

**ESD Reporting and Assessment  
Subprogram: Strategic Planning,  
Project Management  
and Adoption – Stage 2**  
Final FRDC Report – Project Number 2004/006  
Principal Investigator: Dr Rick Fletcher



Government of Western Australia  
Department of Fisheries



Ecologically  
Sustainable Development  
*Catching Sustainability*  
FRDC – Subprogram



Australian Government  
Fisheries Research and  
Development Corporation

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*Fish for the future*

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*This Final Report for Project 2004/006 forms part of an on-going process to develop an effective reporting and assessment framework for ESD and fisheries within Australia.*

*While this project was conducted under the auspices of the Australian Fisheries Managers Forum (AFMF) and the project was endorsed by the Marine and Coastal Committee (MACC) of the Natural Resources Management Committee (NRMC), it should not be taken as being the policy of any individual government/management agency. FRDC 2004/006 , March 2009.*

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## **Non technical summary**

### **ESD Reporting and Assessment Subprogram: Strategic Planning, project management and adoption – Stage 2**

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### **Outcomes Achieved**

The second stage of the operation of the ESD Subprogram was successful, but compared to the focus during the first subprogram period, mostly in a consolidation manner rather than from the generation of significant new tools. This was necessary because it takes time to adopt and integrate significant changes to the methods of operation of agencies and industries. The policies must be there before any real activity can occur and we found that for the broader focused, cross fishery/cross sector applications of the framework, agencies were not in a position for much of the time to apply this.

There was also the need to get a level of harmonization of policy and processes amongst agencies – especially between fishery and environment agencies before these broader frameworks can be applied in an effective manner. Such discussions are now occurring in some jurisdictions and these regional types of frameworks are therefore becoming more relevant to their operations and it is likely that they will be used with increasing frequency over the coming few years.

The projects and processes undertaken through the ESD subprogram (and related activities) have overall, been successful. It has provided the basis to demonstrate whether management has credibility with the issues of resource sustainability, functional ecosystem relationships and habitat processes such as is needed to meet the requirements of the Commonwealth's EPBC assessment. Most jurisdictions are now using the tools and frameworks developed by the subprogram or related projects.

The benefits of the subprogram are summarized as:

- The coordination and facilitation of the development of ESD related tools and processes.
- A vehicle for the extension and promotion of the tools, concepts and processes generated by the subprogram and its related projects.
- Providing a forum for high level discussion on ESD related issues and concepts.
- Providing a credible authority and legitimacy of recommendations for some purposes.
- Provision of a group of experts on ESD related issues for input into other purposes and processes.

## **Future Development**

The ESD workshop held in May 2008 outlined a number of drivers that would face fishery management over the coming 5-10 years.

- Community/Market Expectations/Policies
- Having an Effective Governance/Response Framework
- Viable (adaptable) sectors (economic/ social viability/ development) that meet community/ market expectations and/or government policies
- Dealing Appropriately with External Factors

Each of these drivers had a wide set of key objectives and actions that would need to be taken to achieve these goals.

One of the main gaps was in the effective use of social and economic tools. It is clear that there is a lack of understanding of the values and outcomes that the community wants from the management of marine resources. The difficult bit is how to get this information and to use this in a practical sense. i.e. can you do this and is it useful? This is further complicated by the observation that community attitudes are not necessarily always linked to actual performance.

One other element is the major lack of capacity for progressing many of the aspects of ESD. Given the high turnover rate of staff in management agencies and, increasingly, industry, combined with the relatively fast pace of change in this area, the body of people with expertise in the operation of the ESD framework – dissipates rapidly.

There will, therefore be a need to have regular educational programs, both refresher courses and induction courses. Train the trainer exercises may be appropriate. Another mechanism could be to employ one or two people whose job it is to go to each jurisdiction on a roving basis to provide these courses. One way to both increase capacity and to get better harmonization with other similar NRM processes is to go into partnership with the NRM groups and get people who can teach the underlying concepts common to all the systems. This team would therefore cover not only fisheries but for all NRM groups.

Irrespective of who takes ownership, there will be a need to have human and financial resources provided to undertake any of the identified actions and processes

One final aspect is the names that are used for this initiative. Perhaps it is time to shift the terms to not be an ‘ecosystem approach’ but merely a ‘systems’ approach? If we move to have our framework adopted more widely with similar terms being used across all sectors then it is very likely that the name will need to change.

**Keywords:** Ecologically Sustainable Development, Ecosystem Based Fisheries Management, Ecosystem Approaches; Risk Assessment, fisheries management, reporting frameworks, social and economic assessments.

## **Acknowledgements**

A considerable number of people helped with the operation of the Subprogram over the past three years. These include all past and present members of the ESD Reference Group. Special thanks are owed to Mr Peter Millington who continued the onerous task of chairing the ESD Reference Group and championing this initiative in other forums (AFMF, MACC etc). Dr

Patrick Hone, Executive Director of FRDC has shown ongoing support for the subprogram and its related projects since its inception.

Dr Jean Chesson not only provided valuable assistance in the generation of this final report but she has been an integral part of the continued development of this ESD system including its extension into other non- fisheries forums and industry sectors.

## **Background**

Achieving Ecologically Sustainable Development (ESD) requires the integration of short and long-term economic, social and environmental effects in all decision making. This has, until recently, been a difficult task to implement in a practical way. Significant progress has, however, been made in the past few years due to the initiatives undertaken by industry, government agencies and environmental groups, many of which have been funded by the FRDC.

In March 2000, an FRDC funded workshop on ESD was held in Geelong to generate discussion and input from a wide group of stakeholders to develop a plan to progress this issue. One of the main outcomes from this workshop was the formation of an ESD reference group that included stakeholders from the commercial, recreational and aquaculture industries, environmental groups and agencies in addition to the fisheries agencies through their Standing Committee for Fisheries and Aquaculture (SCFA) working group. The workshop also supported the funding by FRDC of two ESD related projects. One of these projects was designed to develop an ESD reporting system for wild capture fisheries capable of meeting the needs of the relevant fisheries agencies and the requirements of the Commonwealth's newly developed EPBC Act. The other project was to provide industry with a set of tools to enable them to generate their own Environmental Management Systems (EMS) which would compliment the agency-based ESD reporting systems.

The ESD reference group and the SCFA working group met in June 2000 in Glenelg and agreed upon a set of ESD objectives specifically relevant for fisheries. This meeting also developed a conceptual framework for reporting and assessing performance against these objectives, which was subsequently tested and revised through a series of case studies and reviews.

In 2001, the FRDC funded an ESD Reporting and Assessment (ESDRA) subprogram to coordinate these and other related ESD activities. Subsequent to the formation of the ESDRA subprogram a number of significant achievements have been generated. The subprogram has also assisted in the communication of these results to stakeholders through a variety of mechanisms including newsletters, publications, presentations at conferences, workshops held within each jurisdiction and the lodging of all material on the dedicated ESD website ([www.fisheries-esd.com](http://www.fisheries-esd.com)).

The projects coordinated within the ESDRA subprogram have successfully developed a "How To Guide" for completing ESD reports for wild capture fisheries (Fletcher et al., 2002) and a "Technical Support" manual that summarized the information generated during the Case Studies (Whitworth et al., 2002). This ESD reporting framework for wild capture fisheries has now been endorsed by the Ministerial Council for Natural Resource Management (NRMMC). More recently, the first draft of a companion ESD Assessment manual has been completed. This summarises the information available on what is considered acceptable performance across a number of objectives, species and fisheries.

The other major initiative that has been completed is the development of the Seafood EMS Chooser. This was developed by SSA in conjunction with Ocean Watch and industry EMS case studies under the Green Chooser project. This is located on the SSA website.

Activities currently underway within the subprogram include the completion of an ESD framework for Aquaculture; the generation of a handbook for completing Social Impact Assessments and the refinement of techniques to complete economic comparisons between commercial and recreational sectors.

A number of issues have been identified for future work within the subprogram. These include further development of the assessment manual, techniques to allow the integration and interconnection of indicators to be made along with the need to extend the ESD Frameworks to cover multi-fishery issues (such as cumulative impacts and allocation) and multi-sector issues associated with marine planning. Each of these initiatives has been endorsed by both the ESD Reference Group and the MCNRM.

A review of the ESDRA subprogram activities was completed in July 2003 through a combination of meetings that included the ESD working group of NRMSC, the ESD Reference Group and a joint meeting of the FRDC board with the members of the Australian Fisheries Managers Forum (AFMF). One outcome of these meetings was a recommendation that the subprogram should continue. This recommendation was subsequently endorsed by the NRMMC.

## **Need**

Effective coordination of the activities needed to progress the implementation of Ecologically Sustainable Development (ESD) within the fisheries and aquaculture sectors is essential. The concepts of ESD cover a variety of different disciplines including environmental, social, economic, legal and administrative. Furthermore, the stakeholders involved include the research agencies, fisheries management agencies, environmental agencies, the commercial, recreational and aquaculture industries along with the non-government organizations plus indigenous interests. Therefore, the standard jurisdictional, discipline or stakeholder consultative structures are not appropriate to meet this task.

A “Subprogram structure”, which has a reference group that acts both as a coordinating group and as a method of increasing communication amongst the different parties, has proven an effective method of administering these activities for the past two years. The duration of the current ESD Reporting and Assessment (ESDRA) subprogram project will finish in June 2004. At this time, however, a number of ESD based initiatives will still be underway. Moreover, a number of new initiatives have only just been endorsed by the ESD reference group and the Ministerial Council for Natural Resource Management (NRMSC) and are likely to be funded in the coming round of applications. Therefore, to assist in the effective management and coordination of these activities (and any future developments) an extension of the subprogram for a further three year period will be required.

## **Objectives**

1. Facilitate the discussion and coordination of ESD related issues amongst the various stakeholder groups
2. Coordinate and facilitate the development and evaluation of ESD related project applications submitted to FRDC
3. Coordinate the preparation and delivery of the ESD subprogram communications strategy
4. Facilitate travel of ESD Reference group members to the annual workshop and meetings

## **Methods**

### **Project Coordination and Development**

The coordination and discussion of issues related to progressing ESD was accomplished by holding regular meetings with the ESD reference group.

The items covered in these meetings included

- An update on progress for each of the projects covered by the subprogram.
- A report by each of the stakeholder groups on ESD related issues.
- A report on the outcome of discussions at AFMF, MACC plus the NRMSC and NRMMC.
- General discussions of future needs and possible areas where new projects may be needed.
- Analysis of any project applications that have been submitted relevant to the activities of the subprogram.

The composition of the ESD Reference Group includes representatives from:

- MACC/NRMSC/AFMF (i.e. fisheries agencies, DEH, NOO, EPAs)
- FRDC
- ASIC
- National Aquaculture Council
- RecFish Australia
- NGO groups (currently Traffic Oceania)
- Relevant Experts (covering the three disciplines of Social, Economic, Environmental)

The outcomes of these meetings were circulated to all participants as a meeting report. A summary of this was incorporated into newsletters that were circulated by email, hard copy and lodged on the ESD website.

Additional coordination was also achieved by the direct attendance of the subprogram leader at meetings of AFMF and MACC (which includes the heads of all fisheries agencies, DEH - DEWHA, NOO and a number of State conservation agencies).

### **Workshops and Conferences**

A number of workshops and conferences on ESD related topics were held during this period that were directly or indirectly sponsored or supported by the ESD subprogram.

### **Communication**

There was a continuation of many activities that began in the first subprogram period including

- the generation and distribution of regular newsletters,
- updating the ESD website with new material and
- presentations of updates at industry and technical conferences

To enhance the effectiveness of communication of any achievements and outcomes of the work completed within the subprogram to the broader community a communications consultant will be employed to develop a communication strategy.

**Extension**

Reflecting the consolidation phase that the subprogram experienced in this current three year period, a significant level of effort was put into the concepts and tools that had been developed by the subprogram being extended for use within a number of fishery jurisdictions outside of Australia. Furthermore, these ESD techniques were also extended for their use within a number of non-fishery sectors within Australia.

**Review**

A review workshop was held in 2008 (FRDC 2008/057). This reviewed the progress that had been made by the subprogram activities over the past 7 years to determine if the subprogram had achieved its objectives and whether any further work was required and if so, whether this would benefit from taking a national approach.

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## **1.0 Results & Discussion**

### **1.1 Roles and Responsibilities**

The objectives of the Ecologically Sustainable Development Reporting and Assessment (ESDRA) Subprogram did not change significantly from the first period. They were to:

- Act as the coordinating hub for the development of information and tools for ESD reporting and assessment.
- Facilitate practical implementation of ESD initiatives by providing a leadership role.
- Coordinate and facilitate the development and evaluation of relevant applications on the reporting and assessment of ESD.
- Facilitate the participation of the ESDRA Reference Group.
- Assist project integration and value-adding through regular project workshops.
- Coordinate the formulation and delivery of the ESDRA communications strategy.

### **1.2 ESD Reference Group**

The Ecologically Sustainable Development Reporting and Assessment Subprogram continued to an ESD 'Reference Group' as its main consultative body. Thus, the ESDRA Reference Group included representatives from:

- most fisheries agencies;
- other relevant areas of government;
- commercial fishing industry;
- indigenous interests;
- recreational fishing;
- aquaculture;
- Fisheries Research and Development Corporation; and
- environmental groups.
- relevant experts

### **1.3 Reference Group Roles**

The ESDRA Reference Group had four main roles:

- Provide comments and feedback on the progress of current ESDRA projects
- Assist in the identification of future directions for projects within the ESDRA Subprogram
- Provide comments on applications submitted for funding through the ESDRA Subprogram
- Assist the flow of communication into and from the ESDRA Subprogram and their particular agency/industry/group.

