 3263 (M)
	Dy. Director of Fisheries Western Zone	Uttam Panja			032 2227 5610
	Dy. Director of Fisheries Central Zone	Gautam Sarkar			033 3482 252286
	Dy Director of Fisheries (ME & MS)	Prasanta Kumar Jana			033 2215 6711
Education and training institutes					
National: CIFE	--	--	Post-graduate education and training in fisheries	Central Institute of Fisheries Education as above	022 2636 1446 022 2636 3404
State: Andhra Pradesh	--	--		SIFT, as above	
	Principal	Sri. Rabindra-nath	Initiator	College of Fisheries, Muthukur, Nellore, Andhra Pradesh	
State: Orissa	Principal		Training	Fishery Training Institute, Balugaon, Orissa	
	Director		Education, research and training	College of Fisheries, University of Agriculture & Technology, Bangailunda, Berhampur, Ganjam 7, Orissa	0680 224 2235
State: West Bengal	Dy. Director (MP),	Dr. Madhumita Mukherjee &	Trainers special training and field officers training	Pailan Research Centre, as above, West Bengal	
	Dy. Director (Training)	Dr. B.K. Mondol			
	Professor & Director	Prof. (Dr.) Sugata Hazra	Education, research and training	Jadavpur University, Kolkata 700 032, West Bengal	Tel: 2867 1048 Fax: 2414 6242
		Dr. Abhijit Mitra		Marine Science Department, Calcutta University	98 3126 9550
	Lecturer	Mr. T.S. Nagesh		Faculty of Fishery Science, University of Animal & Fishery Science, Mohanpur, Nadia, West Bengal	93 3096 1430
	Head, Marine Science Dept			Kolkata Univ. West Bengal	
	Dean, Fishery Dept.			Viswabharati Univ., Dept. of Animal Husbandry and Fishery, West Bengal	
Others	Director of	Dr. Perar	Education,	Karnataka Veterinary,	Tel: 0824 224 8936

Stakeholder category	Position / title	Name	Role / responsibility	Address	Tel/Fax/Website
(Project R8360 Mangalore workshop)	Instruction & Secretary Asian Fisheries Society Indian Branch	Keshavanath	research and training	Animal and Fisheries Science University, Bidar College of Fisheries, P.B. No. 527, Mangalore – 575 002, Karnataka	Fax: 0824 224 8366
	Professor and Head (FRM)	Dr. N. Jayabalan			0824 224 9256
	Professor and Head (Statistics)	Professor K.S. Udupa			
NGOs / CBOs					
Regional: BOBP-IGO	Director	Dr. Y. S. Yadava	Liaison with states	Bay of Bengal Programme Post Box No 1054 91, Saint Mary's Road Abhiramapuram Chennai – 600 018 Tamil Nadu	Tel: 91 44 2493 6188 Tel: 91 44 2493 6294 Fax: 91 44 2493 6102 www.BOBPIGO.org
	Director	Dr. S. Parmanik	Training and implementation of central Govt. scheme	MPEDA, Tankapani road Bhubaneswar	
	Director	Dr. P. K. Sarangi	Training and reseach	CIFA, Bhubaneswar	0674 2434400 0674 2463421
National	Chief Editor and Publisher	J.V.H. Dixitulu	Fishing industry news	Chimes House, Sector 12, Plot 176, M.V.P. Colony, Visakhapatnam 530 017, Andhra Pradesh	Tel: 0891 278 4419 Fax: 0891 278 4542
State: Orissa	Secretary	P. Behera	Implementation of fisheries scheme	Project Swarajya, Kendrapara, Orissa	
	Secretary	K. Alliya	Decision making for small scale fishery and fishermen welfare	UAA. Arjipali Ganjam, Orissa	
Fishers associations					
National	President	Dr K.R. Prasad		Confederation of Fisheries and Aquaculture Industry Welfare Organisation / Forum of Fisheries Professionals of India, Devi Krupa, 7-5-181 Ocean View Layout, Visakhapatnam 530 003, Andhra Pradesh	0891 555 8868
State: Orissa	Secretary	Mr. K. Rath		Orissa Marine Fish Producer Association Secretary, Badapadia, Paradeep, Orissa	06811 262286

Date: 19-25 September 2005

Venue: Bangladesh Department of Fisheries Training Facility, Savar, Dhaka

Training Course Programme

Note: Numbers in brackets (Xa) indicate names of PowerPoint presentations for different lectures, given to participants on CD at end of workshop

Day 1 – Monday 19 September

09.00	Introduction of participants and trainers etc.....	MS
09.15	Course introduction and outline	DH
09.30	(1) <u>Fishery management</u> - the FAO Code of Conduct for Responsible Fisheries	DH
10.15	<i>Break</i>	
10.30	(2) <u>Stock assessment process</u> and overview of the FMSP tools and guidelines	DH
11.15	Discussion of management and stock assessment concepts	
11.30	(3) <u>Data collection</u> for stock assessment – concepts and needs.....	DH/PM
12.30	<i>Lunch</i>	
13.30	Discussion of data collection needs for different fishery management scales and use/adaptation of existing Bangladesh systems.....	DH/PM
15.00	Installation of software	All
16.00	Close	

Day 2 – Tuesday 20 September

09.00	(4a) LFDA theory sessions (1 – Fitting growth rates, 2 – Fitting mortality rates).....	DH
	(4b) LFDA practical sessions	DH

Day 3 – Wednesday 21 September

09.00	(5a) ‘Yield’ theory sessions (1 – Introduction, 2 – Equilibrium analyses, 3 – Transient projections).....	DH
	(5b) ‘Yield’ practical sessions.....	DH

Day 4 – Thursday 22 September

09.00	(6a) CEDA theory session	PM
	(6b) CEDA practical sessions	PM

Day 5 – Friday 23 September

09.00	(7) Bayesian approaches and decision making – ParFish theory session	PM
	(7) ParFish practical and feedback sessions	PM

Day 6 – Saturday 24 September

09.00	Practical session on depletion modeling (ping pong ball ‘fishing experiment’ data), and other stock assessment concepts, including training in use of Excel spreadsheets for stock assessment	PM
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Day 7 – Sunday 25 September

09.30	(8) Empirical and other stock assessment approaches	DH
10.15	(9) Training overview.....	DH
11.00	Participants to form working groups to identify future strategies (and any further training needs) for data collection, stock assessment and fishery management	Facilitator: DH
12.30	Presentations from working groups and discussion	Participants / chairs
12.45	Course evaluation questionnaire	DH
13.10	Final comments, thanks and certificates	
13.30	Workshop close	

