FAO EAF–Nansen Project Report No. 6 **EAF-N/PR/6 (En)**

Report of the

EAF-NANSEN PROJECT TRAINERS WORKSHOP

Rome, 16-20 February 2009

NANSEN PROJECT

THE EAF-NANSEN PROJECT

FAO started the implementation of the project "Strengthening the Knowledge Base for and Implementing an Ecosystem Approach to Marine Fisheries in Developing Countries (EAF-Nansen GCP/INT/003/NOR)" in December 2006 with funding from the Norwegian Agency for Development Cooperation (Norad). The EAF-Nansen project is a follow-up to earlier projects/programmes in a partnership involving FAO, Norad and the Institute of Marine Research (IMR), Bergen, Norway on assessment and management of marine fishery resources in developing countries. The project works in partnership with governments and also Global Environment Facility (GEF)-supported Large Marine Ecosystem (LME) projects and other projects that have the potential to contribute to some components of the EAF-Nansen project.

The EAF-Nansen project offers an opportunity to coastal countries in sub-Saharan Africa, working in partnership with the project, to receive technical support from FAO for the development of national and regional frameworks for the implementation of Ecosystem Approach to Fisheries management and to acquire additional knowledge on their marine ecosystems for their use in planning and monitoring. The project contributes to building the capacity of national fisheries management administrations in ecological risk assessment methods to identify critical management issues and in the preparation, operationalization and tracking the progress of implementation of fisheries management plans consistent with the ecosystem approach to fisheries.

FAO, EAF-Nansen Project Report No. 6 EAF-N/PR/6 (En)

STRENGTHENING THE KNOWLEDGE BASE FOR AND
IMPLEMENTING AN ECOSYSTEM APPROACH TO
MARINE FISHERIES IN DEVELOPING COUNTRIES
(EAF-NANSEN GCP/INT/003/NOR)

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2011

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PREPARATION OF THIS DOCUMENT

This is the report of the Trainers Workshop organised by the EAF-Nansen project "Strengthening the Knowledge Base for and Implementing an Ecosystem Approach to Marine Fisheries in Developing Countries (EAF-Nansen GCP/INT/003/NOR)" held in Rome, Italy on 16 to 20 February 2009. The report includes PowerPoint presentations given by the resource persons (in Appendix 10 – English only), summary of the discussions that followed the presentations and the results of group work done by the participants. The EAF-Nansen project is grateful to all workshop participants for their input into the report and to all resource persons for their presentations and summaries provided for this report.

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ABSTRACT

A workshop for Trainers was organised at the FAO headquarters in Rome from 16 to 20 February 2009 under the EAF-Nansen project "Strengthening the Knowledge Base for and Implementing an Ecosystem Approach to Marine Fisheries in Developing Countries". It was attended by experts from the four operational regions of the EAF-Nansen project in Africa and one FAO EAF project in Europe.

Jorge Csirke, Director of the FAO Fisheries and Aquaculture Management Division, noted that the workshop is one of the most important activities within the capacity building component of the EAF-Nansen project and that the participants are expected to be involved in national and regional activities under the EAF-Nansen project.

The training covered fundamentals of the ecosystem approach to fisheries management (EAF), ecological risk assessment methodology and the development and review of fisheries management plans. Participants were also introduced to workshop facilitation. Practical exercises were undertaken in working groups.

It was noted that although there are several opportunities for the management of fisheries in Africa in line with the ecosystem approach, the major challenges include getting political and management buy-in, recognising that EAF is not just a scientific exercise and the lack of institutional integration and adequate resources for fisheries management.

The Participants noted that the training had prepared them for the task expected of them but admitted that the practice looked a bit scary and that it would be better to organise another meeting where real issues are presented and the problems tackled. The aspects of the course on how to interact with stakeholders was singled out as extremely good so was the ecological risk assessment methodology although it was thought that a better appreciation of the latter would require a dedicated extended course.

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1. INTRODUCTION

As part of the activities of the FAO project "Strengthening the Knowledge Base for and Implementing an Ecosystem Approach to Marine Fisheries in Developing Countries (EAF-Nansen GCP/INT/003/NOR)" a Trainers' Workshop was organised at the FAO headquarters in Rome from 16 to 20 February 2009.

The workshop was attended by participants from all four operational regions of the project namely the Canary Current, the Guinea Current, the Agulhas and Somali Currents and the Benguela Current large marine ecosystems areas. The list of participants and agenda for the workshop are presented in Annex 1 and Annex 2 respectively.

The training covered fundamentals of the ecosystem approach to fisheries management, ecological risk assessment methodology and the development and review of fisheries management plans. It also looked at the EAF-Nansen project, its activities and expected outcomes. Participants were also introduced to workshop facilitation.

This report gives brief overview of the presentations and the discussions that followed. All the PowerPoint presentations are given in the annexes.

1.1 Opening of the workshop

Opening the workshop Jorge Csirke, Director of the FAO Fisheries and Aquaculture Management Division, welcomed the participants to Rome and to the workshop. He said that the workshop was one of the most important activities within the capacity building component of the EAF-Nansen project. His statement was sectioned as follows:

I. Reference to EAF as a better approach to fisheries management

a. The principles in support of the ecosystem approach to fisheries clearly emerged in the Code of Conduct for Responsible Fisheries (CCRF) adopted by FAO in 1995, and can also be traced back to the negotiations of the United Nations Convention on the Law of the Sea (UNCLOS) adopted in 1982, and to the United Nations Conference on Environment and Development (UNCED), its Agenda 21 held in 1992 and to the Convention on Biological Diversity (CBD) also held in 1992.

b. The ecosystem approach to fisheries was more explicitly addressed in the Reykjavik Declaration, which was adopted at the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, held in Reykjavik, Iceland, 1—4 October 2001, organized jointly by the Government of Iceland and FAO with the co-sponsorship of the Government of Norway.

c. The results of the Reykjavik Conference and the Reykjavik Declaration were presented to the World Summit on Sustainable Development (WSSD), held in Johannesburg in 2002. The Plan of Implementation of this World Summit encouraged nations to apply the ecosystem approach by 2010 with specific reference to the Reykjavik Declaration.

d. The twenty-fifth session of the committee on fisheries (COFI) in 2003 supported the role of FAO in facilitating the process of adoption of the ecosystem approach as agreed during the WSSD.

II. Reference to WSSD targets and application of EAF

e. Art. 30 of WSSD Plan of Implementation: oceans, seas, islands and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical for global food security and for sustaining economic prosperity and the well–being of many national economies, particularly in developing countries. Ensuring the sustainable development of the oceans requires effective coordination and cooperation, including at the global and regional levels, between relevant bodies, and actions at all levels: It states "Encourage the application by 2010 of the ecosystem approach, noting the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem and decision V/6 of the Conference of Parties to the Convention on Biological Diversity".

Mr Csirke noted that the EAF-Nansen project is FAO's support to member countries to implement EAF in line with the COFI recommendation and Norad is providing financial support for this. He reiterated the importance of the workshop and wished all participants a nice stay in Rome.

1.2 Workshop objectives and organization

Gabriella Bianchi of FAO Fisheries Management and Conservation Service gave the objectives of the workshop as to provide extra capacity to the participating countries to help with training and implementation of in-country activities of the EAF-Nansen project. She said that the participants will be expected to help FAO follow-up on field activities connected with the implementation of the project and also acting as resource persons where and when required.

2. FISHERIES MANAGEMENT AND THE ECOSYSTEM APPROACH TO FISHERIES

2.1 Introduction to EAF and why it is necessary

The introductory presentation, the highlights of which are given below, was given by Gabriella Bianchi of FAO.

What is the EAF?
"An ecosystem approach to fisheries strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries."

Why EAF?

- Advances in science (environmental effects on fishery resources and effects of fishing on non-target species and habitats, food-chain effects and biodiversity).
- Lessons learnt from conventional management practices.
- Recognition of a wide range of societal interests in marine ecosystems.
- Increasing public awareness of the negative impacts of fishing on the marine environment and of its poor state.

Principles of EAF
EAF builds on conventional fisheries management.

Comparison with other approaches
Many approaches are proposed in the context of sustainable development for aquatic ecosystems. Some of these are cross-sectoral (or integrated) approaches that deal with goals for sustainable development in a given region/ecosystem including all sectors (e.g. fisheries, mining, shipping, tourism etc.). Here rights are allocated to different user groups and an attempt is made to reconcile conflicts. Examples are ecosystem based management (EBM), the integrated ocean management (IOM), large marine ecosystem (LME) and integrated coastal zone management (ICZM). The sectoral approaches, on the other hand, deal with goals and intentions for sustainable development within a given sector. The challenge then is to make sure that there is consistency with the framework provided by the global strategy. Example: EAF.

2.2 General discussion on possible opportunities for application of EAF in Africa

The agenda item was lead by Johann Augustyn and Kwame Koranteng and started with a presentation by the former. The highlights of the presentation and discussions are presented below.

What has been done?

- Upon a request by the Steering Committee of the Benguela Current Large Marine Ecosystem (BCLME) programme the FAO Fisheries Department collaborated with it in the project "Feasibility study on the implementation of EAF in the BCLME region". It was the first EAF project of its kind in Africa. The project was a cooperative effort by the BCLME Programme, the fisheries management agencies of Angola, Namibia and South Africa, and FAO. It started in January 2004 and was completed in December 2006.

- In the Agulhas and Somali Current Large Marine Ecosystem (ASCLME), Guinea Current Large Marine Ecosystem (GCLME) and Canary Current Large Marine Ecosystem (CCLME) countries there have been EAF familiarization workshops under the EAF-Nansen project and regional and national EAF task groups have been formed; there is high level of interest by the countries.

The BCLME EAF feasibility project
The objective of the BCLME EAF feasibility project was to investigate the feasibility of EAF management in the BCLME region through examining the existing issues, problems and needs related to EAF, and developing different management options to achieve sustainable management of the resources at an ecosystem level. The scope of the project included the following:

- Review all major fisheries from ecosystem perspective.
- Cost-benefit analyses of implementing EAF, presentation to managers and decision makers.
- Propose operational objectives and goals to implement EAF.
- Identify management measures and rules to achieve best results.
- Liaise with managers, decision makers to formulate preliminary management plans for EAF at national and regional levels.
- Develop improved techniques and approaches to strengthen decision-making process, e.g. analyses for reference points and evaluation of decision rules.
- Identify useful ecosystem indicators and application to characterize ecosystem states, changes and functioning.

- Identify research needs.
- Propose incentive measures.
- Recommend appropriate institutional arrangements.
- Inform stakeholders of project results.

The reviews included a summary of available data and the management measures currently being used in the fishery/sector. Ecological risk assessments were undertaken for a number of fisheries involving issue identification, prioritisation and performance reporting. Also done were cost-benefit analyses. The details of these analyses are shown in the presentations. Also shown are the outcomes of the project in the three countries.

Challenges for Africa

- Getting political and management buy-in; EAF is not just a scientific exercise.
- Cost of research versus economic justification.
- Lack of institutional integration and adequate resources for fisheries management.

Opportunities for Africa

- Existing basic model.
- Examples already implemented at different levels in countries with different capabilities.
- Donor funded regional programmes and resources available in many African countries.
- Relatively simple process – can be implemented without huge additional costs, from small to large fisheries.
- Awareness building and current issues, e.g. climate change.
- Positive spin-offs for all aspects of fisheries management and capacity building.

2.3 Introduction to fisheries management plans: Setting up and revising management plans

Kevern Cochrane, Chief of FAO Fisheries Management and Conservation Service introduced the subject and gave the sources of information on the subject. He gave the definition of a fisheries management plan as follows:

"A fisheries management plan is a formal or informal arrangement between a fishery management authority and interested parties which identifies the partners in the fishery and their respective roles, details the agreed objectives for the fishery and specifies the management rules and regulations which apply to it and provides other details about the fishery which are relevant to the task of the fisheries management authority."

He said that a fisheries management plan describes:

- Where, what and who is this about?
- What do we want to achieve?
- How will we achieve it?
- How will we know if we are achieving it or not?

He said that the plan should be a living document (i.e. up-to-date, relevant and reflecting the real state of the fishery), practical (including clear instructions and guidance to manager's and stakeholders), must be the product of full stakeholder consultation and thereafter available to all and serve as the basic reference for discussions and conflicts within the fishery. Mr Cochrane noted that a management plan should <u>not</u> be too vague and general to be of any use

to the manager or just a formal obligation that is forgotten as soon as it is completed. Neither should it be a "secret" document seen only by the fisheries management agency.

Mr Cochrane outlined the process for setting up (or revising) a management plan as including consultation, defining the scope of the management plan, assembling background information and analysis, setting objectives for the fishery, and formulation of rules. There must also be a mechanism to monitor, assess and review the process. Other important steps and elements are elaborated in the Powerpoint presentation. He gave examples of the required contents of an EAF management plan, and outlines of plans for Australian northern prawn fishery, the fishery of Cayos Cochinos in Honduras and the European Union and Norway Management plan for North Sea haddock. He posed the following questions for the workshop participants to consider:

- Are "living" workplans being used in any fisheries?
- Can we aim for functioning management plans as the basis of EAF in the most important fisheries in each country?
- Would these be a useful outcome of the EAF-Nansen project?
- What additional training and/or support, if any, would you require to lead such a process?

2.4 Developing and applying fisheries management plans consistent with EAF

Mr Cochrane outlined the information required for management plans under EAF. He said that these are the same as those for conventional management with additional requirements on critical habitats that may be affected and the potential direct and indirect impacts of the fishery on these habitats. Other additional requirements include the species composition of both the retained and non-retained bycatch and the potential effects of additional fisheries-generated mortality on affected populations, the potential amounts of litter produced by the fishery and the possible effects of lost or abandoned gear on fish and other biota. Others are knowledge on the ecosystem within which the fishery takes place including the impact of other anthropogenic activities such as releases of nutrients and contaminants and the major biological interactions in which the harvested species participate and the potential effects of fisheries on these interactions. He noted that particular efforts should be made to identify possible interactions with critical species, with forage species important for transfer of energy in the food chain, and with habitat structuring species such as coral. Also to be considered are the possible management measures to reduce adverse environmental impacts.

He ended by elaborating on a model for selecting new or modifying measures for EAF. This starts with agreeing on broad objectives for the fishery and identifying and prioritizing the EAF Issues. The management measures to address priority issues are considered along with the costs and then benefits of the management options for all agreed objectives. The optimal measures are selected and implemented.

2.5 Evaluating the costs and benefits of different management measures and strategies to achieve desired results

Ms Cassandra De Young of the FAO Fisheries Economics and Planning Service reminded the group that, as we move from conventional fisheries management to EAF, the range of costs and benefits stemming from management choices to be considered during the planning process is wider. Benefits may be in terms of greater protection for a threatened species, greater long-term stability in food supply for a local community, reduced wastage, or many

other possibilities. Costs could include the direct costs of implementation (e.g. increased management costs) as well as the indirect or induced costs resulting from how the EAF is implemented (e.g. reduced employment and revenues in the short term). These costs and benefits may be grouped under four headings: ecological, management/governance, economic, and social.

A wide range of methodologies could be used in measuring the benefits and costs of EAF implementation; coming from a range of disciplinary traditions and approaches. The choice among these methods will vary from case to case, depending on, *inter alia*, the amount of time and funds available, the complexity of the benefits and costs and data availability. Examples of such methods vary from highly quantitative and complex (e.g. bioeconomic models and economic valuation methods) to qualitative group ranking. As trainers, it is important to understand the wide range of potential costs and benefits and the various tools and methods available in order to apply those appropriate for their contexts.

Crucial to the understanding of costs and benefits arising from EAF application is the understanding of the distributional impacts involved. Trainers will need to assist the stakeholders to evaluate the following:

i. to whom the various costs and benefits accrue (e.g. one sub-sector bares the costs while another sub-sector reaps the benefits);
ii. when do the various costs and benefits occur (e.g. short-term, long-term); and
iii. at what scale (local, national, and international) do costs and benefits occur (e.g. local costs and global benefits).

3. EAF FROM PRINCIPLES TO PRACTICAL APPLICATIONS

Rick Fletcher, the workshop consultant gave a number of presentations on the EAF starting from the basic principles to practical application of the approach. The presentations are summarised below.

3.1 Outline of the full process for the application of the EAF

Mr Fletcher introduced a document that outlines all of the activities that need to be undertaken to enable the EAF process to be completed. These activities are listed within three categories of individuals/groups who would undertake the activities:

- FAO (including any consultant)
- Research agencies (if they are not directly part of the management agency)
- The country (including the fisheries agency and the other relevant stakeholders)

Detailed information and the actions to be taken by each group within each of these segments are shown in Annex 3. The overall process is divided into a series of segments (as listed below) based on their likely chronological order in the process.

- Initiation
- Preliminary activities
- Scoping meeting
- Between scoping meeting and stakeholder workshop

- Stakeholder workshop
- Outcome of workshop
- Operational plan
- Management plan
- Ongoing implementation
- Review of the process

3.2 How to determine the scope

This is an important step to undertake at the beginning of the process because it affects how the rest of the EAF process will operate. It was pointed out to the group that the scope of the assessment should be defined by the agency responsible for the management of fisheries (in most cases for African countries, this is the Fisheries Management authority). For the purposes of the EAF process any entity that is to be assessed will be called 'a fishery' the system can operate at any one of these levels:

- A subset of a fishery (either geographically separated or jurisdictionally separated)
- An entire fishery, even if this covers multiple areas/species/fishing methods
- A collection of fisheries

Where it is clear what fishery and fishing activities are being assessed, the EAF system works much more effectively. Therefore it must be acknowledged that the simplest assessments are of easily identifiable fisheries.

It was also pointed out that the other key factor in generating a successful EAF outcome is that management can really only work when the scope aligns fairly closely with powers of the management jurisdiction. If you do not have the power to regulate or manage an activity, then you cannot realistically establish objectives or set performance levels nor introduce the management arrangements to achieve these. So there needs to be some reality in how large the scope of the assessment can be. To assist in defining the scope was suggested that it may be useful to answer the following questions:

- What fishing methods are included (e.g. longline, purse seine, other)?
- Which groups of fishers are included (e.g. all commercial, foreign, local, artisanal, sport)?
- What species are covered (just the target species or non target species)?
- What spatial area does it cover/not cover (entire Exclusive Economic Zone (EEZ); territorial waters, a depth strata, a distance from land; waters in between islands)?
- What management agencies are involved (fisheries, enforcement, customs, immigration, the Commission, environment, etc.)?

The other critical information to document for the scope is what does the community want to achieve from the fishery? In answering this you need to know what are the community values or their high level goals.

In terms of societal values, these often include:

- Species sustainability
- Species viability

- Economic outcomes
- Social outcomes
- Food security

3.3 The hierarchical tree and identification of EAF issues

Having identified the scope, the next step in the EAF process is to identify all the relevant issues (given the scope) across the components of EAF (retained species, non-retained species, ecosystem; local and national community, governance and external factors) for the 'fishery' being examined. This is where it is important to have got the scope well defined because it will greatly affect what issues are identified. For example, depending upon the scope chosen for a coastal fishery can affect whether subsistence fishing in the area is included or not.

The process can be assisted by using, and modifying, a set of "*generic component trees*". There is one *generic component tree* for each of the main components of EAFM. Each generic tree has most of the types of issues that are likely to be relevant to fisheries across each of these categories – irrespective of which level of fishery is being examined. This maximises consistency and minimises the chances of missing issues.

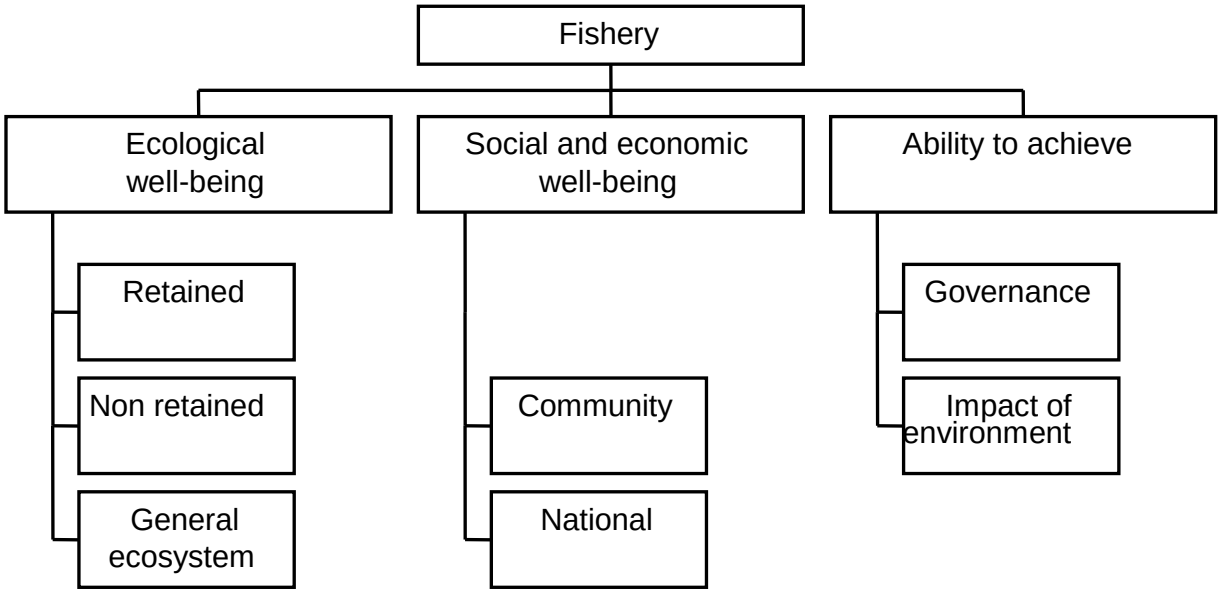

Figure 1: EAF Framework component tree showing main categories

These are, however, only the starting point; each fishery needs to tailor the trees to suit their individual circumstances. This can include splitting some of the issues to have greater detail, adding issues that were not there, or removing those that are not relevant. The need to add, remove or alter the trees will depend upon the fishing methods that are used, the areas of operations, the species involved and the types of communities where the fishery operates.

For a practical exercise (see section 5), a spreadsheet was provided to participants with the heading categories of each of the trees included (Table 1). One of the groups added the issues relevant to the fishery they were working on under each of the headings. The other group used a software package called ***Mind Mapping*** to not only map out their issues in a format similar to the component trees but it can also be used to record information or reports on these issues (thus it is a very useful package for such an activity).

Having identified the issues, it is important that each of the relevant values (sustainability, economic, social etc) that the management agency/community wanted to achieve for each of these are determined. It was outlined that each of these different values (i.e. there can be a sustainability outcome wanted for an issue but a particularly social value outcome may also be even more important) can result in very different risk levels being generated and therefore different management outcome may be required. Consequently it is vital that if there are different objectives that these are both recognised and are agreed up front.

3.4 Deciding whether an issue should be addressed – How the issues are prioritized

A large number of issues can be identified for any fishery but their importance will vary greatly. Consequently, it is necessary to have some way of prioritising amongst the issues so that only those issues that require management actions receive what are usually rather scarce resources.

To determine the priority of issues, and therefore the appropriate level of management response, the EAF process uses risk analysis methods. A number of risk analysis tools can be used to assist this process. All risk assessment methods work by assessing the "risk" of not meeting your objectives which are, in turn affected by the values/outcomes wanted to be achieved. Thus this process links back to values that were identified in the initial scoping part of the process.

The first risk analysis system outlined was the simplest system which used the three risk categories directly and this is more appropriate for use within community consultation processes but also may be useful for assessing economic and social objectives. The category approach uses descriptions to help assess whether there is a high medium or low risk of not achieving the objectives. It was also outlined that even simpler systems are available – such as using "stick dots" to get priorities from a group of stakeholders, can sometimes be useful methods of getting the priority issues identified.

The second more robust system, which is based upon the Standards Australia/Standards New Zealand Risk Assessment (Standards Australia, 2004; Fletcher, 2005) which is most appropriate for use with a technical group for the key ecological risks (note – other formal risk analysis methods are also likely to be suitable). The robust system works by assigning a level of consequence (impact) (from low to severe) and the likelihood (probability) of this consequence actually occurring (from remote to likely) to generate an estimate of the risk (from low to high) for each issue.

In both cases only medium and high risk issues require direct management with high risk issues probably requiring additional management. In the less robust system, issues are assigned directly to these categories.

Whichever risk assessment method is used (including any that are not outlined here), it must include appropriately detailed justifications for why the levels of risk were chosen. This allows other parties who were not part of the process to be able to see the logic and assumptions behind the decisions that were made. It also helps when reviewing the issue sometime in the future – unless you know why you choose the levels, it will be hard to know if anything has changed that may requires a shift in the risk levels and therefore management actions. This also assists in understanding the knowledge "gap" analyses/uncertainties.

Most importantly, these are tools to help you decide what you should and should not be spending your resources on.

Thus, for issues that are **not** currently being addressed directly:

1. Should you continue to do nothing, or
2. do you really need to be doing something?

For issues that **are** currently being managed or investigated:

3. Are you doing an appropriate amount;
4. are you not doing enough, or
5. are you doing too much?

3.5 Developing the management systems/reports

The next step in the process was to develop the management system for each of the issues that required direct controls and/or investigation. The EAF process outlines a set of elements that each need to be completed to ensure that the management system is comprehensive and effective. These elements are outlined in Table 1.

The three most critical elements in this system are the operational objective (what do you want to achieve specifically for this issue and this fishery?); the performance measure (what levels define acceptable performance); and the indicator (how will you actually measure performance). These three are a package; one has no value without the others.

The management responses developed should be directly related to trying to achieve each of the objectives and there should be regular reviews of progress and alterations to management where performance is not considered good enough.

Table 1: Summary of headings used for developing a management system for issues (modified from Fletcher *et al*., 2002, 2005)

Performance report heading	Description
1. Reason for inclusion	Summary outcome of risk assessment. Why is it important and high risk, how do you know/how certain are you? State knowledge base
2. Operational objective (plus justification)	What are you trying to achieve and why?
3. Indicator	How are you going to use to measure performance?
4. Performance measure/limit (plus justification)	What defines acceptable and unacceptable performance and why?
5. Evaluation	Monitoring programme needed and their results
6. Robustness	How robust are the indicators and performance measures?
7. Fisheries management response - Current - Future - Actions if performance limit is exceeded - Review Cycle	What management actions are currently used to achieve acceptable performance? Does any extra management need to be introduced? What will happen if performance is not acceptable? What is the time frame for reviewing performance? And why (the basis of) this time frame?
8. Other issues	What, outside of the fisheries control, could affect performance against the objective?

It was also explained to participants how the use of indicators related to the limit and target reference points (see below).

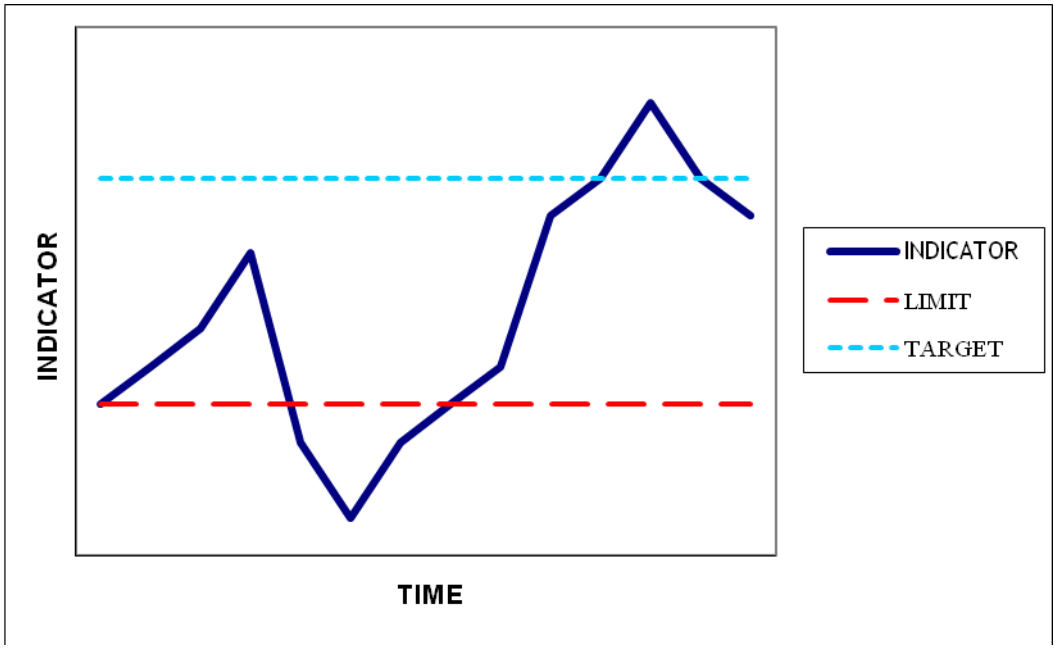

Figure 2: Trend of a particular indicator vis-à-vis management target and acceptable limit

4. GROUP WORK ON DEVELOPING AN OPERATIONAL FISHERIES MANAGEMENT PLAN

The participants split into two groups, one Francophone and the other Anglophone. Each group selected a fishery for the exercises on scoping and issue identification. The Francophone group picked an inshore small pelagic fishery in Benin, and the Anglophone group picked the inshore net fishery from Mauritius.

Each group then went through the process of describing their selected fishery using the criteria in Table 1. They then reported back to the whole workshop about what they determined and what problems they identified in undergoing the process (Annexes 4 and 5). Each group also developed summary management actions for one or two of the issues that they had prioritised as being moderate or high risk. The management actions are shown in Annex 6.

5. LEGAL CONSIDERATIONS IN THE IMPLEMENTATION OF EAF

Ms Anniken Skonhoft of the FAO Development Law Service (LEGN) who made the presentation on legal considerations in the implementation of EAF, listed and examined international legal frameworks that established the principles or have objectives of relevance to EAF or for conservation and sustainable use of biological diversity under national jurisdiction. She noted that the FAO Code of Conduct for Responsible Fisheries (CCRF) specifically contains many provisions which support the implementation of EAF as it deals with ecosystem and habitat protection, biodiversity and endangered species conservation, and

the precautionary approach, among others. She elaborated on the following steps necessary for national implementation of EAF.

Step 1: Identify the issues that need to be addressed in policy and legal framework in order to make EAF operational
Step 2: Review national fisheries policies
Step 3: Review the fisheries and sector-specific legal frameworks
Step 4: Amend or revise legal framework
Step 5: Adopt legislation
Step 6: Ensure implementation and enforcement

In order to achieve this, political will and capacity are key, said Ms Skonhoft. As an example, she examined the new Fisheries and Marine Resources Act 2007 of Mauritius for its compatibility with EAF principles. Ms Skonhoft concluded that putting in place a holistic EAF fisheries legal framework requires a legal review, which in many cases will require amending existing laws and regulations or adopting a new legal framework where current legislation is weak.

On funding for the required activities and actions, Ms Skonhoft told the participants that limited assistance may be available under the EAF-Nansen project. Assistance can also be solicited through FAO's Technical Cooperation Programme and other sources.

6. ECOSYSTEM SURVEYS IN THE CONTEXT OF EAF

Tore Strømme, Research Coordinator of the EAF-Nansen project, made the presentation which focused on data requirements for EAF with special emphasis on information collected at sea by fishery independent means and the surveys by the R/V DR. FRIDTJOF NANSEN. He said that the surveys are for the monitoring of the state of the ecosystem, including sampling of plankton and mapping of benthos, assessment of pelagic fish resources by acoustic methods and demersal fish resources by bottom trawls. The newest addition to the programme, Mr Strømme said, is using visual methods to monitor the bottom habitat using camera frames towed slowly over the bottom, or remotely operated vehicles.

Mr Strømme noted that the challenge for the EAF-Nansen project is how to monitor the ecosystem with adequate sampling in order to establish the state of the system and with sufficient precision to detect changes and at the same time optimising the use of limited resources.