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## **2.0 Meetings and workshops of the ESD Reference Group**

### **2.1 Dates**

- 22 September 2004 – Adelaide SA (Workshop)  
5 November 2004 – Melbourne Vic (Meeting)  
21 April 2005 – Cronulla NSW (Meeting)  
1-2 June 2006 – Adelaide SA (Workshop and Meeting)  
12-13 October 2006 – Adelaide SA (Meeting)  
4 April 2007 – Adelaide SA (Meeting)

### **2.2 Summary of Meeting Outcomes**

#### **September 2004 Ecosystem Modelling Workshop – Review of Current and Proposed Projects**

- It was concluded that there was not a large amount of overlap in the activities being undertaken in ecosystem modeling.
- The group expressed the benefit of having the discussions to share their experiences and gain an understanding of what each group were doing and hoped that similar meetings could be organized when appropriate.
- It was clear the there should be significant synergy between the development of models and experimental designs and outcomes.
- There was a clear need to help generate methods to develop indicators.
- There are two types of issues – one that relates to the entire ecosystem with the other related to specific issues of a higher level concern (e.g. icon species).

#### **November 2004**

- Progress of the aquaculture EMS project was outlined.
- Links between the recommendations outlined in the DAFF sponsored ‘Maunsell’ report on ESD for aquaculture and the subprogram were discussed.
- The completion of the social assessment handbook was discussed and the progress in completing the two SA case studies was outlined.
- The draft objectives and methods of the FRDC project to review ESD across the jurisdictions by CSIRO were discussed.
- An update on progress in extending the EMS process to various industry groups.
- The lack of a general understanding of the ESD subprogram and the tools already available by many scientists was raised as a communication issue.

#### **April 2005**

- It was agreed that a short ‘idiot guide’ to ESD needed to be written.
- Updates on all ESD projects were provided.

- A planning session for the ESD Needs survey was confirmed.
- An update on the NOO processes was provided, and there was discussion on how these could be coordinated with the National framework. There was a commitment for the possibility of a joint project occurring.
- An update on the Signposts for Agriculture project was provided – this project uses the same concepts as developed in the national framework and applies them to agriculture systems.
- The linkages with the AFMF research priorities and the outcomes of research needs from the EPBC assessments was discussed and the process to try and harmonise these was established.

### **June 2006**

- The letter from the FRDC board asking the question of the chairman on the value of the subprogram for assisting with future ESD activities was discussed. The need to get clarification on this issue was supported.
- The draft communication plan was discussed and the development of a small 4 page brochure was supported.
- The development of a curriculum framework was also supported.
- Outcomes from the DEH workshop fishery re-assessments that was to make recommendation on any adjustments to the EPBC process were outlined.
- Each jurisdiction and group gave an update on issues and progress of their projects relevant to the ESD subprogram.
- An update on the progress of the projects managed by the subprogram.
- The extension of the ESD framework into new projects within the Pacific and within WA were outlined.
- A demonstration of the potential value of qualitative modeling for use within an ESD context was provided by CSIRO.

### **October 2006**

- Each jurisdiction outlined ESD/EBFM related work that was currently underway.
- The new communication brochure was circulated.
- The placement of ESD related PowerPoint presentations on the website was supported.
- Updates on current projects were provided.
- A small team was identified to assist the ESD needs project develop appropriate questions for the survey.
- An ESD case study on the SA marine scalefishery was identified.
- An outline of the WAMSI EBFM project was completed and members of the reference group were invited to the first case study meeting.
- The outcomes from the AFMF risk assessment workshop were discussed.
- An update on the EPBC reassessment process was provided and discussed.
- There was a long discussion on where to from here for the subprogram particularly whether it was sensible to move to more of an EBM approach. It was suggested that this needed to be taken to the various parent bodies.

- A meeting to be held in April 2007 to scope out what should be in final report and what type of forum should be held to determine future directions.

#### **April 2007**

- The group reviewed the outcomes from the ESD/EBFM survey. Suggestions were made on the structure of the report including making it into 2 sections – a general and a specific. The specific section would only be available to the jurisdiction who provided the information. A final review of the report was to be completed.
- Updates on activities were provided by each of the groups/jurisdictions.
- A summary article was to be generated and a presentation be given to senior bureaucrats in Canberra.
- The progress in developing an FRDC climate change document was discussed.
- Updates on current ESD related projects were provided.
- New projects for the next round were discussed.
- Future directions for the subprogram were again discussed and it was agreed that a scoping paper would be generated as the basis of a review.

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## **3.0 Summary of Project Management and Input**

### **3.1 FRDC 2000/145: ESD Frameworks Part 2 – Cross fishery frameworks**

#### **Background**

Following the completion of the wild capture framework, it was identified that other frameworks were needed to enable full implementation of ESD across all sectors. This required a separate framework for aquaculture and also frameworks to enable cross fishery and cross-sectoral assessments.

There has been a high level of confusion in the use of terms such as Ecologically Sustainable Development (ESD), Ecosystem Based Management (EBM), Ecosystem Based Fishery Management (EBFM), Integrated Oceans Management (IOM) and Environmental Management Systems (EMS). As part of the ESD workshop held in April 2004, these specific terms, and the general problem of dealing with different terminology amongst groups and countries, were discussed by the ESD Reference Group.

With a more general agreement on ESD definitions, being used by the Australian Fisheries Management Forum<sup>1</sup> and the Marine & Coastal Committee of the Natural Resources Management Standing Committee (NRMSC), the ESD Reference Group determined that ESD was the overall goal and that the other terms (e.g. EBFM) described strategies that were being used to work towards the goal of ESD.

#### **Subprogram Involvement**

November 2004 - A short version of the ASFB presentation on these new frameworks was provided to the reference group. This outlined the agreed terminology for ESD ABFM etc developed at the April 2004 workshop. It also outlined the progress that had been made in extending the ESD framework to cover the cross fishery and cross sector (EBFM, EBM, IOM) issues.

The work that had begun in NSW and WA on the cross fishery issues was discussed. It was noted that we were still yet to engage formally with NOO to ensure linkages with the IOM process. This was to be rectified at the next meeting.

April 2005 – Following presentations from NOO the reference group made three suggestions;

- i) NOO trial the use of the ESD framework – including the component tree approach as an engagement tool to assist achieve an outcome and,
- ii) The South West Region be used as the case study to trial the multi sector framework.
- iii) That a subcommittee be formed with representatives from the Subprogram and NOO to determine the engagement process and size of subsequent project (which would then go back to FRDC board for validation).

October 2006 - the Group was given a brief overview of the WAMSI project which was going to be used as one of the case studies for this approach.

- WAMSI operates similar to a state CRC – State government has allocated \$20 million to promote marine science within WA to meet Government outcomes.

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<sup>1</sup> Which includes the heads of each fisheries agency in Australia

- Broken up into 6 Nodes
- Node 4 – EBFM - \$5million allocation
  - Attempting to apply National ESD Framework at the regional level, rather than the fishery level.
  - 5 different projects within the Node

April 2007 - A PP presentation on WAMSI node 4 was presented. This included the component trees for the west coast bioregion that were currently in development. The group was advised that there will be a 2-stage external workshop for stakeholders whereby they will have a day's exposure to EBFM for the west coast and then will be able to respond at another workshop to be convened later. Members of the ESD reference group were invited to attend.

May 2008 – The current progress in this case study was presented to the ESD review workshop.

### **Summary Outputs from Project**

Initially it was envisaged that this would be done as a joint exercise with NOO. Whilst this was investigated vigorously both by the PI and the reference group as a whole (see above) the changes in scope that were made to the NOO marine planning processes during 2006 meant that they were no longer similar enough to be considered viable.

The formation of WAMSI and the subsequent funding of a series of projects to implement EBFM for a major region of Western Australia provided the best vehicle for undertaking a comprehensive case study of this type. This WAMSI initiative has 5 interrelated projects of which one – the EBFM framework project - is being part funded by these FRDC funds.

So far this project has generated the overall EBFM framework for the West Coast bioregion – a total of 460 issues/assets have been identified across the ecological, social, economic and institutional components of EBFM. There have been agreements across government on the main ecosystems within this system and risk analyses have begun to identify the issues that need specific management beyond what is currently being done for the single fishery arrangements. (see also section 5.6)

## **3.2 FRDC 2003/056: Social Assessment Handbook: A guide to methods and approaches for assessing the social sustainability of fisheries in Australia.**

### **Background**

This project will produce a handbook that will enable all fisheries around Australia to finalise their SCFA assessment process using an approach to social impact assessment that is consistent with the issues and values articulated in Section 6 “Impacts of the Fishery on Community Wellbeing” and Section 7 “Impacts of the Fishery on National Socio-economic benefits”. The social impact assessment (SIA) framework and guidance on methods/approaches for each stage of an SIA will allow practitioners to develop skills and confidence to undertake or commission sound assessments of the social impacts of changes in fishing industry policy. This will also facilitate increased awareness of potential social impacts and improved planning and management to take these into account, amongst fisheries managers. This project will additionally incorporate a component of case study work to review the effect of government

action in facilitating the use of social capital to assist fishing communities in adjusting to changes in resource access. The case study component of the work will complement the SIA Handbook through both testing it, and with further assessment criteria of a communities' ability to adjust to resource access changes.

### **Objectives**

Provide a user-friendly "How To" handbook for practitioners that will:

- 1) Include a framework outlining the scope and content of SIA for fisheries management;
- 2) Describe the range of methods or approaches that can be employed at different SIA stages;
- 3) Provide an assessment of the relative strengths and limitations of different methods or approaches;
- 3) Complete case studies to test application of the handbook.

### **Subprogram Involvement**

In April 2004, a discussion was held on what two case studies should be used, to assist in the development of the handbook. It was decided that there would be a region based case study and a fishery based case study.

In November 2004 the completion of the social assessment handbook was discussed and the progress in completing the two SA case studies was outlined. This was in its final stages and was to be available early in 2005. The group was very impressed with the types of results that were being collected using these methods.

In April 2005 the social assessment manual had been completed and was awaiting release. The two case studies were also nearing completion. The group wanted to know the cost and length of time involved in completing each of the case studies to provide some guidance to those who may contemplate such a project.

In June 2006 the group noted briefly the Social Assessment Handbook and how it was completed. BRS had produced a small pamphlet on the SA Case Study that picked up the key messages in a very readable form. This was designed to explain what social assessment could give you, that is what could you expect get out of social assessment as a response to why would you complete one.

### **Summary Outputs of Project**

- This project developed a booklet outlining the methods for undertaking various types of social assessments.
- It also generated two case studies, both of which have been published.

### **3.3 FRDC 2004/036 Review of the scope, assessment methods and management responses for fisheries ESD and EBFM in Australia**

#### **Background**

In 1997 the FRDC Board initiated a review of ESD application across jurisdictions (FRDC Project 98/168), and later worked with the Standing Committee on Fisheries and Aquaculture (SCFA) to develop a national approach to ESD in fisheries. Following on from this project, the FRDC Board suggested that a national review be conducted of the scope, assessment methods and management responses for Fisheries ESD and EBFM, and to clarify understanding of the relationship between fisheries ESD and other similar approaches or terms. This review would provide an opportunity to repeat the national ‘snapshot’ of experience and approaches across jurisdictions (provided by Project 98/168), for the period from 1998 to 2006.

#### **Objectives**

- Compare and contrast the scope, principles and criteria of fisheries ESD and EBFM.
- Review and report on the major issues raised from the EPBC strategic assessment process for ESD and EBFM, and implications for R&D.
- Review the recent developments in fishery assessment methods, indicators and benchmarks used in Fisheries ESD/EBFM assessments and their state of development, and develop agreed directions on future assessment processes by end users (i.e. fishery regulators and DEH).
- Review the response by fishery management agencies and FRABs to the fisheries ESD/EBFM assessment methods, their status, development and future directions, and identify gaps and implications for R&D.
- Identify possible bottlenecks for implementation and cost implications to fisheries.
- Develop and deliver presentations and ‘plain English’ written summaries of the results of the review to Commonwealth and State fisheries departments, and other relevant Commonwealth agencies.

#### **Subprogram involvement:**

November 2004 - Discussions were had on the objectives for this project and the appropriate ways of engaging agencies to obtain the best information. The workshop for the subprogram in 2005 may form part of this project (see later).

April 2005 – After an update the group discussed the need for a planning session for this project to be held in conjunction with the next AFMF meeting in June, with a report from this session to be presented at the next ESD Reference Group meeting in November.

June 2006 – The project leaders provided the group with an update. There had been a revised timeline for the project. The aim is to look at the coherence, complex in policy legislation; various instruments of implementation etc then do an analysis of the responses to strategic assessments in particular. A report, questionnaire and workshop arose. Wanting to determine the main impediments to implementation of ESD, the Chairman suggested a presentation to AFMF and the Subprogram in March 2007, in order to get input. There was also a suggestion to target peak industry groups.

October 2006 – PI gave an update on the project

The Group discussed the questionnaire and the three areas of potential questions –

- ESD/EBFM
- Fishery Assessment Methods and Tools
- Implementation Issues

There were concerns that the governance and reporting components weren't covered. It was suggested a small group get together to further discuss the questions for the survey.

### **Summary Outputs of Project**

A key finding of this study was the widespread view that there is an ongoing need for a national forum to coordinate approaches to EBFM. Such a national forum should bring together a range of stakeholders involved in the development and implementation of EBFM, including fishery managers, industry, environmental agencies and NGOs, and various disciplinary experts. The need for and focus of such a national forum is categorised under the following four elements:

1. The need for continued improvements in coordination and consistency in approach across fisheries, jurisdictions and departments. By applying a consistent approach to ESD/EBFM across all jurisdictions and working with DEWHA to assist with fishery assessments and marine planning.
2. There are considerable variations in use of assessment and management tools by ESD components, and variations within and between jurisdictions in use of assessment and management tools. Develop a plan for further development of indicators and reference points, focusing first on those areas where least progress has been made.
3. A key issue/challenge for implementation of ESD/EBFM across all jurisdictions is the need for adequate resources (funding and people) and data, analysis, research and decision support.
4. Closely linked to capacity is the need for education and training for fisheries managers, industry and researchers to enable them to develop a set of skills that better match the expected roles and responsibilities necessary for implementing EBFM.