List of participants

	Name	Address	Telephone and e-mail
1.	Sk. Mustafizur Rahman	District Fisheries Officer Barisal (Nr Chittagong)	+88-0431-64018(off) 61852(res) dfobarisal@fisheries.gov.bd sumonazma@yahoo.com
2.	Md. Aminul Islam	Chief Fisheries Extension Officer. Department of Fisheries. Ramna, Dhaka.	+8802-9561592 +880152-318626 aminul@fisheries.gov.bd
3.	Bikram Jit Roy	Scientific Officer Marine Fisheries Survey Unit, C.G.O-2, Agrabad, Chittagong	+88031-724206 bikram_64@yahoo.com
4.	Md. Kafiluddin Kaiya	Assistant Director – Open Water Fourth Fisheries Project Department of Fisheries, Dhaka,	+880152-314271 kafil@fisheries.gov.bd
5.	Sitesh Chandra Chowdhury	Fishery Survey Officer, FRSS. Department of Fisheries. Dhaka, Bangladesh	8802-7162804 sitesh@fisheries.gov.bd
6.	Md. Mahbubul Alam Miah	Deputy Assistant Director. Fourth Fisheries Project. Department of Fisheries. Dhaka, Bangladesh	+8802-8361710 mahbubul@fisheries.gov.bd
7.	Md. Ahsan Hasib Khan	Upazila Fisheries Officer Department of Fisheries Matshya Bhaban Ramna, Dhaka	+88029562861 ahasib_khan@hotmail.com
8.	Md. Monwar Hossain	Senior Upazila Fisheries Officer Ishwardi, Pabna	+8807326+63910 monwar.hossain@gmail.com
9.	Syed Arif Azad	District Fisheries Officer Sylhet, Bangladesh	+88-0821-716241 s_arif_azad@yahoo.com
10.	Nasiruddin Md. Humayun	District Fisheries Officer Luximpur, Bangladesh	+88-0381-55465 nasir_bgd@yahoo.ca
11.	Md. Tariqul Alam	Upazila Fisheries Officer Charghat, Rajshahi	+88-081670
12.	Sabita Devi	Scientific Officer Office of the Deputy Director Ctg. Division, Comilla	+880-81-67009 arghanet@yahoo.com
13.	Mst. Manzu Ara Begum	Scientific Officer Office of the Deputy Director Rajshahi Division, Rajshahi	+88-0721-760184
	Mohammad Aatur Rahman (Provided IT support)	Assistant Programmer Fourth Fisheries Project Department of Fisheries 5 th Floor, Room# 607 Matshya Bhaban, Ramna, Dhaka,	Tel : +8802-7162804 Mobile: +880172633594 ataur@fisheries.gov.bd ataur75bd@yahoo.com
	Masood Siddique DOF Facilitator	Deputy Assistant Director. Fourth Fisheries Project. Department of Fisheries. Dhaka, Bangladesh	+88-9560653 masood@fisheries.gov.bd
	Dr. Daniel D. Hoggarth Trainer	Director, Scales Inc. 66b Creffield Rd London W3 9PS	+44-0-208 992 0275 dhoggarth@btinternet.com
	Dr. Paul Medley Trainer	Sunny View Main Street Ane, North Yorks, Re, UK	paul.medley@virgin.net

Workshop Evaluation – Summary of Responses

Summarised below are the responses of ten of the course participants, plus co-ordinator, Masood Siddique, to an evaluation questionnaire used at the completion of the course. Three of the thirteen trainees were required to leave the workshop during the final morning, to attend a planning meeting at HQ, and were not able to fill in the questionnaire. Shaded cells indicate the most frequently given (modal) responses.

Section 1: Knowledge of workshop participants about FMSP tools

	Not at all	Low	Medium	Good	High
1. How familiar are you now with the general principles of stock assessment?			6	1	3
2. How well do you now know how to use the following FMSP tools:					
LFDA		1	6	3	1
Yield		5	4	1	1
CEDA		3	5	3	
ParFish			5	4	2
3. How confident are you in choosing which tool would be appropriate for a particular fishery?			7	2	2
4. How aware are you of what data are required for different stock assessment tools?			6	2	3
5. How aware are you of how the results of using stock assessment tools can be used to give management advice?		1	3	7	
6. How well do you understand how indicators and reference points should be used to scientifically guide the management of the fisheries?		3	3	5	

Note: One respondent did not answer Q1.

Section 2: Attitude towards FMSP stock assessment tools

	Strongly agree	Agree	Neither Agree nor disagree	Dis-agree	Strongly disagree
1. FMSP stock assessment tools seem too theoretical and complex and have only limited practical use.		5	1	4	1
2. We don't have the time or the finances to implement FMSP stock assessment tools at the moment.	3	4	2	2	
3. Our fisheries are well managed at the moment and I don't think that FMSP stock assessment tools will help improve our management	1		1	2	7
4. There should be higher quality of training including FMSP stock assessment tools, for those working in fisheries management in Bangladesh	11				
5. We know enough about the level of our fish stocks at the moment without using FMSP stock assessment tools		1		4	6
6. Implementation of FMSP stock assessment tools will take more time, energy and money than it will bring benefits.	2	3	2	1	3
7. FMSP stock assessment tools have a lot of potential to improve our management but there should be national policy requiring their	3	6	1	1	

use					
8. FMSP stock assessment tools are too complex for my fisheries management team to be able to use.	2	3	1	3	2
9. The use of FMSP stock assessment tools would help to ensure the sustainability of our fish stocks.	5	5	1		

Section 3. General comments or remarks about the workshop

Comments below are combined responses from all participants, with no particular sorting or grouping, or correction of English/grammar.

What was helpful?

- All tutorials and practicals were helpful.
- Become familiar with the FMSP tools.
- Good presentation and friendly behaviour of trainers.
- It is very helpful for Marine MSY, because our total CPUE decline, but total production increase due to total number of boat increase.
- It has been a very good, informative and useful training, but could be improved further by accommodating suggestions that were provided in the course (as below).
- All of the sessions about the workshop was helpful.
- To learn about the terminologies of recent stock assessment tools and models. Make a window to learn more about stock assessment.
- Very friendly trainers.
- Uninterrupted power supply [Ed.: DOF had wisely arranged for an on-site backup generator, which was needed every day].
- Learning atmosphere and demo practice.

What was not helpful?

- Our knowledge of stock assessment tools are not sufficient, which is somewhat increased.
- Due to my lack of basic knowledge on population dynamics, it was difficult to understand. I can improve myself and be ready to get next such type of workshop or training.
- The examples and exercises were mostly from temperate waters [Ed: not true in fact, although no examples were from Bangladesh waters].
- No trainers available during practice beyond training time.


What could be improved next time?