The results from some of the surveys done in the project and prior to that were presented including time series of hake biomass and distribution off Namibia (1990–1999), distribution of deep water hake off Namibia-South Africa, and the shared sardinella resources off Angola-Gabon. Others were biomass estimates of sardine south of Cape Bojador (1995–2006) and the main events in the Dakhla stocks. He also looked at surface temperature and salinity distribution and trends and fluorescence off Gabon–Congo.

On climate change, it was noted that the Nansen surveys are helping to set critical baselines for monitoring and also helping to establish indicators for climate change. Mr Strømme ended with the following questions, among others:

- How will the distribution and abundance of marine species and communities alter with climate change?
- Which species are candidate indicators for climate change impacts?
- Within large marine domains, where are sensitive areas or hotspots of change?
- How will ocean productivity alter with climate change?
- How would non-climate related stressors impact on ecosystem resilience to climate change?
- To what extent will marine climate change impacts affect socially and economically important uses of marine ecosystems?

7. COMMUNICATION

Kwame Koranteng gave a short presentation on the development of a "Communication Strategy" for the EAF-Nansen project. It was noted that it is important to communicate information about the project in a consistent way hence a communication strategy for the project that outlines a clear understanding of the needs of the stakeholder communities.

The goal of the communication strategy was given as "To market the EAF-Nansen project as widely as possible to ensure that all intended beneficiaries and stakeholders understand the project, its objectives and expected outcomes". The objectives are as follows:

- To increase the awareness on the importance of the EAF application in promoting responsible fisheries and sustainable use of marine ecosystems.
- To raise public awareness and understanding of the EAF-Nansen project during its implementation.
- To create synergies and develop collaborations among research institutions, fisheries management administrations and other key stakeholders on EAF.
- To ensure information flow within project components and partners.

It was noted that the development of the Communication Strategy has been done through a participatory process with the active involvement of the project Focal Points and Task Group members. The draft strategy clearly identifies the target audience, the key messages to deliver and the communication channels and tools to use in the delivery.

8. DEVELOPING A STRATEGIC PLAN FOR EAF IMPLEMENTATION

8.1 Practical approach of EAF management in coastal fisheries of Africa

The session was lead by Johann Augustyn. In his introductory statement, Mr Augustyn outlined the following:

1. Tools
Training workshops: we have had some success with training workshops in the basic principles and working through some local examples. This seems to bring home the concepts and practical issues that arise in a real fishery.

Toolbox: Using the EAF toolbox as much as possible

Literature: Making use of the FAO and other available publications as much as possible. A lot has been published at various levels.

2. Championing EAF: Regionally and nationally, it has been our experience that specific individuals need to be assigned the task of championing EAF. Like any other important issue, it means the right person who has a real interest and passion should be used. The LMEs and RFMOs can help in championing EAF too.

3. The fisheries in each country each have their own issues and characteristics and therefore each needs to develop its own strategy and workplan to implement EAF, based on the Ecosystem Risk Assessments.

4. Each country should implement EAF through Regional Task Groups, National Task Groups or local structures with a similar function, such as working groups for EAF and/or including scientific working groups, to initiate, implement and integrate EAF into day-to-day management.

5. The EAF Nansen communication strategy could be a useful approach to getting decision-makers, managers, fishers and other stakeholders on board. I would like to suggest that the participants here should each contribute as to how they think it could be done in their own country – we can perhaps all learn from each others' experiences in that regard.

6. However, the EAF processes as described and in some cases already implemented are basic to any successful implementation, i.e. fishery reviews, risk assessments, prioritization of issues, cost/benefit analyses (at varying levels of detail), and development of management plans, and finally regular reviews. In the management plans you also need to have measurable indicators to be able to determine whether your measures are having any effect.

7. Local knowledge is critical – stakeholders need to feel that they are making a contribution to better management and that they are being listened to.

8. Local partnerships with academic institutions, industry, non–governmental organizations (NGOs) and other stakeholders can be extremely useful when it comes to raising funds, training initiatives, studentships, even with difficult implementation issues, etc.

9. Issues that require special attention include: legislation and policy, formal development of management plans, ensuring that compliance officers are involved, monitoring and reporting, ensuring that human resources are adequate (not necessarily through additional appointments – though that can be invaluable).

Mr Augustyn noted that it is important for each country to identify the fisheries and the risk factors through the ecological risk assessment methodology and local knowledge will be important in determining what issues are to be tackled first.

Mr Augustyn's introduction started very interesting discussions on the subject. The points raised are summarized below:

i. Traditional knowledge and management strategies are important hence EAF should use this as a foundation for new things.

ii. To help with implementation of EAF, it is essential that all stakeholders are well informed and motivated to adopt and promote the approach.
iii. Training on EAF should be extended to relevant professional organizations and civil society organisations.
iv. In promoting the EAF concept, it is important to realize the differences among countries and to adapt to local situations.
v. In most countries some forms of consultative groups exist and these must be used and their focus oriented towards adoption and implementation of EAF.
vi. It is important to attract members of parliament for example into the EAF process in order to ensure complete political buy-in.
vii. It was noted that we are not starting from ground zero and that many projects and initiatives exist that can be considered as foundations for the implementation of EAF and the appropriate links need to be made with those projects/initiatives.
viii. The EAF-Nansen project should build "structures" that would ensure continuation of use of the approach even after the project has ended; this means ensuring that the project objectives are fully taken up by the national fisheries administrations.
ix. Legal issues are not likely to be the impediment for EAF implementation; most African States are signatories to relevant international agreements (e.g. Convention on Biological Diversity (CBD), United Nation Convention on the Law of the Sea (UNCLOS), etc) and should be used to make decision makers start adoption and implementation of EAF.

Contributing to the discussions, Mr. Cochrane confirmed that the success of the EAF pilot project in the Benguela region hinged on the champions that emerged in South Africa and the major contribution made by the World Wildlife Fund (WWF) South Africa. He noted that this was not the case in Angola and Namibia hence the little progress made in these two countries compared to South Africa. He noted that for lack of adequate financial and technical resources the EAF-Nansen project will not be able to support all countries as required and underscored the need for countries to find partner organizations. The need to form partnerships with universities was also noted and the South African example where the University of Cape Town is working on modelling aspects of EAF was mentioned.

9. PARTICIPATORY FACILITATION

Ms Patricia Colbert of the FAO Gender, Equity and Rural Development Division gave three sessions on workshop facilitation. The three sessions were on different occasions but the outcomes of the exercises and discussions have been put together in this section of the report. It was explained that the facilitation exercises are intended to build the skills of the Trainers in facilitation and were expected to use these skills in their engagement in the EAF implementation process.

9.1 Introductory activities

The session of the facilitation exercise started immediately after the opening of the workshop. Each participant was asked to introduce himself or herself and to write his/her full name and titles on a piece of paper which was collected by the facilitator. This exercise was intended to break "status" barriers by taking away the titles with the promise of returning them on the last day of the workshop.

Ms Colbert gave a brief presentation on Abilities for Experiential Learning and on the theory of Adult Learning which involves the three steps of Thinking, Understanding and Applying the Learning Loop and Learning Pyramid. She explained that the fundamentals of adult learning show, among others, that adults are motivated by needs and interests, that learning is life- or work-centered and a self-directing process that differs with age and experience. She explained the role of teachers and students in the learning process in both traditional and participatory training approaches. She outlined the attributes of a good facilitator as including the following: active listener and observant, knowledgeable and clear, and assertive but not controlling. She concluded that the good facilitator must be flexible and organized and must ask questions.

She touched on how to encourage participation and took participants through some training techniques (Annex 7) and the DOs and DON'Ts of presentation (Annex 8).

9.2 The Margolis Wheel exercise

Participants were taken through the Margolis Wheel exercise the objectives of which are: (i) to provide participants the opportunity to discuss real problems of EAF and generate potential solutions; and (ii) to encourage participants to share problems and actively seek experiences and suggestions from each other. Other elements of the Margolis Wheel are shown in Annex 10.

Finally the participants listed the following as the challenges that they expect to face when facilitating an EAF workshop at home:

- Facilitating in another language, e.g. French
- How to impart the EAF notion to fishermen
- Choose the appropriate level of language to pass the message on EAF to participants
- Funding
- The Minister, Permanent Secretary and Director of Fisheries who are responsible for management of fisheries perceiving EAF as a scientific project
- EAF is quite a complex, long process. Maintaining concentration over five days may well be the biggest problem
- The choice of the participants (most suitable to catch the message)
- Prepare case studies to facilitate understanding
- Put on the same level all the stakeholders including the traditional chiefs.

10. CONCLUSION AND RECOMMENDATIONS

10.1 Collation of difficulties and issues encountered during the week which will require further work

Participants made comments on the training highlighting the aspects that have been particularly difficult to follow or assimilate. Generally, the participants noted that the training had been useful and prepared them for the work ahead. The training on how to interact with stakeholders was singled out as extremely good so was the ecological risk assessment methodology although it was thought that the latter required a dedicated extended course. Another area that required more time was cost-benefit analysis.

Some of the trainees admitted that the training looked o.k. but the practice looked a bit scary and noted that it would be better to organise another meeting where real issues are presented and the problems tackled. Dr Augustyn encouraged trainees to "jump into it" noting that although things look unclear and not easy to comprehend, there is certainly much to gain from every step of the process. FAO noted that the trainees are expected to be involved in national and regional activities.

Other comments made included the following:

1. It would have been better to hire professional interpreters.
2. It would be good to have participants lead some of the sessions.
3. Some sessions and presentations were too long.
4. It would have been useful to provide brief summaries of the salient points in the presentations in French for the sake of the francophone participants.

The participants felt that there was need for a whole course on ecological risk assessment and also underscored the need for a training manual. They asked FAO to speed up work on the Toolbox for EAF and the EAF Training Manual.

10.2 Future work

For the way forward, participants were referred to the action tables developed at the end of each Regional Task Group meeting.

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APPENDIX 1:
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APPENDIX 2:
WORKSHOP PROGRAMME

Day / Time		***Resource Person / Facilitator***
DAY 1 (Monday 16 February 2009): Introduction to EAF		
09.00	Workshop Opening	
9.30	▪ Opening remarks ○ Introduction ▪ Background and Objectives of the workshop ▪ Adoption of Programme ▪ Workshop procedures ○ Participatory facilitation	Jorge Kevern Gabriella Kwame Kwame Patricia Colbert
10.30 11.00	*Morning Tea / Coffee*	
11.00	○ Introduction to the principles of EAF and why it is necessary ○ General discussions on possible opportunities for application of EAF in Africa (including what has already been done)	Kevern / Gabriella Augustyn / Kwame
12.30	*Lunch*	
13.30	○ Introduction to fisheries management plans ○ Setting up a management plan ○ Revising a management plan	Kevern
15.30	*Afternoon Tea / Coffee*	
16.00	○ Outline of the full process for the application of the EAF ○ Step 1: How to determine the scope ▪ Case studies	Rick Gabriella / Rick
17.00	Close of Day 1 sessions	
17:30-18:30	*Drinks with FIM staff*	Kevern
DAY 2 (Tuesday 17 February 2009) : Operationalizing the EAF from principles to practical applications		
08.30 09.30	○ Participatory Facilitation • Facilitation Training methodology ○ Step 2: The hierarchical tree and identification of EAF issues • Ecological issues	 Patricia Colbert Gabriella / Rick
10.30	*Morning Tea / Coffee*	
	➢ Group work ○ Step 2: The hierarchical tree and identification of EAF issues • Socio-economic and institutional issues ➢ Group work	 Rick / Cassandra
13.00	*Lunch*	
14.00	○ Step 2: The hierarchical tree and identification of EAF issues • Ability to achieve ➢ Group work	Augustyn / Rick / Gabriella
15.30	*Afternoon Tea / Coffee*	
16.00	○ Step 2: The hierarchical tree and identification of EAF issues (cont)	Augustyn / Rick / Gabriella
17.30	Close of Day 2 sessions	

Day 3 (Wednesday 18 February 2009) : EAF from principles to practical applications (continued)		
08.30	○ Step 3: Deciding whether an issue should be addressed – Risk assessment and the risk analysis process ▪ Outline of risk assessment and of the risk analysis process	Rick / Gabriella
10.30	*Morning Tea / Coffee*	
11.00	○ Step 3: Deciding whether an issue should be addressed (cont) ▪ Example of ecological assessment	Rick / Gabriella
12.30	*Lunch*	
14.00	○ Performance Report	Rick / Gabriella
15.30	*Afternoon Tea / Coffee*	
16.00	○ Performance Report (cont)	Rick / Gabriella
17.30	Close of Day 3 sessions	
DAY 4 (Thursday 19 February 2009) : EAF from principles to practical applications (continued)		
08.30	○ Step 4: Developing and applying fisheries management plans consistent with EAF ○ Evaluating the costs and benefits of different management measures and strategies to achieve desired results	Kevern / Rick Rolf / Cassandra
10.30	*Morning Tea / Coffee*	
11.00	○ Group work on developing an operational plan	Kevern / Rick / Gabriella
12.30	*Lunch*	
13.30 14.45	○ Implementation of EAF - Legal considerations ○ Communication	Anniken Kwame
15.30	*Afternoon Tea / Coffee*	
16.00	○ Participatory facilitation • DOs and DON'Ts	Patricia Colbert
17.00	Close of Day 4 sessions	
DAY 5 (Friday 20 February 2009): Developing a strategic plan for EAF implementation		
08.30	○ Ecosystem surveys for fisheries management	Tore
10.30	*Morning Tea / Coffee*	
11.00	○ Practical approach of EAF management in coastal fisheries of Africa ○ Collation of difficulties and issues encountered during the week, which will require further work	Kevern / Augustyn / Kwame All participants (Gabriella / Rick)
12.30	*Lunch*	
14.00	○ Developing a strategic plan/roadmap for the application of the EAF in Africa	Gabriella / Kwame
15.30	**Closing of workshop**	Kevern

APPENDIX 3
BASIC OUTLINE OF EAF PROCESS

COMPONENT OF EAF PROCESS	FAO	RESEARCH AGENCIES	COUNTRY
1. INITIATION	Informal discussions on the readiness of countries for the process.	Nil	Determine if any permission is required from government. If so, then this needs to be obtained. Once obtained, request FAO to undertake the EAF process.
2. PRELIMINARY ACTIVITIES	Determine suitable timetable for the country. Inform/discuss with the country and specific research agency the approximate timeline for when the process is likely to occur. Identify key contact in country and begin to develop a relationship (this is usually the Director). Collate all relevant material for the key contact to use. Assist the key contact person in understanding the EAF process either directly when in the country or when they are co-located for other purposes (piggyback). Potentially get the key contact person involved in another EAF process to see what happens firsthand.	Liaise with FAO on the timetable for the process for this country. Supply the lead person in the country (and FAO if permission granted) with the relevant reports plus any comments on issues already identified. Start updating the country status assessments based on the current data available. Prepare a draft scientific background for the country. Submit this scientific background material plus draft presentation to FAO for distribution to country as part of the scoping meeting information package. Provide input to exact date of workshop.	Identify who will be the key contact person for the agency that will be the "champion" within the country for the EAF process. Provide FAO with the authorisation to obtain previous country reports. Ensure that all relevant data are submitted to Research Group about 3 months before the scoping meeting. Provide input into the agenda for scoping meeting, including input into what are the key issues and opportunities. Determine who needs to be invited to the scoping meeting. Liaise with FAO on the exact date for the meeting – when should it not occur. Begin to encourage all the invited participants to attend the meeting (e.g. government officials).

	Determine what expertise is available in the country (legal, economic, social, etc). Engage consultant and determine exact timetable in consultation with country and Research Group. Develop an economic and social report if any relevant information is available. This should include a report by the fisheries development section on initiatives in this country/region. There should also be a report by the legal section of FAO on any legislation/treaty issues they think are relevant, plus any legal issues they are already aware of. Consult with country to determine what level of direct involvement is required by the legal section. All background material is to be circulated to country prior to meeting. This can be sent ahead of time electronically. Take hard copies to meeting if required (liaise with country contact as to need for this).		Generate interest within other agencies interested in the meeting. Country may wish to translate the EAF description into local language if needed for distribution at the scoping exercise. Collate any relevant country documents that need to be sent to FAO and/or distributed at the scoping meeting. Generate an overview of the fishery in the country to be presented at scoping meeting. Identify relevant treaties and other obligations that may affect the scope of the process and issues that may need to be considered.

3. SCOPING MEETING 3.1 Pre-Meeting (can be the day before – or a separate meeting)	Have a chat with the key contact person to get a feel for any issues they think may come up and to fine tune what should be presented the next day. An informal discussion with the main fisheries agency section before the formal scoping meeting is often needed. This may not be necessary if staff have all previously been exposed to the process. This should include an outline of what will ultimately be generated – an operational plan. People required to come include the consultant/facilitator, FAO. May also need to have a legal advisor present based on assessment of awareness and issues. It may be useful to bring economic and/or social expertise if considered necessary and if there is none available locally.	A run through of the presentation on science could be done with the fisheries staff. Tailor what gets presented at the scoping meeting to the whole group based on the input from the fisheries agency.	Ensure most fisheries staff are available for an informal discussion on this day. Provide input from the country perspective about what components of the talks – including the science talk – are included for the next day.
3.2 Opening session of meeting	Outline the EAF framework and process – one hour in total if possible. This needs to engage the interest of the group – especially the non-fisheries staff. A general overview including what it will do for them and what is the outcome. Talk needs to be clear about what the process includes, addressing the	Present one hour or less science talk.	Have Director or Minister, etc., welcome everyone and open the meeting. Introduce participants. Provide the country background report/talk.

	objectives in the convention and others the country may want to achieve. They should be asked to start thinking about the values they hope to achieve.		
3.3 Defining the scope	Outline scoping aspects in more detail. This may require a presentation by a legal expert or at least a discussion of the generated report. Obtain general agreement on the definitions relating to scope for use within the rest of the process.		Provide advice on elements which are part of the scope for this process. This is done in reference to the questions i.e. methods, locations, treaties etc. as in guide.
3.4 Draft component trees (identifying the issues)	**ALL PARTIES** Explain component trees process to help identify issues. Split into relevant groups if needed or possible. **Assist** (not direct) groups in developing trees for each of the EAF elements. Facilitate identification of issues to be within the scope previously determined. Develop trees and report back to group. Build a comprehensive set of trees based on the individual ones developed by groups.		
3.5 Outline the risk analysis	Outline risk assessment process. Provide some pre-existing examples and do at least one local example.		Get used to the concept of risk assessment by undertaking examples.
3.6 Conclusions	Summarise outcomes from scoping meeting and explain what the next steps will be. Leave a copy of outputs from scoping exercise with local agency – could be an amended PowerPoint presentation.		Provide initial feedback; raise any issues or problems identified.

4. BETWEEN SCOPING MEETING AND STAKEHOLDER WORKSHOP	Send the report on the scoping meeting to agency if not done above. Start to build draft EAF report, including embedding initial set of component trees and the definitions developed from scoping meeting.	Using the draft trees, examine to determine if there are any major gaps between issues identified and available analyses. Based on any new data and the issues identified at the scoping meeting start to generate a more up-to date assessment for the country. Summarise information or complete analyses particularly for issues not previously assessed and considered priority by the agencies.	Provide any comments on the scoping meeting report. Start organizing list of participants for stakeholder workshop. Begin to get these groups aware of the process and engender their interest.
4.1 Before Stakeholder Workshop	Consult and agree on appropriate dates with country and Research Group and any other relevant party. Develop the draft agenda in consultation with the country. Develop information pack to send by email to country.	Send any revised background papers to FAO.	Send invitations and agenda. Venue and catering hire and identify facilities for venue and all other logistical arrangements. Update country background paper including industry presentations. Organize media both before and during workshop. Document any socio economic reports – including unpublished material. Country may wish to translate the six-page EAF description into local language if needed for distribution at the workshop.
5. STAKEHOLDER WORKSHOP	Outline the EAF framework and process. Brief – one hour in total, to engage interest.	Present one hour or less science talk.	Have Director or Minister, etc., welcome everyone and open the meeting. Introduce participants.

	Be clear about objectives in convention and others they may want. General overview including what it will do for them.		Provide a country/industry report/talk – outline values.
5.1 Scope	Consultant/FAO outlines where the process got to at scoping exercise and outlines the developed definitions from the scoping exercise. Get workshop agreement on the scope and definitions (if possible) – client is agency and they decide.		Stakeholders: Provide input on the scope and definitions – getting agreement that they are correct. Identify what values they consider to be important for the management of these resources
5.2 Component trees	Explain component trees. Complete the draft trees – either in groups or as a whole group.		Stakeholders –provide input (add missing issues).
5.3 Risk assessment	Risk assessment – explain and provide examples.		
5.4 Sustainability objective assessments	Generate LxC Risk Values for country level risk for each relevant species that has a completed regional quantitative stock assessment provided by Research Group. Generate LxC Risk Values for country level risk for each relevant species that does not have a quantitative stock assessments using the regional and country level PSA analyses provided by Research Group and any other relevant information available.	Provide direct additional scientific input to process.	Stakeholder input into ecological issues – provide some on-ground information to assist process of determining if risk scores or underlying analyses appear appropriate to them.
5.5 Social and economic objectives assessments	Generate Risk Values for country level risk for social and economic objectives – including those associated with the target and non target species. This could use the		Stakeholder input into what are the significant economic and social risks based on what values they consider important.

	information supplied by FAO or direct from stakeholders. If an expert on either of these areas is present, he/she should assist in the discussion. This will often require getting some clarification of objectives for each issue.		Refer to any socio economic reports – including unpublished material.
6.0 OUTCOME OF WORKSHOP	Fill in brief outline report as per management report option (a) in the EAF guide. Prepare one or more examples of option (b) brief management report. Explain operational plan.		Provide input as to what direction management should take with each issue Get an understanding of what the reports will mean for them and how they look.
6.1 Workshop report	Develop a workshop report (i.e. leave material generated) – either at time or shortly afterwards.		
6.2 Draft EAF report	Finish EAF report and submit draft to country.	Provide any additional input on the specific science related issues as requested.	Agency: Start thinking about how to input and develop an operational plan.
6.3 Expert panel discussion	Run through draft report, fill in gaps and identity any problems or changes. Assist country develop performance limits and potential indicators, data needs, etc. for the management systems.		
6.4 Finalize EAF report	Take on board any comments from country – finalize the EAF Report.		Agency: Review EAF report This may include review by stakeholders. This is to be encouraged

RESPONSIBILITY NOW SHIFTS TO COUNTRY/AGENCY TO DRIVE THIS			
7. OPERATIONAL PLAN	Assist in developing the operational plan (that is a separate country level report). The level of direct assistance will need to be determined on a case by case basis. This would include clearly identifying the level at which FAO can undertake any requested actions.	Assist in developing the operational plan (such as assistance in how to develop new monitoring system etc) but clearly identifying the level at which Research Group can undertake any requested actions.	Based on EAF report, complete the operational plan – this is not a public document for wide dissemination. This could include reviewing/developing management plan to see how it needs to be changed to accommodate these actions. If activities by others (non agency staff) are included then you also need to require input from them.
END OF DIRECT EAF PROJECT ACTIVITIES BEGINNING OF IMPLEMENTATION			
8. MANAGEMENT PLAN	May need to supply support for any changes/development to the management plan to support the EAF requirements. This could include legal or management input (determine level of resources available).		Country seeks support for their management plan process if needed.
9. ONGOING IMPLEMENTATION	Follow up visits to assist in implementation of the operational plan if requested.		Regular reviews of progress against the operational plan.
10. REVIEW PROCESS	Work out how this ongoing review, if required, becomes part of normal FAO processes.		

APPENDIX 4
SCOPING

A: GROUP – Anglophone

Countries: Kenya, Mauritius, Sierra Leone
Participants: Nallee, Ibrahim, Renison, Johann, Fransisco
Name of Fishery: Artisanal net fishery in Mauritius (towards creating a management plan)

SCOPE	DESCRIPTION
Fishers involved	Artisanal fishers (mostly low income groups)
Methods involved	Net 500 m long, width 5 m and mesh size 5 cm. Number of nets limited to 15 nets for the whole country. Closed season from October to February, spawning season and open season from March to September. Fishers are compensated during closed season. Fishing done in the inshore shallow water lagoons in the seagrass and coral reef beds.
Values to achieve and priorities	1. Food security 2. Economic 3. Social 4. Conservation of ecosytem; in that order of decreasing priority.
Primary agency(ies) or groups (those directly involved). Those who have to take direct responsibility for the fishery.	Department of Fisheries Coast Guard
Other agencies which are indirectly involved or manage related aspects i.e. they do not take direct responsibility for the fishery	Department of Cooperatives Department of Environment Department of Tourism
Time scale for this process	The process of completing a management plan for this fishery will take five years as it involves stakeholder meetings at various levels, since it is the first management plan for this fishery.
Any issues associated with identification of this fishery	Recreational fisheries cause conflict with operations of this fishery through physical disturbances in the fishing areas. Other recreational activities also cause conflicts. Exploitation by middlemen.

B: GROUP – Francophone

Countries: Senegal, Cameroon, Morocco, Benin
Participants: Moussa, Salvador, Souad, Amélie
Name of Fishery: Small pelagic fisheries

SCOPE	DESCRIPTION
Fishers involved	Artisanal and industrial fishermen (National and International Agreements)
Methods involved	Artisanal: beach seine, purse seine, driftnet. Industrial: midwater trawl, seine fishing.
Areas involved	Artisanal: 5–6 miles (shared stocks). Industrial: over 3 miles (shared stocks).
Values to achieve and priorities	Artisanal: Food Security Social Economic Sustainability of the resources Industrial: Economic Resources Sustainability Resources Viability Socio-economic
Primary agency(ies)/groups (those who are directly involved). Those who have to take direct responsibility for the fishery.	Fisheries Departments (Ministry) Organisations Professionals Civil Society Research centres, Ministry of Agriculture Monitoring, Control and Surveillance Department (Ministry of Environment) Administration of the area (decentralization) Regional Fisheries Organizations
Other agencies which are indirectly involved or manage related aspects i.e. they do not take direct responsibility for the fishery	Local government Tourism Public works/decontamination Mines and petroleum Ministry for Agriculture Ministry of Employment Investment Development partners Immigration Services, Customs Ministry of Finance Ministry of Health
Time scale for this process	Seven years (one–two years for the preparation and five years for the implementation/annual evaluation. Developed at national level and harmonisation at regional level.
Any issues associated with the identification of this fishery	Scale of application of the process (administrative, legal etc...)

APPENDIX 5
ISSUE IDENTIFICATION

A: *GROUP* – Anglophone

Name of Fishery: Artisanal net fishery

ECOSYSTEM ISSUES

RETAINED/TARGET SPECIES

PRIMARY

Snappers
Mullets
Lethrinidae (several species to be determined)

OTHER

Sardines
Crustaceans
Other fish

NON RETAINED SPECIES

GENERAL BYCATCH/DISCARDS

None

SPECIAL SPECIES

None

ECOSYSTEM

COMMUNITY STRUCTURE

Yes

HABITAT

Coral
Seagrass beds

DAMAGE TO INVERTEBRATES

Yes

WATER QUALITY

None

COMMUNITY WELL–BEING

FISHERS

Source of protein
Income from selling
Social security

	Conflict with fishers in other artisanal sectors
	Conflict with tourist activities
	Conflict with recreational activities
	Income during closed season
	Dependence on middlemen
	Equipment maintenance
	Non-transferability of licence
LOCAL COMMUNITY	
	Eventual closure of fishery because of environmental concerns
	Reduction of catch
NATIONAL COMMUNITY	
	Import of fish
GOVERNANCE	
INSTITUTIONAL	
LEGAL FRAMEWORK	
	Laws, regulations, permit conditions and policies in place
	Political interference
MANAGEMENT PLAN	
	Management plans needed
COMPLIANCE	
	Illegal fishing
	Bribery of compliance officers
MONITORING/RESEARCH	
	Statistics collected
	Stock assessments done
	Capacity adequate
	Staff succession
RESOURCES	
	Inadequate HR
	Inadequate funding
CONSULTATION	
FISHERS	
	Consultative Committee - chaired by Minister now in place
	Conflict between associations
	Non-transferability of licences
COMMUNITY	
	None - Consultative Committee

INTERAGENCY

Environment, Tourism
EIAs

NGOS

None - Consultative Committee

OTHER

None

B: *GROUP* – Francophone

Name of Fishery: Artisanal pelagic fisheries; Beach seine

ECOSYSTEM ISSUES

RETAINED/TARGET SPECIES

PRIMARY

Sardinella maderensis
Anchovies

OTHER

Carangids
Rays
Prawn
Mullets
Crustacean
Shellfish
Bonga

BYCATCH SPECIES

GENERAL BYCATCH/DISCARDS

Medusas
Seagrass

SPECIAL SPECIES

Turtles

ECOSYSTEM

COMMUNITY STRUCTURE

Exploitation of Juveniles
Eggs and larval fish capture
Capture of breeders
Release of jellyfishes