The continuation of a high level national process and forum involving key stakeholders in policy, management, industry, environmental NGOs and key government agencies. Second, a smaller, adequately resourced, and more dedicated team tasked with implementation and coordination of key recommendations.

### **3.4 FRDC 2004/096 The development and production of EMS template documents for the salmonid, oyster and abalone aquaculture sectors in Tasmania (advice only)**

#### **Subprogram Involvement**

In November 2004 an outline of project was provided

- Has one of the industry pioneers in EMS (Col Dyke).
- State based assessments of oyster, salmonids and abalone aquaculture industries
- FRDC funding for two years with TFIC as principal investigators and DPIWE as hosts and co-investigators + industry

- Will use ESD 'How to guide', including risk assessment framework. Has initially modified component trees for oyster industry

June 2006 – PI gave a presentation on the development of the EMS framework template document based on the ESD framework for Aquaculture.

October 2006 – PI provided update:

Almost all projects, except Salmon, have been delivered

Presented at Australasian aquaculture conference – requests for documents from national and NZ.

Most successful outcome – requests from two aquaculture industries in Australia to develop the ESD compliance documents at the National level.

### **Summary Outputs of Project**

EMS reports on each of the three sectors have now been published.

## **3.5 FRDC 2008/057 Geelong revisited: from ESD to EBFM – future directions for fisheries management**

### **Background**

In March 2000, FRDC funded a workshop in Geelong to develop a plan to implement ESD. This workshop, which was attended by all jurisdictions, commercial and recreational fishing groups and non-government organisations, identified a set of national projects to enable effective incorporation of ESD within the management of fisheries. These projects, which were coordinated by the ESD Subprogram, generated an ESD framework plus a suite of other tools to enable any wild capture fishery report against ESD. This was followed by a workshop held in 2002 that similarly addressed the ESD needs for each of the aquaculture sectors.

A key finding of the recent review of ESD implementation across all Australian fisheries jurisdictions (see above project 2004/036) was the need for a national forum to coordinate approaches to ESD and EBFM. Consensus is needed on the degree to which an integrated, national approach should be taken to further develop tools for EBFM and regional marine planning, or whether these should continue to be developed using jurisdictional based approaches.

### **Objectives**

1. Formally review (a) the progress nationally against the aspirations of the ESD Conference in Geelong in 2000; and (b) the outcomes of the FRDC ESD Sub-Program which arose as a result of that Conference.
2. Determine whether a national program is required to assist in the development of state and federal initiatives associated with fisheries and marine management at the regional scale.

### **Subprogram Involvement**

Representatives of the ESD reference group were on the Steering Committee for this workshop. This involved a series of telephone link ups to determine the scope of the workshop; the participants, the agenda and the facilitator.

## Summary Outputs of Project

There was general agreement that:

1. Significant progress had been made in the implementation of ESD since Geelong 2000.
2. Having to undertake assessments to meet the EPBC requirements had played an extremely important role in this progress.
3. There was still a lack of understanding/acknowledgement by the community about the level of progress that had been made by the fishing industry.
4. Most of the progress had been made in the ecological area with minimal progress in social and economic areas.
5. Whilst valuable tools, including risk-based frameworks, are now available, there has been inconsistent use of these across jurisdictions.

The workshop agreed that:

1. The projects and processes undertaken through the ESD subprogram (and related activities) had, overall, been successful. It has provided the basis to demonstrate whether management has credibility with the issues of resource sustainability, functional ecosystem relationships and habitat processes needed to meet the requirements of the Commonwealth's EPBC assessment.
2. The analysis of the progress that had been made towards an ESD based assessment and management of individual fisheries determined that:
  - Target species are relatively well covered; a number of tools were developed and used, many of which include risk based approaches. For the commercial fisheries these processes are now core business but there has been less application for recreational fisheries and minimal application for indigenous fisheries.
  - Non-target/bycatch/by-product species. Many of the tools for target species can be applied to this set of issues but it is often more difficult to demonstrate adequate performance as there are less data; but risk assessments can assist with such deficiencies.
  - The assessment of ecosystem-level issues still requires further tool development, but this may be best done at a regional level, not at the individual fishery level.
  - Economic considerations are not widely used, they are needed to inform management decision making within an ESD framework. There are tools available, but almost no uptake on an ongoing basis.
  - For the social and cultural areas, there is lack of a clear policy framework. This includes a lack of understanding of the issues and acceptance of the value of this information because it is not clear what to measure and, more importantly, to what end?
  - There are multiple tools to assist with overarching management frameworks that include risk-based approaches and adaptive processes such as harvest strategies.
  - There are few tools available to enable integration of the three ESD components to compare management options and assist with decision-making.
  - While some effort has been expended in education and extension, more needs to be done, especially to engage the wider community, industry but also the market.

The second part of the workshop looked forward to see what were likely to be the main drivers and issues that would be confronting fisheries management in the next 5-10 years.

The presentations and table discussions generated the following:

### **Driver 1. Community/Market Expectations/Policies**

#### **Key Goals**

- Informing and getting understanding by the community of EBFM expectations.
- Getting an agreed understanding of what EBFM/ESD actually means, which will require community engagement.
- There is also a requirement to have political will to enable any decisions and programs to progress.

### **Driver 2. Having an Effective Governance/Response Framework**

#### **Key Goals**

- Obtaining the harmonisation of governance and jurisdictional arrangements.
- Getting a clear alignment of the information and data collected with management needs.
- Have an holistic risk based framework for decision making (covering all sectors) that includes effective implementation and robust decision settings.

### **Driver 3. Viable (adaptable) sectors (economic/ social viability/ development) that meet community/market expectations and/or government policies**

#### **Key Goals**

- Getting improved Access Security
- Ensuring affordability of management (i.e. Who Pays for what?)
- Given that the progress towards ESD is at very different levels for the different sectors, determining which sectors should be included in the future plans (and to what level) is required?

### **Driver 4. Dealing Appropriately with External Factors**

#### **Key Goals**

- Better alignment of marine planning processes (including the establishment of MPAs) with fisheries management processes and arrangements.
- Integrated Coastal Zone management that includes the assessment of cumulative impacts from all sources.
- A whole of government decision making framework that effectively deals with these broader issues.
- Clear whole of government objectives for regions that have appropriate guidelines that clearly articulate what impacts are, and are not, allowed on aquatic system health
- Have Governments recognise the need to be accountable for the responsibilities that they already have under their current sets of legislation

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## **4.0 Summary of Project Outputs**

### **FRDC 2001/145 – ESD Reporting phase 3**

#### **Outputs**

- A published paper in ICES Journal of Marine Science on risk assessment methodologies for fisheries management
- A published scientific paper in Bulletin of Marine Science on the linkages of frameworks for ecosystem approaches
- A published chapter in an ICES funded book on the experiences in applying the ecosystem approach to various fisheries
- A draft set of component trees and risk assessments for the West Coast Bioregion of WA

### **FRDC 2003/056 Social Assessment Handbook: A guide to methods and approaches for assessing the social sustainability of fisheries in Australia.**

#### **Outputs**

- A Social Assessment Handbook.
- Two Case Study assessments – South Australian, lakes entrance

### **FRDC 2004/096 The development and production of EMS template documents for the salmonid, oyster and abalone aquaculture sectors in Tasmania**

#### **Outputs**

- Reports on EMS for three Tasmania aquaculture sectors (oysters, salmon and abalone)

### **FRDC 2004/036 Review of the scope, assessment methods and management responses for fisheries ESD and EBFM in Australia**

#### **Outputs**

- Final report

### **FRDC 2008/057 Geelong revisited: from ESD to EBFM – future directions for fisheries management**

#### **Outputs**

- A workshop report
- A set of powerpoint presentations
- A series of recommendations to AFMF/MACC

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## 5.0 Communication

### 5.1 Communication Plan

One of the main tasks of this phase of the subprogram was the development and implementation of a communication plan. The plan was developed in 2005 through a series of meetings and through the use of the AFMF communications subcommittee.

The draft plan was discussed and agreed to by the ESD reference group in June 2006 and the agreed full plan is located in Appendix 2. The following are the list of main strategies that were identified and there is a short description of what progress was made against each of these:

1. *A simple four-page 'brochure' that markets the wealth of material now developed by the ESD subprogram and related activities and scientific references (most of which are available on the national ESD website or its direct links – eg SSA). It will also stress the importance of having a clear understanding of ESD in a natural resource management agency – from the perspective of getting in a job in an agency of this kind, as well as carrying it out well. This will be used for a saturation campaign, similar to that used by Seafood Services Australia for its EMS Project.*

**Progress** – A full color 6 page brochure was produced (see Appendix 4). This brochure outlined the major elements of the National ESD framework process and how the various concepts of ESD EBM and EAFM/EBFM fitted together. It also included some testimonials on the value of this work by international experts.

2. *Direct mail the four-page brochure to target audience in fisheries and environmental agencies, NGOs and universities across Australia. Seafood Services Australia may be able to help with mailing lists. Subprogram executive officer to prepare/source suitable mailing lists.*

**Progress** - partial, the brochure was mailed to each of the AFMF agencies.

3. *Get the brochure placed in every fisheries conference pack across Australia in the next 12 months. Executive officer to develop list of relevant conferences and arrange this.*

**Progress** – this occurred to a reasonable capacity. The brochure was placed as inserts in the conference packs of five major conferences and at a number of smaller workshops in Australia. It is still being used and is about to be a conference insert in the upcoming ASFB conference in Sydney.

It has also been used as a promotional material for three overseas conferences and workshops. It has also been circulated at the conference on EAF held in Norway, at the Arabian Gulf Conference in Kuwait, at two FAO sponsored workshops on EAF in Rome.

4. *Based on the four-page brochure, prepare two identical static display posters for the FRDC, that are taken by FRDC staff to every conference the FRDC attends throughout Australia, along with a supply of brochures. Check that this is being done through monitoring of the use of the display materials, which is carried out by the FRDC's National ESD reporting and Assessment Subprogram who attend these conferences and follow ups by executive officer.*

**Progress** – this was not done.

5. *Arrange a panel of suitably knowledgeable speakers from the FRDC's National ESD Reporting and Assessment Subprogram that can speak on ESD and the subprogram at universities (specifically those with fisheries, marine biology and marine planning courses) around Australia. Such members would be encouraged to visit universities as a 'side trip' from conference trips/meetings in Australian cities to speak on ESD and the FRDC's*

*National ESD Reporting and Assessment Subprogram. Undergraduates in marine biology and marine planning would welcome a chance to hear a guest lecture on ESD, in particular from a nationally-acknowledged expert.*

**Progress** - This was not done in a formal capacity.

6. *Promote this work as a necessary part of any marine science based curriculum subject, particularly those that have any management aspects. This will best be done by personal contacts with the key players in each of the main marine science institutions. This material could, however, also be of appeal to broader sustainable development courses as case studies where ESD has been put into practice.*

**Progress** - This was not done in a formal capacity .

7. *Continue to develop the national ESD website, in particular the bulletin board that is used to promote interesting events (i.e. guest lectures at universities – see previous strategy).*

**Progress** - This is still underway. The website continues to be the main focus for general communication about the activities and outputs from this subprogram. A copy of the entire website to be generated to disk – as an archive.

8. *Continue to publish the results of the subprogram projects in international journals, speaking at national and international conferences and workshops.*

**Progress** – This is still occurring and has been probably the most successful element of communicating the benefits of the subprogram activities. During this phase the ESD national framework and the subprogram have been the topic of conference and or workshops held in Florida (US regional), England; Rome x 3 (international), Norway (international), Canada (regional), Kuwait (regional), Vanuatu x 3, Solomon Islands (regional), Samoa, Noumea x 2 (regional). See full lists below 5.4 and 5.5.

## **5.2 Summary of ESD Website**

The website remained the major communication tool for the Subprogram to assist those wanting to understand or utilise the outputs of the national initiative to implement ESD within the management of all Australian fisheries and aquaculture resources.

The stand-alone website is aimed at assisting fisheries managers and the industry Australia-wide, to implement ESD. The National Fisheries ESD Website (located at <http://www.fisheries-esd.com.au>) was revamped but still structured on a multi-tier basis with the level of infrastructure provided about ESD should suit a range of stakeholders. However, the information was especially aimed at assisting fishery managers, the industry, environmental groups and the wider community in understanding of the issues and providing a simple means to find relevant information and downloadable publications.