- Time schedule may be increased for detail about stock assessment methods and softwares.
- Need refresher training.
- Need more intensive training abroad and in-country.
- Need more practical work to understand and use the tools well.
- Need more hands on practice using own data.
- Needs elaborate and extensive (long-term) courses.
- May be re-designed with Bangladesh context.
- Include more practical exercise / data collection; redesign with some other info, like little introduction on fish population dynamics, marine technology, fisheries management, etc [Ed: note that these areas were introduced on Day 1, but more detailed introduction could clearly be given].
- More practicality and exercises could be appropriate to conceptualise the overall stock assessment process for various fisheries resources.
- DOF policy maker representative should join to understand the changed necessity.


General comments

- Need technical assistance to use and introduce FMSP tools in real fisheries.
- For stock assessment, more training required.
- There should be continuation of this practice. DFID can provide some more refreshers course, or higher training course for DOF-B in near future.
- Stock assessment for making management plan should be compulsory.
- Training was too difficult this time as we are ignorant. When we will be able to know, we will get training, we can then use tools confidently with increasing efficiency.

Annex 9. Promotional leaflet on FMSP tools and the new guidebooks
(pre-release version awaiting covers of guides to be included).



Fisheries Management Science Programme
www.fmsp.org.uk




**November
2005**

Fisheries stock assessment and management guides

New guides developed by FMSP Project R8468 available for Free download

Why these guides?
Most of the world's fisheries are now fully or over-exploited, with little capacity for increased production. However, there remain millions of people who rely on fisheries for their livelihoods, and who would be drastically impacted if their fish stocks collapsed. There is an urgent need for better fisheries management, in order to ensure that fisheries are sustainable, and to safeguard the livelihoods of those who depend on them.

The DFID-funded Fisheries Management Science Programme (FMSP) has developed a number of stock assessment tools and guidelines that can help to ensure sustainable fisheries management (see box below). They are appropriate for a range of different situations, including data-limited and small-scale fisheries. FMSP Project R8360 last year developed a summary guide about the different tools, which is now being published as **FAO Fisheries Technical Paper 487** (see right). This year, Project R8468 has reduced this material into a shorter two-part set that attempts to explain in simpler terms *how* and *where* stock assessment fits into the management process, and how managers and scientists can choose between the different tools that are available to them.



What are the new guides?
The two new guides outline the complementary roles of fisheries managers and scientists in the management planning, and stock assessment process. The guides were developed and tested by a team from India, the United Kingdom and the Caribbean. Although the subject is technical, the guides have been designed to be easy to read and understand.

I. How to manage a fishery – A simple guide to writing a fishery management plan
This guide is aimed principally at fishery managers. It goes step by step through a process of developing a fishery management plan. This includes setting the goals and objectives for your fishery, designing management measures to achieve those goals, and monitoring the fishery to provide necessary feedback and ensure success. It stresses the need for fishery managers and scientists to work together and the need for good scientific information to achieve sustainable fisheries and livelihoods. Examples are given of different summary management plans for a range of different biological, social and economic objectives.

II. A guide to fisheries stock assessment using the FMSP tools
This guide is aimed principally at stock assessment personnel, and shows where and how stock assessment information is needed for management, and how scientists should provide advice to managers. It emphasises the need to be able to predict the impact of different management alternatives, through using stock assessment tools. It provides illustrations of the use of different FMSP stock assessment tools (see below), and guides how and when these might be used in different situations. The latest FMSP stock assessment tools have significant advantages over some alternative products, allowing robust assessments, and incorporation of uncertainty and precaution, as required by the FAO Code of Conduct for Responsible Fisheries.

Where are these guides available?
The two new guides are available on the project R8468 page of the FMSP website – www.fmsp.org.uk. The FMSP software packages referred to in the guides (see below) are also available to download, free of charge, from the website. The detailed technical guide – FAO Fisheries Technical Paper 487 – will be available from FAO at http://www.fao.org/fi/eims_search/publications_form.asp.

What are the FMSP Stock Assessment Tools?

Software: (including help files and tutorials in download files)

- **CEDA** - Catch Effort Data Analysis: uses non-equilibrium methods to provide estimates of stock sizes, MSY reference points, catchability and other parameters;
- **LFDA** – Length Frequency Distribution Analysis: estimates growth parameters and total mortality;
- **Yield** software: estimates yield and biomass-based indicators and reference points, allowing for uncertainty in parameter inputs
- **ParFish** – Participatory Fisheries Stock Assessment: fits production model to standard fisheries and/or other data, using a Bayesian approach to integrate uncertainties.

Guidelines: (see FAO Fisheries Technical Paper 487 for further details)

- Costs and benefits of age and length based assessment methods
- Multi-species fisheries management
- Bayesian stock assessments for fisheries with limited data
- Estimating yield and stock status using life history parameters
- Empirical stock assessment approaches

The R8468 guides were written by a team from MRA G Ltd, Scales Consulting Ltd, the Field Studies Council (UK) and the Centre for Environmental Education (India), in collaboration with partners in West Bengal, Orissa and Andhra Pradesh (India), and the Caribbean.

For more information on FMSP projects, visit:
www.fmsp.org.uk

MRA G Ltd, 18 Queen Street, London, W1J 5PN, UK.
Tel: +44 (0) 20 7255 7783
E-mail: fmsp@mrag.co.uk

Front cover MG

Front cover SAG

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This document is an output of the FMSP and the views expressed in it do not necessarily represent those of DFID.

Annex 10. Knowledge, Attitudes and Practices survey of communications stakeholders at project start (Workshop 1.2b)

Questionnaire (as used on Day 2 of Workshop 1.2b – see Annex 3)

Please complete this form, and return it to James Hindson. You do not have to complete your personal details, but we would appreciate it if you would just in case we have follow up questions. All responses are confidential to the Project Team and if response are used in Reporting then no individual will be identifiable

Personal details

Name: _____ Position: _____

Affiliation: _____

Section 1: Current knowledge of stakeholders

<p>Please answer the questions in this section using the following scale:</p> <p>If you wish to clarify your answer, please add text to the lines underneath (insert more lines if required). However, please always use the scale to insert a number into the box.</p>	<p>1 = Not at all 2 = Low 3 = Medium 4 = Good 5 = High</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------

1. How familiar are you with stock assessment tools **in general**? (on the scale of 1-5)

2. How familiar are you with the following **specific** FMSP stock assessment tools ?

(on the scale of 1-5) CEDA

(on the scale of 1-5) LFDA

(on the scale of 1-5) Yield

(on the scale of 1-5) ParFish

(on the scale of 1-5) Other

3. How well do you know **how to use** the tools ?

(on the scale of 1-5) CEDA

(on the scale of 1-5) LFDA

(on the scale of 1-5) Yield

(on the scale of 1-5)

ParFish

(on the scale of 1-5)

Other

4. How confident are you in choosing which tool would be appropriate for a particular fishery?
(on the scale of 1-5)

5. How aware are you of what data are required for different stock assessment tools?

(on the scale of 1-5)

6. How aware are you of how the results of using stock assessment tools can be used to give management advice?

(on the scale of 1-5)

7. What is the most important benefit of precautionary fisheries management ?

8. How well do you understand how indicators and reference points should be used to scientifically guide the management of the fisheries?