HABITAT

Destruction of nurseries and feeding areas
Destruction of Seagrass beds

WATER QUALITY

Water turbidity

IMPACTS OF OTHERS

COMMUNITY WELLBEING
FISHERS
LOCAL COMMUNITY
NATIONAL COMMUNITY

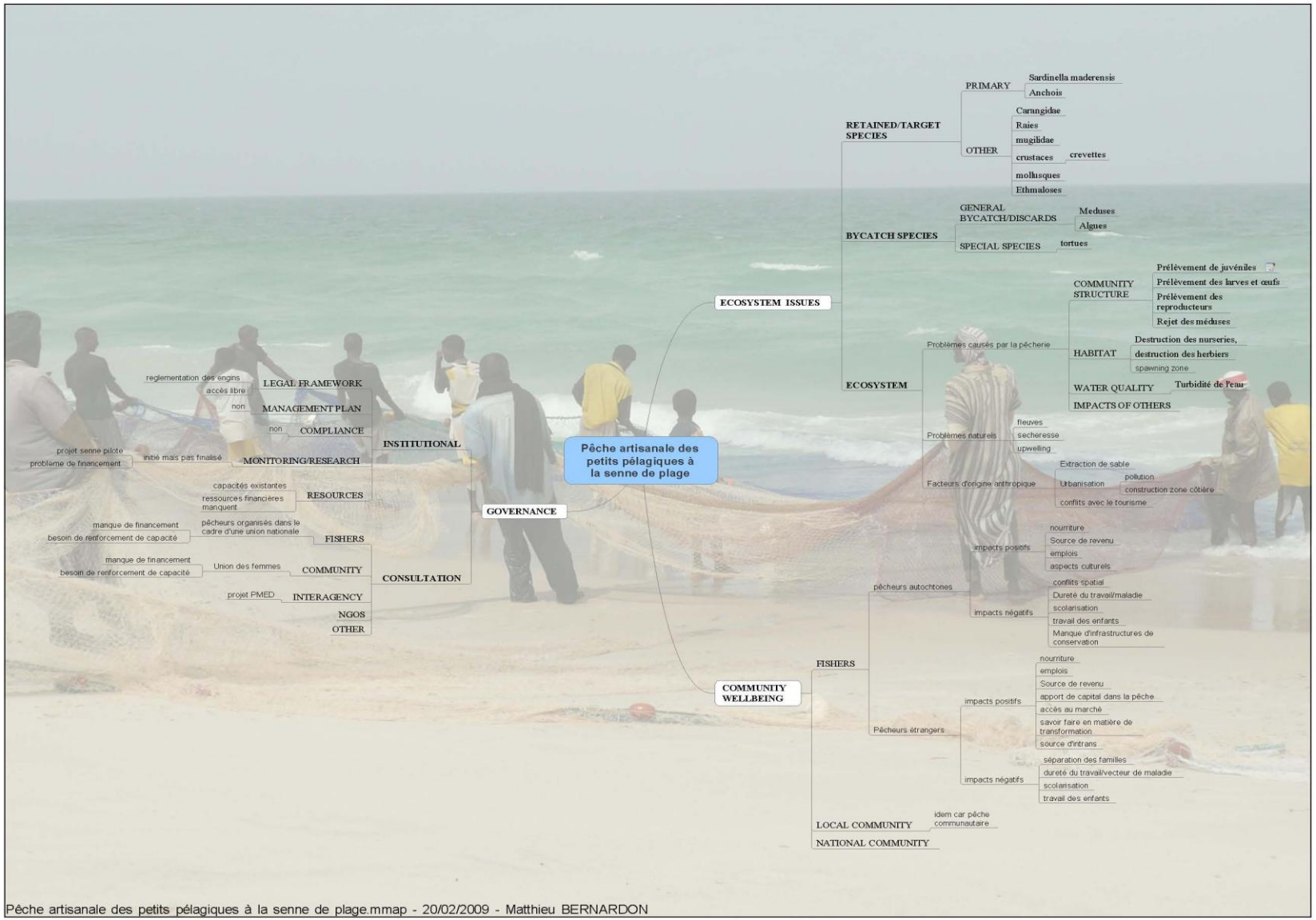
GOVERNANCE

INSTITUTIONAL

LEGAL FRAMEWORK
MANAGEMENT PLAN
COMPLIANCE
MONITORING/RESEARCH
RESOURCES

CONSULTATION

FISHERS
COMMUNITY
INTERAGENCY
NGOS
OTHER


Pêche artisanale des petits pélagiques à la senne de plage
GOVERNANCE
INSTITUTIONAL
LEGAL FRAMEWORK
reglementation des engins
accès libre
MANAGEMENT PLAN
non
COMPLIANCE
non
MONITORING/RESEARCH
projet senne pilote
problème de financement
initié mais pas finalisé
RESOURCES
capacités existantes
ressources financières manquent
CONSULTATION
FISHERS
manque de financement
besoin de renforcement de capacité
pêcheurs organisés dans le cadre d'une union nationale
COMMUNITY
manque de financement
besoin de renforcement de capacité
Union des femmes
INTERAGENCY
projet PMED
NGOS
OTHER
ECOSYSTEM ISSUES
RETAINED/TARGET SPECIES
PRIMARY
Sardinella maderensis
Anchois
OTHER
Carangidae
Raies
mugilidae
crustaces
crevettes
mollusques
Ethmaloses
BYCATCH SPECIES
GENERAL BYCATCH/DISCARDS
Meduses
Algues
SPECIAL SPECIES
tortues
ECOSYSTEM
COMMUNITY STRUCTURE
Prélèvement de juvéniles
Prélèvement des larves et œufs
Prélèvement des reproducteurs
Rejet des méduses
HABITAT
Destruction des nurseries, destruction des herbiers
spawning zone
WATER QUALITY
Turbidité de l'eau
IMPACTS OF OTHERS
Problèmes causés par la pêcherie
Problèmes naturels
fleuves
sécheresse
upwelling
Facteurs d'origine anthropique
Extraction de sable
Urbanisation
pollution
construction zone côtière
conflits avec le tourisme
COMMUNITY WELLBEING
FISHERS
pêcheurs autochtones
impacts positifs
nourriture
Source de revenu
emplois
aspects culturels
impacts négatifs
conflits spatial
Dureté du travail/maladie
scolarisation
travail des enfants
Manque d'infrastructures de conservation
Pêcheurs étrangers
impacts positifs
nourriture
emplois
Source de revenu
apport de capital dans la pêche
accès au marché
savoir faire en matière de transformation
source d'intrans
impacts négatifs
séparation des familles
dureté du travail/vecteur de maladie
scolarisation
travail des enfants
LOCAL COMMUNITY
idem car pêche communautaire
NATIONAL COMMUNITY
Pêche artisanale des petits pélagiques à la senne de plage.mmap - 20/02/2009 - Matthieu BERNARDON

APPENDIX 6
RECOMMENDED ACTIONS

A: Phasing out of nets in Mauritius artisanal fishery

FISHERY/SPECIES **Issue**	**MAURITIUS ARTISANAL NET FISHERY** **Fishers: Non-transferability of licences**
1. Reason for inclusion	Concern about future livelihood, including the generation of food and income from net fishing
2. Operational objective (justification)	Mitigation of loss of netfishers' livelihood through negotiated approach
3. Indicator	Replacement income and food and/or alternative livelihood/employment
4. Performance measures (limit/target)	100% or higher replacement of food and income through alternative livelihoods within two years
5. Data requirements/Availability	Level of complaints
6. Evaluation	Survey after two years
7. Robustness	High
8. Fishery management measures: - current - future - actions if performance limit is exceeded	 Voluntary buy-back Buy-back policy extension Promote alternative livelihood programme through empowerment initiatives, e.g. small business training/subsidization Review diet, livelihood and social impacts
9. Present performance of the fishery in relation to this issue	Reduction from 32 to 15 nets operating
10. External drivers	Economic conditions Natural disasters Government stability

B: Coral damage in Mauritius artisanal net fishery

FISHERY/SPECIES **Issue**	**MAURITIUS ARTISANAL NET FISHERY** **Damage to coral reefs during fishing operations**
1. Reason for inclusion	Productive ecosystem with very high biodiversity which provides focus for tourism and protects coast against erosion
2. Operational objective (justification)	Minimise damage to corals during fishing operations (medium term) Enable recovery of coral ecosystem (long term)
3. Indicator	Proportion of coral reef fished (medium term) Area of coral reef cover (long term)
4. Performance measures (limit/target)	Reduced area fished on corals by net fishers – 20% reduction over two years (medium term) Increase coral reef cover by 10% over 20 years (long term)
5. Data requirements/availability	Spatial data on reef cover and fishing distribution and relative effort levels (medium term and long term)
6. Evaluation	None
7. Robustness	Excellent
8. Fishery management measures: - current - future - actions if performance limit is exceeded	 Control number of nets Non-transferability of net ownership Close net fishing in sensitive and vulnerable coral reef areas
9. Present performance of the fishery in relation to this issue	High impact on coral reefs causing reduction in total coverage
10. External drivers	Coral cover could be affected by global warming/bleaching or other human activities

C: Food Security and the Benin Sardinella fishery

FISHERY/SPECIES **Issue**	***Sardinella*** ***Food security*** ***Socio-economics***
1. Reason for inclusion	• Endangered stocks • Demographic growth/concentration littoral/coastal zones • Free access/lack of regulations • Population reliance on fish as source of food
2. Operational objective (justification)	• Keep catch levels (referred to 2007) at a sustainable level • Improve post-harvest utilization
3. Indicator	• Total landings of sardinella • Demographic structure of sardinella landings • CPUE
4. Performance measures (limit/target)	• Average landings in last five years • 80% of captures are above first maturity size • Captures made up of 80% of target species • Stability of the CPUE level (equivalent to the average of the previous five years
5. Data requirements/availability	• Availability of information at national level for landings, number of days at sea, catch composition
6. Evaluation	Each year in January
7. Robustness	National indicators did not necessarily reflect the real local state (food security) and the stock sustainability at regional level. With regard to the CPUE, the indicator presents a lack of precision.
8. Fishery management measures: - current - actions if performance limit is exceeded	• Regulation on length and mesh size of the seine at 20 mm • Setting up supporting measures to regulate implementation • Setting up a joint management system: o Data collection system o Implication of fishers' unions • Harmonization at regional level: o Follow-up system o Fisheries policy o Development framework • Foster/develop activities which create alternative incomes.
9. Present performance of the fishery in relation to this issue	
10. External drivers	Upwelling/climate change Fisherman migration

APPENDIX 7

TRAINING TECHNIQUES[1]

FROM TEACHING TO TRAINING

Training focuses on specific skills, knowledge, abilities, and attitudes necessary to the performance of a specific task or job. Unlike an academic course of study, trainings should be aimed totally toward practical application, with the underlying theory only introduced if it helps the trainee to better understand the training material and apply it more effectively. Since the objectives of training are measurable and concrete, emphasis must be placed on content and on the trainer's presentation style, which aids the transmission of the content. First, a good trainer establishes an environment which enhances adult learning; factors which are both physically and psychologically conducive to the learning process.

CONDITIONS FOR A PROPER TRAINING ENVIRONMENT

1. Respect for individual personality. Your personal feelings about certain people, particularly if they are negative, have no place in the classroom. Recognize that your students are equal partners in the learning process. Build upon their experiences to enhance the content of the course.

2. Participation in decision-making. Allow adult trainees to share in making decisions about the training process. Encourage and accept their suggestions non-defensively, and, wherever possible, incorporate them into the instruction. Take seriously the input provided by the students' program evaluations.

3. Freedom of expression and availability of information. Make available all information to which you refer and provide access to any additional materials used to develop the course. Respond to all trainees' questions and comments with encouragement and support and integrate their comments into the flow of the presentation wherever possible.

4. Provide a physically comfortable environment. No successful training can take place where trainees are too hot or cold, or where they have to strain to hear the trainer.

RELAX; TRAINERS ARE NOT EXPECTED TO BE:

1. Perfect. Trainers do make mistakes.

2. Experts. Remember that you do not have to know all there is to know about the topic you are covering, but you should know how to go about finding an answer if someone asks something you do not know. Tell people when you do not know an answer – trainees usually know when you are bluffing it. The class can unite in trying to make the instructor look foolish if a "know it all" attitude is expressed.

3. More experienced. It is not unusual to find trainees who are more educated or experienced than you in your specific topic. You have the responsibility to use their expertise to help broaden the course content and add new aspects to it.

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[1] After Andrew E. Schwartz of A.E. Schwartz & Associates, a management training and leadership development organization.

4. In total control. Ironically, the more you give up control, the more adult trainees perceive your program as being responsive and sensitive to their needs. The control you give up may take the form of a traditional authoritarian role or an inflexible lesson plan. For that matter, if the presentation you are making is not going well, you do not have much to lose by asking the class what they perceive as the problem and then responding by adjusting your training.

5. Entertainers. It is more important that the trainees learn the skills, knowledge, abilities and attitude that they were intended to absorb (even if the route you take to guarantee this learning deviates from your plan), than chuckle through the presentation but not learn much. Although ideally you want them to enjoy the learning process, the context should never be sacrificed to the rapping.

DIRECTING ENERGY INTO IMPORTANT THINGS

1. Yourself. You have a lot to offer just as you are. Trainees easily notice when a trainer puts on an act.

2. Honesty. You must be honest – personally, professionally and intellectually. You must manifest a sense of integrity and pride.

3. Sincerity. In your concern for the quality of the instruction and the learning of the participants. You must be willing to adjust the program where necessary to improve its effectiveness and be open to suggestions and criticism by the trainees.

4. Being prepared. You must research your topic areas as fully as you can within your time frame, prepare a complete lesson plan, and develop handouts, overheads, or other training aids. Know how to use the equipment required for the lesson and have sufficient materials for all participants. Even if nobody else knows that you are not prepared, your presentation will suffer.

5. Confidence. If you are not prepared it's almost impossible to be confident since you know that you are not ready to instruct. This is likely to increase your nervousness and overall lack of composure. Being prepared is the key to confidence. And confidence is justified when you have prepared, since preparation leads to success.

THE PSYCHOLOGY OF SELF-MOTIVATION FOR TRAINERS

Lack of self-motivation is an unfortunate side effect of our accelerated times. Many people today are cynical and disillusioned or feel that to appear sophisticated, they must become so. They find it difficult to muster a feeling of energetic conviction toward any subject. In training, however, it is crucial to success to possess self-motivation when making presentations. Knowing this, however, does not do much for the trainer who lacks inner direction. Achieving a full understanding of the anatomy of self-motivation and mastering ways of obtaining it can lead to vast improvement in training presentations.

A SUCCESSFUL PRESENTATION
Enjoy what you are doing, or at least appear to. If you are well-prepared, working with and in front of a group can be fun. If you appear to be enjoying your presentation, your audience will be likely to enjoy it as well.

NERVOUS PRESENTERS
Control nervousness – by converting it into a positive force. Everyone gets nervous; although it cannot be eliminated, it can be controlled. Uncontrolled nervousness can result in loss of memory, trembling voice, shaking hands, shaking knees, an urge to talk faster and exit. Controlled nervousness can result in clear thinking, physical energy, and even an emotional high.

GET FEEDBACK FROM YOUR LISTENERS
Be sensitive to the needs of the group. You should genuinely care about each member of the group, and should be able to convey this caring. You can do this by picking up cues from the "body language" of group members and adjusting your presentation accordingly.

SUBVERTING YOUR EGO
Suppress ego when giving a presentation. Subvert your ego to that of the group. We tend to forget at times that our main objective is to deliver information or skills to the group. For example, if we are too nervous, we are more concerned with our own failure than the group's reception of the message. At the other extreme, some people like to hear themselves talk. In those cases, they are usually the only ones who do. An excellent strategy in assisting you to subvert your ego to that of the group is to know your audience members' background, and their reason for being in the training session.

TRAINING AND COMMUNICATION
It is the trainer's responsibility to customize the training to be responsive to the needs of those attending. To be a successful trainer you must successfully communicate the information your trainees are there to learn. In addition to communication, four other tools can be used by a trainer to make their presentation more effective - purposeful movement, voice, eye contact, and questions.

KEY TO A GOOD PRESENTATION
Movement should be purposeful. Excessive movement is distracting. A trainer should always stand, and should resist the temptation to lean or sit on objects. Convey enthusiasm and energy as well as vitality by closing the distance between you and your audience to make a specific point. Use gestures in a natural manner; don't bring them in on cue. Be careful not to turn your back on your audience. We communicate as much with our bodies as we do with words. Don't give the group conflicting messages.

ON SPEAKING
Use your voice to your advantage. One of your main tools as a trainer is your voice, and you should be aware of several of its characteristics.

1. Training requires a bit more volume than your natural speaking voice; speak loud enough to meet the situation. Then, there is pitch; the variance in your voice. Avoid a monotone or patterned pitch, which often is a result of memorization and sounds unnatural.

2. Use inflection, which is the varying emphasis on spoken words. When used properly, inflection can place emphasis on key points. Used improperly or carelessly, it can drastically change the meaning of a statement.

3. Vary your rate of delivery. People listen faster than they talk. Increase your speed to maintain interest, but watch for cues from the audience to tell you when to do this. Attempt to vary your rate for interest, and make use of pauses.

4. Perhaps the most important factor about your voice is clarity, or how clearly your words reach the audience. Always speak as clearly as possible.

LOOK INTO MY EYES

A tool to make your presentation more effective is eye contact. According to a study done by Richard Hildreth, speakers who were rated sincere looked at the audience 64 percent of the time, while those rated insincere looked at the audience only 21 percent of the time. Look individuals directly in the eye; when a glance has been returned, move to the next person. Like purposeful movement, eye contact should be done naturally. It should never be used to intimidate.

ANY QUESTIONS?

We use questions for four basic reasons: to get feedback, to stimulate discussion, to provoke thought, and to maintain interest. Mishandling questions can destroy an effective talk. Always prepare for questions by knowing both your topic and the audience, and anticipate areas for potential questions. When answering questions be concerned with the whole group. Never let one person dominate; repeat or rephrase questions for the entire group. If you do not know an answer, admit it, but do try to find the answer or advise the person who asked the question where the answer might be found. An excellent technique for involving the group is encouraging others in the group to respond to questions.

APPENDIX 8

DOs AND DON'Ts FOR PRESENTATIONS (39 TIPS)

Content

1. Explain the purpose of your presentation to your audience when you start
2. KISS! Keep it short and simple
3. Start your presentation with a positive remark
   – "I am grateful I have the opportunity to tell you about..."
   – "After 15 minutes you might be as interested in handicrafts as I am.."
4. No "suicide openings":
   – "I don't know much about the subject"
   – "I am replacing a colleague and did not have much time to prepare
   – "I will never have enough time to explain"
5. Explain all abbreviations: your public always wonders what they mean
6. Use silences/pauses to emphasize what you just said or to indicate you go on with the next subject
7. Make the procedure of your presentation clear to your audience
   – Tell them what you are going to tell them (introduce your subjects and sub-subjects)
   – Tell it
   – And tell them what you told them (conclusion/summary)
   This way you will guide your audience through your presentation and will attract their attention
8. Make sure your presentation is relevant to the audience

Relation with the audience

In relation with the audience the most important points are:

- to know what they can expect from the presentation
- to be able to recognise the points mentioned in the introduction during the presentation
- to feel that the speaker is actually there for them and
- to feel attracted by the presentation

1. Always keep contact with your audience, it will:
   - give you self-confidence
   - build up your presentation
   - get your message across
2. Do not look at and talk to your flip chart, overhead-screen or personal notes
3. Check the comprehension of the audience regularly by watching the (non-verbal) communication
4. Start your presentation with eye contact and keep eye contact during your presentation
5. Do not stand with your back or side to the audience

General attitude

General attitude includes looking at ease, motivated, enthusiastic, the way you move your body, etc.

Ways of getting a good general attitude across include:

1. Making useful jokes
2. Proper use of the voice, not monotonous
3. Use of the hands and arms to support your presentation (in line with what was said) not to distract the audience

4. Have a variation in the gestures, if not audience will start checking how often you make a specific movement
5. Learn the first couple of sentences (2–4) by heart. That way you can have eye contact. This will make you feel at ease
6. When you change sheets/transparencies, stop talking, otherwise you will lose the audience and make a hasty impression
7. Before starting your presentation, make the stage your own property by arranging your table, chair, visual aids and papers. This will give you self-confidence and gives the audience the impression you are in control. It diminishes your tension!
8. Do not use "filler" words (I mean, you know) or make other "funny noises (Umm, Er..)"

Use of space

Use of space includes your mobility, the distance to the audience and the movements you make. Draw an imaginary line in front of your feet at the beginning of the presentation when you are still in a position to see all the audience. Remember you have to turn back to that line! This will help you to look regularly at all the audience, and avoid looking only at those in front of you.

Visual aids

Visual aids include transparencies on the overhead, white board, flip chart and other demonstration materials

1. Do not use too many visual aids: one per minute is (more than) sufficient
2. Organize your visual aids before the start of your presentation. You will save time and make a good impression
3. Make sure you use the overhead properly, don't stand in front of the screen or cover the image for half of the audience, and check whether your sheets are legible
4. Show the transparencies long enough but take them away when not needed anymore
5. Switch off the overhead projector when not in use
6. If you use the whiteboard, make sure the writing does not take up most of your time
7. Visual aids: try them out before you start!
8. Make sure you use the right size of (legible) letters on your transparencies and flip charts
9. KISS! Keep it short and simple, too many details on visual aids are disturbing
10. Use only keywords, no sentences on transparencies and flip charts!
11. Make use of functional colours in your flip charts and transparencies
12. Use a pen or pencil to point at your transparency or at the overhead projector, and lay it down!
13. Use colours, numbers. etc. to point at specific subjects. "I start at number one"/"The red area indicates Nepal"
14. Use graphs to give summarized information, especially for figures and numbers
15. Use silences/pauses to give your audience time to look at the visual aids
16. Build up your transparencies: reveal the information you are talking about. This way you keep the attention of your audience
17. Bring demonstration material and show it: for example handicrafts. Your public will remember them and by that also your message
18. Never let the visual supports control you: it should always be you who are in control.

APPENDIX 9
EXPLANATION OF THE MARGOLIS WHEEL[2]

Objectives:

- To give participants the opportunity to discuss real problems with gender sensitization and generate potential solutions
- To encourage participants to share problems and actively seek experiences and suggestions from each other.

Materials:

- Two sets of five or six chairs arranged in two concentric circles, the inside ones facing the outside. Or people can stand in two concentric circles with those inside facing out.
- A watch or electronic timer to time each round
- Object to make a noise, e.g. cup and spoon, bell

Time: 45 minutes

Procedure:

1. Ask participants to reflect on particular problems they will face when dealing with gender sensitization. This can be focused on a recent session and could include:
    - Problems in training others using participatory methods
    - Problems/difficulties likely to be faced when returning to your own institution.
2. Then ask participants to sit in any seat/or stand in circles opposite someone else. Instruct them that those sitting in the inside circle will be the consultants or solution suggesters. Explain that each pair has three minutes to discuss problems and potential solutions.
3. After three minutes, the outside circle rotates by one chair, bringing a new client to face each consultant.
4. Give another three minutes for discussion.
5. Then give two minutes for all clients and consultants to write down a summary of problems and solutions.
6. After this is complete the clients and consultants change circles and reverse roles. The exercise is repeated.

Comments: You could give an example from your own experience to demonstrate this. The exercise is best used when there has been prior discussion of problems and constraints. For example, participants may have been with colleagues from the same institution, programmes or department discussing what should happen after the workshop. Break the discussion by using the Margolis Wheel, as this will permit participants to discuss problems and relevant solutions.

This exercise usually generates highly animated discussion. It is important that participants do write down a clear statement of the problems and potential solutions. These can then be used in a follow-up discussion, such as the elaboration of their Participant action plan approach.

Basically the exercise allows people to realize that very often the solutions to what seem very difficult problems lie within us (individually or as a group) and can be discussed given the right setting, time and circumstances. This tool can be very empowering if used properly!!!

[2] Source: Alan Margolis (pers. comm.).

APPENDIX 10
POWER POINT PRESENTATIONS

Appendix 10.1

The Ecosystem Approach to Fisheries

Introduction

Gabriella Bianchi, FAO

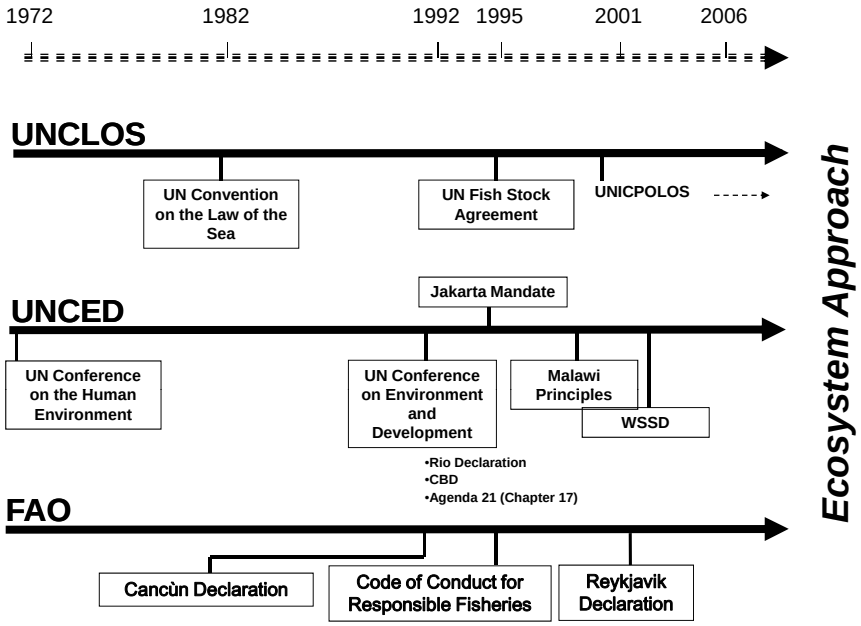
What is the EAF?

- ”An Ecosystem Approach to Fisheries strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.”

Why EAF?

- Advances in science (environmental effects on fishery resources and effects of fishing on non-target species and habitats, food-chain effects and biodiversity)
- Lessons learnt from conventional management practices
- Recognition of a wide range of societal interests in marine ecosystems
- Increasing public awareness of the negative impacts of fishing on the marine environment and of its poor state

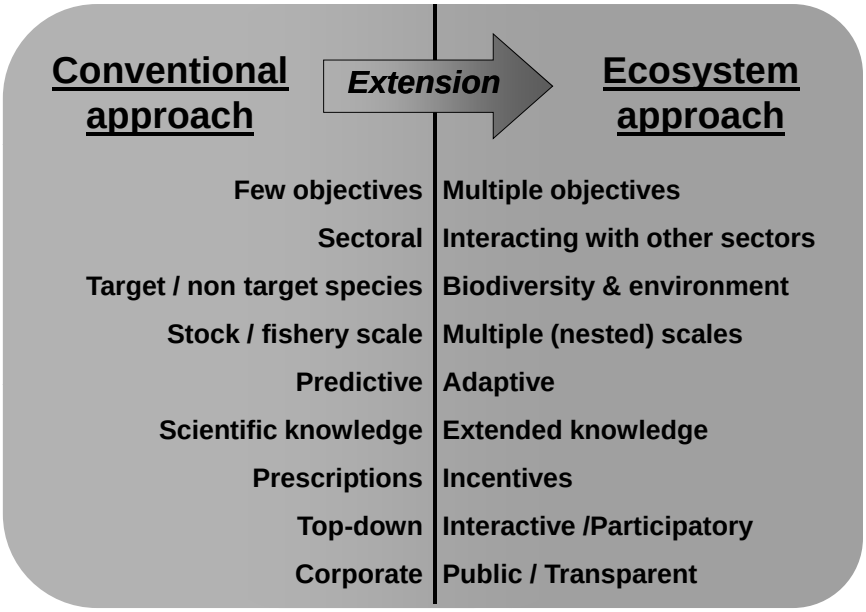
Concept development



Principles

1. **None of the principles that underlie the EAF are new. They can all be traced in earlier instruments, agreements, declarations.**
2. **The Cod eof Conduct for Responsible Fisheries contains all the principles for responsible fisheries in the marine ecosystem.**
3. **Implementation of these principles lags behind in relation to their formulation in agreed international instruments**
4. **The EAF highlights and reorganizes the principles of sustainable development making there application more imperative**

EAF builds on conventional fisheries management



Comparison with other approaches

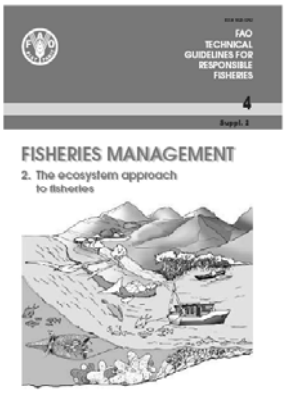
Many approaches are proposed in the context of sustainable development for aquatic ecosystems, e.g.:

- **Ecosystem-based fisheries management (EBFM)**
- **Ecosystem-based management (EBM)**
- **Ecosystem approach (EA)**
- **Ecosystem approach to fisheries (EAF)**
- **Integrated coastal zone (or area) management (ICZM, ICAM)**
- **Integrated ocean management (IOM)**
- **Community-based fisheries management (co-management)**
- **Large Marine Ecosystems (LME)**
- **Territorial user rights for fisheries (TURFS)**
- **Marine protected areas (MPAs)**
- **Sustainable Livelihood Approach (SLA)**

Comparison with other approaches

- **CROSS-SECTORAL (integrated) APPROACHES**
  - Deal with goals for sustainable development in a given region / ecosystem including all sectors (e.g.fisheries, mining, shipping, tourism etc.)
  - Allocate rights to different user groups and reconcile conflicts
  - *Examples: EBM, IOM, LME and ICZM*
- **SECTORAL APPROACHES**
  - Deal with goals and intentions for Sustainable Development within a given sector
  - Make sure that there is consistency with the framework provided by the global strategy
  - *Examples: EAF*

How can EAF be implemented in practice?



Appendix 10.2

Possible opportunities for application of EAF in Africa

Johann Augustyn

What has been done?

- The Benguela – BCLME/BCC countries
  - EAF Feasibility Study & some implementation by Namibia, Angola and South Africa
- Agulhas-Somali – ASCLME countries
  - EAF Initiation Workshops & regional task group meetings
  - High level of interest by 8 countries
- GCLME & CCLME process

The BCLME EAF feasibility project

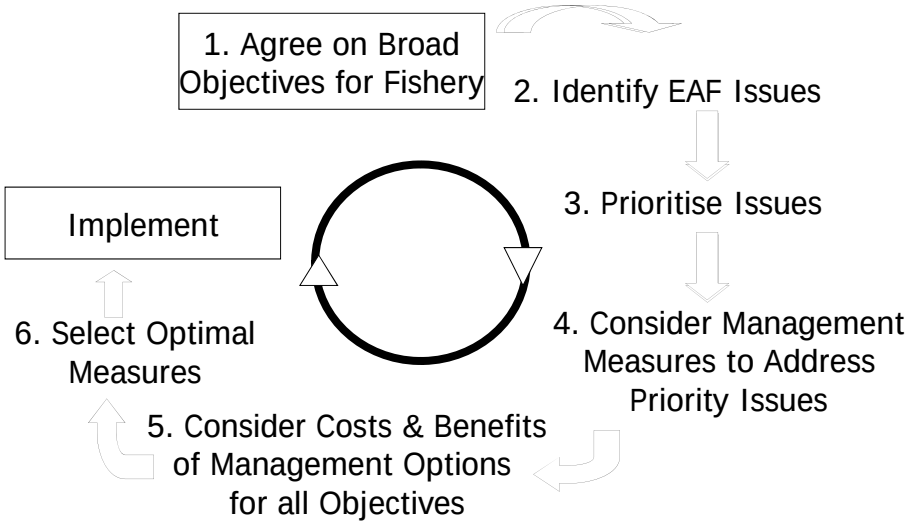
Project Objectives

- To investigate the feasibility of EAF management in the BCLME region through examining the existing issues, problems and needs related to EAF, and developing different management options to achieve sustainable management of the resources at an ecosystem level

Project Scope

- Review all major TROM fisheries from ecosystem perspective
- Consequences of TROM alone
- Cost-benefit analyses of implementing EAF, presentation to managers & decision makers
- Propose operational objectives & goals to implement EAF
- Identify management measures & rules to achieve best results
- Liaise with managers, decision makers 2 formulate preliminary management plans for EAF at national & regional levels
- Develop improved techniques & approaches to strengthen decision-making process, e.g. analyses for reference points & evaluation of decision rules
- Identify useful ecosystem indicators & application to characterize ecosystem states, changes & functioning
- Identify research needs
- Propose incentive measures
- Recommend appropriate institutional arrangements
- Inform stakeholders of project results

Overall Strategy for Evaluating and Implementing EAF



1. TROM reviews

a) Summary of available data

- **Annual catches from the earliest time available**
- **Value of the catches from the fishery per year for the last 5 years**
- **Number of fishers and land-based workers by sector**
- **Value and employment of any value-added activities linked to the sector.**
- **Estimated status of the stocks per year over the last 5 years.**
- **Details of fishing gear used and areas fished**

b) Management measures currently being used in the fishery/sector

- **Gear restrictions**
- **Vessel restrictions**
- **Details of limited entry, including number of rights holders**
- **Details of closed areas and seasons**
- **Size/age controls**
- **Output controls in place (e.g. TAC, bag limits, etc)**

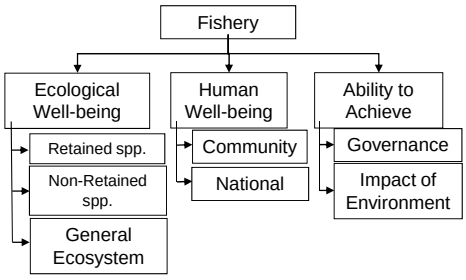
2. Ecological Risk Assessments

- Risk analysis=the consideration of the sources of risk, their consequences and the likelihood that those consequences occur
- ERA=simple, qualitative approach to assess risk based on likelihood of a detrimental event occurring, and the estimated impact (consequences) of that event
- ERA is a three step process:
  - Identification of risks/issues
  - Prioritization of issues (categorized as Negligible, Low, Moderate, High and Extreme risk according to their overall risk score)
  - Development of Performance Reports for all issues of sufficient priority (i.e. greater than Moderate risk). Performance reports are developed according to the following template.