To increase the access to the site, a number of aliases were adopted – this included

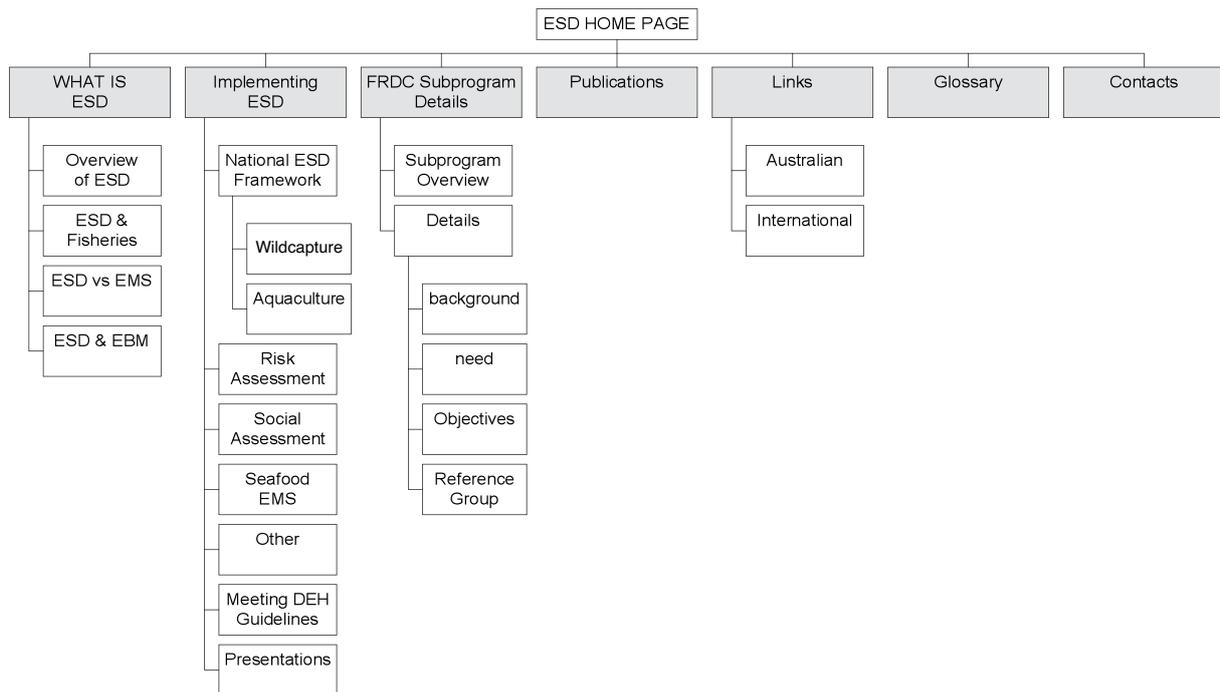
[www.eafm.com.au](http://www.eafm.com.au)

[www.ebfm.com.au](http://www.ebfm.com.au)

[www.aquaculture-esd.com](http://www.aquaculture-esd.com)

The major aim of the website is for the collection and dissemination of ESD information for fisheries managers, assisting them in its implementation. However, the site has the potential to become the national information hub on ESD for the entire fishing industry.

The updated design of the website is shown below.



The webpage includes the ability for readers to provide feedback on how valuable the website has been in providing information – 5 Very helpful – 4 Somewhat helpful – 3 uncertain – 2 some use – 1 No use at all.

The responses received tended to rate the site either at one end of the range or the other. Thus most of the comments received were that it was very helpful (score of 5). The next most common response were those that said it was ‘no use’. Of these people, however, most provided additional comments that they wanted very detailed information on specific management strategies - which were beyond the scope of this site - i.e. closed seasons, closed areas, a list of fish that were sustainably caught. Thus, it probably depended upon whether the inquiry was of a generic or specific nature.

In addition to the formal responses via email, the subprogram leader has had a number of individuals comment on the value of the website and they have expressed their satisfaction with the website and the valuable material that can be downloaded from it.

This website needs to be maintained in some form following the end of the subprogram – it is a very useful product.

### **5.3 Printed Material – Newsletters, Brochures, Reports, Articles**

Only three newsletters were produced over the duration of the project. These were distributed both nationally and internationally to a variety of organisations that include Fisheries and other related agencies, industry groups, recfishing groups, conservation NGO's and other interested parties.

The aim of the newsletters was to provide a summary of the progress of the ESDRA Subprogram. They include:

- Current progress reports on existing projects
- Updates and information on new projects
- Details of upcoming workshops and conferences
- Outcomes of related workshops and conferences
- Jurisdictional updates - what ESD related activities are occurring and what level of uptake of the Subprogram outputs has taken place.
- Identification of future work that needs to be completed eg new frameworks, extension etc.
- Details of the next meetings

As these reference group meetings became 12-monthly ESD Reference Group meetings only one newsletter was produced per year.

### **5.4 Conferences and Meetings**

Conference papers were presented by the Subprogram leader at a number of conferences.

These include :

- *“Frameworks for managing marine resources in Australia using ecosystem approaches: do they fit together and are they useful?”* Mote Symposium September 2004 Florida
- *“Implementing sustainable development in a practical way”* FAO Rome September 2004.
- *“ESD Reporting Frameworks for Fisheries”* Indian Ocean Conference. February 2005 Fremantle WA
- *“Using EBFM to inform management at a regional level to inform regional marine planning - National Abalone Conference* June 2005 Melbourne Vic.
- *“Sharing the fish, and other resource access issues: how can this be done at a regional level?”* FAO Sharing the Fish Conference. June 2006 Fremantle. WA
- *How do all the ecosystem based terms fit together? Where does an aquaculture EMS fit into ESD?* World Aquaculture Society Meeting Adelaide 2006
- *EAFM Frameworks in Australia and the Pacific Region Overview and Lessons Learned.* CEIF Conference Bergen, Norway. September 2006
- *Implementing ecosystem based fisheries management: lessons learned and application for the Gulf Region.* STAFO Conference Kuwait February 2007
- *EAFM Frameworks in Australia and the Pacific Region overview and lessons learned.* NAIF Conference

- *Ecosystem Approaches in Western Australia: Where have we been, where are we going?* SPC Workshop on Ecosystem Approaches. Noumea September 2007
- *FAO EAF February 2008*

## **5.5 Workshops and Meetings (Australia)**

A number of workshop presentations were completed by the Subprogram Leader, that was not part of the initial project case study list. These were undertaken to promote the concepts developed and extend the information to all jurisdictions.

### **ESD Training Workshops**

- August 2006 – ESD training workshop in Tasmania – using rock lobster as the case study
- September 2006 - ESD training workshop in WA – finfish aquaculture as the case study

### **Presentations to Boards/Committees**

- Inter-Departmental Committee on Aquaculture – South Australia
- Marine Stakeholder working group in WA
- Northern Irrigation Futures Working Group
- FRDC Board – Breakfast forum on Sustainability in fisheries
- Senior Officers Group – Western Australia

### **Steering Committees – Working Groups**

- DEH Review of EPBC Assessments
- FRDC Social and Economic Working Group
- AFMF/FRDC Climate Change reviews
- NAC – Aquaculture – social indicators
- AFMF – SSR meetings

## **5.6 Extension of ESD Framework into other Processes (Domestic and International)**

The tools and processes developed within the ESD subprogram were also promoted to be taken up within other systems. The following outline the various systems where this occurred in a major fashion and is therefore not an exhaustive list of the systems that have been influenced by the ESD subprogram.

***WA Marine Science Institute (WAMSI) - Node 4*** Sustainable Marine Ecosystems: Ecologically Sustainable Development for the Marine State's Fisheries

The overall strategic purpose of this node of WAMSI is to develop methods and/or generate the information needed to assist with the management of the marine ecosystems of Western Australia to meet the principles of Ecologically Sustainable Development. Implementing these ESD principles in a practical manner for fisheries has involved the development of a new management approach which is termed Ecosystem-Based Fisheries Management (EBFM). This approach will require supporting research that is additional and, in many cases, very

different in nature to the current, traditional fisheries related research programs. This Node has five interrelated research components each of which has a number of research elements that have been designed to progress the practical implementation of EBFM within Western Australia

*Key Outputs* - Develop a complete initial EBFM framework for each of the highest priority bioregions of Western Australia (the Gascoyne and West Coast Bioregions) by applying the processes developed by the National ESD Reference Group.

- Produce updated EBFM reports for each bioregion that includes operational objectives, indicators and performance measures for each of the critical elements needed for effective management. These will constitute the major output for this project, forming the underlying management and information framework for implementing EBFM and identifying the elements that Government and stakeholders will need to consider when developing policy to effect changes in governance

### **FAO – EAF approach**

A Workshop on a Toolbox for the Ecosystem Approach to Fisheries (EAF) was held in Rome, Italy, from 26 to 29 February 2008. This workshop was designed to initiate the development of a toolbox to assist with the implementation of EAF to all fisheries. The process identified that the National ESD framework is a major component of such a toolbox and it is central to the FAO's own EAF guidelines.

The outline of this workshop report recognises that there is considerable confusion in the fisheries management world about EAF. EAF is not about understanding in detail the functioning of the ecosystem and it is not necessarily about increasing knowledge about the functioning of the ecosystem. It is now recognised as the appropriate framework for fisheries management. It has been found in practice that the best way to dispel misunderstandings about the EAF is to actually go through the process of implementing the EAF using a risk based approach similar to that developed in Australia for the implementation of Ecologically Sustainable Development.

The Australian framework to implement the EAF is one way of conceptualising the fishery in an ecosystem context. It is a tool to identify and clarify issues, identify areas where there are tensions, as well as agree on objectives and potential management responses. It allows the identification of the major risks of not achieving the objectives and the identification of measures to mitigate these risks. In less developed management systems, there may be a gap between prioritisation and the development of appropriate management measures: the process will identify the issues, but insufficient human and financial capacity may hinder the implementation of solutions.

### **FFA – Tuna Fisheries in the WC Pacific**

The entire national ESD framework has been adopted by the Western Central Pacific Tuna Commission as the model to implement Ecosystem Approaches to Fisheries management for their tuna fisheries. Oceanic tuna fisheries are one of the major components of a complex marine ecosystem that exists in the western and central Pacific region. Pacific island countries who are influenced by their obligations to various international and regional management regimes and treaties, have been involved in the development of viable management arrangements that will be effective in addressing issues such as resource sustainability, fishing capacity and effort control, maximizing benefits from resource utilization and mitigating impacts on the

environment and non-target species. These issues are specifically covered by the objective of the Convention on the Conservation and management of highly migratory fish stock in the western and central Pacific Ocean (WCPO) which is to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stock in the WCPO in accordance with the United Nations Convention on the Law of the Sea (1982), and also many of the articles within this convention.

The issues outlined in the WCPO Convention are fully consistent with implementing EAFM. Article 5 of the convention outlined what is expected for “*target species, non target species, other dependent species within the ecosystem, minimising waste and pollution, endangered species, biodiversity, optimum utilisation, the welfare of the various states involved including the interests of artisanal and subsistence fishers*”. Thus, the implementation of EAFM should not be seen as either a major change in direction for the WCPO Commission nor will it require adding EXTRA elements. Rather, it is largely a framework that should help coordinate current activities, making them clearer by giving a ‘home’ to many of the strategies and monitoring programs already being undertaken.

Given the success of the National ESD system in meeting the needs of Australian fisheries, this approach was chosen as the basis for the development of a system specifically designed for use in the tuna fisheries of the Pacific region. Whilst a number of changes have been made to the framework which relate both to the specific circumstances of fisheries management in the Pacific but also from further experiences using the system, it is essentially the same process but the pathways and the levels used have been suitably adjusted.

One of the key issues covered was that the scope of some issues were difficult to define given that these fisheries deal with tuna which are transboundary and highly migratory species- therefore the fisheries operate at island, country and region levels. There was also a need to have increased emphasis on the social and economic analyses in the system as this is crucial in the decision making process especially in co-management regimes that are currently practised in most fisheries of the Pacific countries. There were also different concepts of acceptability for some elements, particular interactions with species of customary importance both among countries and regions.

### **SPC – Coastal Fisheries of the Pacific**

Following the week long workshop a number of issues have been raised, a number of documents have been produced and a number of follow up actions are needed to assist with the use of the EAFM system by SPC, specifically within the coastal fisheries unit.

This workshop completed a number of example cases studies to show that the system could operate in all circumstances.

The system could be used in the following manner:

- Initial scoping study
- Gathering information that is already available on a region/fishery
- It can be the basis of discussions with other SPC staff to get their knowledge on these issues
- It would be possible to complete an initial risk assessment to try and assist identify likely issues that may need to be researched or the key priority areas
- This would generate a ‘straw man’ that could be used as the basis of initial discussions with representatives of the country – or a country representative could be brought in to be part of this process

- Whatever is produced through this in-house process would not be a final document. Thus it would not be ‘given’ to a country. For example, the actual risks – and the objectives against which risk would be assessed against - would need to be determined with the relevant agencies, people and communities in the region being examined.

### **Canada – Herring Fisheries**

Based upon the information provided on the Australian ESD framework at the FAO workshop on EAF, the subprogram leader was invited to assist the Canadian Government in their implementation of EAFM. The forum for this was a workshop where members of the Fisheries Resources Conservation Council (FRCC) of Canada were presented an outline of how the Ecosystem Approach to Fisheries was being applied in Australia and the Pacific. Because EAFM is a concept that is currently an initiative for Canadian fisheries, the FRCC wanted to examine how the Australian system operated as part of their process for providing advice to the Minister for Fisheries on the future management of the Canadian herring fishery – and all Canadian fisheries.

The review of the herring fisheries that the FRCC is undertaking covers the whole Canadian Atlantic coast, which comprises several different fisheries and several different stocks. Whilst these fisheries share many characteristics there are also differences: some are predominantly purse seine fisheries (e.g. in the Bay of Fundy), while others are predominantly gillnet fisheries (e.g. in the southern Gulf of St. Lawrence).

It was decided that the workshop would focus on one region as a case study. The area chosen was the southern gulf stocks (4T 4VN). Within these regions, gillnets are the predominant gear and purse seine have allocated only about 20% of the TAC. There has been a long standing conflict, at least since the late 1970s, between inshore (gillnets) and the purse seiners which may resolve itself in 2008 by the PS being eliminated. Also the autumn spawners biomass is higher than average while the spring spawners are close to the lowest biomass observed (or inferred).

The workshop included the following steps:

- Overview of Ecosystem Approach to Fisheries Management
- Development of component trees for the herring fisheries
- Complete risk assessment for identified issues
- Identifying priorities and importance of socio-economic and governance issues
- Example Management Reports
- Conclusion of Ecosystem Approach To Fisheries Management

Over the two days of the workshop, the EAFM process was outlined to the participants using the herring fishery of the southern gulf region as the case study, including both the spring and fall stocks, and the gillnet and purse seine fisheries. During this period, the scope of the herring fisheries in this region were specified and draft ecological, economic and social values were identified.