(on the scale of 1-5)

Section 2: Current attitudes of stakeholders

Please answer the questions in this section by putting a tick in the boxes on the table below

		Strongly agree	Agree	Neither Agree nor disagree	Dis-agree	Strongly disagree
1	FMSP stock assessment tools seem too theoretical and complex and have only limited practical use.					
2	We don't have the time or the finances to implement new FMSP stock assessment tools at the moment.					
3	Our fisheries are well managed at the moment and I don't think that FMSP stock assessment tools will help improve our management					
4	There should be higher quality of training including FMSP stock assessment tools, for those working in fisheries management in India					
5	We know enough about the level of our fish stocks at the moment without using FMSP stock assessment tools					
6	Implementation of FMSP stock assessment tools will take more time, energy and money than it will bring benefits.					
7	FMSP stock assessment tools have a lot of potential to improve our management but there should be national policy requiring their use					
8	FMSP stock assessment tools are too complex for my fisheries management team to be able to use					
9	The use of FMSP stock assessment tools will help manage the sustainability of fish stocks.					

Section 3: Current practices of stakeholders

Please answer the questions in this section using **Y** (yes) or **N** (no). Different questions will be appropriate for different stakeholders, and this is indicated. However, please feel free to answer any other questions which you feel are appropriate for your situation.

Question	Answer (Y/N)
For fisheries managers and researchers	
Do you currently use stock assessment tools for your fisheries?	
Do you currently use FMSP stock assessment tools for your fisheries?	
Do you collect the following fisheries data on a regular basis?:	
Catch data	
Effort data	
Length-frequency data	
Age-frequency data	
Other (<i>please specify</i>):	
Which of the following management measures are in place in your fisheries?:	
Limits on effort	
Catch quotas	
Fish size limits	
Mesh size limits	
Other gear restrictions (<i>please specify</i>):	
Closed seasons	
Closed areas	
Other (<i>please specify</i>):	
For fisheries policy-makers	
What of the following are your current objectives for your fisheries (please indicate all which apply)?:	
Maximising catches	
Maximising revenue	
Maximising employment	
Maximising local food supplies	
Sustainable use of the fisheries	
Conservation of the environment / minimization of adverse effects	
Other (<i>please specify</i>):	
For fisheries training institute staff	
Which of the following does your institute offer training in?:	
Fisheries management issues	
Use of fisheries stock assessment tools:	
• FISAT	
• CEDA	
• LFDA	
• Yield	
• Spreadsheet models	
• Other (<i>please specify</i>):	

Section 4: Professional development related to FMSP stock assessment tools

1. Please list any training courses or professional development courses or conference related to FMSP stock assessment tools that you have attended over the last five years.

Date	No of days/hours	Location	Title	Delivering agency

Questionnaire Responses

Shaded cells indicate the most frequently given (modal) responses.

Section 1: Current knowledge of stakeholders (n = 16 respondents)

	Not at all	Low	Medium	Good	High
1. How familiar are you with stock assessment tools in general?		5	8	3	
2. How familiar are you with the following specific FMSP stock assessment tools:					
CEDA	2	6	7	1	
LFDA	2	5	8	1	
Yield		6	9	1	
ParFish	4	8	2	1	1
Other	4	7	5		
3. How well do you know how to use the tools:					
CEDA	3	4	7	1	1
LFDA	3	5	7	1	
Yield	1	9	5	1	
ParFish	6	6	2	1	1
Other	5	5	5	1	
4. How confident are you in choosing which tool would be appropriate for a particular fishery?		4	8	3	1
5. How aware are you of what data are required for different stock assessment tools?	1	1	8	6	
6. How aware are you of how the results of using stock assessment tools can be used to give management advice?		2	7	6	1
7. What is the most important benefit of precautionary fisheries management ?	<ol style="list-style-type: none"> 1. Sustainable and responsible fisheries management 2. Sustainable fisheries 3. no answer 4. Positive growth within sustainable limit in successive years 5. Sustainable catch in successive years (marine sector) 6. Sustainable growth for future management 7. Sustainable growth 				

	8. no answer 9. Without much effort for data collection, one can assess the present stock position within put from the experiences and background of landing pattern (C/E) of fishery. 10. It helps sustaining the sources for the future 11. Precautionary fisheries arrangement helps for sustainable development of fisheries to provide fishers indicators to the fieldwork 12. We can take advance action (control) when we do not really know the impact of the present exploitation level 13. Sustainability of stocks 14. no answer 15. Ensuring sustainability and hence protecting livelihoods in the absence of better / more comprehensive information 16. Protection of different species in sea water					
8. How well do you understand how indicators and reference points should be used to scientifically guide the management of the fisheries?		3	7	5	1	

Section 2: Current attitudes of stakeholders (n = 16 respondents)

		Strongly agree	Agree	Neither Agree nor disagree	Dis-agree	Strongly disagree
1.	FMSP stock assessment tools seem too theoretical and complex and have only limited practical use.	1	3	3	9	
2.	We don't have the time or the finances to implement new FMSP stock assessment tools at the moment.	4	2	4	6	
3.	Our fisheries are well managed at the moment and I don't think that FMSP stock assessment tools will help improve our management			6	6	4
4.	There should be higher quality of training including FMSP stock assessment tools, for those working in fisheries management in India	7	5	3	1	
5.	We know enough about the level of our fish stocks at the moment without using FMSP stock assessment tools		3	3	9	1
6.	Implementation of FMSP stock assessment tools will take more time, energy and money than it will bring benefits.	1	2	6	6	1
7.	FMSP stock assessment tools have a lot of potential to improve our management but there should be national policy requiring their use	6	8	2		
8.	FMSP stock assessment tools are too complex for my fisheries management team to be able to use		3	5	8	
9.	The use of FMSP stock assessment tools will help manage the sustainability of fish stocks.	6	7	1	1	1

Section 3: Current practices of stakeholders (n = 11 respondents for second attempt – see text)