RISK ASSESSMENT FOR SUSTAINABLE FISHERIES

1. Identification of risks/issues

Using broad categories…



2. Prioritisation of issues

Risk = Impact x Likelihood

Impact Level	Description
0 Negligible	Very insignificant, probably not measurable against background variability
1 Minor	Possibly detectable but minimal impact
2 Moderate	Maximum acceptable level of impact
3 Severe	Above acceptable limit. Wide and long-term negative impacts
4 Major	Very serious, likely to require long restoration time to undo
5 Catastrophe	Widespread and probably irreversible

Likelihood	Description
1 Remote	Insignificant probability of occurring
2 Rare	May occur in exceptional circumstances
3 Unlikely	Uncommon, but has been known to occur either here or somewhere comparable
4 Possible	Evidence that it could occur
5 Occasional	May occur
6 Likely	Expected to occur

3. Develop Performance Reports

Operational objective
Indicators
Performance Measure/Limit
Data Requirements
Evaluation
Robustness
Fisheries Management (*current, future…*)

3. Cost-benefit analyses

- Considered preliminary analyses of the potential management measures identified during the risk assessments

South Africa – benefit/costs analyses

- Fisheries analysed: hake, small pelagics, west coast rock lobster
- Management actions with highest long-term benefits:
  - time-area closures & MPAs to protect size classes of hake;
  - development of joint research program and explore joint management options for shared hake stock with Namibia;
  - establishment of an effective RMWG with broad stakeholder participation;
  - establishment of formal co-management structures for all three fisheries;
  - improved access to and dissemination of information to larger public;
  - integrated studies to assess conflicts between rock lobster and mining industries;
  - Monitoring of WCRL distribution abundance and population structure; leading to appropriate management

Namibia – benefit/costs analyses

- Fisheries analysed: hake; small pelagics; midwater trawl
- Mitigation of habitat and substrate damage (hake fishery);
- Research into small pelagic fish and their role/impacts on them within the ecosystem;
- Research and management of midwater trawl fishery

Angola – benefit/cost analyses

- Fisheries analysed: small pelagics, artisanal, bottom trawl finfish, bottom trawl deep-sea crustacean
- Highest benefit/cost for:
  - surveys/research into gear selectivity & efficiency;
  - Development & implementation of management plans;
  - training of managers & researchers;
  - development of joint management plans & stock assessments for shared stocks

Outcomes of the EAF Project

- Capacity building for EAF in the BCLME region was achieved through involving relevant scientists at local institutions and by exposure of local scientists and managers to local and international expertise in EAF and related disciplines (e.g. at the various workshops)
- Ecological Risk Assessment (RASF)
- Modelling approaches (e.g. EwE, IBM, MRM) – EwE training courses (2005: SA and Namibia; 2006: Angola) plus modelling working sessions, collaborative modelling and scientific efforts with IRD, links to EurOceans project, etc.
- Student projects to address EAF issues were identified and encouraged
- The BCLME EAF project played a pivotal role in equipping South Africa, Namibia and Angola with the capacity to move towards an EAF

SOUTH AFRICA

A closer look at progress made
by means of several
different approaches/tools

PELAGIC FISHERY: progress towards implementation of EAF

- **Task Group was formed to provide recommendations to the Pelagic WG on the proposal to close around penguin breeding colonies to purse seine fishing (2006-2007)**
- **Food requirements of seabirds for breeding success sufficient to maintain populations have being considered – the Pelagic WG accounted for these explicitly in 2008 by incorporating functional relationships between predators and prey in revision of the OMP**

DEMERSAL FISHERY: progress towards implementation of EAF

- **From 2006, a special section on Ecosystem Considerations has been included in permit conditions of all the demersal fishing sectors:**

Hake Deep-sea trawl
Hake Inshore trawl
Hake Longline South Coast Inshore
Hake Longline South Coast Offshore
Hake Longline West Coast
Hake/Horse mackerel trawl
Horse mackerel fishery

WEST COAST ROCK LOBSTER FISHERY Progress towards implementation of EAF

- **From 2006 onwards, the West Coast rock lobster TAC recommendations has included a state of the environment / ecosystem report, to highlight important environmental issues or concerns.**

Additional research underway in South Africa in support of EAF

- **Decision support systems and Expert systems developed by Astrid Jarre, Coleen Moloney and Barbara Pattersen**
- **Comparative ecosystem indicators for fisheries management (IndiSeas WG: Yunne Shin, Philippe Cury, Lynne Shannon)**
- **Sustainability indicators (INCOFISH – Tracey Fairweather)**
- **Comparative Ecosystem modelling (e.g. INCOFISH – Lynne Shannon; historical models – Kate Watermeyer; comparative modelling – Lynne Shannon, Marta Coll, Sergio Neira, Mark Taylor)**

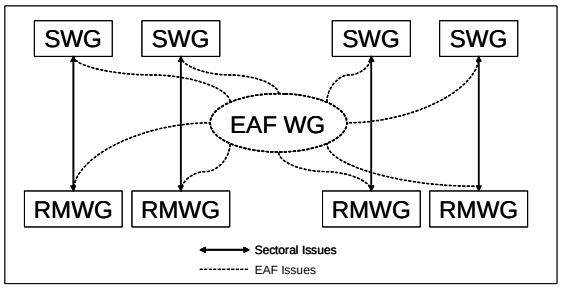
Future challenges

- **Selection of *Indicators* and setting of *reference points***
- **Incorporation of these indicators/reference points and other ecosystem information provided by the scientists into *management***
- **Subsequent *compliance and surveillance***
- **Maintaining capacity for EAF – skills & funding**
- **Implementing across boundaries – the BCC**

Broadening Institutional Implementation

Discussion of Existing & Proposed Structures

- EAF Scientific WG to broaden scope to include management and compliance & be renamed the EAF WG.
- Need for integration across sectors – tradeoffs between them to manage for EAF - framework to consider trade-offs needs to be put into place.
- Proposed EAF WG should not be an additional bureaucratic body but facilitatory, co-ordinating over-arching EAF issues that cannot be addressed at a sectoral level
- Each sector should identify over-arching issues that need to be raised at the EAF WG.
- Need to better define the TORs for SWGs and RMWGs to facilitate distribution and addressing of identified tasks and allocate responsibility



Support for an institutional structure that includes a general, combined **EAF WG**, spanning scientific and management aspects.

EAF WG TASKS

- Further develop Tracking Tool for EAF, which defines milestones and documents the progress and process of EAF implementation
- EAF WG to facilitate joint meeting of the SWG, RMWG and Compliance/resource /sector in order to:
  - Provide information on EAF progress to date
  - Refine and distill EAF issues – split into sectoral and overarching
  - Develop workplan to address EAF issues at the sectoral/resource level
  - Consult industry
  - Involve Compliance – inputs from the ICM group
  - Decide on how to address ecosystem effects issues
  - Include inputs into State of the Environment reports
  - Identify permit conditions to translate issues into legally binding EAF concrete implementation - to be reviewed annually by RMWGs
    - Overarching concepts to be considered:
      - Indirect ecosystem effects (predation, competition)
      - Environmental effects at different levels in the ecosystem (requires monitoring)
      - Gear effects
      - By-catch

EAF WG tasks cont'd.

- Linefish RASF (now done)
- Future RASF review workshops planned every 5 years
- A framework for Conservation Risk Assessments will be developed and tested (Lynne Shannon & Samantha Petersen) in conjunction with Biodiversity SWG.
- Concern expressed that climate change and ecosystem "health" aspects are falling through the cracks as they are not explicitly dealt with in present OMPs.
- Suggestion: a more formal vehicle than is currently in place is required to ensure a practical monitoring protocol is adopted to detect ecosystem changes and to enable management to act appropriately.
- Some Governance (and Compliance) issues need to be addressed at a higher level.
- Proposed EAF WG provides opportunity to build trans-disciplinary capacity: science, social science and economics.
- Vital to define questions that need to be answered by such a group, e.g. necessary that specific socio-economic tasks be identified and addressed to provide required inputs to EAF.

Specific EAF Actions Needed

- Review uncertain or contested risk values and priorities using the best available information, including new investigation and analysis where necessary and attainable;
- For moderate, high and extreme priority issues, re-examining the issue groupings and performance reports
- With improved and updated information where relevant, refining PRs to ensure that they reflect current state of knowledge and uncertainty
- Identify optimal and precisely specified management responses;
- Revise estimates of cost and benefits;
- Reconcile proposed management responses across the different issue groups, fishery and ecosystems
- Use this information in a participatory and transparent manner to decide on the management responses to be implemented
- Implement and review in due course.
- Work with regional partners (BCC, ASCLME and SWIOFP)

Challenges for Africa

- Getting political and management buy-in – not just a scientific exercise
- Cost of research v. economic justification
- Lack of Institutional Integration and Resources

Opportunities for Africa

- Existing basic model
- Examples already implemented at different levels in countries with different capabilities
- Donor funded regional programmes and resources NOW available
- Relatively simple process - can be implemented without huge additional costs, from small to large fisheries
- Awareness building & current issues, e.g. climate change
- Positive spinoffs for all aspects of fisheries management and capacity building

Appendix 10.3

Introduction to fisheries management plans: setting up and revising management plans

Kevern Cochrane

Sources of Information

- FAO 2002. A fishery manager's guidebook. Management measures and their application. *FAO Fisheries Technical Paper.* No. 424. Rome, FAO. 2002. 231p.
- Cochrane, K.L. and Garcia, S. (Eds). 2009. A Fishery Manager's Guidebook 2nd Edition. FAO and Blackwell Publishing Ltd.
- FAO 1997 — *FAO Technical Guidelines for Responsible Fisheries.* 4. *Fisheries Management*. Rome; FAO: 82 pp.
- FAO 2003 — Fisheries Management 2. The ecosystem approach to fisheries. *FAO Technical Guidelines for Responsible Fisheries.* 4(Suppl. 2): 112 pp.
- FAO 2005. Putting into practice the ecosystem approach to fisheries. Rome, FAO. 2005. 76p.

Definition of a Management Plan (FAO, 1997)

"A fisheries management plan is a formal or informal arrangement between a fishery management authority and interested parties which identifies the partners in the fishery and their respective roles, details the agreed objectives for the fishery and specifies the management rules and regulations which apply to it and provides other details about the fishery which are relevant to the task of the management authority."

"Un plan d'aménagement des pêcheries est un arrangement officiel ou officieux entre une autorité d'aménagement d'une pêcherie et les parties intéressées qui définit les partenaires intervenant dans la pêcherie et leurs rôles respectifs, énonce en détail les objectifs concertés pour la pêcherie, stipule les règles et règlements de gestion qui s'appliquent à cette dernière et fournit sur la pêcherie d'autres détails intéressant le rôle de l'autorité d'aménagement."

Put more simply...

A fisheries management plan describes:

- Where, what and who is this about?
- What do we want to achieve?
- How will we achieve it?
- How will we know if we are achieving it ot not.

The Roles of a Management Plan

- A goal: a milestone in implementation;
- A user's guide and checklist for the manager and stakeholders;
- A formal or informal contract between the management authority and stakeholders;
- A document for transparency and communication;

A Management plan should be:

- A living document i.e. up to date, relevant and reflecting the real state of the fishery;
- Practical – including clear instructions and guidance to manager's and stakeholders;
- The product of full stakeholder consultation;
- Available to all;
- The basic reference for discussions and conflicts within the fishery;

A Management plan should not be:

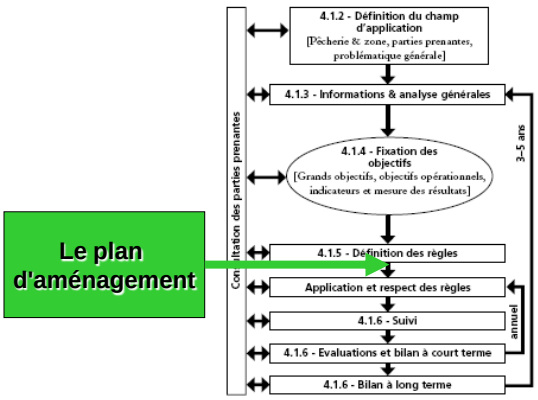
- Too vague and general to be of any use to the manager;
- Just a formal obligation that is forgotten as soon as it is completed;
- A 'secret' seen only by the management agency;
- Imposed by the top

The Process for Setting up or Revising a Management Plan

1. Consultation
2. Defining the scope of the management plan
   - Identifying fishery, area and stakeholders
   - Identifying the broad issues for the fishery
3. Background information and analysis
4. Setting objectives for the fishery
   - Setting the broad objectives
   - Developing operational objectives from the broad objectives
5. Formulation of rules
6. Monitoring, assessment and review process

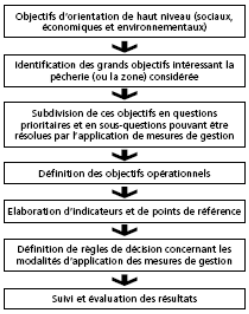
Processus de gestion

(FAO, 2003)



Processus recommandé pour l'élaboration et la mise enoeuvre d'un plan de gestion

(FAO, 2005)



Best Available Information

(FAO, 2003)

- To the extent possible, plans must be based on an understanding of a broad background of knowledge, although a lack of data or uncertainty about the impact of the fishery should not be used as an argument for delaying the formulation of an EAF management plan.
- Only in situations where the existing information is insufficient to decide whether a potentially important impact does actually take place will it be necessary to collect and analyse additional data (rapid assessment techniques, for example).

Background Information for Developing a Management Plan

- Is there a Management Plan for the fishery?
- If no management plan, are there stated or de facto objectives for the fishery?
- The legal framework
- The institutional and administrative frameworks
- Overview of the fishery and resources exploited (gear; resources (incl. state); fishers; other stakeholders; interactions with other sectors)
- Available scientific and traditional knowledge on the resources
- Catch time-series.

Background Information for Developing a Management Plan -2

- Importance of the fishery in the national social-economy (throughout value chain)
- Management measures/tools being used
- The estimated effectiveness of the current management measures in relation to the fishery objectives
- Any compliance or enforcement problems
- Is there a national or regional forum for discussions/consultation?
- Any other information relevant to management.

CONTENTS OF AN EAF MANAGEMENT PLAN

(FAO, 2005)

- • **Titre**
- • **Généralités**

  Inclure:
  - aspects sociaux et institutionnels
  - description de l'activité et des ressources halieutiques et de l'écosystème
  - problèmes et enjeux écologiques
- • **Objectifs**

  Inclure:
  - objectifs opérationnels
  - points de référence
  - mesure des résultats de la pêche
- • **Mesures de gestion**
  - Description des mesures arrêtées pour réglementer la pêche de manière à atteindre tous les objectifs fixés dans le délai convenu (par exemple, descriptiondétaillée des restrictions frappant les engins de pêche, des fermetures de zones ou des fermetures saisonnières de la pêche, des règlementations concernant le nombre de journées en mer, des captures autorisées ou des limitations concernant la taille des captures).

CONTENTS OF AN EAF MANAGEMENT PLAN – cont. (FAO, 2005)

- • **Règles de décision**
  - Règles concernant les mesures de gestion à adopter (par exemple, sur l'ampleur de l'effort à autoriser, ou sur le niveau du total admissible des captures, pendant une année donnée)
- • **Droits d'accès**
  - Description du ou des régimes d'accès à la pêche.
- • **Evaluation de la gestion**
  - Inclure un rapport sur l'état des stocks (y compris pour les espèces non ciblées), basé sur des évaluations des risques et des stocks, un état de l'écosystème et une analyse des caractéristiques socioéconomiques. L'ensemble de ces indicateurs démontrera le degré d'efficacité de la gestion passée et mettra en lumière les domaines qui constituent un échec ou qui méritent plus d'attention.
- • **Suivi, contrôle et surveillance**
  - Description détaillée des systèmes de SCS adoptés dansla pêcherie
- • **Communication**
  - Stratégie de communication et activités prévues pour tenir les parties prenantes régulièrement informées des faits nouveaux et des activités de gestion intéressant la pêcherie.

Outline of the Australian Northern Prawn Fishery Management Plan (from Die 2009)

1. **Introductory Provisions**
   a. Name of Plan
   b. Commencement
   c. Interpretation
   d. Objectives
   e. Measures
   f. Performance criteria

2. **Statutory Fishing rights**
   a. Gear statutory fishing rights
   b. Types of statutory fishing rights (fishing licenses)
   c. Who may fish in the NPF area
   d. Boat nomination and replacement
   e. Cancellation of statutory fishing rights
      i. Directions by AFMA (length of fishing season etc.)
      ii. Transfer of statutory fishing rights
      iii. Expiry of statutory fishing rights

3. **Miscellaneous**
   a. Certificates, delegation, leasing arrangements of statutory fishing rights Schedule 1 Area of the Northern Prawn Fishery

Outline of the Fishery Management Plan for Cayos Cochinos, Honduras (from Die 2009)

1. **Introduction**
2. **Methods and General concepts** –
   a. Analysis of fisheries
   b. Sampling
   c. Fishery production in the greater Caribbean and Honduras
   d. Principles of responsible fishing
   e. Ecosystem-based fishery management
   f. Co- management and community participation
   g. Scientific support
3. **Body of the plan**
   a. Characterization of the fishery in Cayos Cochinos
      i. Resources
      ii. Institutional analysis
      iii. Fishery management
      iv. Fishing communities and fishing fleet
   b. Management alternatives
      i. Conservation measures
      ii. Fishery regulations

Formulation of Rules: EU and Norway Management plan for N. Sea Haddock.

1. Every effort shall be made to maintain Spawning Stock Biomass above 100,000 tonnes (Blim).

2. ... set TAC that results in a fishing mortality rate (F) of no more than 0.3 when the SSB is estimated above 140,000 tonnes (Bpa).

3. If this gives a TAC 15% higher or lower than last years's TAC, TAC will be no more or less than last year's.

4. If SSB is below Bpa but above Blim, TAC be set equivalent to an F equal to 0.3-0.2*(Bpa-SSB)/(Bpa-Blim). (Overrides paragraph 3.)

5. If SSB below Blim, the TAC shall be set equivalent 0.1 or less. (overrides paragraph 3).

6. In addition, efforts must be made to reduce discarding and to increase the spawning stock biomass and the yield of haddock.

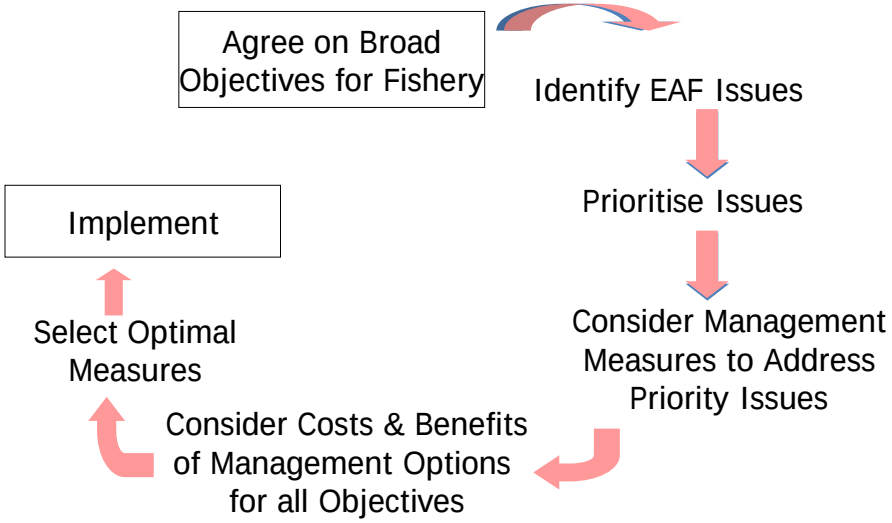
Some Questions to the Workshop

- Are 'living' workplans being used in any fisheries?
- Can we aim for functioning management plans as the basis of EAF in the most important fisheries in each country?
- Would these be a useful outcome of the Nansen project?
- What additional training and/or support, if any, would you require to lead such a process?

Information for Management Plans: under EAF (FAO, 2003)

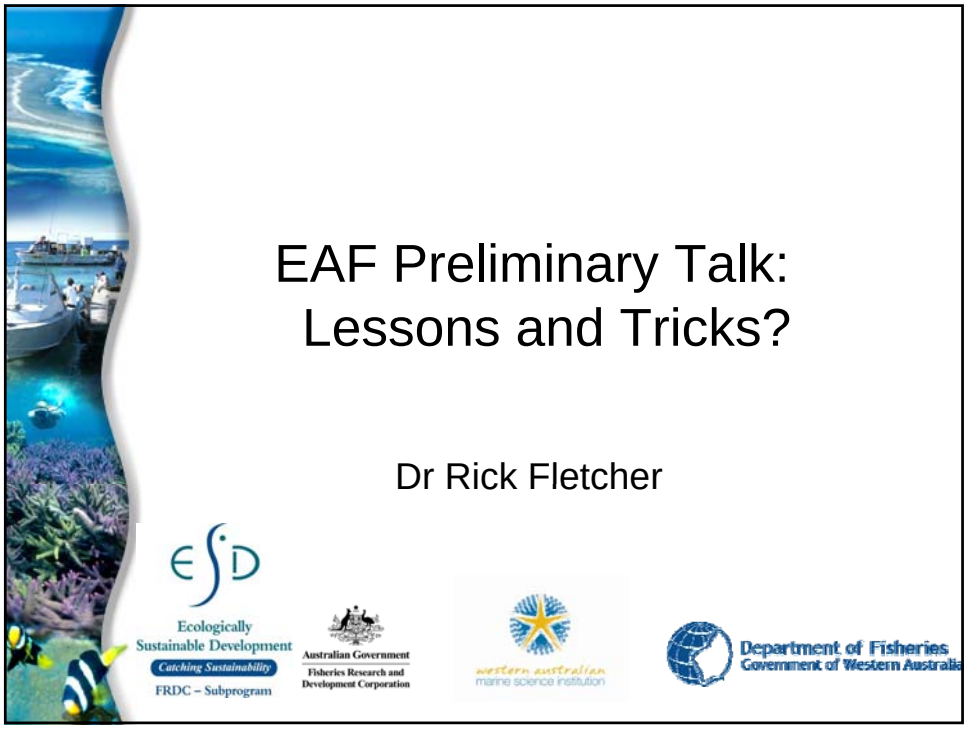
- Requirements for conventional management PLUS the critical habitats that may be affected and the potential direct and indirect
- impacts of the fishery on these habitats;
- the species composition of both the retained and non-retained by-catch and the potential effects of additional fisheries-generated mortality on affected populations;
- the likely amounts of discards produced by the fishery and the importance of these discards for potential scavengers;
- the potential amounts of litter produced by the fishery and the possible effects of lost or abandoned gear on fish and other biota;
- the ecosystem within which the fishery takes place including the impact of other anthropogenic activities such as releases of nutrients and contaminants;
- the major biological interactions in which the harvested species participate and the potential effects of fisheries on these interactions. Particular efforts should be made to identify possible interactions with critical species, with forage species important for transfer of energy in the food chain, and with habitat structuring species such as coral;
- the impact of fishing on life history traits, such as age and size of first maturity and possible effects of the fishery on the genetic diversity of affected populations;
- the legal framework and extent to which the effects generated by the fishery would comply with national regulations and with international law and agreements related to nature conservation with consideration for endangered species; and
- the possible management measures to reduce adverse environmental impacts

Selecting New or Modified Measures for EAF



- 4. **Management processes** 43
- 4.1 Developing an EAF management plan 43
- 4.1.1 Consultation 46
- 4.1.2 Defining the scope of a fishery management plan
- under EAF 46
- 4.1.3 Background information compilation and analysis 47
- 4.1.4 Setting objectives 48
- 4.1.5 Formulation of rules 55
- 4.1.6 Monitoring, assessment and review process

Appendix 10.4



What is EAF?

- Is one of growing number of terms/strategies to take a more comprehensive approach to management of natural resources
- They all recognise that we must deal with ecological, social & economic implications of our management of human activities
- It can cover part of a fishery, a number of related fishing activities up to all fisheries in a region.
- It covers the direct and indirect impacts of these activities plus external impacts on the fishery

Basic Concepts of Resource Management

- *What impacts are my activities having on the things that I manage or want?*
- *What impacts are my activities having on the things that someone else manages?*
- *What are the economic/social benefits and costs generated by my activities?*
- *What activities by others affect me and my things?*

EAF Measurement and Reporting

- **Many previous attempts failed**
- **One size does not fit all**
- **Requires a process to systematically identify issues, develop operational objectives and then work out what indicators need to be measured.**
- **The objectives and acceptable range needs to be developed with all stakeholders**
- **Level of information presented needs to be appropriate to the issue**

What are the EAF Steps?

1. Initiation/Preparation.	**Planning**
2. The definition of the scope of the EAF process.	
3. The identification of issues and the prioritisation , amongst them of those that need to be managed.	**What needs to be managed?**
4. Development of operational objectives.	
5. The identification of indicators and the choice of performance limits.	**How are you going to manage?**
6. The development and evaluation of the management options.	
7. Formalize the management system.	
8. Monitor and Evaluate performance	**DOING IT**

1. Determining Scope & Values

Develop a clear description of what you are trying to manage/assess - including the societal values that need to be addressed

Understand that there are issues that you:

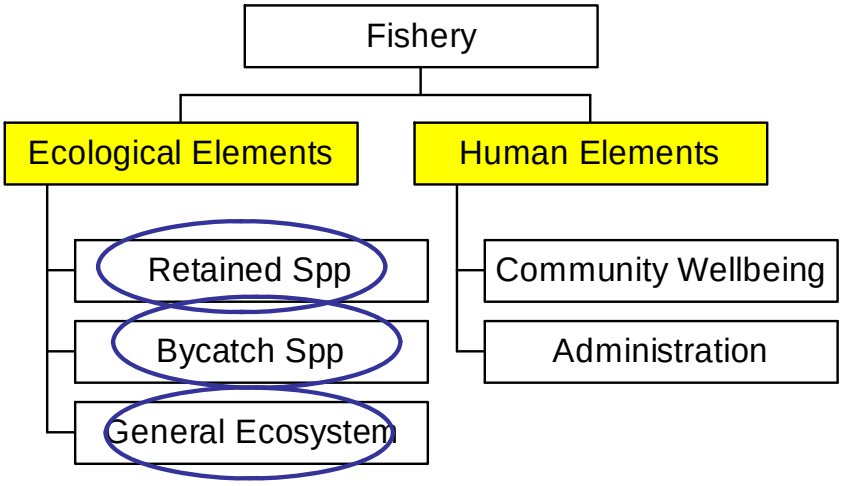
- Control
- Influence
- Can only react to

2. Identifying Issues

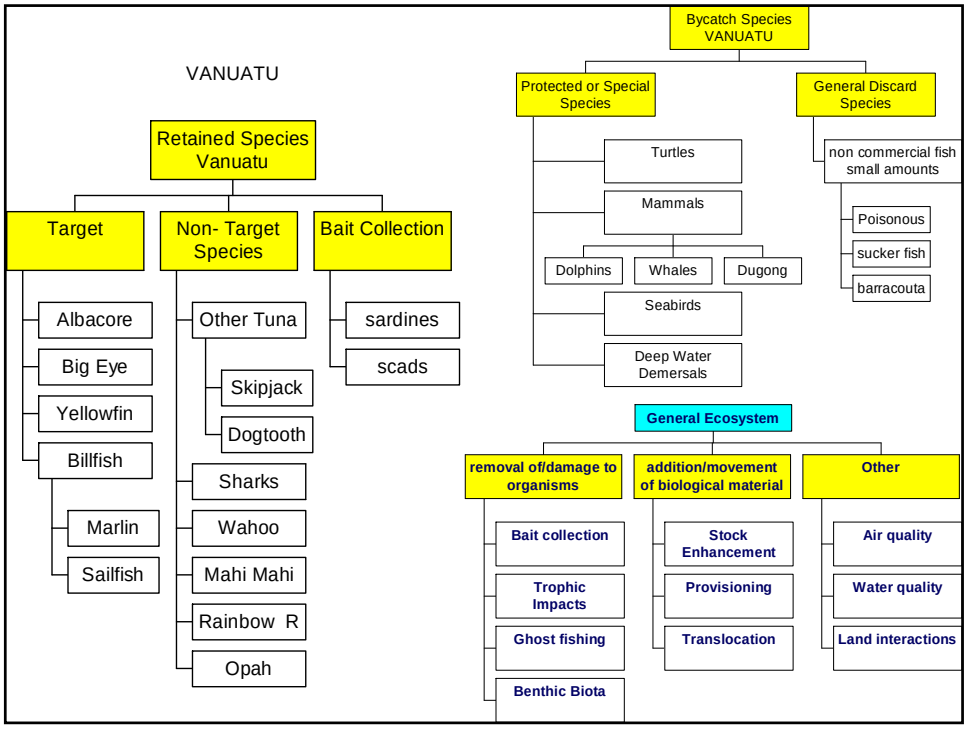
Given the scope, identify all the issues that need to be examined across the all key areas of EAF (target species, non target, habitat, ecosystem, community; administration etc.) and;

Agree on what objectives want to be achieved for each of these based on values

STEP 2: ISSUE Identification Using Component Trees



Separates EAFM into component parts



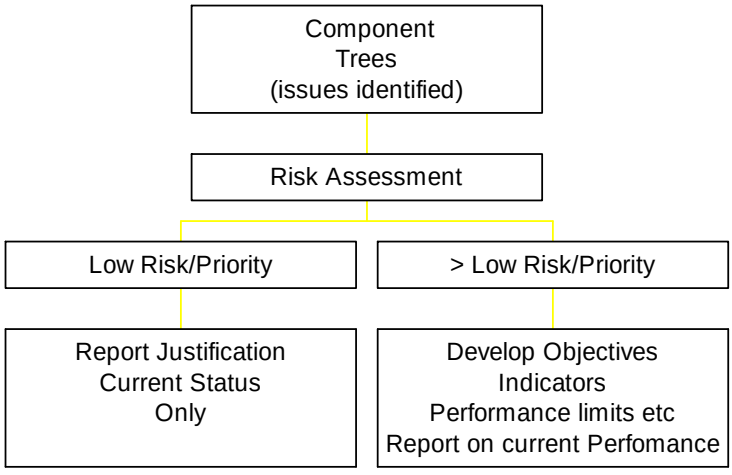
3 Prioritisation

Use some form of risk assessment or prioritisation to determine which issues really need direct management.

How does the process work? Part 3

- Often many issues are identified, their importance varies and not all will require full reports and explicit management
- Conduct a Risk Assessment on each of the identified issues to determine appropriate level of response

RISK ASSESSMENT



NO DIRECT MANAGEMENT NEEDED

DIRECT MANAGEMENT IS NEEDED

4 Management Systems

For issue that requires direct management:

- Establish acceptable performance levels,
- Identify actions used to achieve these levels, and what will happen if it doesn't
- Monitor and Review performance
- Adjust arrangements where needed

(Adaptive management)

PART 4 – Management Systems

- Rationale for inclusion (risk rating)
- Operational Objectives *(+Justification)*
- Indicator
- Performance Measure *(+Justification)*

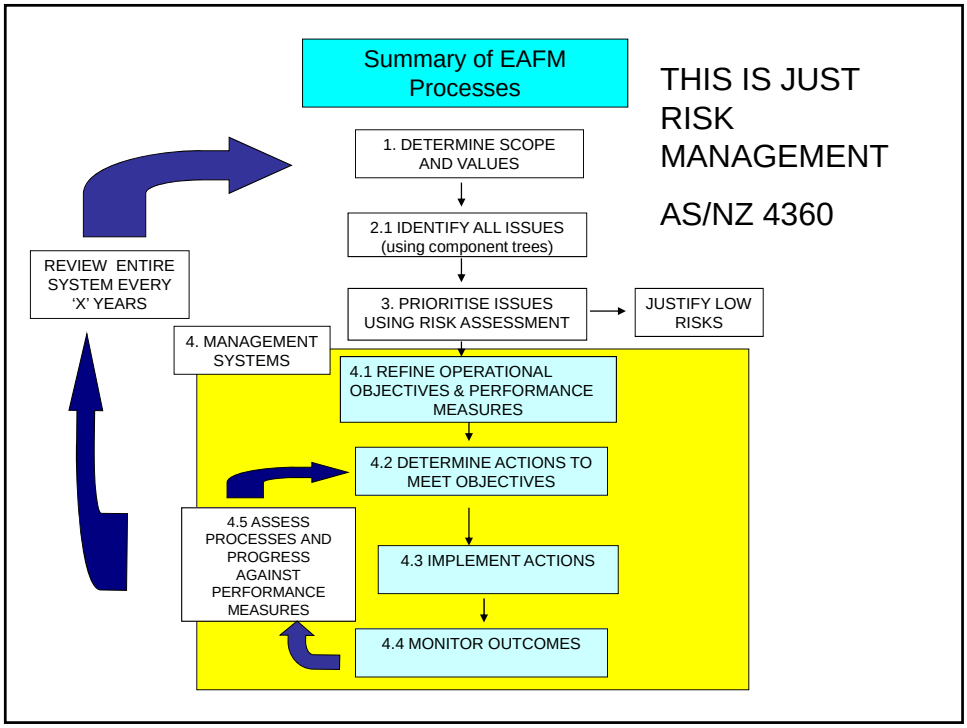
These 3 are a package

- Data Requirements & Availability
- Evaluation
- Management Responses
  - *Current,*
  - *Future and*
  - *if Trigger is reached*

These need to link directly to the objective and PIs (Harvest Strategy

- External Drivers

Issue	Objective	Risk level (Internal)	Indicator	Performance Measure	Immediate Management Actions
Industry Income	Economic	Moderate	Sale price of licenses	Maintain or increase	Trying to get the management settings correct to optimize the income generated by the fishery.
Industry Debt	Economic Social	Low	Not Applicable	-	Not needed at the moment
Crew - Work Related Injuries	Social	Moderate	Deaths or serious injuries	No increase	Continue to enforce the requirement of IMO. Ensure crew have adequate training.
Crew - Separation from families	Social	High	Number of complaints from wives	No increase	Education of fishers about the issues and implications of extended trips – cherish family values. Encourage them to take shorter trips.
Crew – Employment and Capacity	Social	Moderate	Percentage of ni-Vanuatu crew on Tuna vessels	Increasing trend	License condition to employ certified local crew on domestic vessels. Encourage locals to go to Vanuatu maritime college to get appropriate certificates



Step 5 Operational Plans

- The management system developed for the fishery needs to be operationalised.
- This requires determining the specific activities that need to be done, who will do each of these and whether there are resources to undertake each of the identified tasks.