From this scope the participants identified the issues/components for this fishery that are relevant to EAFM using a set of component trees to organize the issues into a sensible structure. The issues identified included 12 retained or target species issues, 12 issues associated with other species captured by the fishery, 17 components of the broader ecological impacts from the fishery, 30 economic and social elements, plus 31 institutional/governance elements and finally

16 external driver issues that could affect the performance of this fishery. Risk assessments were completed for many of these and example management reports were generated.

The workshop successfully outlined the EAFM process for participants. It is expected that the material that was generated along with the experiences of the participants will enable a full analysis by the FRCC of the value of the ESD framework for use in the management of the herring fisheries and, possibly all fisheries, in Canada.

### **Northern Irrigation Futures**

As part of the joint Commonwealth, state and territory initiative to manage the northern irrigation systems of Australia, in a sustainable manner, the ESD framework has been adopted as the main consultation mechanism for identifying all of the relevant ecological, social and economic issues amongst the diverse set of stakeholders. This project is being run by CSIRO from Perth.

### **Agricultural Futures – Signposts for Australian Agriculture**

The Australian Government (DAFF) had commissioned the National Land & Water Resources Audit (the Audit) to explore means of reporting on the contributions made by Australia's primary industries to ESD. The Audit commissioned the Bureau of Rural Sciences (BRS) to work with selected research and development corporations (RDCs) to develop and pilot a reporting framework suitable for use by industry based organisations and governments to measure and assess the overall performance and direction of agricultural production in Australia.

The reporting framework they used is the same in concept to that developed for the fishing and aquaculture sectors but specifically tailored for use in an agricultural situation. This highlighted that the generic processes developed within the Subprogram were robust in nature, flexible and likely to be adaptable to most circumstances.

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## **6.0 Outcomes – Jurisdictional Uptake**

At each of the ESD Reference Group meetings, the representatives of each jurisdiction provided an update of the uptake of the tools developed by the ESD Subprogram. This update was both on the level to which they were using the ESD framework within their general operations, and more specifically, in generating their applications to meet the EPBC requirements.

Over time, presentations by each jurisdiction indicated that the level varies according to the jurisdictional requirements and the level of resources available. All jurisdictions agreed that these tools have affected their processes and outcomes in a positive fashion.

The following is a summary of this uptake as of mid 2007.

### **6.1 Implementation of ESD processes and tools within Wild Capture Fisheries**

The extent of uptake of these ESD tools within the wild capture sector of each jurisdiction was most recently reviewed through the ESD review workshop (See section 3.5 above).

### **6.2 Implementation of ESD Processes within Aquaculture**

#### **Western Australia**

Each of the aquaculture sectors in WA are now being put through the ESD framework process. These reports are being used as the basis for getting bilateral agreement and MOUs with the Department of Environment and Conservation for assessments of new and revised aquaculture permits and licenses.

#### **South Australia**

No information available.

#### **Victoria**

The case studies, for the salmonid aquaculture industry and offshore aquaculture fishery reserves examine their performance and compares the ESD reporting tools with an industry EMS. The EMS side of it has grown up through mature industries like Trout. The EMS performance levels were interesting in that they were not driven only by fisheries agencies but in partnership with EPA and by environmental management agencies.

#### **Tasmania**

##### **Industry**

There is a high level of use of the ESD framework within industry. All major aquaculture sectors in Tasmanian have EMS documents and systems based on the ESD framework

##### **Government**

Only minimal uptake

#### **Queensland**

No information available.

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## **7.0 Benefits**

The key benefits of the Subprogram have been:

### **The coordination and facilitation of the development of ESD related tools and processes.**

- It has continued to facilitate the generation of a number of key research projects designed to make further progress in the development of ESD related tools.
- The subprogram has provided ongoing advice to a number of projects – even those that were not directly managed.
- The tools that have been developed through the subprogram are considered to be world's best practice and are now being used not only within Australia but are being taken up by external groups such as FAO.
- The subprogram was the main vehicle for getting harmonisation of the alternative ESD related processes that were operating.

### **A vehicle for the extension and promotion of the tools, concepts and processes generated by the subprogram and its related projects.**

- The subprogram generated a communications plan that assisted in the extension of the ESD framework material – this was mainly targeted at the fishery managers and fishery research groups.
- The maintenance and revision of the subprogram website have been highly valuable for getting the information on the outputs from the subprogram to the potential users of these tools.
- There has been a substantial number of publications generated by the subprogram – including journal, other scientific and more popular articles
- Individuals from the subprogram have completed a significant number of conference and related presentations on the ESD frameworks.
- The subprogram has assisted in the extension of the use of the ESD frameworks into use by jurisdictions for both wild capture and aquaculture sectors
- There has been substantial extension by subprogram members of the ESD framework and tools into the updated processes being used by fisheries managers in other countries, regional management authorities and certification groups
- Given the universal value of the tools developed, they have also been extended by subprogram members into other natural resource management systems including agriculture and irrigation.

### **Providing a forum for high level discussion on ESD related issues and concepts**

- The subprogram has provided a regular forum for the discussion of issues amongst fisheries agencies, environmental agencies, the seafood industry and the environmental NGOs. This has assisted in developing a greater level of partnership amongst all these stakeholders.
- It has also provided a forum to be informed of what activities were being done in other areas of NRM
- It has provided regular update on the status of progress by key stakeholder groups on their progress towards implementing ESD.

- It allowed regular discussions amongst all jurisdictions about the problems they were facing in meeting EPBC requirements and other ESD related issues, including marine planning.

**Providing a credible authority and legitimacy of recommendations for some purposes.**

- It provided a relatively easy source of direct information and experiences for use in other ESD projects – networks of people, consultation
- The subprogram has therefore generated and provided a ‘community of common practice’ within which there is a critical mass of ideas and expertise. This allows more authoritative outputs to be generated – greater than if it was only outputs of individuals
- Thus a key benefit of the Subprogram was the generation of a set of agreed ESD terminology. Given the subprogram’s status, these definitions have now been agreed by the Australian Fisheries Management Forum and the Marine & Coastal Committee of the Natural Resources Management Standing Committee.

**Provision of a group of experts on ESD related issues for input into other purposes and processes.**

- Members of the subprogram have often been requested to attend meetings to ensure that the ESD process is recognised and incorporated into the development of other initiatives
- These processes included being key members of the groups that developed the climate change policy for fisheries and also the updated guidelines for undertaking EPBC assessments.

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## **8.0 Further Development**

### **8.1 Individual Wildcapture Fisheries**

The outcomes from the ESD Review Workshop, which identified a series of issues that required further development for the implementation of ESD within single wild capture fisheries, are summarised below.

#### **Overall:**

- While significant progress has been made in the implementation of ESD, there is still a lack of understanding/acknowledgement by the community of this progress;
- Most of the progress has been made in the ecological area with minimal progress in social and economic areas; and
- Valuable tools, including risk-based frameworks are now available, but there has been inconsistent use of these across jurisdictions.

The main gaps still remaining for the ESD based assessment and management of individual fisheries are:

- Target species are relatively well covered; a number of tools were developed and used, many of which include risk based approaches. For the commercial fisheries these processes are now core business but there has been less application for recreational fisheries and minimal application for indigenous fisheries.
- Non-target/bycatch/by-product species. Many of the tools for target species can be applied to this set of issues but it is often more difficult to demonstrate adequate performance as there are less data; but risk assessments can assist with such deficiencies.
- The assessment of ecosystem-level issues still requires further tool development, but this may be best done at a regional level, not at the individual fishery level.
- Economic considerations are not widely used, they are needed to inform management decision making within an ESD framework. There are tools available, but almost no uptake on an ongoing basis.
- For the social and cultural areas, there is lack of a clear policy framework. This includes a lack of understanding of the issues and acceptance of the value of this information because it is not clear what to measure and, more importantly, to what end?
- There are multiple tools to assist with overarching management frameworks that include risk-based approaches and adaptive processes such as harvest strategies.
- There are few tools available to enable integration of the three ESD components to compare management options and assist with decision-making.
- While some effort has been expended in education and extension, more needs to be done, especially to engage the wider community, industry but also the market.

## **8.2 Future Drivers - EBFM and Regional Management**

The second part of the ESD Review Workshop looked forward to see what were likely to be the main drivers and issues that would be confronting fisheries management in the next 5-10 years. The key goals that were identified will require additional work to complete.

### **Driver 1. Community/Market Expectations/Policies**

#### **Key Goals**

- Getting an understanding of community EBFM expectations.
- Getting an agreed understanding of what EBFM/ESD actually means, which will require community engagement.
- There is also a requirement to have political will to enable any decisions and programs to progress.

#### **Possible Actions**

##### 1.1 Define community expectations:

- Review the available data, information and research on community and market engagement.
- Using best practice methods, identify community expectations.

##### 1.2 Evaluate/review:

- Public relations strategies to address (influence) expectations.
- The use of branding as a method for increased exposure and engaging public sentiment.
- The requirement to implement existing government policies and/or possible future policy development and alignment.

##### 1.3 Develop a national, all-sector, outwards looking community engagement strategy:

- This will need to be multi level with defined target audiences that does not just deal with the commercial sector not just individual species, but deals with fishing in general.
- It will need to clear what we mean by ‘community’? Is this the seafood community (direct), seafood consumers, the broader community (less direct), international community?
- It should also cover the impacts of other activities on fish stocks and fishing.
- The key messages for each sector will need to be defined and include standardised language to minimise confusion.
- The objectives for this strategy will need to align with federal and state policies.
- It should include an intelligence program that covers data collection, data curation, analysis, outputs.

##### 1.4 Develop outcomes, programs and objectives based on confirmed community expectations, that includes a feedback loop.

##### 1.5 Move to the use of a formal risk management framework (i.e. progress from just the use of risk assessment).

##### 1.6 Increase capacity and understanding by fishers of their responsibilities.

### 1.7 Improve political will:

- This may be aided by dealing positively with community expectations.
- Getting endorsement from the Natural Resource Management Ministerial Council (NRMMC): have this group sign off on the final agreed process; e.g. adopting an improved EBFM framework.
- This would include ensuring that there is a commitment to appropriately fund this process.

## **Driver 2. Having an Effective Governance/Response Framework**

### **Key Goals**

- Obtaining the harmonisation of governance and jurisdictional arrangements.
- Getting a clear alignment of the information and data collected with management needs.
- Have an holistic risk based framework for decision making (covering all sectors) that includes effective implementation and robust decision settings.

### **Possible Actions**

- 2.1 Generate a clearly articulated public policy on the real risks from the utilisation of aquatic resources.
- 2.2 Get a high level sign off on what are the acceptable levels of risk and the acceptable levels of impact. This will require a public policy debate about what is acceptable to define the rules of engagement.
- 2.3 Get acceptance of risk assessment methodologies and risk management as the basis for decision making:
  - This leads to getting more formal outcomes on ‘acceptable’ levels, (that may vary over time with community attitudes), that will be more robust and provide greater certainty for decision-making.
  - The assessment of risk needs to cover not only ecological but social and economic issues and objectives.
- 2.4 Ensure that there is community consultation within the risk assessment process and any cost benefit analysis.
- 2.5 May need a new policy to capture the current thinking on ESD.
- 2.6 Getting harmonisation of management arrangements. This might include:
  - States and Commonwealth working better together.
  - Removing the inefficiencies in the current Offshore Constitutional Settlement (OCS) arrangements.
  - Having effective stakeholder representation at a range of scales including the regional level.
  - Getting recognition that there are already a range of tools to support process.
  - Top down or bottom up implementation → AFMF → MACC → NRMSC → NRMMC
  - Consideration of whether there should be a federal EAFM Act?
- 2.7 Getting a good alignment between information available with needs:
  - Only collect data that is needed, not what is possible because the collection of data is a strategy not a driver

- Data collections should therefore be based on risk, including external risks (“unknown” unknowns).

#### 2.8 Improve the longer term benefits of data collection systems:

- Deal with the collection of ‘ecosystem level’ data.
- Move beyond environmental data to include social, economic, cultural and governance information.
- Recognise the opportunities to look at contrasts when they arise.
- Address the general lack of long term data series within Australia (compared with elsewhere) by ensuring ongoing funding for required programs.

### **Driver 3. Viable (adaptable) sectors (economic/ social viability/ development) that meet community/market expectations and/or government policies <sup>2</sup>**

#### **Key Goals**

- Getting improved Access Security.
- Ensuring affordability of management (i.e. Who Pays for what?).
- Given that the progress towards ESD is at very different levels for the different sectors, determining which sectors should be included in the future plans (and to what level) is required?<sup>3</sup>

#### **Actions**

- 3.1 Define objectives for the different sectors.
- 3.2 Develop tools to achieve these objectives.
- 3.3 Develop tools to measure success (e.g. tools are currently not available to easily measure social success or economic success).
- 3.4 Undertake reviews of the social impacts that are generated by other non-fisheries outcomes.

### **Driver 4. Dealing Appropriately with External Factors**

#### **Key Goals**

- Better alignment of marine planning processes (including the establishment of MPAs) with fisheries management processes and arrangements.
- Integrated Coastal Zone management that includes the assessment of cumulative impacts from all sources.
- A whole of government decision making framework that effectively deals with these broader issues.
- Clear whole of government objectives for regions that have appropriate guidelines that clearly articulate what impacts are, and are not, allowed on aquatic system health.
- Have Governments recognise the need to be accountable for the responsibilities that they already have under their current sets of legislation.

<sup>2</sup> It was noted that this is really a specific community value (i.e. driver 1)

<sup>3</sup> For example, should tourism be included or is this EBM? This decision could be informed by what the community thinks should be included.

## **Possible Actions**

- 4.1 Have it recognised that many external impacts are generated by the outcomes of implementing other legislation and policies.
- 4.2 Develop a more robust and efficient method for dealing with these issues, i.e. a single consolidated agency not a number of smaller agencies with significant overlaps/ disputes.
- 4.3 Clarify relevant legislation to ensure that it takes into account social and economic assessments of the external impacts on fisheries.
- 4.4 Ensure that there is a legal obligation of other parties to undertake assessments of the impacts on fisheries and on the fishing industry including social and economic elements.
- 4.5 Educate community about the outcomes of these external impacts.
- 4.6 Develop industry capacity to equip it to better respond to these challenges.
- 4.7 Ensure that the operation of the EPBC Act is amended to include external factors explicitly (it is already included within the legislation).