Question		Answer	
For fisheries managers and researchers		Yes	No
Do you currently use stock assessment tools for your fisheries?		3	8
Do you currently use FMSP stock assessment tools for your fisheries?		1	10
Do you collect the following fisheries data on a regular basis?:			
	Catch data	10	1
	Effort data	8	3
	Length-frequency data	5	6
	Age-frequency data	4	7
	Other (<i>please specify</i>):	2	9
Which of the following management measures are in place in your fisheries?:			
	Limits on effort	2	9
	Catch quotas	0	11
	Fish size limits	3	8
	Mesh size limits	8	3
	Other gear restrictions (<i>please specify</i>):	4	7
	Closed seasons	11	0
	Closed areas	5	6
	Other (<i>please specify</i>):	1	10
For fisheries policy-makers			
What of the following are your current objectives for your fisheries (please indicate all which apply)?:			
	Maximising catches	8	1
	Maximising revenue	6	3
	Maximising employment	8	1
	Maximising local food supplies	8	1
	Sustainable use of the fisheries	8	1
	Conservation of the environment / minimization of adverse effects	9	0
	Other (<i>please specify</i>):	1	8
For fisheries training institute staff			
Which of the following does your institute offer training in?:			
	Fisheries management issues	4	3
	Use of fisheries stock assessment tools:		
	• FISAT	1	6
	• CEDA	1	6
	• LFDA	2	5
	• Yield	2	5
	• Spreadsheet models	0	7
	• Other (<i>please specify</i>):	0	7

Section 4: Professional development related to FMSP stock assessment tools (n = 16)

Date	No of days	Location	Title	Delivering agency	No. of respondents
2004	5 days	Mangalore	Training on FMSP Tools	DFID/MRAG	9
?	3 days	?	SA Training (CMFRI Guidelines)	FSI	1
No previous training					5
No answer given					1

Annex 11. Workshop evaluation questionnaire used in Workshop 1.2d

Questionnaire (as used on Day 5 of Workshop 1.2d, see Annex 4)

Name: _____

A. Session Review

Please evaluate each session on a scale in terms of Content, Clarity it brought, Method used and Time allocated for the workshop.

Contents of the session / activity

1. Content was not enough
2. The content was just right
3. There was too much

Clarity it brought

1. Very clear and helpful – I could follow it easily
2. Generally clear – I could follow it most of the time – but some sections need improving
3. Quite clear – but I did get lost a number of times – it needs quite a lot of improvement
4. Unclear – I could not follow it easily at all.

Method Used for the session

1. Appropriate – It was very useful
2. Inappropriate – Not useful. Another method would have been more appropriate

Time allocated – Was it

1. Much too long
2. Too long
3. About right
4. Too short
5. Much too short

	Content	Clarity	Method Used	Time allocated
Session 1: Introduction Inauguration, workshop objectives, programme				
Session 2: Feedback on the Guides Questionnaire and group feedback				
Session 3: Writing a Management Plan – Phase One – Where are we now? (a) Introduction to Management Planning (b) New Policy Requirements for Fishery Management Plans in Bangladesh				
Session 4: Writing a Management Plan – Phase One – Where are we now? (a) Defining Fishery (b) Stakeholder Analysis (c) Situation Analysis				
Session 5: Writing a Management Plan – Phase Two – Where do we want to be? (a) Purpose (b) Goals (c) Objectives				
Session 6: Writing a Management Plan – Phase Three – How do we get there? (a) Introduction to Stock Assessment (b) Management Standards – indicators and Reference points				

(c) Management Measures – control rules				
Session 7: Writing a Management Plan – Phase Four – How do we know we are there?				
(a) Monitoring and Reviewing				
(b) Action Planning – force field analysis				
Sessions 8-10: Planning for follow up				

B General questions

1. For me, the most valuable session during the workshop was

This is because:

2. For me, the least valuable session during the workshop was

This is because:

3. Please write an aspect of the workshop that will be particularly useful in your work and how you might use this.

4. What are your suggestions to make the workshop programme even more effective for Fishery Managers?

C. Attitude towards the proposed management planning process

		Strongly agree	Agree	Neither Agree nor disagree	Dis-agree	Strongly disagree
1	The Management Planning process seem too theoretical and complex and have only limited practical use.					
2	We don't have the time or the finances to implement new Management Planning processes at the moment.					
3	Our fisheries are well managed at the					

	moment and I don't think that these Management Planning process will help improve our management					
4	There should be higher quality of training including this Management Planning process, for those working in fisheries management in India					
5	We know enough about the level of our fish stocks at the moment without using FMSP stock assessment tools					
6	Implementation of Management Planning processes will take more time, energy and money than it will bring benefits.					
7	These Management Planning process have a lot of potential to improve our management but there should be national policy requiring their use					
8	These Management Planning processes are too complex for my fisheries management team to be able to use					
9	The use of this Management Planning process will help manage the sustainability of fish stocks.					

As a result of the Programme, what do you feel you will:

- Do better:

- Do that you did not do before:

- Do differently from before:

D. Review of Objectives

Please score each of the objectives according to how well it has been achieved for you

The score means

- 1 not achieved at all
- 2 achieved partly
- 3 mostly achieved
- 4 fully achieved

Objective	Score
To review what activities have taken place between the last workshop and this one	

To receive written and verbal feedback on the Guides	
To build participants understanding of the process of writing a Fishery Management Plan (FMP)	
To give participants practise in the key skills needed to write an FMP	
To enhance participants understanding of the key role and place of Stock Assessment Tools (SAT) in the FMP process.	
To provide participants with examples of good management plans	
To assist participants in identifying how they can develop a FMP for their fishery	

Responses

A. Session Review (means of all responses, n = 22)

	Content	Clarity	Method Used	Time allocated
1	Not enough	Very clear	Appropriate	Much too long
2	Just right	Mostly clear	Inapprop.	Too long
3	Too much	Quite		About right
4		Unclear		Too short
5				Much too short
Most positive response	2	1	1	3
Session 1: Introduction	2.0	1.6	1.0	3.0
Session 2: Feedback on the Guides	2.0	1.5	1.0	3.1
Session 3: Phase One	1.9	1.7	1.0	3.1
Session 4: Phase One (cont.)	2.0	1.5	1.0	3.1
Session 5: Phase Two	1.9	1.5	1.0	3.2
Session 6: Phase Three	1.8	1.7	1.0	3.2
Session 7: Phase Four	1.8	1.8	1.0	3.3
Sessions 8-10: Follow up	1.8	1.2	1.0	3.0

B General questions (individual responses from each participant)