OPERATIONAL PLAN HEADINGS

CATEGORY	DESCRIPTION
Issue	*The name of the issue*
Sub fishery	*If there are sub fisheries such as inshore, Artisanal, offshore etc. these can be identified here.*
Category	*What category of activity is this – e.g. Administration, Research, Monitoring, Compliance etc..*
Current Activities	*Are there already activities being undertaken?*
Current Resources	*What are the current resources available for this task*
Current Status	*What is the current status – ok, not ok?*
Regulations/ Notices /Condition/fines	*What legislation etc is needed for the activity/process to operate?*
New Activities	*Are there new activities needed to enable the management of the issue to occur?*
Additional Resources	*Are additional resources needed to undertake the new activites?*
Training	*Will this require training?*
Priority	*What overall priority does this activity have?*
Risk if not undertaken	*What is the risk if this activity is not done in the required timeframe?*
Timeframes	*What is the proposed timeframe for undertaking the activity?*

Overall Lessons

- Short summary documents can be generated in a quickly can cover >80% of the main issues.
- Dealing with actual ‘ecosystem’ issues have NOT been the main problem - despite them being hard to clarify
- The most common high risk issues are problems with Fishery governance – administration - political.
- Where these are identified - this is not the fault of the framework – it is a benefit of the framework!
- If these aren't dealt with then the management WONT work
- Complexity vs Difficulty – The first can be dealt with – the second cannot.

ANOTHER LESSON

- This is a management process not a research activity – scientists can sometimes make processes and outputs too complicated and focus on the interesting exceptions- or work on areas of uncertainty that are not high risk.

Enough Data?

- DON'T WAIT TO GET MORE INFORMATION BEFORE BEGINNING – YOULL NEVER START.
- You can begin using this using whatever information is available – let the process guide in a structured, risk based manner, what information is needed.

Final Points

- The system by itself, like any system, does not provide the answers – it merely assists you in the process.
- It can identify problems that may be hard to solve.
- The issues and answers must come from those involved in the management of the fishery.
- If they don't know what they want to achieve, or are unwilling to do the things needed to achieve it, no system will help

What are we doing

- Starting to provide you with basic risk management tools
- Begin to collate appropriate examples and details for use in applying EAF for your example fisheries

TODAY

- Identify Scope for case studies – make sure we all know what we are doing.

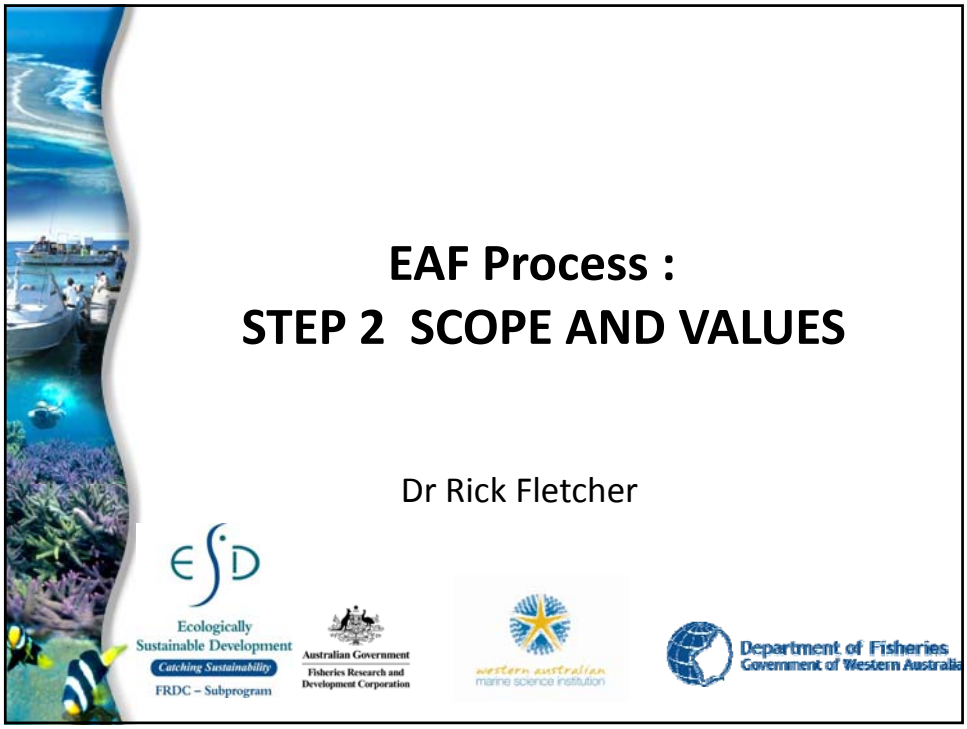
TOMORROW

- Given the scope - identify the issues

NEXT DAY

- Complete Risk Assessment

Appendix 10.5



Project Initiation

- ***The first step in applying EAF is to ensure that you are adequately prepared to undertake this process and are realistic about what it can deliver and when.***

DEFINING THE SCOPE

- ***Explicitly determine what fishing activities, areas, groups will (or won't) be included in the EAF process and the key community values to be achieved.***

ACTIVITIES

Scope and Scale of Management

- Clearly outline what fishing activities, fishing groups, target species, geographic regions will be included within the EAF based management system.
- Identify other key activities, groups, agencies that need to be included in this system (directly or indirectly) to enable this management system to operate

Determining Community Values and High Level objectives

- Define the key values (high level goals and objectives) that the community wants to generate or maintain from their use of the resources by the defined activities.
- Outline any hierarchy/precedence that may already exist among the different values.

Background Information

- Identify information and expertise on the fishery and its associated ecosystem.
- Collate relevant national policies or international agreements;
- Summarise the socio-economic status of the relevant region;

SCOPE

- **What is the sensible management unit – that is workable given your legislation and policies.**
- **Get agreement on what the high level values that you want to protect - ecological, cultural, social, economics, food ….. Why do you need to manage it?**
- **If you are not clear what you are managing or why it will not be a successful process.**

Areas Involved

Is it an easy boundary to determine?

Are there already clear divisions in place?

Is it all of the resource or just a subsection?

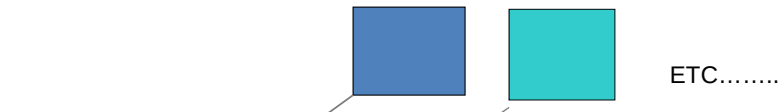
Is it shared with another country, region?

Types of Agencies/Groups involved in Fishery/Area Management

- Fisheries Department
- Environment Agency
- Local Govt Councils
- Community Groups
- Police/Navy
- Etc..

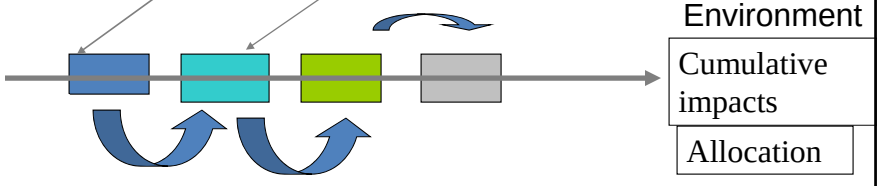
Fishery/Marine Sustainability Frameworks

1. Fishery EAF – Management using SD principles (single fishery)

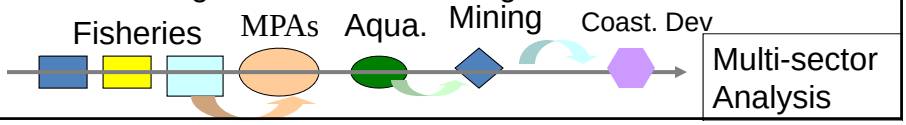


2. Bioregional Level EAF

Multi-fisheries Assessment – Integrated Fisheries Management

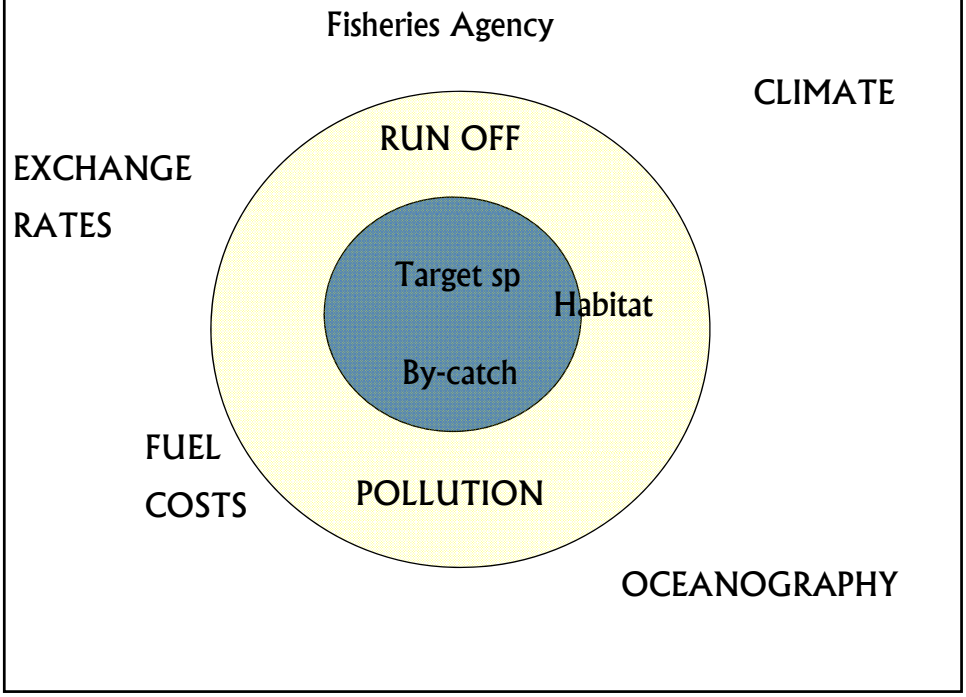


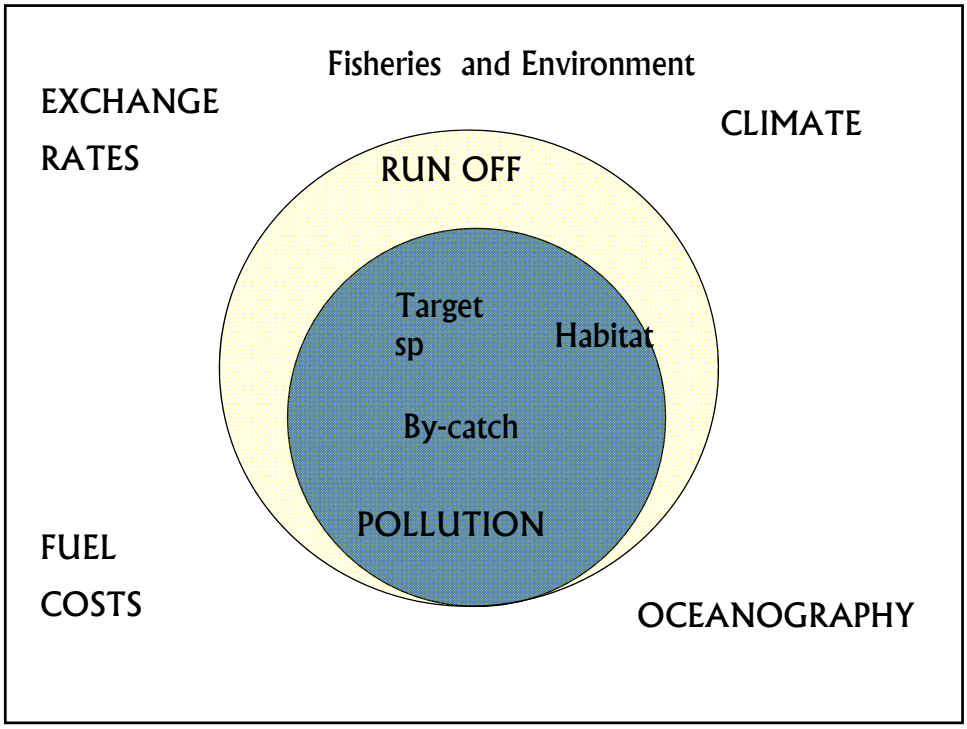
3. EBM - Regional Marine Planning

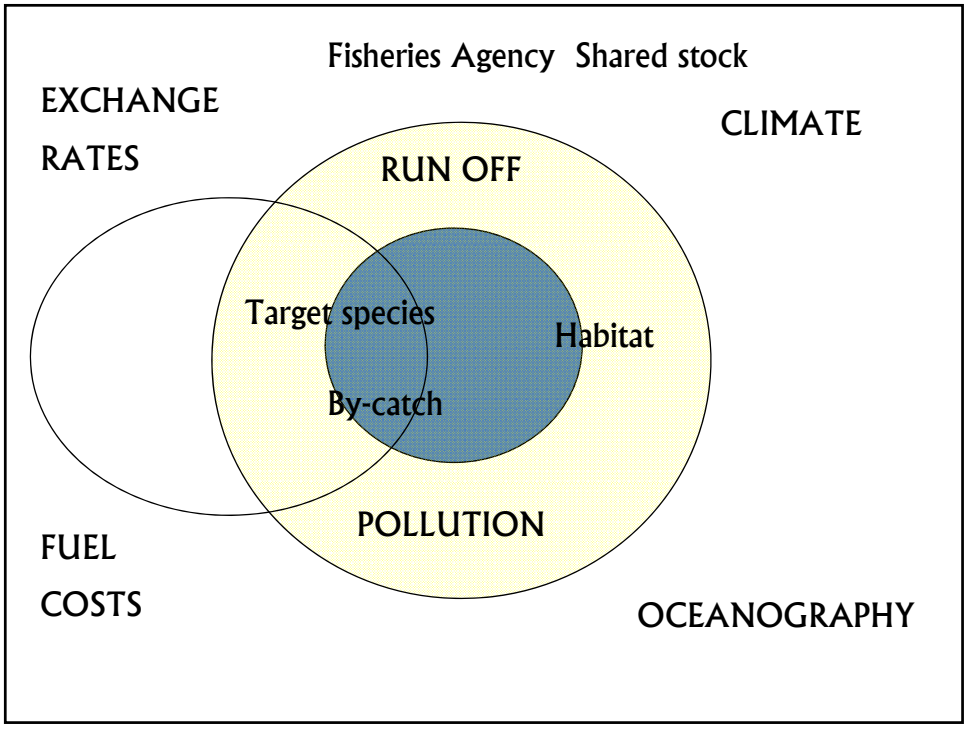


TYPES OF ISSUES

- MANAGE - These come under your direct legislative responsibility. You can generate regulations/management plans etc to deal with these issues. The agency must take full responsibility for these issues.
- INFLUENCE - These issues are not under your legislative responsibility so you cannot manage them, but as they come are under other legislative responsibility (e.g. another Agency) you can influence what they do.
- REACT TO - These issues are generated by external environment - you can neither manage nor influence You can still be ready to deal with these issues (e.g. natural changes in the oceanography, changes in currency exchange, market prices, fuel prices) as much as possible.




Fisheries and Environment
EXCHANGE
RATES
CLIMATE
RUN OFF
Target
sp
Habitat
By-catch
POLLUTION
FUEL
COSTS
OCEANOGRAPHY


Fisheries Agency Shared stock
EXCHANGE
RATES
CLIMATE
RUN OFF
Target species
Habitat
By-catch
POLLUTION
FUEL
COSTS
OCEANOGRAPHY

Authority

- From the groups, agencies and species involved clarify who is in charge of what.
- Work out which of these agencies are directly involved – the primary management group(s) and those that are only indirectly involved.

VALUES

The next element of determining the scope is what is the purpose of management?

- What are the values a community wants to achieve
- What do the communities want to 'get' from undertaking management?
- What am I managing to achieve?

Types of Values

- Species sustainability
- Species viability
- Cultural
- Social
- Economic
- Food Security

THESE ARE EXAMPLES –OTHERS ARE POSSIBLE

There priority varies between countries

In Australia

- Species sustainability
- Cultural – Moral
- Economic

In Pacific – Offshore Tuna

- Economic
- Species sustainability
- Social
- Food Security
- Species Viability

In Pacific – Coastal Fisheries

- Food Security
- Social
- Species Sustainability
- Species Viability
- Economics

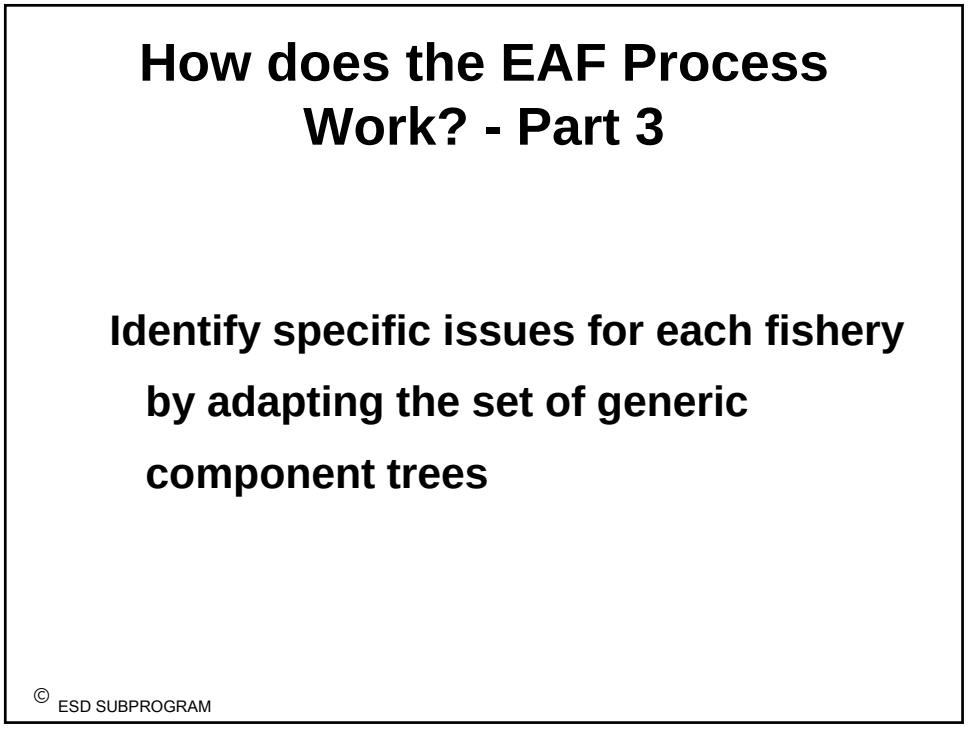
Achieving one objective often also achieves another objective

Questions to help ?

- **Which fishers/people are involved (or who are not)**
- **What fishing methods are being used (or which are not included)**
- **What geographical areas are involved – including distance from coast**
- **What do the community want to get from this management**
- **What time frame does this relate to?**
- **What agencies are, or need to be involved**
- **What authority do these agencies have**

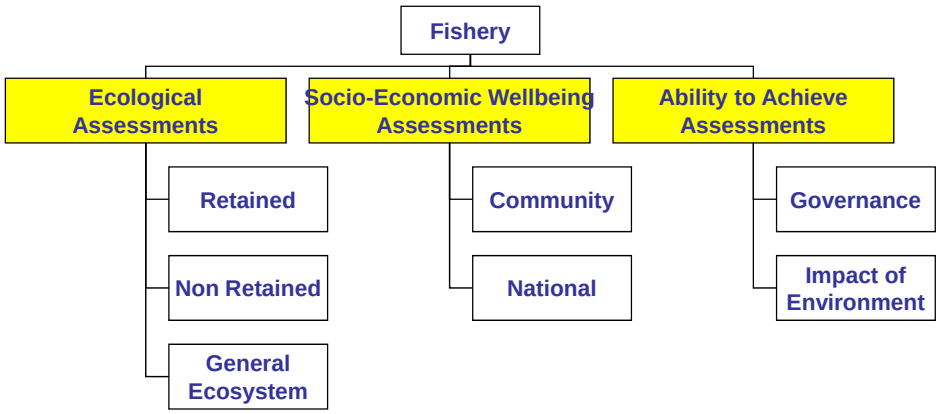
Category	Details
Fishers involved	
Methods involved	
Areas involved	
Values to achieve	
Primary agenc(ies)/groups (those who are directly involved). Those who have to take direct responsibility	
Other Agencies/Groups (those who are only indirect – or who manage related aspects) – ie they will not take direct responsibility	
Any Issues of identification	
Time frame(s)	

Appendix 10.6



Key Activities
3.1 Issue Identification

- Identify the specific issues to be managed in the EAF process, including all direct and indirect impacts of fishing.
- Identify any non-fishing issues (those that are external to the fisheries management system) that are affecting, or could in the future affect, the performance of the fishery.
- Identify what high level objectives are relevant to each identified issue.



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Why use this structured approach?

- Likely issues identified were developed into a generic tree for each component of EAF
- These generic trees are used as the starting point for all assessments
- Enhances consistency of approach
- Requires specification of what are NOT issues as much as determining what are issues.
- Minimises 'missing issues' at first pass
- Good visual description of issues

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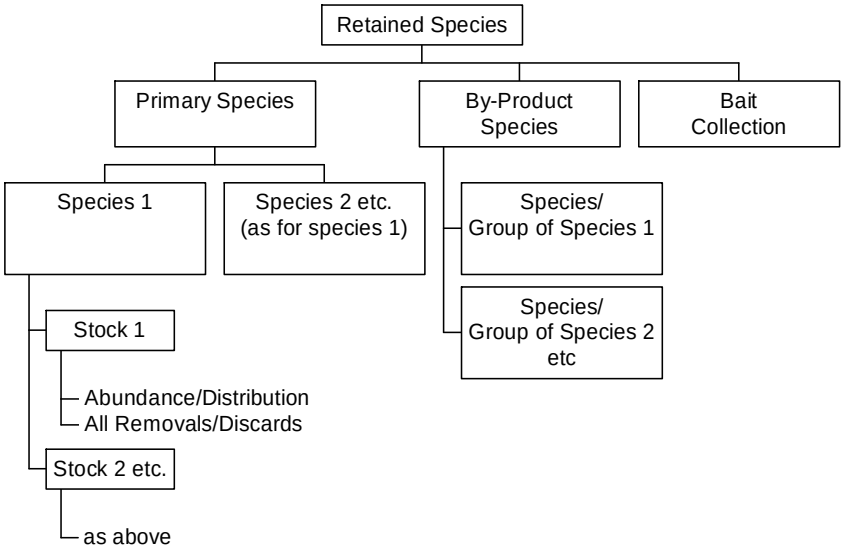

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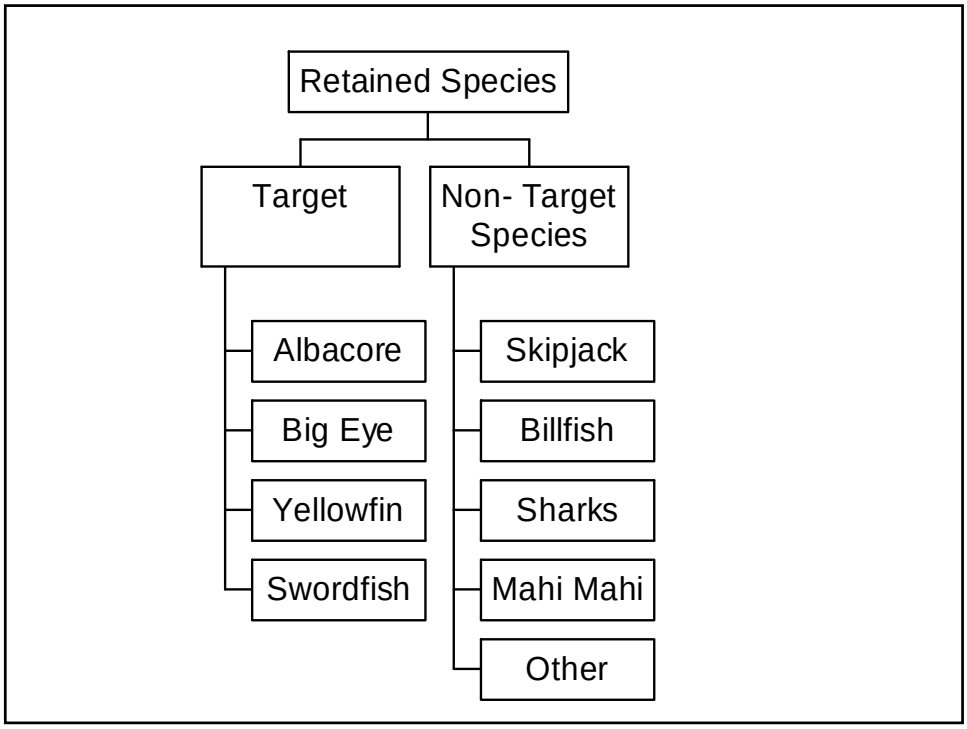
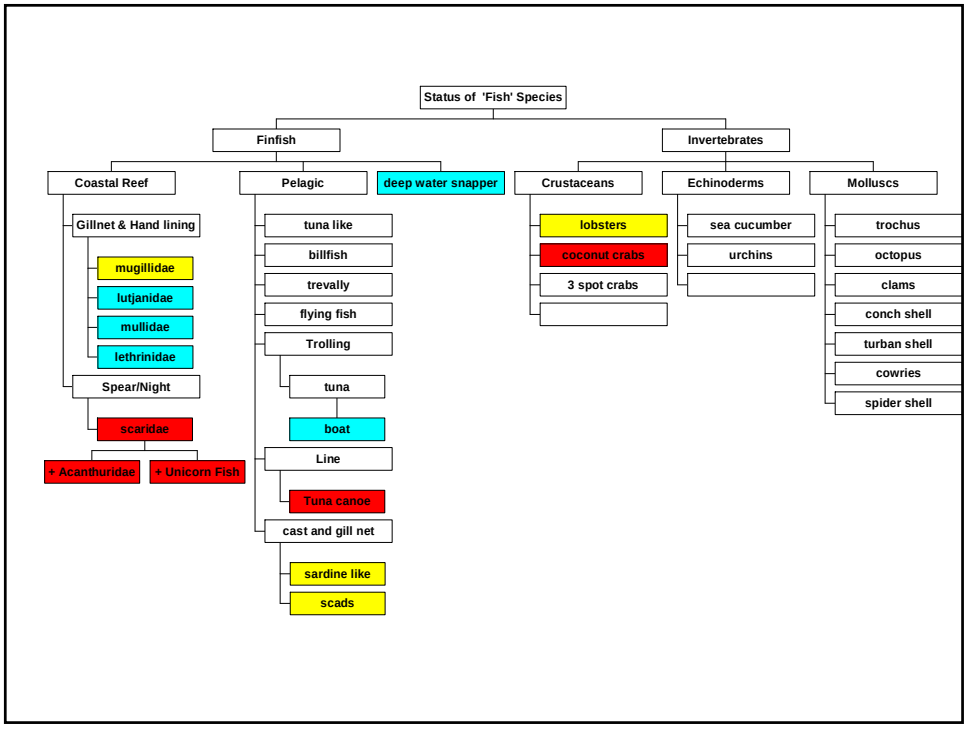
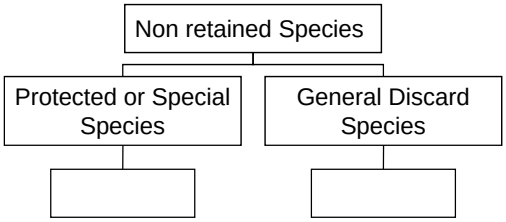

Retained Species
Target
Non- Target Species
Albacore
Big Eye
Yellowfin
Swordfish
Skipjack
Billfish
Sharks
Mahi Mahi
Other


Status of 'Fish' Species
Finfish
Invertebrates
Coastal Reef
Pelagic
deep water snapper
Crustaceans
Echinoderms
Molluscs
Gillnet & Hand lining
mugillidae
lutjanidae
mullidae
lethrinidae
Spear/Night
scaridae
+ Acanthuridae
+ Unicorn Fish
tuna like
billfish
trevally
flying fish
Trolling
tuna
boat
Line
Tuna canoe
cast and gill net
sardine like
scads
lobsters
coconut crabs
3 spot crabs
sea cucumber
urchins
trochus
octopus
clams
conch shell
turban shell
cowries
spider shell

Non Retained Species



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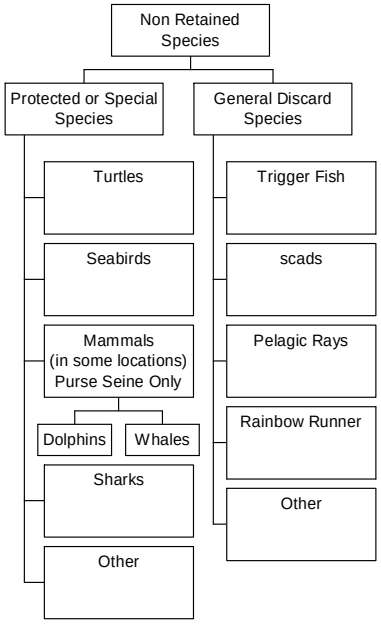