## **8.3 Co-operation and Harmonisation**

Integrating more with land based activities – main stream NRM groups and agencies – this could include harmonizing the ESD framework with the MERI framework that is being used for Caring For Country projects.

Try and ensure harmonization with these other activities - influencing and in cooperation with these other activities – try and get the nomenclature similar.

Increase the number of people who would understand the concepts – Care for Country likely to fund such things - moving into mainstream NRM groups.

## **8.4 Capacity Development**

There is a clear need for further development of capacity. A number of the jurisdictions and sectors outlined their concerns at the lack of practitioners in many areas related to ESD. This includes specifics such as social and economic assessments but also there is still a lack of people who can undertake the overall ESD process. Some jurisdictions have virtually no-one who can assist with this.

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## **9.0 Conclusion**

The outcomes from the second stage for the operation of the ESD Subprogram were successful, but compared to the focus during the first subprogram period, mostly in a consolidation manner rather than from the generation of significant new tools. This was necessary because it takes time to adopt and integrate significant changes to the methods of operation of agencies and industries. The policies must be there before any real activity can occur and we found that for the broader focused, cross fishery/cross sector applications of the framework, agencies were not in a position for much of the time to apply this. There is also the need to get a level of harmonization of policy and processes amongst agencies – especially between fishery and environment agencies before these broader frameworks can be applied in an effective manner. Such discussions are now occurring in some jurisdictions and these regional types of frameworks are therefore becoming more relevant to their operations and it is likely that they will be used with increasing frequency over the coming few years.

The projects and processes undertaken through the ESD subprogram (and related activities) have overall, been successful. It has provided the basis to demonstrate whether management has credibility with the issues of resource sustainability, functional ecosystem relationships and habitat processes such as is needed to meet the requirements of the Commonwealth's EPBC assessment. The review meeting of the subprogram concluded that for the individual fishery framework:

- The National Fisheries ESD Framework is a well structured guide through the process of identifying risks and then developing programs to deal with those issues.
- The framework has brought a level of rigor and common understanding to issue identification, risk assessment and management systems that ensured there was consistency when developing plans.
- The framework brings industry in a structured way into the debate and brings other stakeholders to the point where they have a better understanding of the industry, its practices and operational imperatives i.e. it assists in dealing with perceptions.
- It helps prevent the opportunity to short cut the process in order to avoid unpalatable issues.
- It assists to gather all available information that could contribute to the development and assessment processes.
- It has promoted advanced thinking and debate at a national level

The clear gaps that were identified included the technical aspect of measuring and assessing ecosystems. There are already a number of projects around the country that are looking at this aspect. One of the main gaps is in developing and agreeing on standards that can be used to determine acceptable levels of impact for these components. This will need to be done in conjunction with environment agencies.

The main gaps are in the effective use of social and economic tools. It is clear that there is a lack of understanding of the values and outcomes that the community wants from the management of marine resources. The difficult bit is how to get this information and to use this in a practical sense. i.e. can you do this and is it useful? This is further complicated by the observation that community attitudes are not necessarily always linked to actual performance. These areas are going to be difficult to progress because they merge with politics. Thus managers need to clarify what is the scope of the social and economic issues that they think are important to engage with to assist their decision making, not just what could be interesting to study.

One other element that is clear is that there is still a major lack of capacity for progressing many of the aspects of ESD. The subprogram has done some of this task, but in this stage there were limited resources – both funds and people in this three year period - to complete this task in a major manner. Given the high turnover rate of staff in management agencies and, increasingly, industry, combined with the relatively fast pace of change in this area, many of the people who did get training in the first stage of the subprogram are no longer working in fisheries or have moved sections so that this knowledge and experience is no longer available for use. Thus, the body of people with expertise in the operation of the ESD framework dissipates rapidly and there is also a need to keep the knowledge up to date.

There will, therefore be a need to have regular educational programs, both refresher courses and induction courses. Given the work that was done in the Pacific, the train the trainer exercise worked very effectively in getting a wider group of people well knowledgeable in these tools and they then extended this information to each of the various countries. Another mechanism could be to employ one or two people whose job it is to go to each jurisdiction on a roving basis to provide these courses.

One way to both increase capacity and to get better harmonisation with other similar NRM processes is to go into partnership with the NRM groups and get people who can teach the underlying concepts common to all the systems. This team would therefore cover not only fisheries but for all NRM groups.

To progress many of these initiatives will take a national coordinated response. This could occur as a working group under AFMF. At the ESD workshop there was qualified support for an EBFM initiative given that a consolidated effort at a national level would be more efficient and effective for a number of actions:

- Methodological development and standardisation of nomenclature;
- Promotion of institutional harmonisation;
- Development of national policies, lead role by AFMF with sign off by NRMMC;
- Getting improved stakeholder engagement; and
- Supporting specific project work, such as the shift from risk assessment to risk management including the development of risk-benefit-cost frameworks

Irrespective of who takes ownership, there will be a need to have human and financial resources provided to undertake any of the identified actions and processes

One final aspect is the names that are used for this initiative. ESD – EBFM – EAFM - ecosystem approaches. They are still causing difficulties both internally within the sector but especially externally with the community. For example, ESD is seen by some as ‘old school’. There is a growing recognition that having ecosystem as a leading term confuses people when really we are just trying to implement holistic and comprehensive approaches at a number of different scales. Perhaps it is time to shift the terms to not be an ‘ecosystem approach’ but merely a ‘systems approach’? If we move to have our framework become adopted more widely then if similar terms are to be used it is very likely that the name will need to change.

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## 10.0 Appendices

### Appendix 1 Publications in the ESD Subprogram Series

1. Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M. and Whitworth, B. (2002) *National ESD Reporting Framework for Australian Fisheries: The 'How To' Guide for Wild Capture Fisheries*. FRDC Project 2000/145, Canberra, Australia. 120pp.
2. Whitworth, B., Chesson, J., Fletcher, W.J., Sainsbury, K.J., Fisher, M., Hundloe, T., and Smith, A.D.M. (2002) *National ESD Reporting Framework for Australian Fisheries: Technical Support Document – Ecological Components of the 2000/2001 Case Studies*. FRDC Project 2000/145, Canberra, Australia. 98pp.
3. Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M. and Whitworth, B. (2003) *National Application of Sustainability indicators for Australian fisheries*. Final Report: FRDC Project 2000/145. 48pp.
4. Fletcher, W.J., Chesson, J., Sainsbury, K.J., Hundloe, T. and Fisher M. (2003) *National ESD Reporting Framework for Australian Fisheries: The ESD Assessment Manual for Wild Capture Fisheries*. FRDC Project 2002/086, Canberra, Australia 163pp.
5. Fletcher, W.J., Chesson, J., Sainsbury, K.J., Fisher, M. and Hundloe, T. (2004) A flexible and practical framework for reporting on sustainable development for wild capture fisheries. *Fisheries Research* 71:175-183.
6. Fletcher, W.J., Chesson, J., Fisher, M., Sainsbury, K.J., and Hundloe, T.J. (2004) *National ESD Reporting Framework: The 'How To' Guide for Aquaculture*. FRDC Project 2000/145.1, Canberra, Australia. 85pp.
7. Schirmer, J. and Casey, A.M. (2005) *Social Assessment Handbook: A guide to methods and approaches for assessing the social sustainability of fisheries in Australia*. FRDC ESD Reporting and Assessment Subprogram Publication No. 7. Fisheries Research and Development Corporation and Bureau of Rural Sciences, Canberra. 50p.
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9. Fletcher, W.J. (2005) ESD Reporting and Assessment Subprogram: Strategic Planning, project management and adoption. Final Report FRDC Project 2001/082, Canberra, Australia.
10. Schirmer, J. and Pickworth, J. (2005) Social impacts of the South Australian Marine Scalefish Fishery. FRDC ESD Reporting and Assessment Subprogram Publication No. 10. Fisheries Research and Development Corporation and Bureau of Rural Sciences, Canberra. 129pp.
11. Schirmer, J. and Pickworth, J. (2005) Social assessment of commercial fishing in the East Gippsland region. FRDC ESD Reporting and Assessment Subprogram Publication No. 11. Fisheries Research and Development Corporation and Bureau of Rural Sciences, Canberra. 57pp.
12. Fletcher, W.J. (2005) The application of qualitative risk assessment methodology to prioritise issues for fisheries management. *ICES Journal of Marine Science* 62:1576-1587

13. Fletcher, W.J. (2005) A Guide to Implementing an Ecosystem Approach to Fisheries Management (EAFM) within the Pacific Region. Forum Fisheries Agency, Honiara Solomon Islands. Version 2
14. Schirmer, J. (2005) ESD Reporting and Assessment Subprogram: a social assessment handbook for use by Australian fisheries managers in ESD assessment and monitoring. Final Report FRDC Project 2003/056 Canberra Australia, April 2005.
15. Fletcher, W.J. (2006) Frameworks for managing marine resources in Australia through ecosystem approaches: do they fit together and can they be useful? *Bulletin of Marine Science* 78:691-704
16. Fletcher, W.J., Shervington, C., Millington, P. and Hill, A. (2008) Sharing the fish, and other resource access issues: how can this be done at a regional level? *Proceedings of the Sharing the Fish Conference*. Perth, WA March 2006.
17. Fletcher, W.J. (2008) Implementing an ecosystem approach to fisheries management: lessons learned from applying a practical EAFM framework in Australia and the Pacific. Chapter 8 *Proceedings of CIEAF Conference* Bergen, Norway November 2006.
18. Fletcher W.J. (2008) Implementing ecosystem based fisheries management: lessons learned and application for the Gulf region. *Proceedings of the Arabian Gulf Conference*. February 2007
19. Webb, H. and Smith, T. (2008) Review of the scope, assessment methods and management responses for Fisheries ESD and EBFM in Australia. Final Report FRDC Project 2004/101.
20. Fletcher, W.J. (2008) A Guide to Implementing an Ecosystem Approach to Fisheries Management (EAFM) for the tuna fisheries of the Western and Central Pacific Region. Version 5.1 Forum Fisheries Agency, Honiara. 70pp.
21. Fletcher, W.J. and Chesson, J. (2008) Fisheries and ESD: A Short Guide. FRDC. 4 pp.
22. Millington, P. and Fletcher, W. (2008) Geelong revisited: from ESD to EBFM – future directions for fisheries management. Final Workshop report FRDC Project 2008/057
23. Fletcher, W.J. (2008) ESD Reporting and Assessment Subprogram: Strategic Planning, project management and adoption –Stage 2. Final Report FRDC Project 2004/006, Canberra, Australia.

## **Appendix 2      Communication Plan Dec 05 - Dec 06**

### **1.1      Background**

Ecologically Sustainable Development (ESD) is the concept that seeks to integrate the short and long term economic, social and environmental effects in all decision-making. It is one of the most fundamental shifts in public policy that has occurred in the last 20 years, affecting all government organisations to some degree.

The core objectives of Australia's National Strategy on ESD are:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations.
- To provide for equity within and between generations.
- To protect biological diversity and maintain essential ecological processes and life support systems.

In the mid 1990s when ESD first came to prominence there was a general lack of success, both in the implementation of the concept and in the development of assessment procedures to evaluate practical achievements in the field, because of the complexity of issues targeted through ESD.

The need to develop a comprehensive and practical reporting system for ESD has increased substantially in recent years, to meet both a variety of government requirements and community expectations. One of these drivers for the adoption of ESD principles within fisheries was the development of the Commonwealth's *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. This meant that fisheries agencies needed to report on, and demonstrate adequate performance, based on ESD principles, with regard to the sustainability of fisheries and their impact on the environment in order to maintain export approvals.

To facilitate the national implementation of ESD within Australian fisheries, the then Standing Committee on Fisheries and Aquaculture (SCFA) formed an ESD Working Group in October 1999. This initiative was supported by the FRDC through the establishment of the ESD Reporting and Assessment Subprogram to coordinate all research activities in this area. This group has subsequently sponsored a number of specific research projects to develop ESD practices, tools and assessment techniques and ensure that consistent and effective outcomes can be achieved.

The tools that were developed within the projects managed by the Subprogram include ESD reporting frameworks for both wild capture fisheries and aquaculture; an assessment manual for assisting in the reporting on management of wild capture fisheries; the development of environmental risk assessment modules for assisting to determine which ecological impacts of wild capture and aquaculture sectors require management; and a handbook for the completion of social assessments. The subprogram has also assisted Seafood Services Australia with their development of tools for Environmental Management Systems (EMS) for use by the commercial industry. All these tools are considered to be world's best practice and are now being used by external groups such as FAO.

Whilst these tools are now available for use at the national, state, territory and international level there has been a problem in communicating their existence (and, more importantly, increasing

their use) among middle management within both fisheries and environmental agencies and by research scientists at both government institutions and universities within Australia.

A major component of this lack of awareness is the plethora of terms and concepts (along with their acronyms- EBM, EBFM, EAFM, IOM etc.) that have been proposed over the past decade for the holistic management of aquatic natural resources. For example, whilst the requirements of the *EPBC Act* were ESD-related, these were not directly/explicitly referred to as ESD. This has greatly increased the level of confusion amongst practitioners and has led to a number of parallel initiatives. This situation has resulted in the development, by bodies such as the CSIRO, AFMA and the National Oceans Office, of a number of ESD related techniques that overlap, duplicate or ignores work already carried out by the FRDC's ESD Reporting and Assessment Subprogram.