1. Most valuable session/s during the workshop (and reason)

5 and 6.	This is actually need to write a Management plan
3 and 4	It is a new idea to me
4	To know something new, subject matter was described in detail, Expressing and mode of teaching was in new form to me, passed my time without exhaustion
3 and 5	Both describe a step by step approach to prepare a most effective management plan
6	This enlighten us on the very specific way to get into the subject
6	Considering that management standards is the key aspect for successful implementation of FMP
3 to 7	To achieve the target I have to take help of proper management plan
5 and 6	I am looking after all the technical projects of FD West Bengal. These sessions will be helpful for new policy
3 to 7	I have gathered some knowledge about preparation of action plans which I can disseminate to my higher officials which preparing for budget documents
3	This session taught me to get into an orientation towards management part which is a gap for technical / scientist person
6	It gave an insight as to how seamlessly stock assessment process can be interfered with

	management process
5	This clearly brought out writing a management plan incorporating purpose goals and objectives
5	no reason given
5	It provided me to think about my goals and objectives for any management plan to be developed in my state
6	This is urgently required for better management of fishery
3 to 7	Writing management plan; very clear and helpful
All	Every session is aimed at total involvement and understanding
3 to 7	Writing a management plan
3 and 5	Because writing a management plan was very clear in serving the purpose, goal and objective was very clear
4	It is analysing the present situation
5	I had little idea about writing a plan for management. It helped me to understand the pathways for systematisation
5	Setting the purpose, goals and objectives will be helpful for me while making some management plans for our FCBOs

2. Least valuable session during the workshop

8-10	Planning for follow up. It is the real feedback from the training
None	All sessions were valuable
6	The last but not the least, it requires some extra time, it is not possible to understand all within the short period, practical programmes required
7	Lack of sufficient database at hand for writing a proper management plan
None	Felt all sessions were having due importance in their own way
None	All sessions were useful and interlinked for preparing good management plan
3	This experience in some point irrelevant in Indian context
None	
	All were equally important; does not arise
7	Force Field Analysis; I am not sure how it fits into developing management action plans.
6	Already well versed with stock assessment and reference points
6	Stock Assessment; management standards not followed easily
6	I was not about to fit appropriate management measures and control rules as I am not well versed with stock assessment tools and methods
None	
	Reviewing for management and stock assessment; not much importance
None	Every session is important and each session needs understanding of the first one
	Does not arise
None	
6	Nothing is clear, all imaginary
6	I have worked on SA. As I did not attend earlier programme, I gathered little knowledge about SAT
1	Inauguration. Nothing I learnt from these formalities

3. Aspect of the workshop that will be particularly useful in your work.

Group discussion and presentations
The way all participants took part to prepare their management plan. I will follow the same system in my department
New management planning, stock assessment tools that will be used in near future
For developing / preparing the management plan for schemes
This workshop will guide to formulate a comprehensive management plan
First of all, the workshop has enriched my knowledge on FMP which would be helpful in my teaching.

Further, I can initiate SA and FM related work in our university
Prior to this workshop the concept was not clear about the subject. Now I could work for the wing with confidence
Situation analysis & stakeholder analysis are the most important part for framing up goal and objective and appropriate tool selection is the key area for proper management policy
For preparation of documents during preparation of our planning process and also useful for implementation in the field
Session 4 will be helpful for us, since the situation analysis will help to know the degree of vulnerability on certain aspects of Sundarban fishery like pollution, juvenile loss, etc
Session 5 - I can use it to appropriate stock assessment process matching into management goals and objectives
Various phases and stages in preparing fisheries management plans. This will be useful in imparting education and training to researchers, teachers and other stakeholders
Providing guidance to field officials for regular data collection, review and monitoring, linkage to higher quarter on SA and Management plan
Situation analysis which will give me a broad idea for management planning using SA and the success of implementation of such plan
As the workshop is based on active participation, this stock assessment tools may be used for better management and planning of fishery cooperatives
Session 6; how we get over there?
In participatory management
This type of workshop are very useful for learning the EMP and SA which may be implemented in MSc level syllabus and training to state officials in preparation of EMP on fisheries
SA tools
It will help me in contributing to the management plans in inland fisheries sector in India
Setting the purpose, goals, objective for a FMP will help me a lot. I will be able to influence the policy makers to accept such approaches by using my gained knowledge in these aspects

4. Suggestions to make the workshop programme even more effective for Fishery Managers?

Examples of management plans in Indian fisheries scenario
If more case studies are incorporated in the workshop programme to explain different aspects of management I think the workshop programme will be more effective for fishery managers
No comments
Statistical analysis should described more easier way
If the programme would have been carried out with testing some real examples would have been better
Overall the workshop was very effective one indeed; It would have been more effective if we would have involved some of the other key stakeholders
Awareness, wide publicity and training up to grass root level will be more effective to reach the goal
Reference from Indian fishery, time allocation for individual data input and management modelling, practical experience through field study for both DFID and participants
More practical demonstration should be included during training programme
Software training particularly through data input on the following aspects: (a) Juvenile loss (at least 10 years data), (b) Pollution (at least 20 different sampling stations; a sort of spatial variation data), Software on evaluation of fish diversity may make the workshop more practical. AAMSTAT is an important software in this context
It can be improved through analysis and discussion of real life management plans developed elsewhere that are more or less relevant to the target group
Few more successful live examples of FMPs
Management standard for selection of indicator and reference point need further simplification
After this workshop, managers should come up with concrete management plans using the available data and successive SA and test with MRAG's thinking in another workshop
To train in software process
Model management programme if included as demonstration it will be good; the programme is excellent
1. More and more motivation programme by upgradation and monitoring in regular interval through tasks

and analysis; 2. Training in computer / GIS

Such workshops arranged in regions in India with involvement of scientists and state people from time to time instead of once with few selected persons. There is need for more awareness amongst scientists; teachers; state fisheries personnel on SA, how it is done? what is EMP for fisheries and how it is prepared

Practically demonstrate with real live Indian examples using data

The materials supplied should be communicated earlier. The participants should read them carefully before coming to the workshop programme

Only the DoF/Fisheries personnels should not be trained. The local level stakeholders, like fishers representatives, CBO members, local administration, NGOs would have to be trained in this regard also. Then a joint approach for sharing view and ideas.