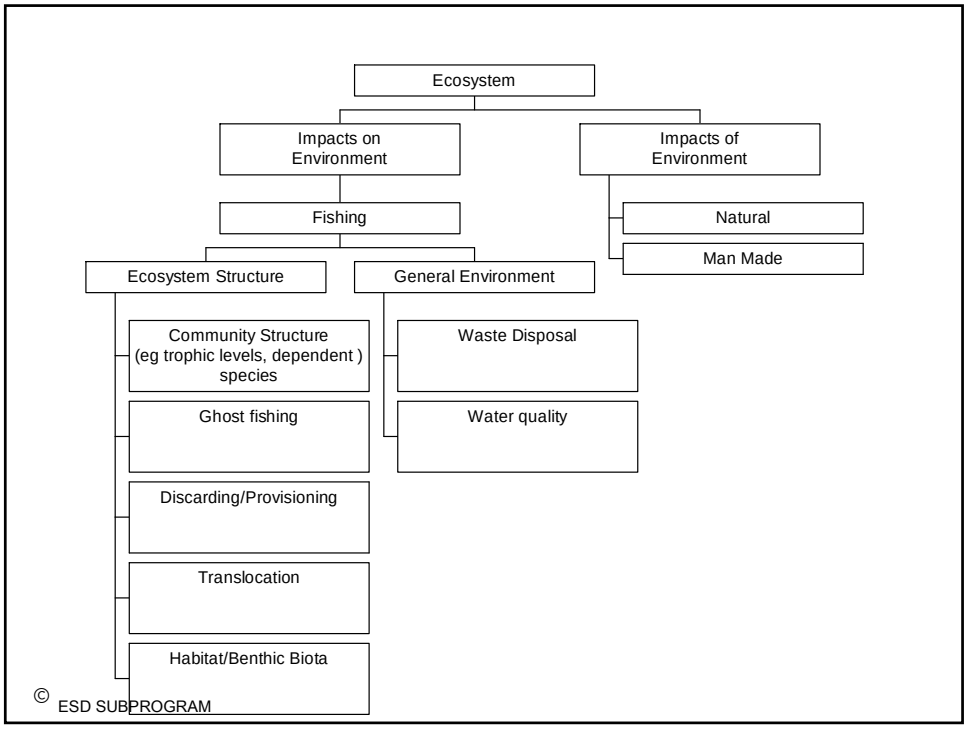
Ecosystem
Impacts on Environment
Impacts of Environment
Fishing
Natural
Man Made
Ecosystem Structure
General Environment
Community Structure (eg trophic levels, dependent) species
Waste Disposal
Ghost fishing
Water quality
Discarding/Provisioning
Translocation
Habitat/Benthic Biota
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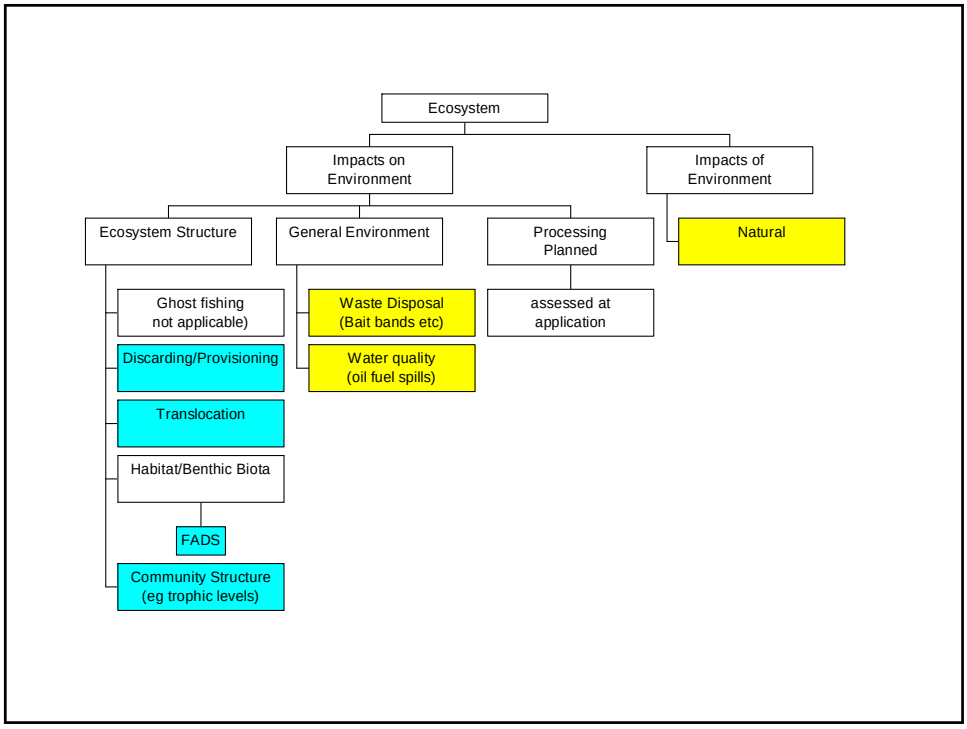
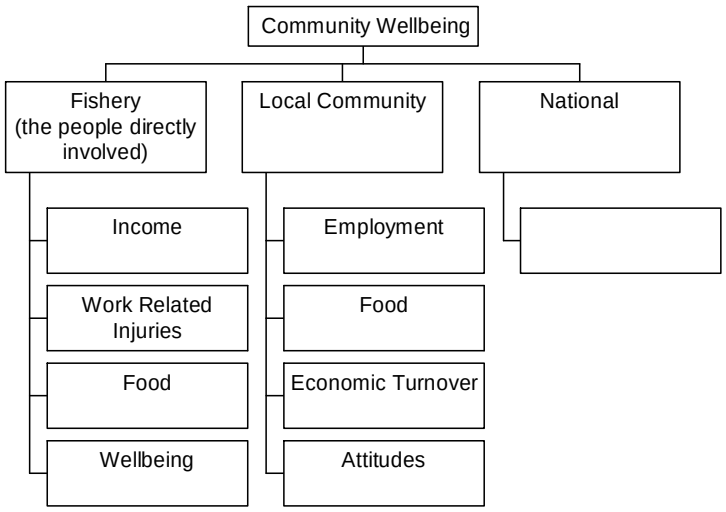

Ecosystem
Impacts on Environment
Impacts of Environment
Ecosystem Structure
General Environment
Processing Planned
Natural
Ghost fishing not applicable)
Waste Disposal (Bait bands etc)
assessed at application
Discarding/Provisioning
Water quality (oil fuel spills)
Translocation
Habitat/Benthic Biota
FADS
Community Structure (eg trophic levels)

COMMUNITY WELLBEING

Contribution of the Fishery/Industry to:



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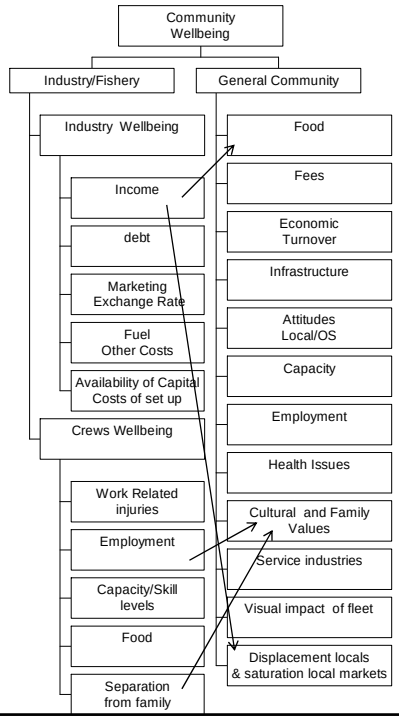
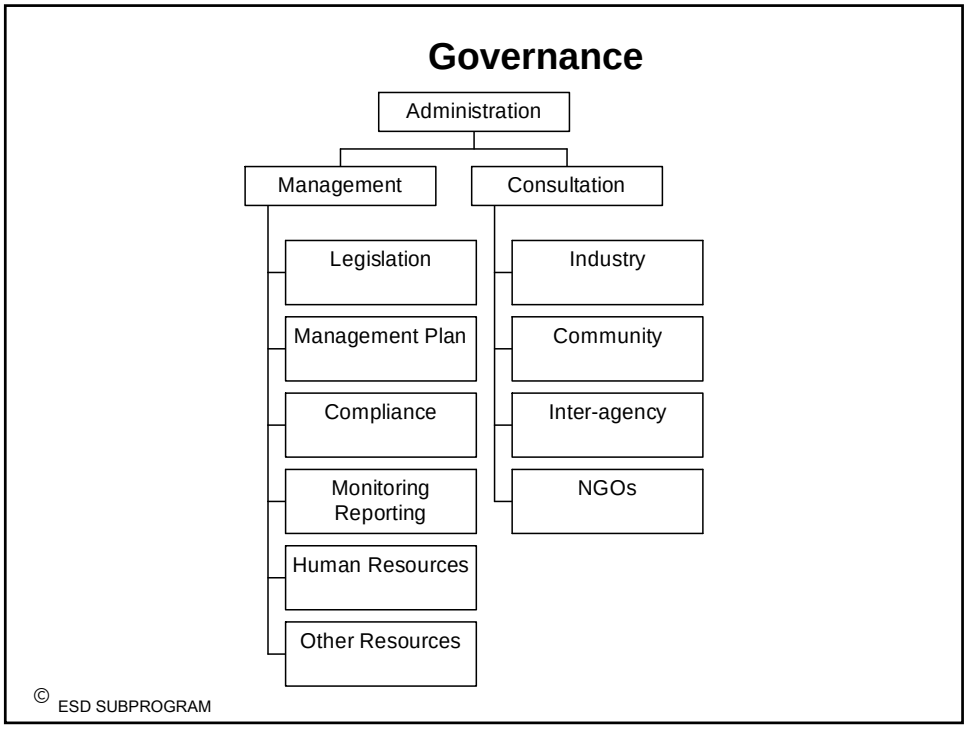
Vanuatu Tuna Fisheries Community Wellbeing Issues




Governance
Administration
Management
Consultation
Legislation
Management Plan
Compliance
Monitoring Reporting
Human Resources
Other Resources
Industry
Community
Inter-agency
NGOs
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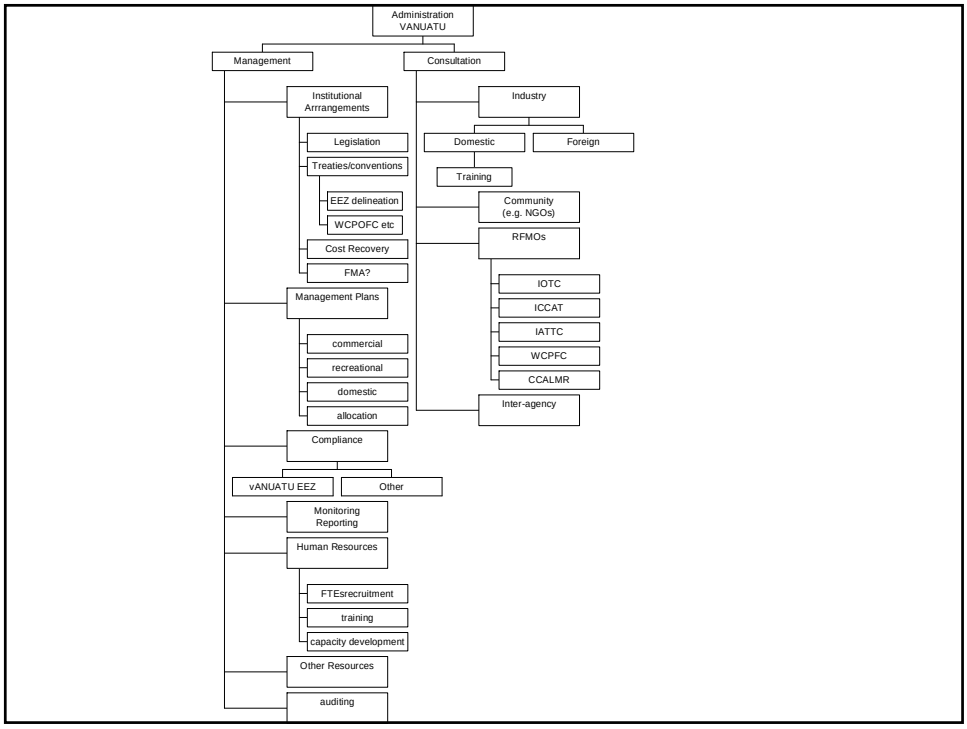
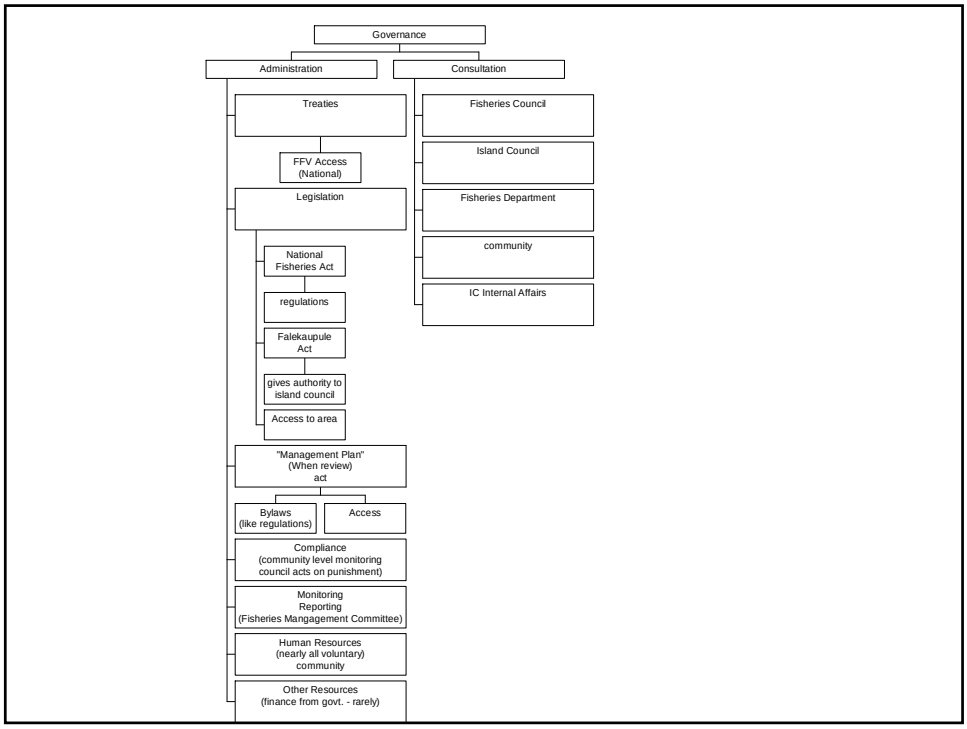
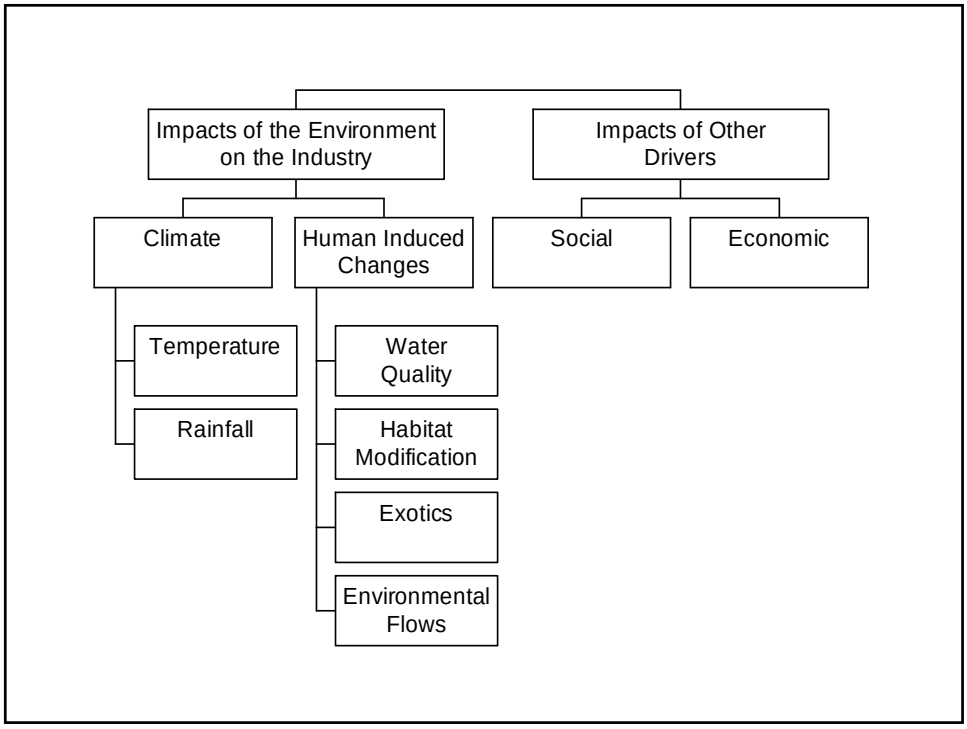

Administration VANUATU
Management
Consultation
Institutional Arrrangements
Legislation
Treaties/conventions
EEZ delineation
WCPOFC etc
Cost Recovery
FMA?
Management Plans
commercial
recreational
domestic
allocation
Compliance
vANUATU EEZ
Other
Monitoring Reporting
Human Resources
FTEsrecruitment
training
capacity development
Other Resources
auditing
Industry
Domestic
Foreign
Training
Community (e.g. NGOs)
RFMOs
IOTC
ICCAT
IATTC
WCPFC
CCALMR
Inter-agency


Governance
Administration
Consultation
Treaties
FFV Access (National)
Legislation
National Fisheries Act
regulations
Falekaupule Act
gives authority to island council
Access to area
"Management Plan" (When review) act
Bylaws (like regulations)
Access
Compliance (community level monitoring council acts on punishment)
Monitoring Reporting (Fisheries Mangagement Committee)
Human Resources (nearly all voluntary) community
Other Resources (finance from govt. - rarely)
Fisheries Council
Island Council
Fisheries Department
community
IC Internal Affairs


Impacts of the Environment on the Industry
Impacts of Other Drivers
Climate
Human Induced Changes
Social
Economic
Temperature
Rainfall
Water Quality
Habitat Modification
Exotics
Environmental Flows

How does this work?

- The process works by modifying each of the trees by adding issues not included already and deleting issues that are not relevant.
- If any of the generic issues are removed, written justification should be provided on why it wasn't applicable (e.g. bait collection for a haul net fishery)

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How does it work 2

- it is about issue identification, not prioritisation so there should be little discussion of the importance of an issue.
- If a group raises an issue that is known to be wrong, this may be useful to document
- So, if a group thinks it is an issue, deal with it.

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Ecological Issues

- What are the main species or groups captured by the fishery
- Are there any species that are captured but not wanted
- Are there any special species caught
- Does the fishery cause habitat damage
- Does it affect the ecosystem more generally
- Does the environment affect the fishery
- Are there other man made impacts on the fishery

Community Wellbeing

- What are the social and economic issues generated by the fishery that affect the
- The fishers
- The local community(ies)
- The national community

Administration

What are the management processes and issues that need to be addressed

What are consultation processes and issues

Appendix 10.7

Implementing EAF in national legislation

Trainer's workshop EAF-Nansen Project
19 February 2009
Anniken Skonhoft
FAO Legal Office

Overview

- Glance at international legal framework
- National implementation
- Inventory of EAF provisions in fisheries legislation
- Case study – Mauritius
- Conclusion
- Funding

Participants

- Mixed backgrounds: management and research, national and regional level
- Non-lawyers, but provide essential input when drafting laws and regulations
- French, English and Portuguese speaking countries – different legal traditions

International legal framework

- LOSC: Establishes principles and objective of relevance to EAF (adopt C&M measures in EEZ to avoid over-fishing (art. 61) → take account of effects on dependent species; best scientific evidence; environmental and economic factors → int'l cooperation
- UNFSA: Management principles for C&M measures for straddling stocks applies in EEZ:
  - Compatibility of measures (art. 7.2)
  - Precautionary approach (art. 3 and 6)

Int'l legal framework – CBD

- Framework for conservation and sustainable use of biological diversity under national jurisdiction – commits states to:
  - cooperate with other states on conservation and sustainable use of biological diversity;
  - integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies;
  - establish protected areas and prevent the introduction and spread of alien species;
  - introduce EIA and measures for minimizing adverse impact.

Int'l legal framework – CCRF

- Contains many provisions which support the implementation of EAF:
  - ecosystem and habitat protection
  - biodiversity and endangered species conservation
  - multi-species management
  - integrated coastal area management
  - fishing gear and methods
  - the precautionary approach

National implementation

- Step 1: Identify the issues that need to be addressed in policy and legal framework in order to make EAF operational
- Step 2: Review national fisheries policies
- Step 3: Review the fisheries and sector-specific legal frameworks
- Step 4: Amend or revise legal framework
- Step 5: Adopt legislation
- Step 5: Ensure implementation and enforcement

→ Political will and capacity is key!

Inventory of legal provisions in fisheries legislation

- Scope and objectives of law, management plans
- The institutional framework: roles and duties, coordination and participation
- International cooperation

Inventory of legal provisions – cont.

- Access to and allocation of fisheries resources
- Fishing gear and methods
- Spatial and temporal controls on fishing, habitat protection
- Monitoring, control and surveillance

Case study: **Mauritius**

- Mauritius Fisheries and Marine Resources Act 2007
- Proclaimed in May 2008
- Most recent Act that has been reviewed
- Reviewed against “EAF inventory”

Scope and objectives of law, management plans

- Scope: Designates the issues that are being subject to regulation under a law
  → EAF: management of *all marine resources*
- Objectives: Principles/goals guiding the implementation of the law
  → EAF: avoid over-fishing; maintain ecosystem integrity; minimize fisheries impact, precautionary approach; consider species interactions; sectoral integration, stakeholder participation, use rights...
- Management plans: management goals and measures

Scope and objectives of law, management plans

Mauritius Fisheries and Marine Resources Act:

- "The Fisheries and Marine Resources Act"
- No defined management objectives in the Act
- Does not require management plans to be adopted

Institutional framework – roles and duties, coordination and participation

- Clearly defined mandates and roles of concerned agencies
- Regulatory powers defined
- Mechanisms for integration and coordination
- Mechanisms for stakeholder participation

Institutional framework – roles and duties, coordination and participation

Mauritius Fisheries and Marine Resources Act:

- "Minister" and "Permanent Secretary" in charge of management (e.g. declare MPAs and issue gear licences)
- Regulatory powers clearly defined (section 74)
- Minister may set up Consultative Committees for discussion and advice on policy relating to fisheries and marine conservation consisting of the Minister and such other person s/he appoints (section 3)

International cooperation

- Management of straddling, transboundary and shared stocks
- Implementing int'l. and reg. conservation and management measures
- Access of foreign fishing vessels in EEZ
- Introduction of alien species
- Marine pollution

International cooperation

Mauritius Fisheries and Marine Resources Act:

- No person shall land, sell or possess fish that he knows has been taken in contravention of int. conservation and management measures (section 17(2));
- May prohibit landing and transhipment when reason to believe that foreign vessel involved in fishing activities in contravention of int. conservation and management measures (section 57(2))

International cooperation

Mauritius Fisheries and Marine Resources Act:

- No person shall land, import etc. fish taken, possessed etc. "contrary to the law of one or more States with which Mauritius has entered into an agreement as reciprocal or multilateral basis for the management of fisheries." (section 24)
- Foreign fishing only under agreement (section 35)
- No provision mandating international cooperation

Access to and allocation of fisheries resources

- Limiting access to fisheries essential for responsible fisheries management
  - Use rights, quotas etc.
  - EAF → manage for multitude of users (predator-prey relationships; multiple fisheries, conservation, tourism etc.)

Access to and allocation of fisheries resources

Mauritius Fisheries and Marine Resources Act:

- Gear licence + quantity limitations (sec. 28-30)
- Vessel licence (sec. 36)
  - → May exempt fishing boat less than 12 m
  - → No licence if history of non-compliance with international conservation and management measures

Fishing gear and methods

- Goal: Minimize harmful impacts of fishing on marine ecosystem
- Gear that selectively harvests target species (e.g. minimum mesh sizes)
- By-catch reduction tools (TEDs etc.)
- Prohibition of ghost fishing, bottom trawling, use of explosives etc.

Fishing gear and methods

Mauritius Fisheries and Marine Resources Act:

- Prohibited fishing methods and gears (12)

(gunny bag, poison, explosives, drift nets...)

- FAD prohibited (15)
- Restrictions on fishing w/ artificial light (18)
- Restrictions on fishing undersized fish, berried crab/lobster, marine turtles (16)

Spatial and temporal controls on fishing, habitat protection

- Reduce fishing mortality by restricting fishing to certain times, seasons, areas (closures)
- Marine Protected Areas
- Protection of aquatic ecosystems
- Prevention of marine pollution

Spatial and temporal controls on fishing, habitat protection

Mauritius Fisheries and Marine Resources Act:

- Closed periods for fishing with large, pocket, gill and canard nets + oyster fishing (section 14)
- MPAs: fishing reserve, marine parks, marine reserves (section 4) + Fund
- Protection of aquatic ecosystem (poisonous subst., mangroves) (69)

Monitoring, control and surveillance

- Register of fishing vessel and fishers
- Reporting (logbooks, catch statistics)
- Fisheries observers, VMS
- Boarding and inspection
- Enforcement powers

Monitoring, control and surveillance

Mauritius Fisheries and Marine Resources Act:

- Record of fishing boats (also <12 m) (sec. 6) + registration (sec. 42)
- Logbooks and reporting (sec. 41)
- Powers to enter and search etc. (part VIII)
- Offences and penalties (part IX)

Conclusion

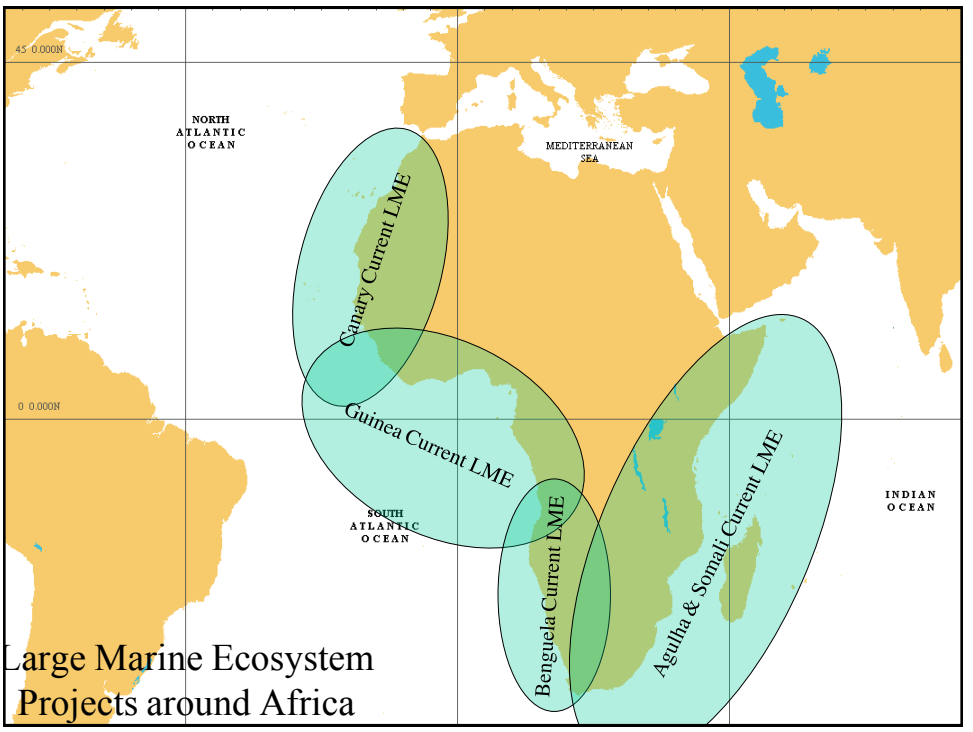
- Putting in place a holistic EAF fisheries legal framework requires legal review:
  - in many countries much can be achieved through amending existing laws + adopting regulations
  - others need more comprehensive reforms
  - capacity and political will

Funding

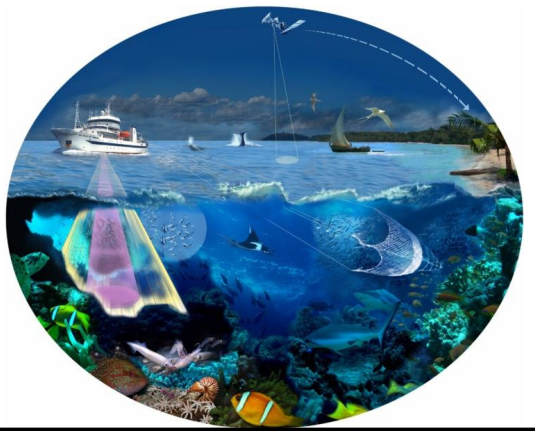
- Limited assistance under Nansen project
- FAO Technical Cooperation Programme assistance – official request from government to FAO (through FAO rep.)
- Other sources

Appendix 10.8

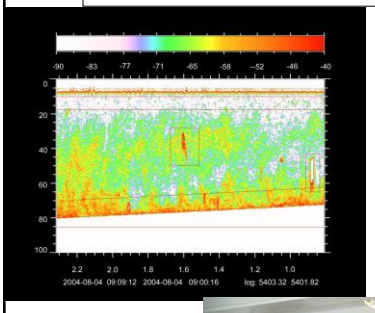
Ecosystem surveys in the context of EAF

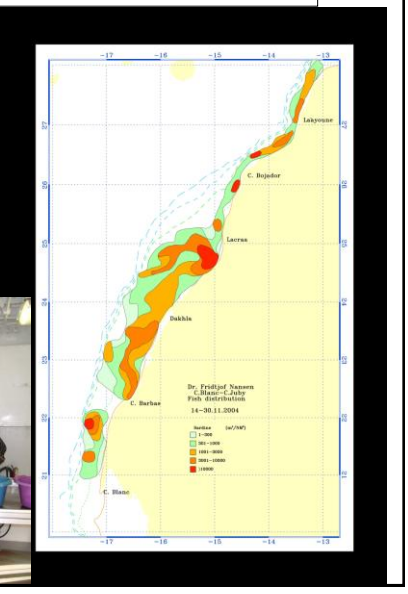


Monitoring the state of the ecosystem by research surveys

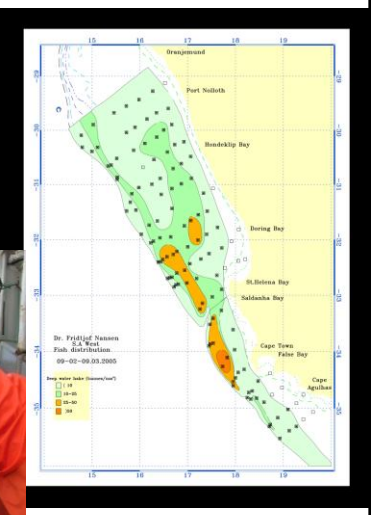


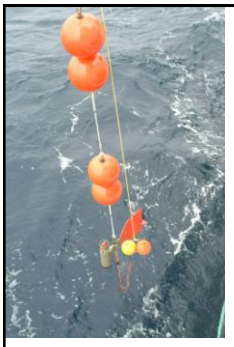
Assessing pelagic fish resources by acoustic methods

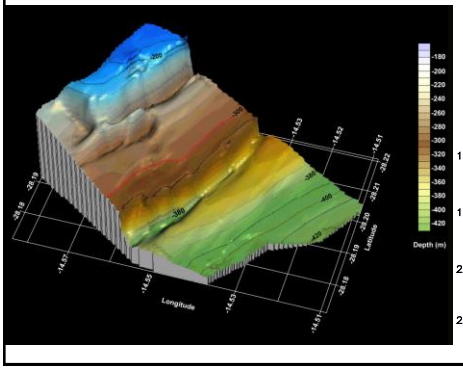


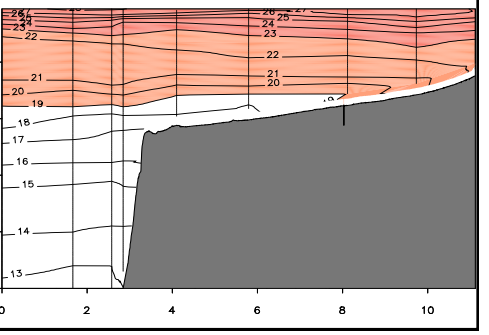


Assessing demersal fish resources by statistical sampling with bottom trawl







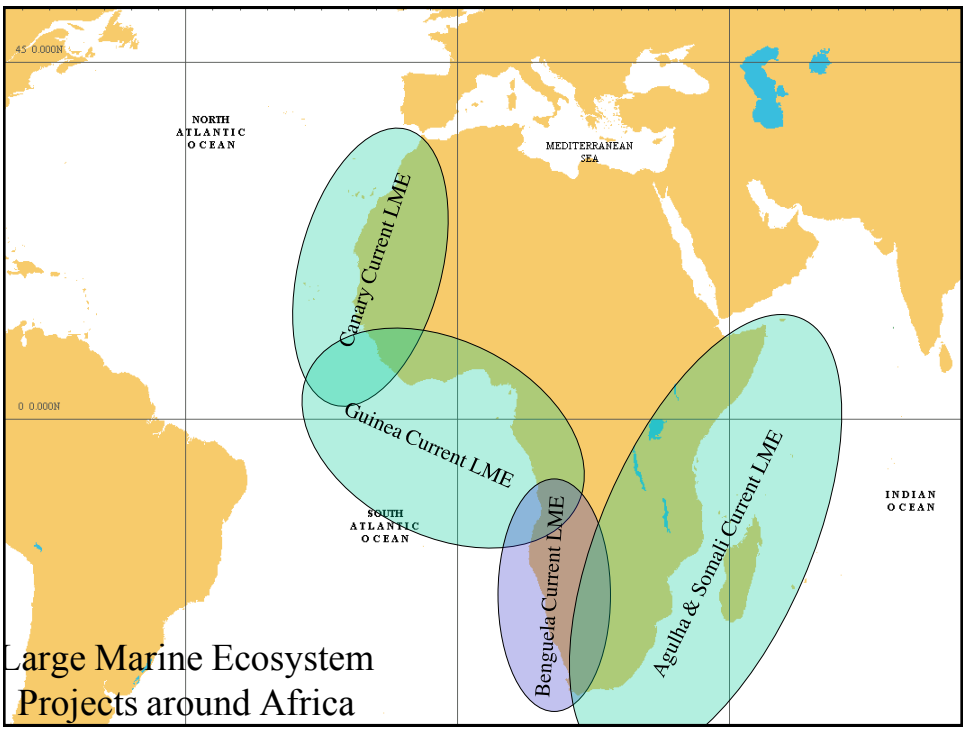


Visual methods

The challenge in EAF-Nansen

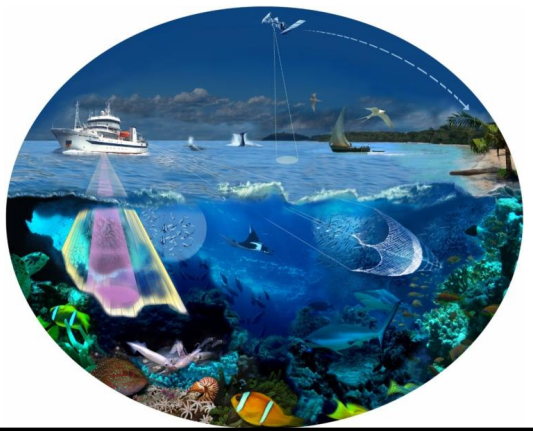
To monitor the ecosystem with adequate sampling in order to establish the state of the system and with sufficient precision to detect changes

Optimise the use of limited resources, avoid oversampling and topics of more pure academic interest.