Communicating the availability of these ESD practices, tools and assessment techniques is one of the key strategies needed to ensure awareness and support of ESD principles and processes. The major 'vehicle' (developed in 2002) to communicate and enable access to these outputs was a national ESD website ([www.fisheries-esd.com](http://www.fisheries-esd.com)). This is no longer seen as the most appropriate vehicle to meet the communication needs, at least not as a stand-alone arrangement. This current plan outlines what activities should be undertaken in the next year to increase the dissemination of the knowledge and systems already developed to target audiences such that any additional work done in this area actually adds value rather than merely repeating the development of similar processes.

## **1.2 Objectives**

- (i) To raise awareness, and understanding of the ESD concept and processes, in particular among:
  - middle/lower level managers in fisheries and marine environmental agencies;
  - researchers in fisheries and marine environmental research institutes and universities;
  - undergraduate students taking part in fisheries, marine biology and marine planning courses at Australian universities; and
  - policy managers and staff associated with marine planning (e.g. WA's Department of Premier and Cabinet; the NSW EPA) who do not come from a fisheries environment or have a fisheries background.

## **1.3 Issues**

Whilst at the national, territory and state level, ESD practices, tools and assessment techniques have been developed, there has been a problem in communicating their existence to those practitioners who would benefit most from their existence and use. The main groups are the middle management in fisheries and environment agencies and amongst fisheries and marine related research scientists.

The lack of awareness of the processes and frameworks already developed combined with a level of confusion about how the various ESD related initiatives are linked has resulted in a situation that has led to the development, by bodies such as the CSIRO, AFMA and the National Oceans Office, of ESD related techniques that duplicate/overlap work already carried out by the FRDC's ESD Reporting and Assessment Subprogram.

There are now a lot more ESD ‘drivers’ for fisheries and marine planning agencies than just meeting the export and strategic assessment provisions of the EPBC Act. This includes Marine Protected Areas, marine planning in general and allocation issues between commercial fishers, recreational fishers and other stakeholders. Increasingly, fisheries and marine planning staff are required to have knowledge of the application of ESD principles to fisheries and marine management and require robust frameworks to undertake this style of management.

## **1.4 Target Groups**

- i. Middle/lower level managers in fisheries and marine environmental agencies;
- ii. Researchers in fisheries and marine environmental research institutes and universities;
- iii. Undergraduate students taking part in fisheries, marine biology and marine planning courses at Australian universities
- iv. Policy managers associated with marine planning who do not come from a fisheries environment or have a fisheries background.
- v. Non Government Environmental Organisations, particularly those who participate in marine activities (e.g. WWF, Greenpeace)

## **1.5 Messages**

- i. ESD is no longer a ‘clean canvas’ in fisheries management – a substantial level of work has now been done by the FRDC’s National ESD Reporting and Assessment Subprogram to develop ESD practices, tools and assessment techniques – and these are ready to be used and built upon, not replicated.
- ii. The main driver for ESD in fisheries is no longer just the need to have it to meet the export elements of the EPBC Act – it is vital to understand it to work in fisheries management and marine planning and understand Marine Protected Areas, marine planning and allocation issues.
- iii. ESD is the overall goal of government for the holistic management of a resource requiring a variety of strategies by agencies and industries to assist in achieving these goals.

## **1.6 Strategies**

- i. A simple four-page ‘brochure’ that markets the wealth of material now developed by the ESD subprogram and related activities and scientific references (most of which are available on the national ESD website or its direct links – eg SSA). It will also stress the importance of having a clear understanding of ESD in a natural resource management agency – from the perspective of getting in a job in an agency of this kind, as well as carrying it out well. This will be used for a saturation campaign, similar to that used by Seafood Services Australia for its EMS Project.
- ii. Direct mail the four-page brochure to target audience in fisheries and environmental agencies, NGOs and universities across Australia. Seafood Services Australia may be able to help with mailing lists. Subprogram executive officer to prepare/source suitable mailing lists.
- iii. Get the brochure placed in every fisheries conference pack across Australia in the next 12 months. Executive officer to develop list of relevant conferences and arrange this.

- iv. Based on the four-page brochure, prepare two identical static display posters for the FRDC, that are taken by FRDC staff to every conference the FRDC attends throughout Australia, along with a supply of brochures. Check that this is being done through monitoring of the use of the display materials, which is carried out by the FRDC's National ESD reporting and Assessment Subprogram who attend these conferences and follow ups by executive officer.
- v. Arrange a panel of suitably knowledgeable speakers from the FRDC's National ESD Reporting and Assessment Subprogram that can speak on ESD and the subprogram at universities (specifically those with fisheries, marine biology and marine planning courses) around Australia. Such members would be encouraged to visit universities as a 'side trip' from conference trips/meetings in Australian cities to speak on ESD and the FRDC's National ESD Reporting and Assessment Subprogram. Undergraduates in marine biology and marine planning would welcome a chance to hear a guest lecture on ESD, in particular from a nationally-acknowledged expert.
- vi. Promote this work as a necessary part of any marine science based curriculum subject, particularly those that have any management aspects. This will best be done by personal contacts with the key players in each of the main marine science institutions. This material could, however, also be of appeal to broader sustainable development courses as case studies where ESD has been put into practice.
- vii. Continue to develop the national ESD website, in particular the bulletin board that is used to promote interesting events (i.e. guest lectures at universities – see previous strategy).
- viii. Continue to publish the results of the subprogram projects in international journals, speaking at national and international conferences and workshops.

## **1.7 Evaluation and Review**

- i. Send a mini-survey of two to three questions – *'What is your understanding of ESD? How important is it? Do you think it is being applied in fisheries and marine management?'* – to all those on the mailing list for the 4-page ESD brochure, six months after the brochure has been mailed out. Offer a single free year's subscription to "title to be announced" to one lucky respondent as an inducement for people to fill in the mini survey. This survey could be carried out by a statistics unit.
- ii. Review of this plan when results of the survey become available – development of more specific plan for two years out.

## **1.8 Schedule for implementation of strategy**

Draft schedule of events. This needs to be ratified by the whole ESD Reference group.

### **March 2006**

Complete the development of simple four-page brochure that markets the wealth of material now available on the national ESD web site (see Strategies section of this document for further information about its contents).

Ensure bulletin board part of web site is developed and contains details of any talks on ESD by key members of FRDC's National ESD Reporting and Assessment Subprogram.

**April 2006**

Direct mailing of four-page brochure to target audiences in fisheries and marine agencies, NGOs and universities (with fisheries/marine biology/marine planning departments) across Australia.

Development of static display posters containing part of the content of ESD brochure to promote content of ESD website and market brochure.

**May 2006**

Hand over static display posters to FRDC National ESD Reporting and Assessment Subprogram, along with remainder of brochures.

Commence program of talks at universities relating to the FRDC ESD Reporting and Assessment Subprogram by key members of staff.

**August 2006**

Mini-survey on ESD carried out – surveying those who were direct mailed the four-page ESD brochure.

**October 2006**

Results of survey collated and report written for FRDC ESD National Reporting and Assessment Subprogram

**November 2006**

ESD Reference group reviews survey results and provides inputs to any changes to communication plan as necessary.



Implementing an Ecosystem-Based Approach  
for fisheries and the marine environment.

**It can be done!**

  
Ecologically  
Sustainable Development  
*Catching Sustainability*  
FRDC – Subprogram

  
Australian Government  
Fisheries Research and  
Development Corporation

Ecologically Sustainable Development or ESD is defined as 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

ESD is now accepted as the foundation for natural resource management in Australia – including the management of our fisheries and aquatic resources. This concept covers all the ecological impacts of an activity along with the social and economic outcomes that they generate. Implementing these ESD principles in a practical manner for fisheries has involved the development of a new ecosystem-based management approach which can be termed Ecosystem-Based Fisheries Management (EBFM) or Ecosystem Approach to Fisheries Management (EAFM).

**Can EBFM be implemented in a practical way? – YES!**

In meeting the objectives of ESD, fisheries management agencies and industry in Australia can now implement EBFM because of the development of a practical framework and set of tools by the National ESD Reporting and Assessment Subprogram funded by the Australian Fisheries Research and Development Corporation (FRDC).

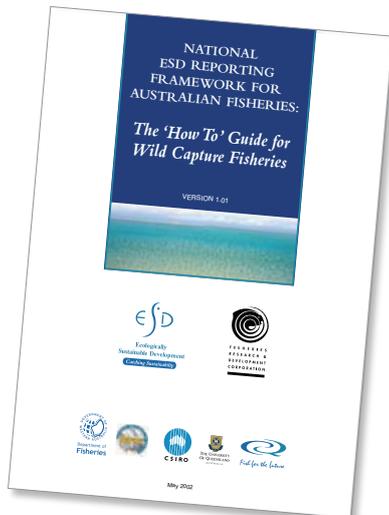
The National ESD Framework and tools have now been successfully applied to many Australian fisheries and, increasingly, to a wide variety of fisheries and marine systems in the Pacific region.

## SUBPROGRAM TOOLS TO IMPLEMENT ESD/EBFM/EAFM ESD/EBFM/EAFM Reporting

### 1) THE 'HOW TO' GUIDE FOR WILD CAPTURE FISHERIES

In 2002, the ESD Reporting and Assessment Subprogram completed the first version of the 'How To' Guide for Wild Capture Fisheries (see also Fletcher et al. 2004).

This guide provides the overall framework needed to report on ESD/EBFM for an individual fishery. An updated version developed for use in the Pacific region will soon be published by Forum Fisheries Agency (Fletcher, 2007).



### USING THE GUIDE

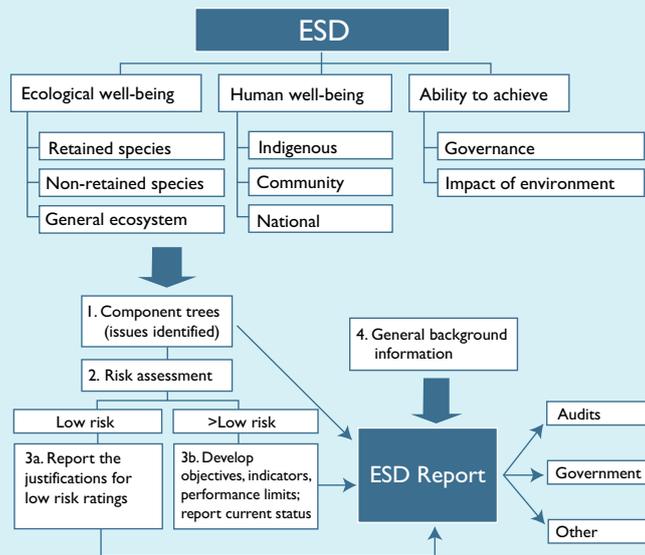
The guide outlines a four-step process based on Risk Management systems (see following page) that includes:

1. identifying the scope of the assessment/ fishery;
2. identifying all issues within the scope;
3. completing a Risk Assessment on all identified issues; and
4. developing management systems for those issues of sufficient risk.

To assist in identifying issues, ESD/EBFM has been divided into eight major components, grouped within three main categories: contributions to environmental wellbeing, contributions to human wellbeing, and ability to achieve. These eight components are further sub-divided into more specific sub-components, using a 'component tree' structure. The generic component trees associated with the eight components can be tailored to suit the particular circumstances of each fishery to which ESD reporting is applied, expanding some sub-components and collapsing or removing others.

The risk assessment methodology uses the Australian and New Zealand Standard (see Fletcher 2005 for more details). The basic process has been refined to be more effective in assessing fisheries and marine related issues through the generation of a set of ecological consequence tables that cover the impacts on retained species, bycatch, habitat, and the ecosystem. Most importantly, there are tables that can be used to assess social and economic objectives.

## Summary diagram of ESD/EBFM process



## A Risk Assessment matrix

		Consequence Level			
		Minor	Moderate	Major	Extreme
Likelihood		1	2	3	4
Remote	1	1	2	3	4
Unlikely	2	2	4	6	8
Possible	3	3	6	9	12
Likely	4	4	8	12	16

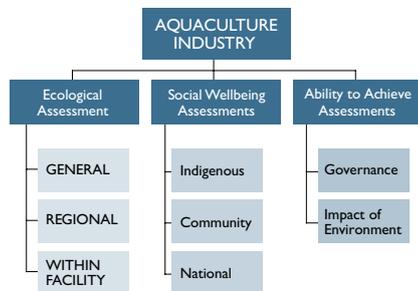
## Risk Category

Risk Category	Risk Values	Likely Management Response	Likely Reporting Requirements
Low	1-4	None specific	Full justification needed
Medium	6-8	Specific management/ monitoring needed	Full performance report
High	9-16	Increases to management activities needed	Full performance report

## SOME OTHER ESD TOOLS

### II) THE 'HOW TO' GUIDE FOR AQUACULTURE

The 'How To' Guide for Aquaculture was completed in 2004. For aquaculture, the ecological issues are structured into three different spatial levels: whole-of-industry issues, catchment/ regional issues and within-facility issues.



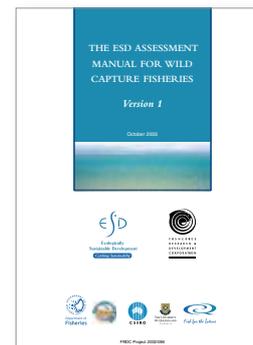
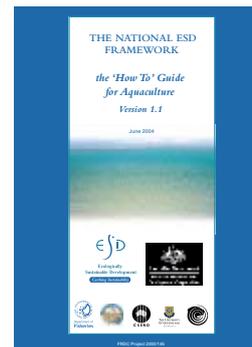
### III) THE ASSESSMENT MANUAL FOR WILD CAPTURE FISHERIES

The Assessment Manual for Wild Capture Fisheries was published in 2003 and provides the transition from ESD reporting to ESD assessment. The manual summarises what is currently considered acceptable and/or best practice performance for the main Australian fish species and fishery types. It can be used as a general guide when preparing and assessing reports. This is currently being revised.