C. Attitude towards the proposed management planning process

Frequency of responses, with modal response shaded

		Strongly agree	Agree	Neither Agree nor disagree	Dis-agree	Strongly disagree
1	The Management Planning process seem too theoretical and complex and have only limited practical use.	1	5	2	13	1
2	We don't have the time or the finances to implement new Management Planning processes at the moment.	3	4	3	8	2
3	Our fisheries are well managed at the moment and I don't think that these Management Planning process will help improve our management	0	3	2	15	2
4	There should be higher quality of training including this Management Planning process, for those working in fisheries management in India	11	10	0	1	0
5	We know enough about the level of our fish stocks at the moment without using FMSP stock assessment tools	0	3	5	13	1
6	Implementation of Management Planning processes will take more time, energy and money than it will bring benefits.	2	2	4	12	2
7	These Management Planning process have a lot of potential to improve our management but there should be national policy requiring their use	11	11	0	0	0
8	These Management Planning processes are too complex for my fisheries management team to be able to use	1	2	5	12	0
9	The use of this Management Planning process will help manage the sustainability of fish stocks.	10	12	0	0	0

As a result of the programme, what do you feel you will do better?

In formulating specific management plan on individual fisheries

I can improve my teaching skill in the subject area

Prior to this programme there was no knowledge about SA process and preparing the plan on that subject

On management of fishery

Imparting Education and training on fisheries management along with SA

In collecting the data required for proper SA more seriously and preparing future management plans for fishery in the state
Managing sustainable fish stocks
Yes, certainly after leaving SA and EMP
Understanding the planning process
I shall try to introduce such approaches among the presently running community based fisheries management programme

As a result of the programme, what do you feel you will do that you did not do before?

Write management plans for fisheries
Assessing fish stocks with the help of FMSP SA tools
I did not go for using any management plan and SA tools
SA and thereby management plan
I can initiate the research work in our university
Sustainability of any target job / project
Include more aspects in fisheries management
Data collection and preparation of proper management plan for commercial fishes of the state
It will help in systematising any thinking and work
A more scientific and planned approach to management

As a result of the programme, what do you feel you will do differently from before?

Steps involved in writing and implementing planning
Collection of data
Take a more methodical approach
Prior to this programme there was no knowledge about SA process and preparing the plan on that subject
On phase-wise management of fishery resources
Right combination of fish SA and mgt aspects
Using this management guide, I can formulate plans step by step so that it takes care of everything
I shall try to incorporate this approach at first. It is not that things will change overnight. Gradually, I shall try to replace the wrong approach with the right one.

D. Achievement of workshop objectives

Objective	Not achieved at all	Achieved partly	Mostly achieved	Fully achieved
To review what activities have taken place between the last workshop and this one	0	5	10	1
To receive written and verbal feedback on the Guides	0	3	19	0
To build participants understanding of the process of writing a Fishery Management Plan (FMP)	0	5	15	2
To give participants practise in the key skills needed to write an FMP	0	7	14	1
To enhance participants understanding of the key role and place of Stock Assessment Tools (SAT) in the FMP process.	1	9	11	1
To provide participants with examples of good management plans	2	4	12	4
To assist participants in identifying how they can develop a FMP for their fishery	0	4	12	6

Annex 12. Draft follow-up actions proposed at R8468 materials-testing workshop, August 2005, Great Eastern Hotel, Calcutta.

Note – actions in grey-shaded rows have deadlines within end-of-project reporting period (i.e. by end of October). Other, non-shaded actions are scheduled to occur after the end of the project.

Bangladesh (Masood Siddique)

Action	By when	By Who	How to measure/verify
Brief higher officials about the necessity of SAT capacity building	Sep 2005	M. Siddique	1. Briefing paper with detailed justification 2. Minutes of meeting/s organised
Organise training workshop on SA Tools (DFID funded)	Sep 2005	Training section of DOF	Programme and participant list of training workshop
Create linkage between WB DOF and Bangladesh DOF (at DG/Secretary/Minister levels)	Dec 2005	M. Siddique & Madhumita Mukherjee (WBDOF)	Evidence of linkage (letter, minutes of meeting etc, describing any agreements)
Introduce management planning process on a test basis in at least one site of CBFM2 project	Apr 2006	M. Siddique and FCBO members	FCBO-developed plan based on FMSP guidelines

Andhra Pradesh Group

Action	By when	By Who	How to measure/verify
Explain deliberations of Kolkata workshop to AP Commissioner of Fisheries	Aug 2005	CS Rao	Letter of confirmation including response of Commissioner
Participate in CMFRI training of trainers course on data collection	Sep 2005	Trainees	<by CMFRI Visak>
Participate in CMFRI training on SAT	Oct 2005	Trainees	<by CMFRI Mumbai>
Workshop in Hyderabad with policy makers, managers, data collectors and SA staff to discuss planning process	Oct 2005	CS Rao	Workshop programme, participants list and conclusion
Implementation (of new plans)	Oct 2005	CS Rao	<Further plan to be developed>
Initiate research work on biological parameters of Ribbon fish (species composition; length-weight relationship, size at maturity; gonado-somatic index; fecundity; age) to be shared with state DOF & ICAR	Fort-nightly sampling from 22 nd Aug 05 for one year	Prof MS Chakravarty	1. Proposal to be submitted to MRAG contacts for comments 2. Report to be submitted in one years time

Orissa Group

Action	By when	By Who	How to measure/verify
Meet base level officers to develop consensus on proposed management planning for commercial fisheries, chaired by Dir. Of Fisheries / Addl. Dir. Fish.	Aug 2005	AC Naik / S Dash	Meeting minutes / report
(Following CMFRI training...) impart training to field level staff for data collection	Nov 2005	SK Bhuyan	Training workshop programmes and participant lists
Training / awareness camp for base level officers, fisherfolk and NGOs	Nov 2005	AC Naik	Programme and participant list

etc			
Preparation of comprehensive plan for regular collection of C/E & LF data of commercially important fish species	Mar 2006	SK Bhuyan	Copy of plan
Management plan for selected fish species developed and submitted to MRAG for comment, then to Minister of Fisheries for approval	<i>Mar 2006</i> <i>Dec 2007</i>	SK Bhuyan S Dash	1. Copy of draft Management Plan 2. Copy of approval letter from Secretary/Minister
Confirmation of staff responsible for SA in Orissa	May 2006	S Dash	List of responsible staff
Confirmation of staff responsible for data collection in each district	Mar 2007	S Dash	List of responsible staff
Collection of data	Apr 2007	S Dash	Summaries of data collected per month & location
Arrangement of meetings of different stakeholders to determine goals and objectives and feasible management measures	Jun 2006	S Dash	Goals and objectives listed in plan

Note – *italic text* indicates different dates suggested by different participants for same activity

West Bengal (Group 1 – initial focus on Joint Hilsa Management Plan with Bangladesh)