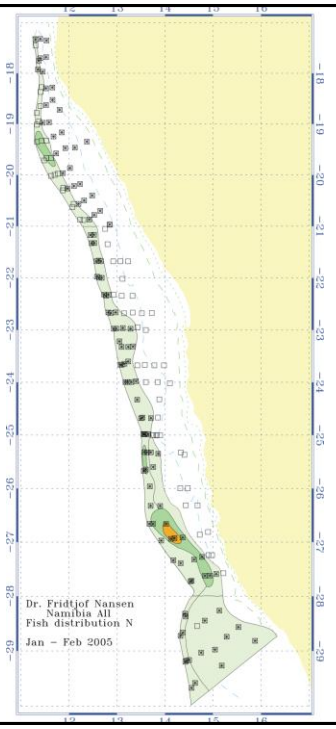


Large Marine Ecosystem Projects around Africa

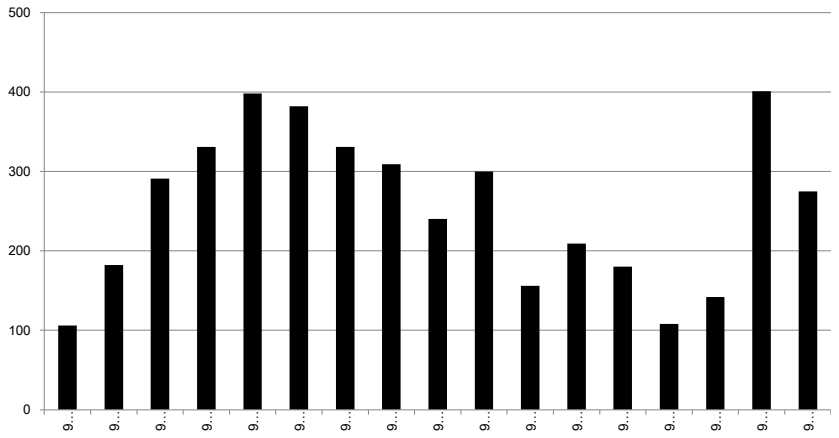
Results from surveys

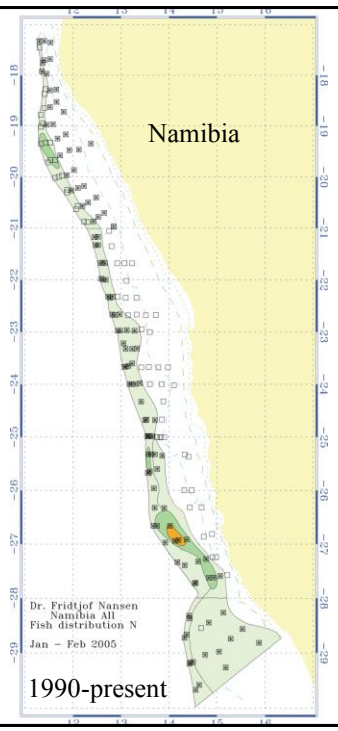


Distribution of deep water hake, Namibia 2005

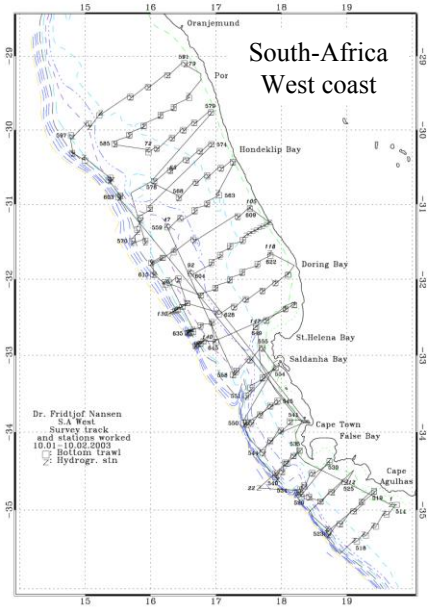


Time series hake Namibia 1990-99



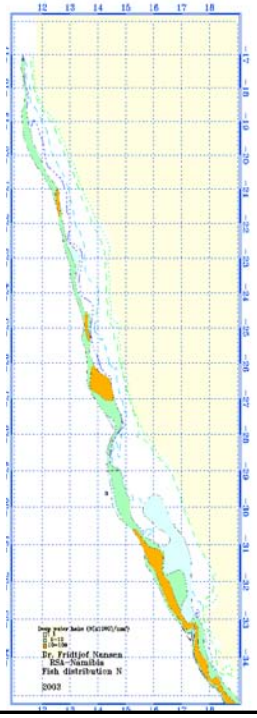


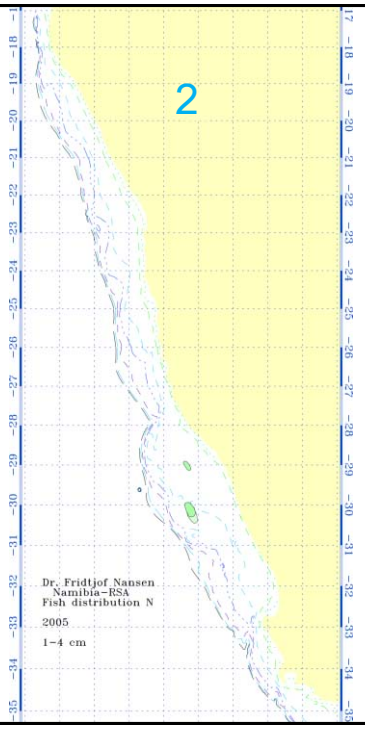
1990-present

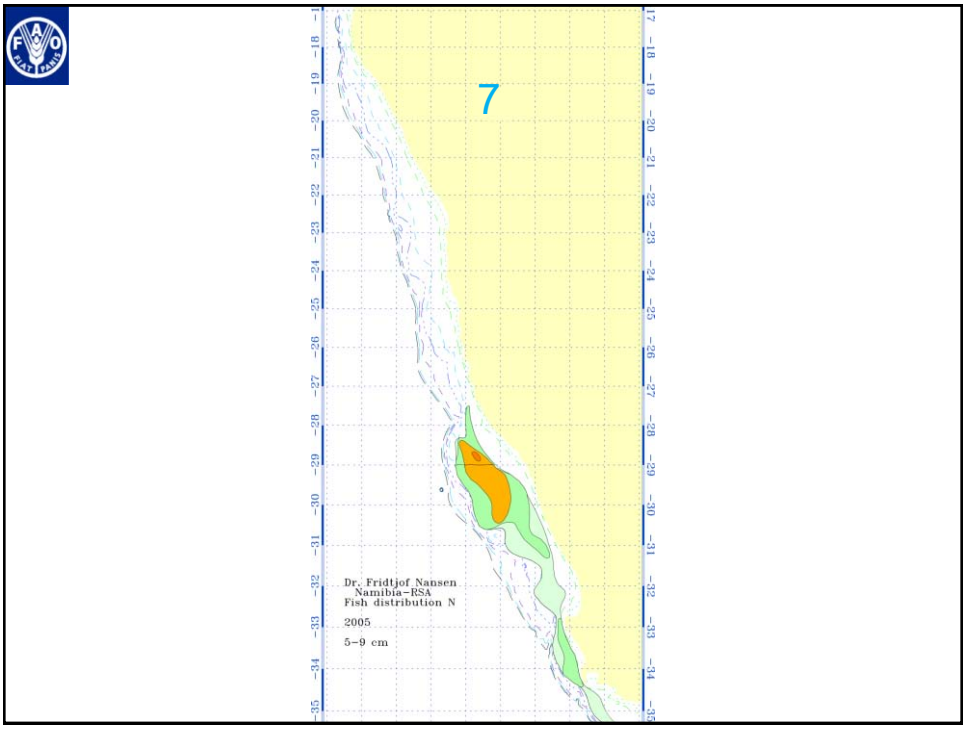


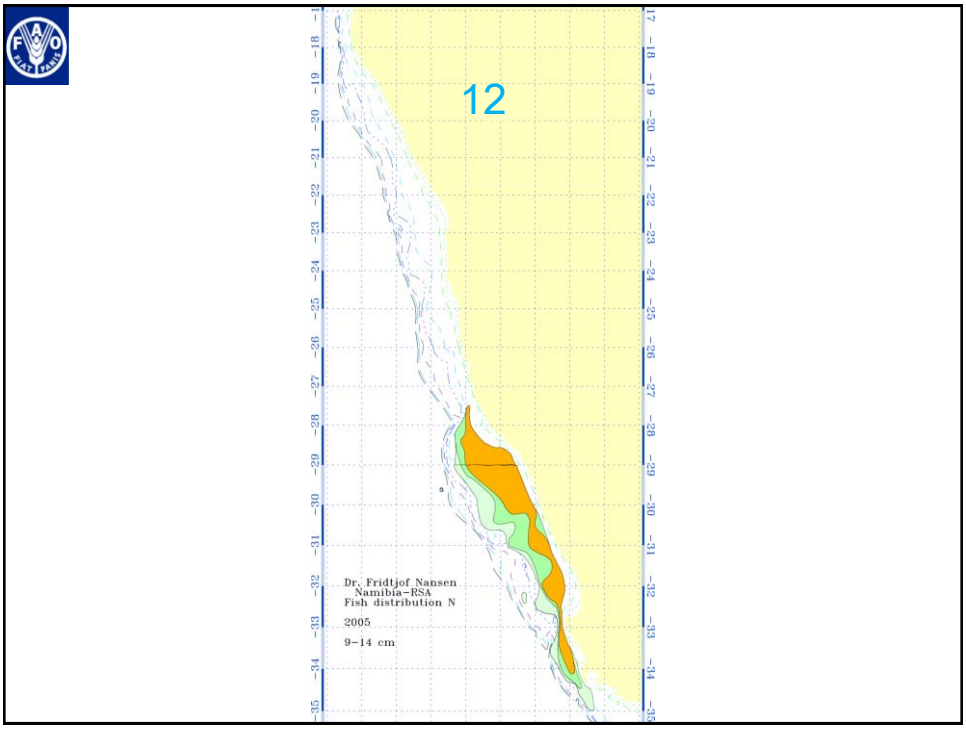
1993, 1995, 1996, 1997

Distribution deep water hake, Namibia-South Africa 2003






7
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
5-9 cm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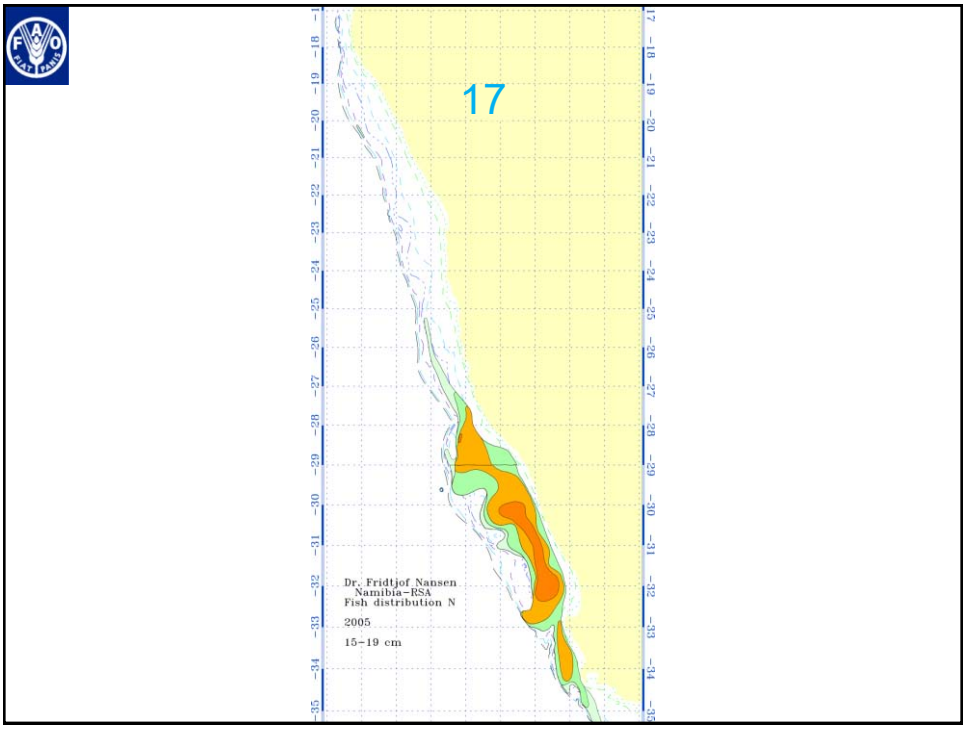
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
9-14 cm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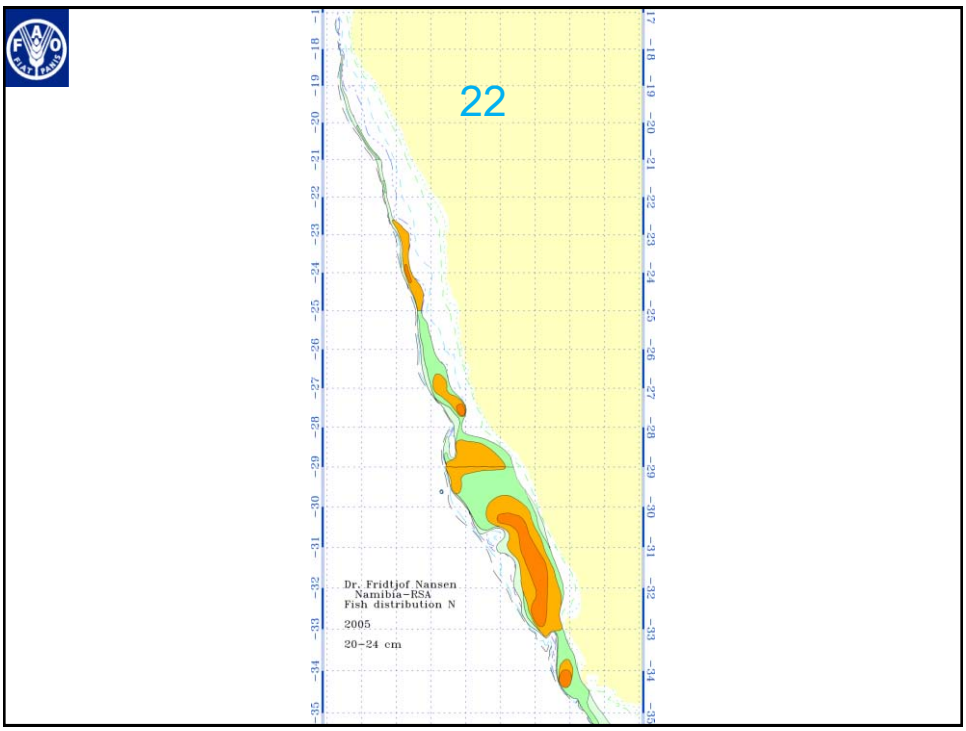
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
15-19 cm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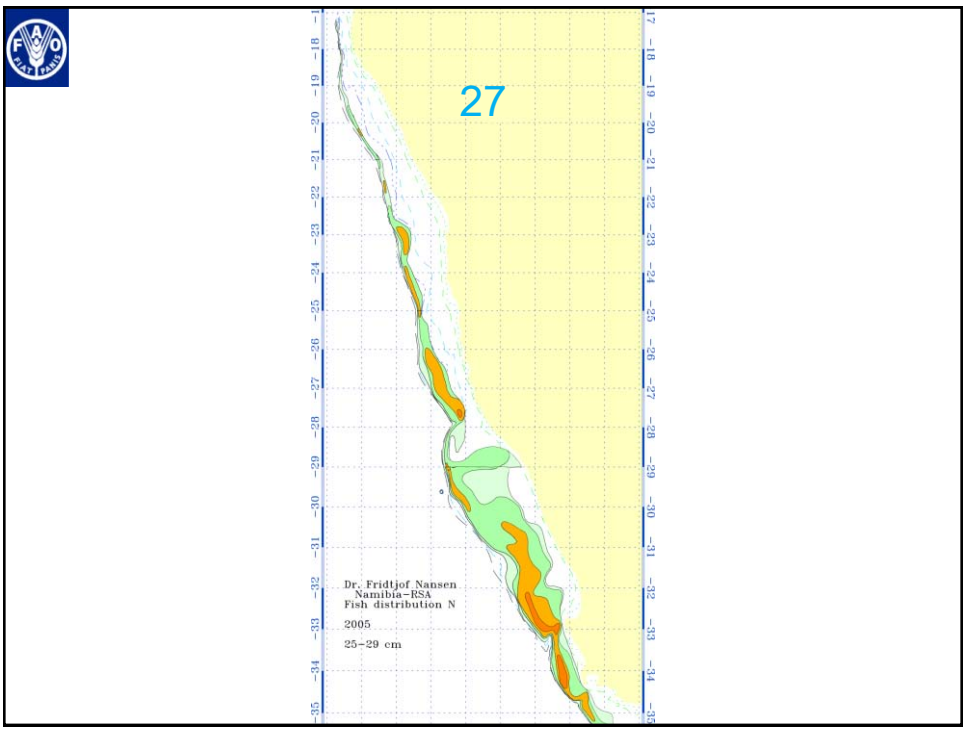
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
20-24 cm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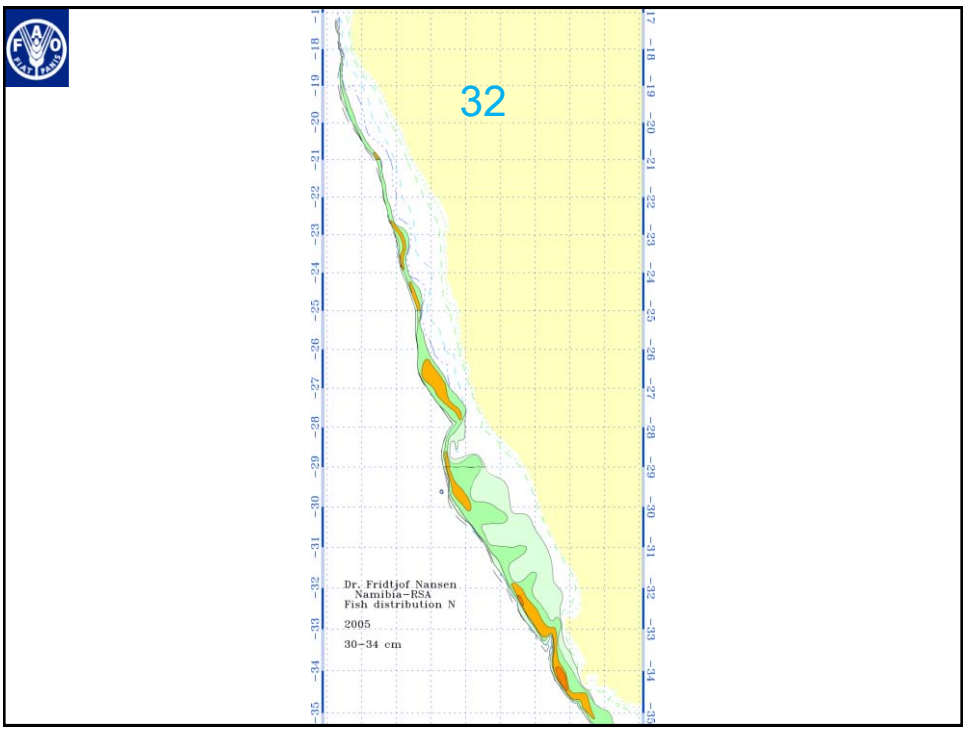
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
25-29 cm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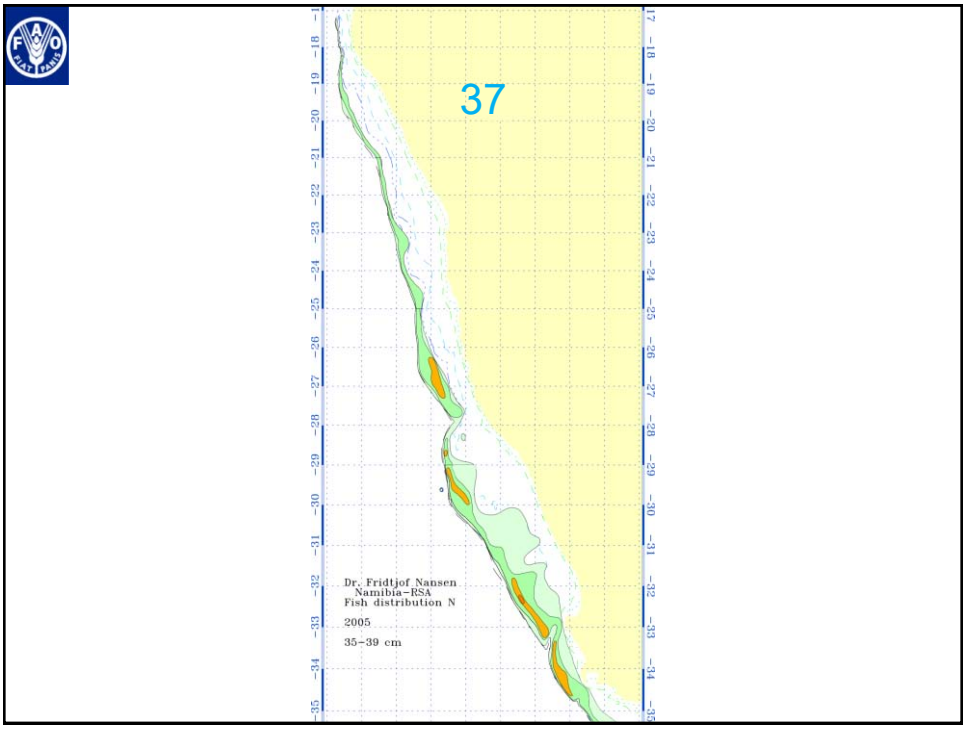
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
30-34 cm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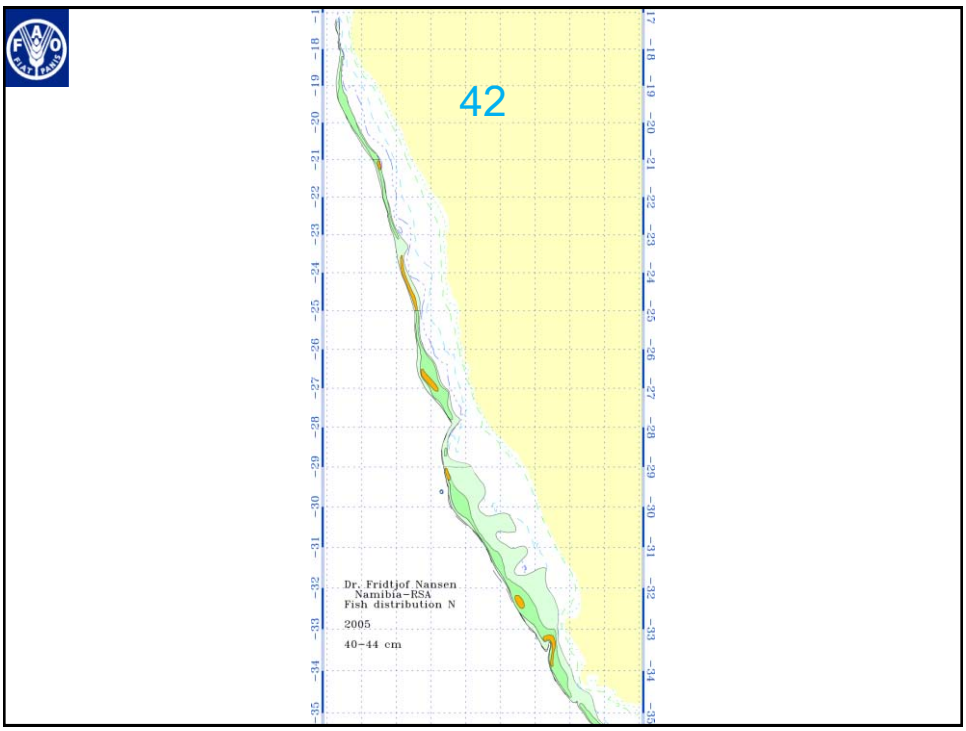
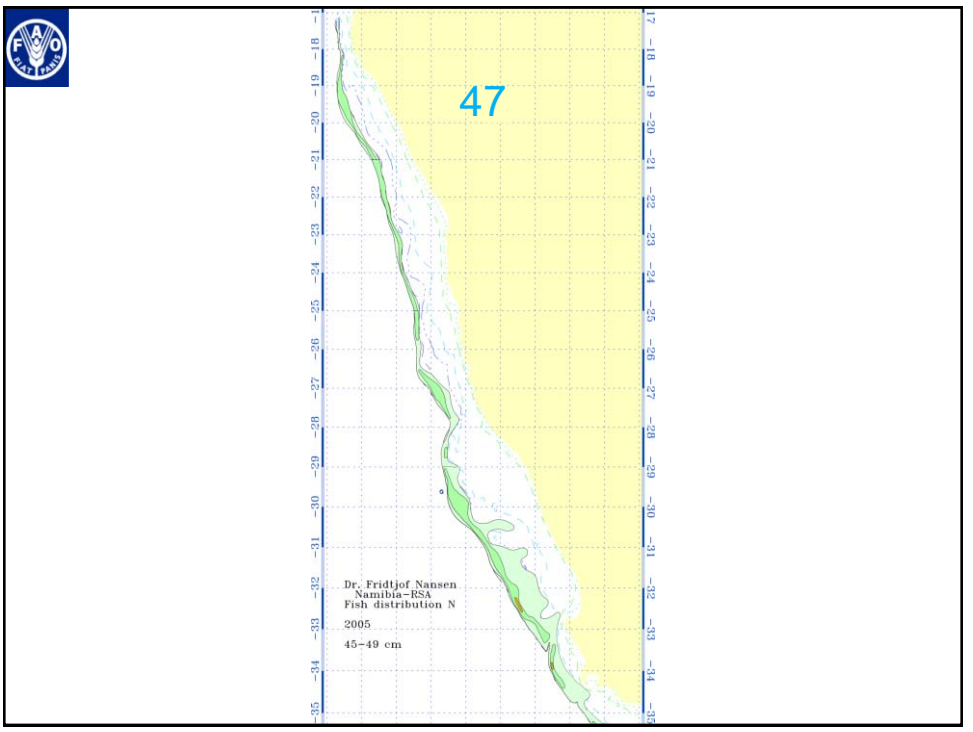
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
35-39 cm