### IV) SOCIAL ASSESSMENT HANDBOOK

The Social Assessment Handbook was published in 2005. This handbook provides a guide to planning and undertaking a social assessment of fishing-related activities in Australian commercial and recreational fishing sectors.

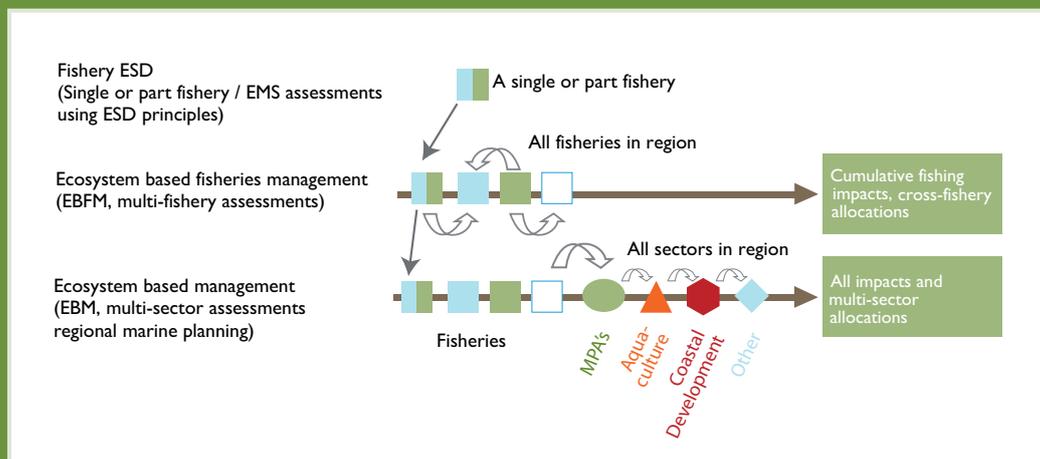
**These publications and other tools and useful links are available from the website: [www.fisheries-esd.com](http://www.fisheries-esd.com) or [www.eafm.com.au](http://www.eafm.com.au) or [www.ebfm.com.au](http://www.ebfm.com.au)**



## The ESD/EBFM hierarchy – How do they all fit together?

ESD can be viewed as a hierarchy of frameworks. Thus, ESD is the goal of government and the other ecosystem-based approaches are really strategies that different agencies can use to work towards this type of

goal. Thus, they are all variations on the same theme with the key difference between them being the scope of issues that they can cover (Fletcher 2006).



## Who should understand and use the ESD Frameworks?

Around Australia, natural resource management organisations are adopting and applying ESD for many purposes – not only in the fisheries and aquatic sector, but in other sectors from forestry to agriculture and ecotourism.

Anyone employed in, or interested in working in the natural resource management

field will find it beneficial to understand these ESD frameworks and their application. These frameworks offer an integrated approach for addressing the wider economic, social and environmental implications within the decision-making process.

## More information on the ESD Subprogram

The development of this national ESD reporting and assessment system for all Australian fisheries forms a major turning point in fisheries management. These management tools offer an integrated approach for addressing the wider economic, social and environmental implications within the decision-making process. Anyone employed in, or interested in working in the natural resource management field will find it beneficial to utilise and/or understand these management related tools.

If you would like to find out more about ESD and Ecosystem approaches to aquatic resource management, visit the National Fisheries ESD website at [www.fisheries-esd.com](http://www.fisheries-esd.com) or [www.eafm.com.au](http://www.eafm.com.au) or [www.ebfm.com.au](http://www.ebfm.com.au)

*All publications displayed and cited are available as pdfs from the above website.*

### Testimonial

“As the world fishing community has agreed to move towards an ecosystem approach to development and management of fisheries (EAF), the Australian ESD framework appears as a lighthouse. It has the potential to assist the fishing and coastal nations in their efforts to turn a fuzzy EAF conceptual framework into a really operational system. EAF and ESD concepts are at the heart of the FAO Code of Conduct for Responsible Fisheries and the Australian experience will be extremely useful for its full implementation”.

**Dr Serge Garcia, Director of Fisheries Resource Division, FAO**



## References

- Fletcher, W.J., Chesson, J., Sainsbury, K.J., Fisher, M. & T. Hundloe (2004). A flexible and practical framework for reporting on sustainable development for wild capture fisheries. *Fisheries Research* **71**:175-183
- Fletcher, W.J. (2005). The application of qualitative risk assessment methodology to prioritize issues for fisheries management. *ICES Journal of Marine Science*, **62**:1576-1587
- Fletcher, W.J. (2006). Frameworks for managing marine resources in Australia through ecosystem approaches: do they fit together and can they be useful? *Bulletin of Marine Science* **78(3)**:691–704
- Fletcher, W.J. (2007). A guide to implementing an Ecosystem Approach to Fisheries Management (EAFM) within the Western and Central Pacific Region. Forum Fisheries Agency, Honiara, Solomon Islands.

### Contributing Agencies



## **Appendix 4      A short Guide to ESD**

### **Fisheries and ESD: A Short Guide**

#### **Introduction**

Within Australia, all fisheries agencies and industry sectors are committed to the process of implementing ecologically sustainable development (ESD). However, the general public is largely unaware that these principles are already being applied by fisheries agencies and many stakeholder groups. In addition, even some key fishery stakeholders still do not clearly understand how this concept applies, in a practical sense. Consequently, this guide seeks to summarise what ‘ESD’ for fisheries means, and outline how the activities of different stakeholder groups may be affected.

#### **What is ESD?**

ESD, or Sustainable Development as it is known outside of Australia, is a concept that was first coined back in 1987 within a report by the World Commission on Environment and Development called *Our Common Future*. Despite the length of time since its inception, ESD is still not well understood.

At its core, ESD requires governments, industry and even individuals to consider the economic, social and environmental implications of their activities and decisions. Whilst this may still sound difficult, there are now a number of systems and tools available that can assist a fishery do this in a practical and efficient manner.

The basis of ESD emerged during the 1980’s following concerns about the impacts that unrestrained economic growth and development were having on the environment. Australia’s formal response in 1992 was to develop a national strategy which stated that we should be *‘using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future (intergenerational), can be increased’*. Since this time there has been a major shift in public attitudes about what are acceptable development and environmental practices, which has resulted in increased scrutiny of government decisions and the operations of many industries. It has also led to a large number of related initiatives such as triple bottom line reporting (TBL), socially responsible investment, environmental management systems (EMS) and more recently, ecosystem based fisheries management (EBFM), to name just a few.

Such a multitude of terms and initiatives has caused considerable confusion about how they are related and if one is ‘better’ than another. Unfortunately, this has not helped the acceptance or implementation of any sustainable development system. These concepts are all, however, just variations on the same theme. Each includes the recognition that management must deal with the full set of ecological risks and consequences of an activity and, to some degree, include an understanding of the social and economic implications of the activity. To assist clarify these terms, the National ESD Reference Group for Fisheries proposed that ESD should be considered the overall goal for government and the other terms (e.g. EBFM) describe strategies that can be used by various sectors/agencies to work towards this overall goal.

#### **What is the process for the ESD assessment of a fishery?**

It is important to recognize that undertaking an ESD assessment is not a process that is designed to show that an industry/sector **is** sustainable. Instead, it should be trying to determine

the following - How does my fishery/industry/sector/vessel **contribute to** sustainable development?

Essentially the process asks four questions–

- *What impacts are my activities having on the ‘assets’<sup>4</sup> that I manage?*
- *What impacts am I having on the ‘assets’ that someone else manages?*
- *What are the economic/social benefits and costs generated by my activities?*
- *What activities by others affect my ‘assets’?*

Because it covers both the positive and negative outcomes of the industry, answering these questions may in some cases suggest that the fishery is highly valuable to the community. In other cases, however, it may conclude that, overall, the fishery is not contributing positively to ESD and it should be reviewed or even closed.

In answering any questions on the impacts, costs and benefits, it needs to be understood that what is considered acceptable performance is highly dependant upon societal values. For example, the acceptable level of harvesting can range from “do not harvest at all” (whales) to “fish them at highest long-term levels of exploitation” (prawns). Furthermore, not all issues are ‘equal’ and an overall negative ESD outcome may be generated from significantly poor ‘performance’ in just a single ecological, economic or social issue. The same outcome could also be from a series of negative scores across many ESD assessment categories (see Figure 1). The critical element is that having acceptable or even good performance in one ESD category will not automatically ensure that the community will agree that the activity should continue.

Finally, what society thinks is acceptable performance can change; community values are always subject to an ongoing process of evolution. For example, whales used to be considered a highly appropriate species to harvest, but now the reverse is true. In this respect, ESD should be seen as an ongoing process, there is no end point.

### **The Process**

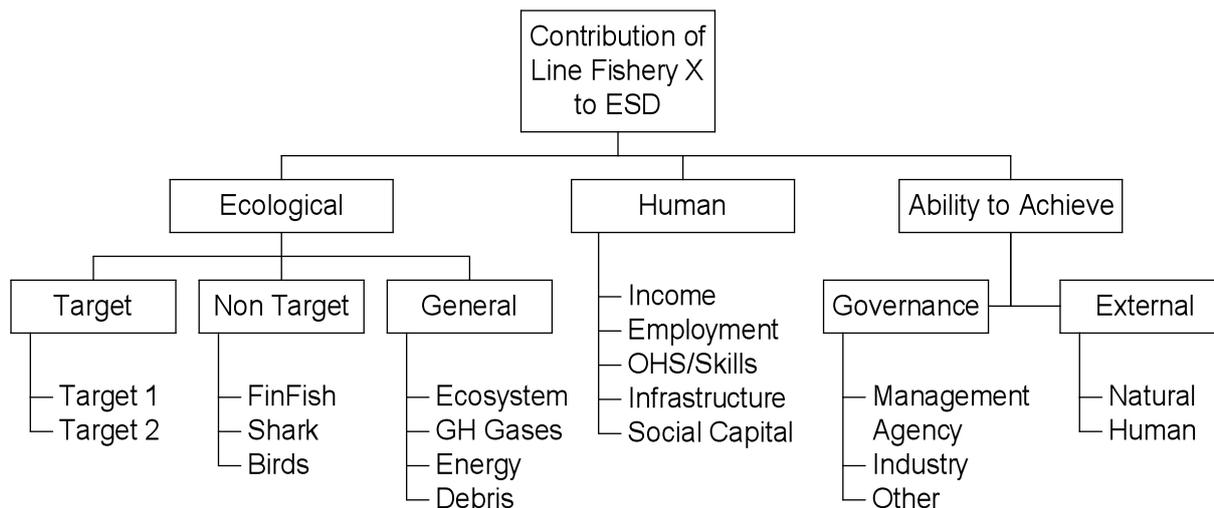
To assist implement ESD, a framework for wild capture fisheries was developed by the national ESD Reference Group (Fletcher et al., 2002; 2004)\*. This framework includes a four step, risk based process that identifies all relevant ESD issues for a particular fishery; including impacts on target species and the broader ecosystem, the social and economic outcomes and the relevant governance and administrative systems. For each of these issues it determines the level and form of direct management required to generate acceptable performance across all the issues.

### **Example**

To help explain how ESD becomes operational, the following example uses a hypothetical commercial line fishery. The main types of ESD issues for this fishery are displayed in the component tree (see below). The specific activities to be undertaken to generate acceptable performance for each of these issues will vary greatly depending upon whether you are from the fisheries management agency, one of the commercial fishers, or someone involved in marine planning within this region. To summarise the potential differences, the key activities that would be undertaken from each of these three perspectives are outlined.

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<sup>4</sup> In the fisheries context an ‘Asset’ would include various fish species, habitats, water quality etc.



**Figure 1.** ESD assessment component tree.

### **From the perspective of a fisheries management agency**

The **fisheries agency** would need to (possibly within a fishery management plan):

- establish restrictions on the effort and/or catch by the fishery on each of the target species to a predetermined level. Monitor these levels, plus the capture of these species by any other sector (e.g. recreational fishers) and regularly assess the status of each of these stocks to ensure they remain at, or return to acceptable levels.
- ensure the levels of catch of the key non target species by this fishery were acceptable, plus mandate the gear types and methods of fishing to help achieve this.
- determine if the total catch of all species, plus other indirect fishing impacts, are not affecting the broader ecosystem to an unacceptable level.
- develop appropriate governance arrangements including access levels of each sector, licensing and transfer systems, compliance, monitoring and reporting systems.
- develop consultation mechanisms with industry and other stakeholders to promote a co-management approach to assist optimize the social and economic benefits to the community.

### **From the perspective of the individual fisher**

Each **commercial fisher** in this fishery would need to (possibly through an EMS):

- maintain their catch & or effort on the target species to their specific level of entitlement.
- ensure that they use the correct fishing gear and methods to minimize their capture of non target species.
- use their vessels efficiently to minimize energy use and optimize the income generated from the fish caught.
- comply with any codes of practice for rubbish disposal at sea.
- ensure their crew and staff are well trained and employed on fair terms.
- comply with any OHS requirements.
- keep their vessels and other equipment appropriately maintained.

- participate in industry association and management consultation processes.
- assist in identifying any external impacts on their operations.

**From the perspective of a marine management planning process**

**Marine Planners** may require that (possibly within a regional marine plan):

- the combined catch of all target and non-target species taken by this fishery, and all other sectors, is consistent with the agreed regional limits.
- the levels of access to resources by participants in this fishery, compared to other competing sectors, is optimal for the community.
- the level of all non-fishing impacts (e.g. coastal development) on key fish stocks and the general environment (e.g. water quality) is kept at acceptable levels; and
- there is maintenance of major infrastructure facilities to enable this fishery (and others) to operate.

\* All publications are available at the website [www.ebfm.com.au](http://www.ebfm.com.au)

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*[www.eafm.com.au](http://www.eafm.com.au) © FRDC – ESD Subprogram Publication Number 21*