Action	By when	By Who	How to measure/verify
Meetings with co-op members to discuss management	Aug 2005	C Adhikary R Choudhury	Copies of materials presented, and report on responses
Capacity building and planning with co-ops using PRA/RRR methods	Sep 2005	C Adhikary R Choudhury	Report on methods used, locations, data collected, plans made and agreed etc
New management plan developed with co-ops	Oct 2005	C Adhikary R Choudhury	1. Copy of plan 2. Letter of approval from co-ops
Workshop on SA tools	Oct 2005	A Mitra B Mitra etc	Workshop programmes, participants list, proceedings
Request Minister in charge of Fisheries to accept and promote proposed fisheries management planning approaches	Dec 2005	DOF (B Mitra, BK Mondal + others)	1. Letters stating approval 2. Approved actions (e.g. for further training, workshops etc) supporting process
Data collection programme in place to support use of management planning and SA tools	Mar 2006	G Sarker... (training course trainees)	Existence of field guidance and questionnaires in local language
Development of WBDOF – Bangladesh linkages for improved management of shared stocks (e.g. Hilsa, floodplain rivers etc)	Mid 2006	M Muk'jee	Letter / report on meeting of two Fisheries Ministers or on commitment to linkages
Training programme / publicity for stakeholders about new planning processes	Dec 2006	DOF + Ponchayet / NGOs	1. Examples of publicity materials 2. Details of training programmes etc
Development of DFID collaboration/s to assist stock assessment, e.g. using ParFish tool in closed waterbodies (not Hilsa)	Dec 2006	M Muk'jee	Approved project proposal and MOU for collaboration
Situation analysis with respect to seasonal trends & time series (collaboration between WBDOF and Calcutta University)	Dec 2007	M Muk'jee A Mitra	Situation analysis report including data

West Bengal (Group 2 – Pomfret)

Action	By when	By Who	How to measure/verify
Approach higher authority for permission (and budget?) to conduct SA of pomfret fishery	25 Aug 2005	UK Sar	Letter
Prepare situation analysis for pomfret	Oct 2005	A Mitra + DOF	Summary report, supported by available data
Initiate preparation of draft pomfret management plan	Apr 2006	S Sarker	Proposal/plans
Stakeholder meeting to discuss management plans	Oct 2006	TS Nagesh	Outcome/proceedings of meeting
Stock assessment and ecological characteristics (including migrations) of pomfret in selected area	Oct 2006 Mar 2006 Dec 2007	TS Nagesh S Sarker M Muk'jee	1. SA report, results and data
Collect LF and C/E data from landing centres of South 24 Panganas district	Mar 2007	UK Sar S Sarker	Summaries of data collected by month and location
Prepare comprehensive management plan (based on MSY) for pomfret fishery	Dec 2007 Dec 2006 Apr 2006	UK Sar TS Nagesh S Sarker	2. Stock assessment report 3. Management plan (or combined?)
Production of leaflet / booklet in local language to raise awareness on need for management	Dec 2007	M Muk'jee A Mitra	Copy of leaflet / booklet
Transmission of data from WBDOF to central policy makers for development of new management rules	Dec 2007	M Muk'jee	New rules enacted
Implementation of management plan	Mar 2008	UK Sar	1. Awareness camps and meetings with stakeholders 2. New rules enacted as Acts/Regulations for WB

ICAR Group

Action	By when	By Who	How to measure/verify
Training of trainers (DOF staff) in data collection, at CMFRI, Visak	Sep 2005	Dr Syda Rao, CMFRI	Training materials, workshop programme and participants list
Stock assessment training (DOF staff, research workers, teachers), at CMFRI, Kochin or Mumbai NB: 2 nd priority of DOF, depending on availability of funds	Oct 2005	Drs Srinath & Biradar, CMFRI	Training materials, workshop programme and participants list
Introduce SAT & Management Planning in Post Graduate Diploma in Inland Fisheries Course at CIFE (University), Kolkata	From next session (Sep 2005) onwards	Prof Chandra, CIFE	Course curriculum from Director / Vice Chancellor
Continue to promote FMSP tools and software in other scheduled training courses, including distribution of software on CD of CMFRI data collection manual	Ongoing	--	--
Submit proposal for inclusion of Fishery Management Planning in new course on Aquatic Environmental Management (M.Sc.) at CIFE (University), Kolkata	Not stated	Prof Chandra, CIFE	Course curriculum from Director / Vice Chancellor
Preparation of new manuals on Stock Assessment & Fisheries Management Planning	2006-2007	Prof Chandra, CIFE	Copies of manuals

Annex 13. Letter promoting development of shared management arrangements for Bangladesh and West Bengal fisheries.

**GOVERNMENT OF WEST BENGAL
Directorate of Fishery
Jessop Building
63, N.S. Road, KOLKATA : 700 001**

Memo No. FTR/295/1/18/97(II)

Date: 26.10.2005

To: The Secretary
Department of Fisheries
Writer's Building
Kolkata-1

Sub.: Organising of periodical meetings between the Ministers in Charge of the two countries of Bangladesh and West Bengal, Department of Fisheries

Sir,

The department of Fisheries, West Bengal has successfully completed the FMSP Project R8486-Floodplain fishery management guidelines-Dissemination workshop at Great Eastern Hotel, Central Kolkata on 5-6 August, 2005. It was represented by Massod Siddique, Bangladesh Department of Fisheries/ Fourth Fisheries Project, Dhaka on behalf of your Government as special guest.

It has been felt that organizing of periodical meetings between the Ministers in Charge of the two countries of Bangladesh and West Bengal, India Department of Fisheries would be beneficial for both the land masses and its people. The border district of our state are ecologically connected with Bangladesh and would be much benefited if joint management of floodplains is performed. Also there would be an erupting need of a discussion on effluent discharge into the Ichamati River along with migratory and other species particularly Hilsa species. It is very disturbing to note that the recent market trends of Hilsa species shows that the size of catches are diminishing (even below 60 gms). This implies that recruitment of new generations would be difficult due to lack of natural brooders. A full proof quarantine would help to check unwanted disease needs to be looked into. An exchange of technical knowledge base can eventually benefit each other. It would be fruit bearing on excavation of beels fore restoration of natural cycle and riverine ecosystem. It would enhance production generate employment and resources. Besides the two sides are optimistically looking forward towards equal mindedness in handling pollution threatening to go out of control because of the huge population pressure.

I am therefore to request you to consider opening a dialogue between the Minister in charge, Bangladesh department of Fisheries and our department as to how a joint meeting could be organize on the above subject at the convenience of both the department.

Yours faithfully
Director of Fisheries, West Bengal

Copy forwarded for information to

1. PA to Minister in charge, Department of Fisheries, West Bengal
2. Mr. G. D. Chandrapal, Depty. Commissioner (Fisheries) , Govt. of India, Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries, Krishi Bhavan, New Delhi-110001
3. Massod Siddique, Bangladesh Department of Fisheries/ Fourth Fisheries Project , Dhaka.