42
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
40-44 cm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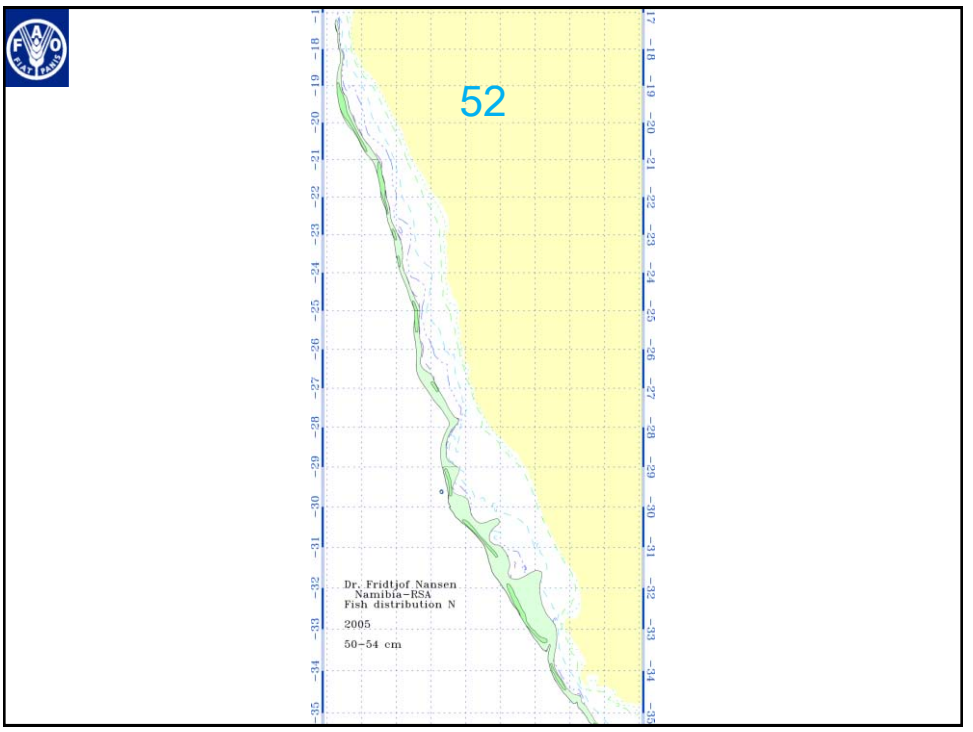
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
45-49 cm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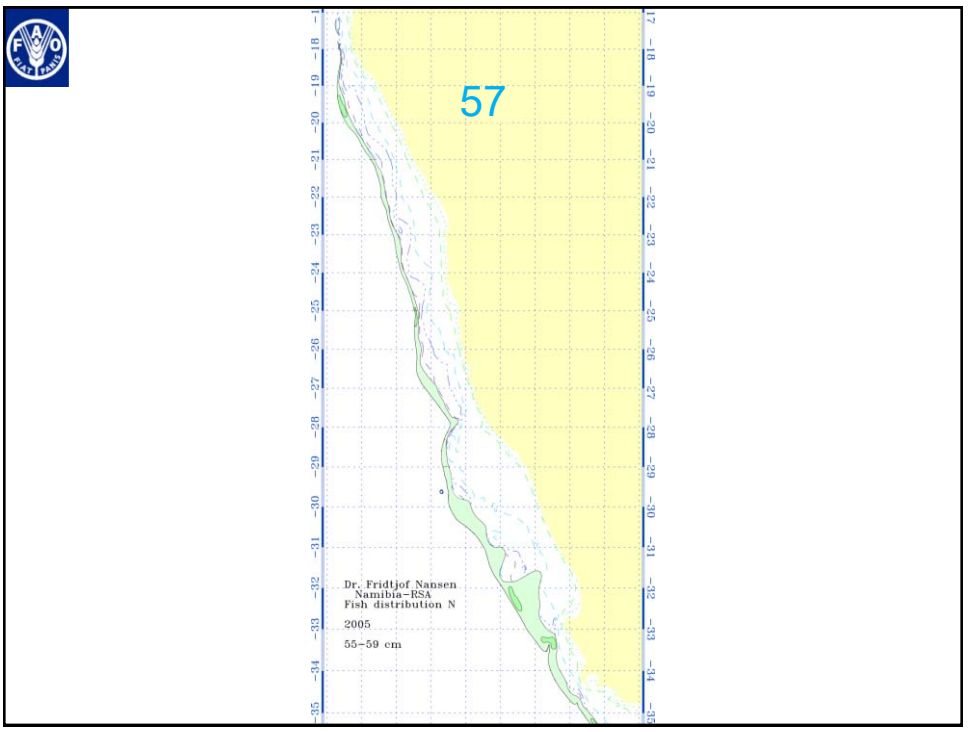
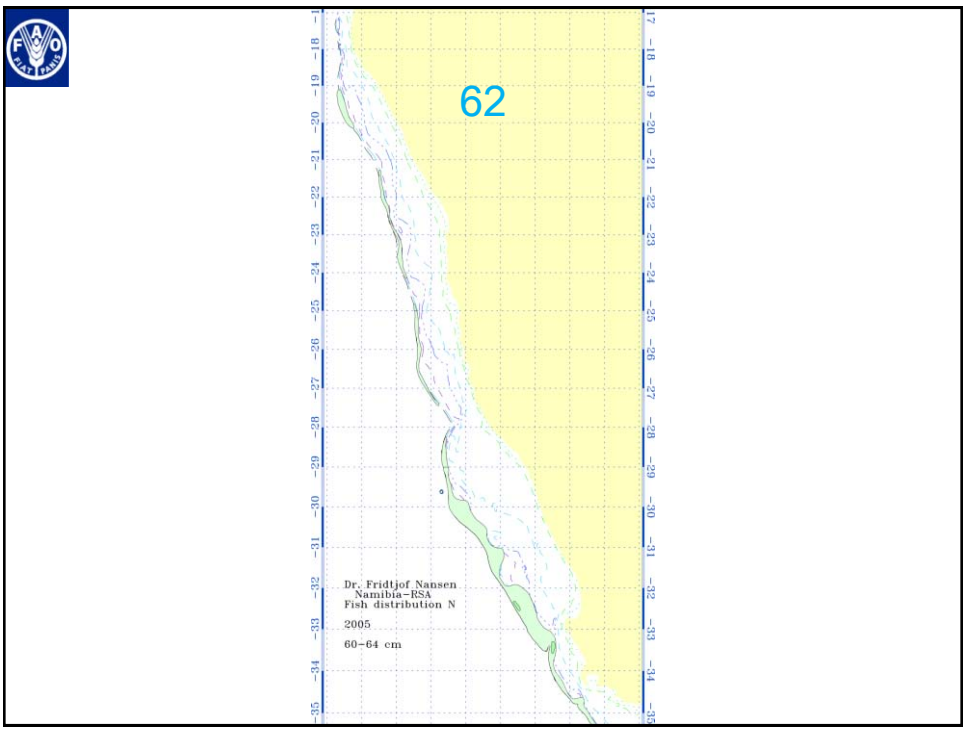
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
50-54 cm


57
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
55-59 cm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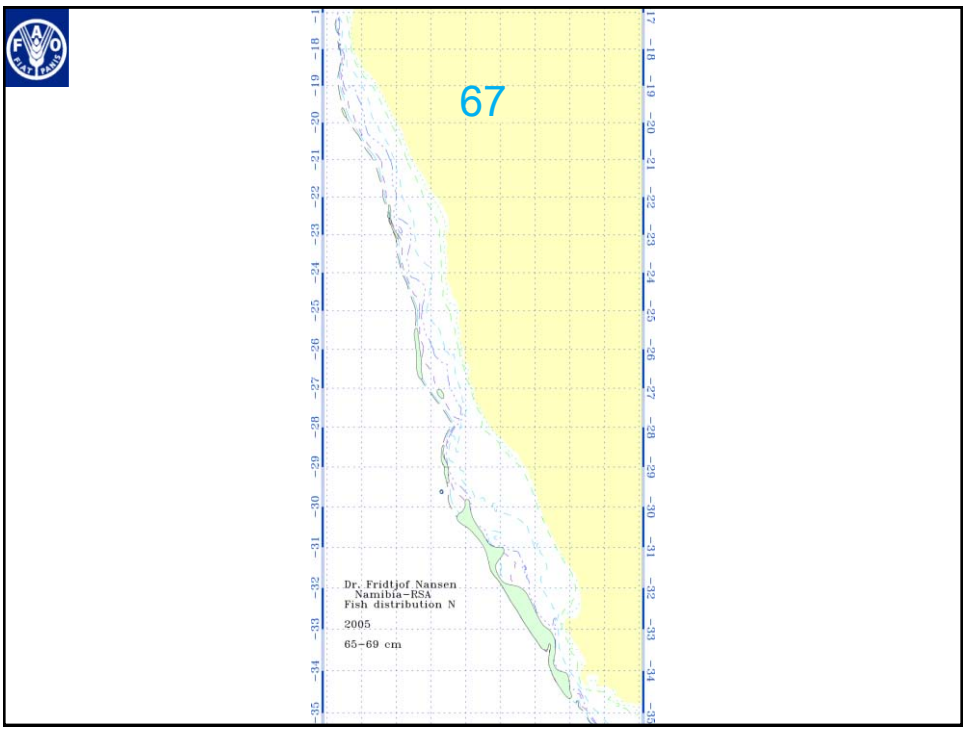
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
60-64 cm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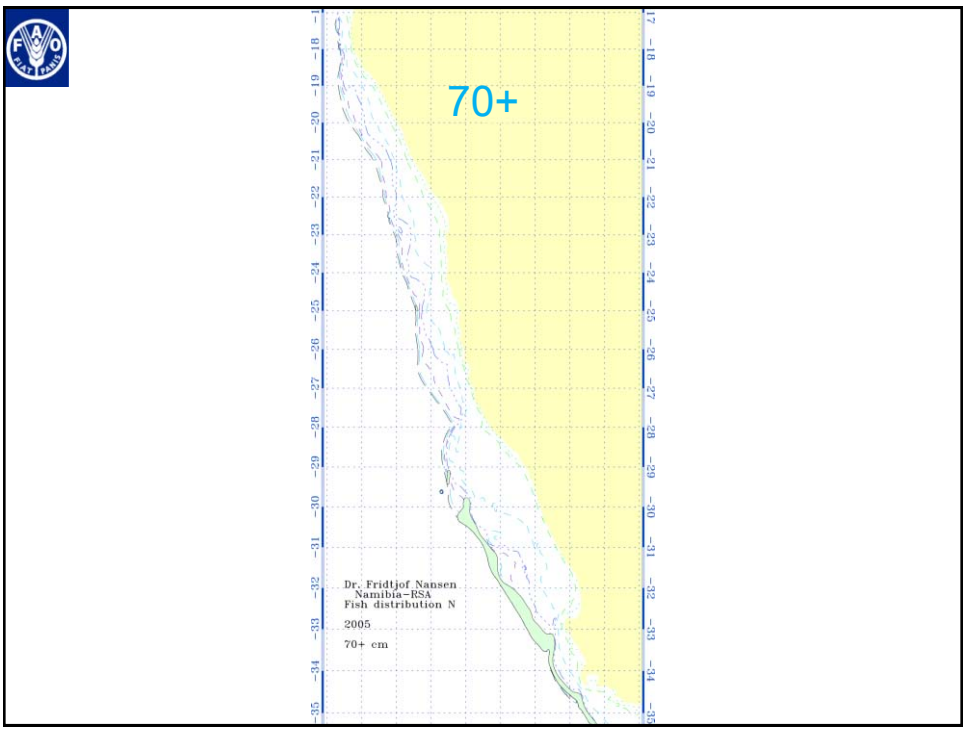
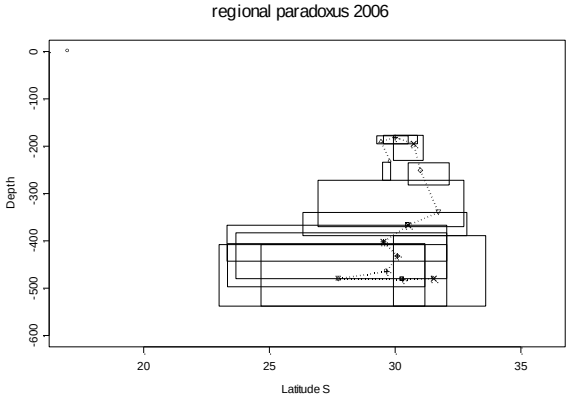
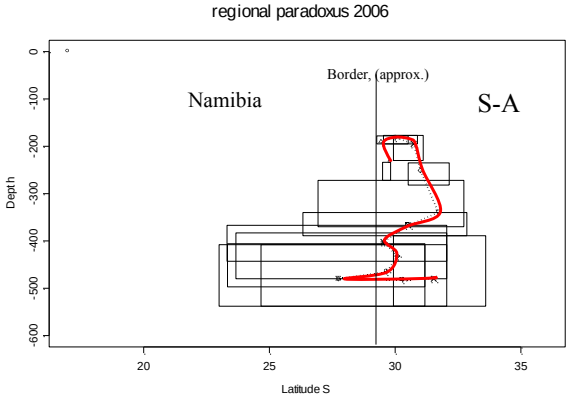
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
65-69 cm


70+
Dr. Fridtjof Nansen
Namibia-RSA
Fish distribution N
2005
70+ cm

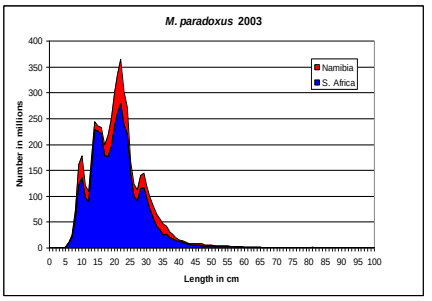
Center of gravity with 50% percentiles
of biomass by latitude (x-axis)
and depth (y-axis)
for each 5-cm size class 2006

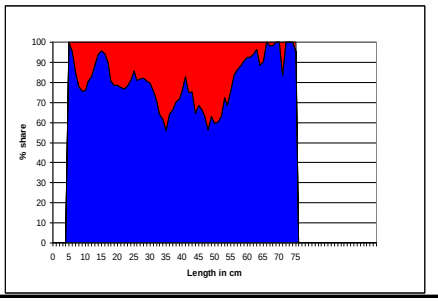


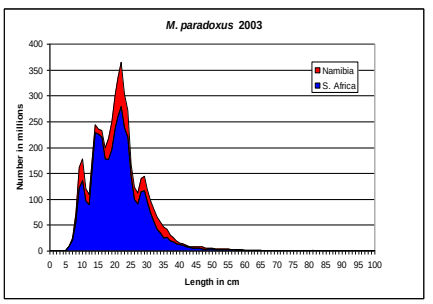
Center of gravity with 50% percentiles
of biomass by latitude (x-axis)
and depth (y-axis)
for each 5-cm size class 2006

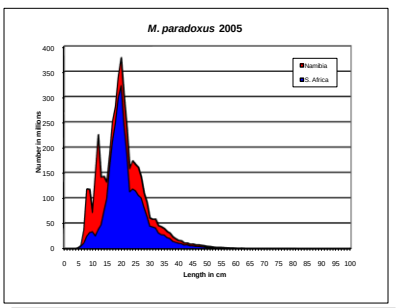


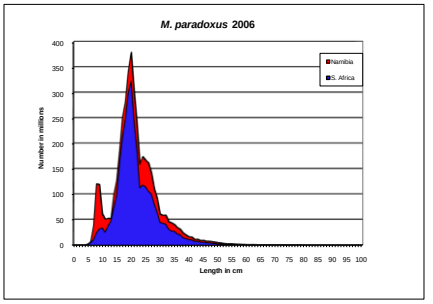
Biomass by length split by Namibia and South Africa, 2003

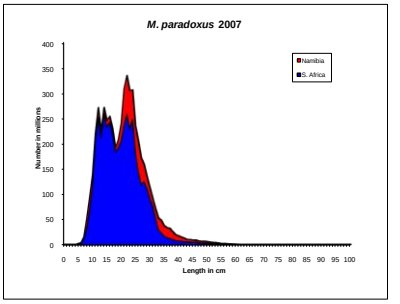




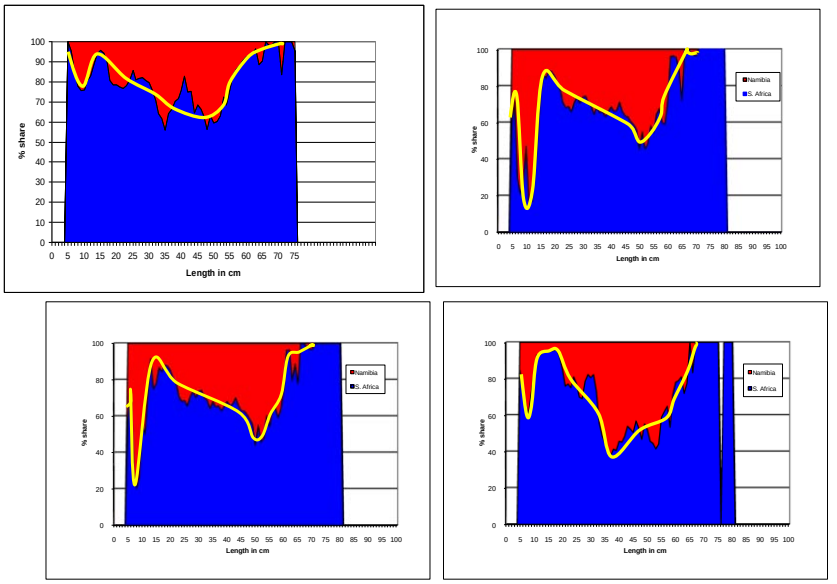




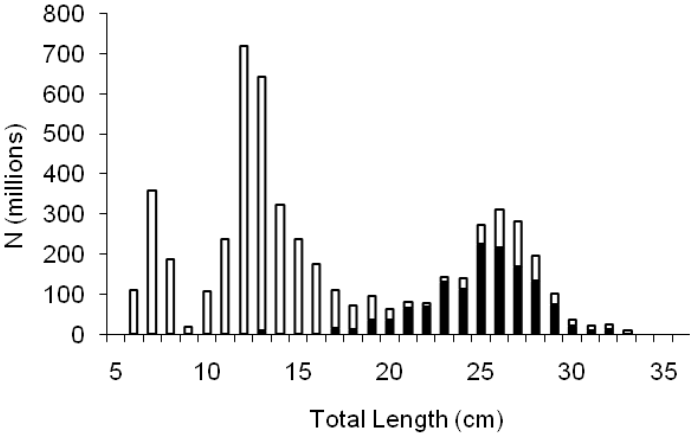


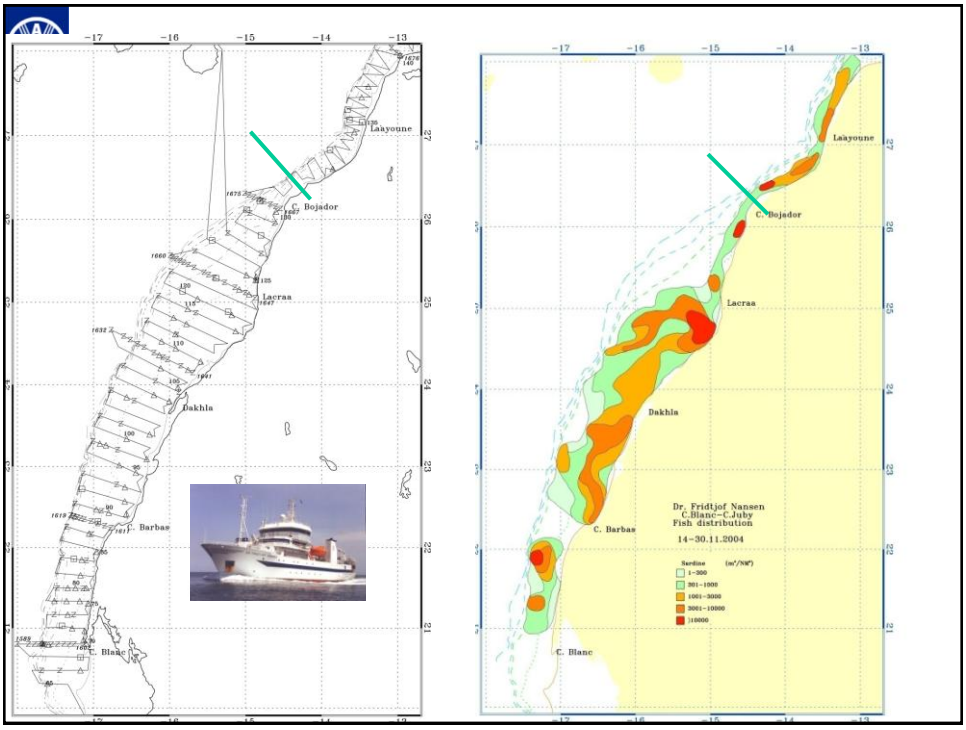


Share of biomass by length, trends by eyefitting

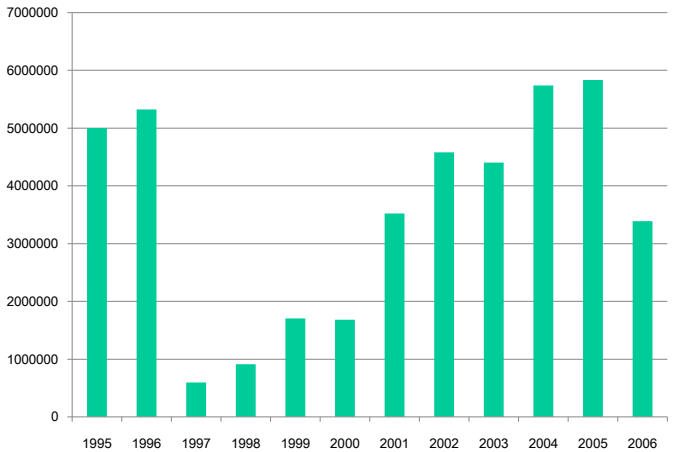


Shared sardinella Angola-Gabon 2005

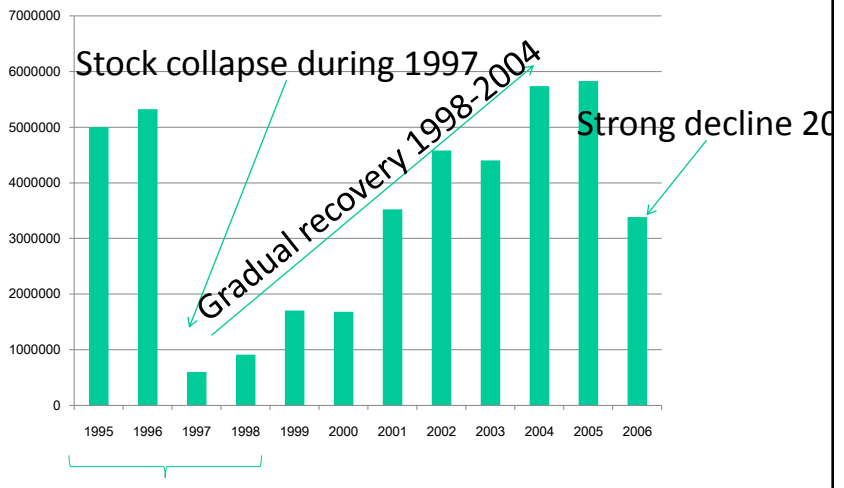




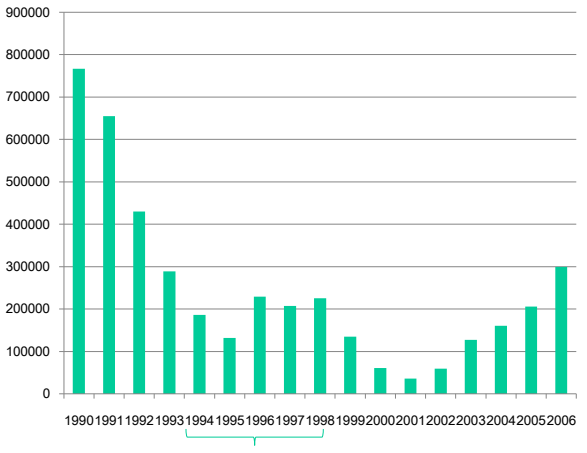
Biomass estimates sardine south of Cape Bojador 1995-2006



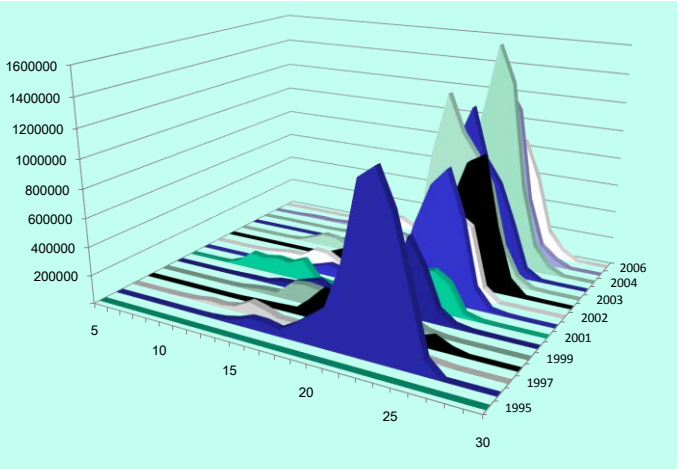
Main events in the Dakhla stock



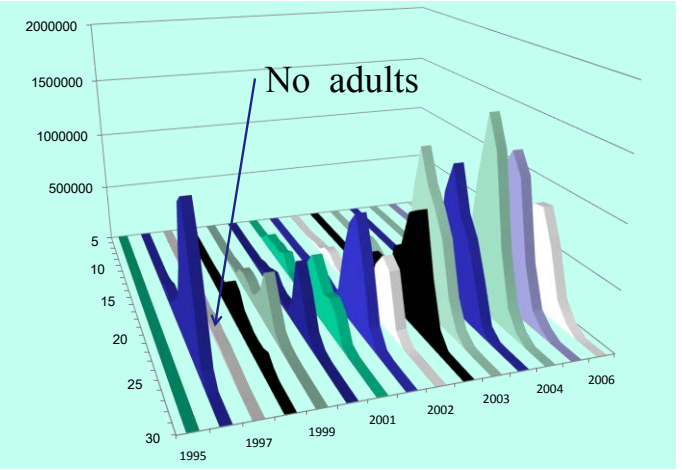
Catch in Zone C, 1990-2006



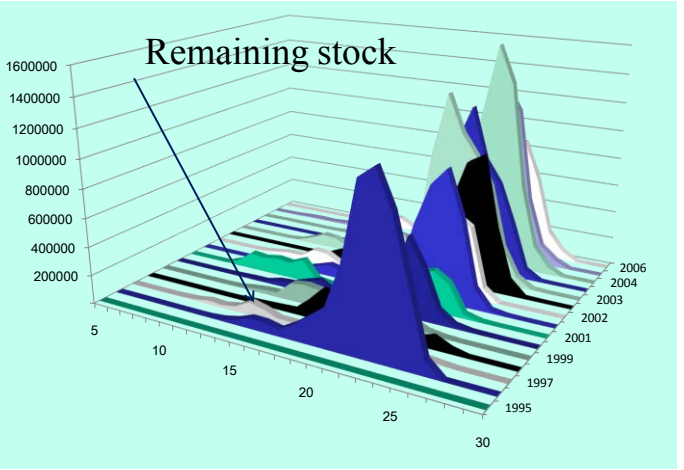
Biomass by length classes 1995-2006, Dakhla stock

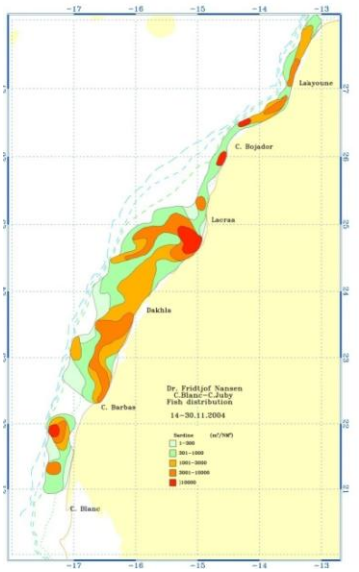


Biomass by length classes 1995-2006, Dakhla stock

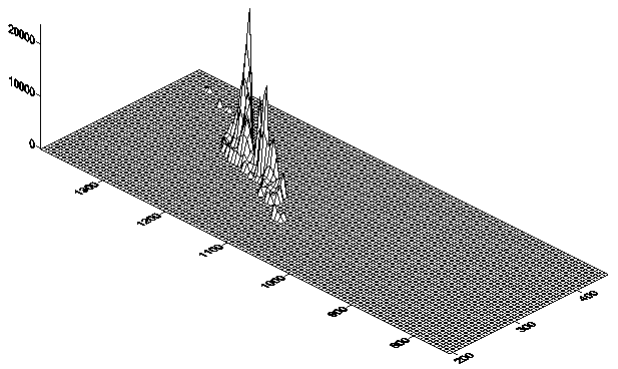


Biomass by length classes 1995-2006, Dakhla stock

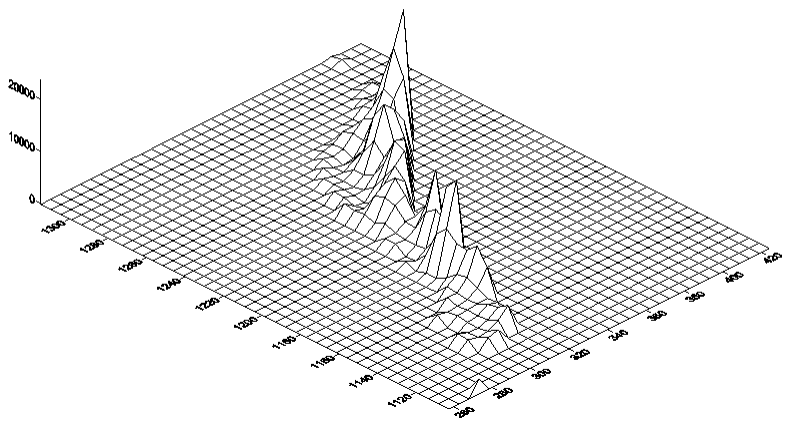




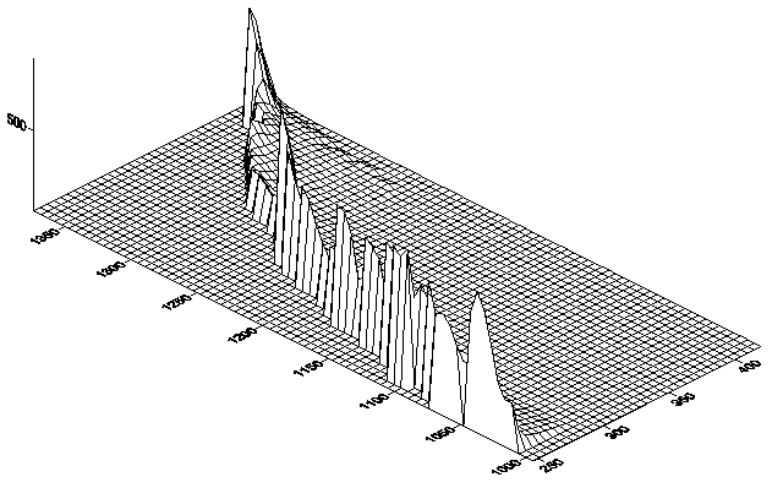
Gridded Sa distribution 1995



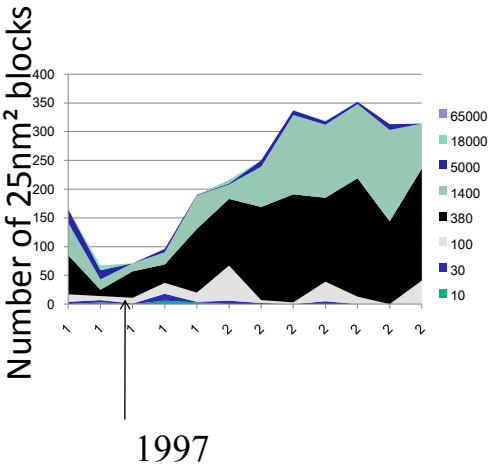
Zoomed in Sa-distribution 1995



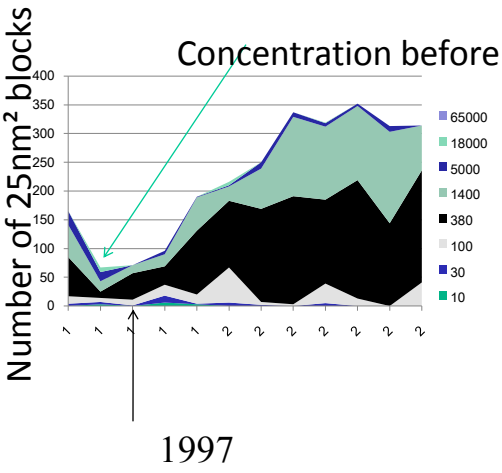
Excerpts from the bathymetric grid



Area occupation in 25nm² units of Dakhla stock by year

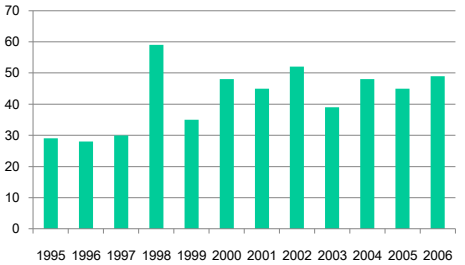


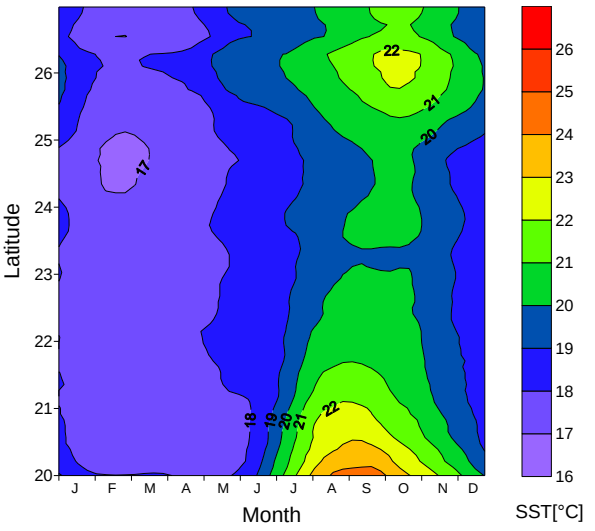
Area occupation in 25nm² units of Dakhla stock by year



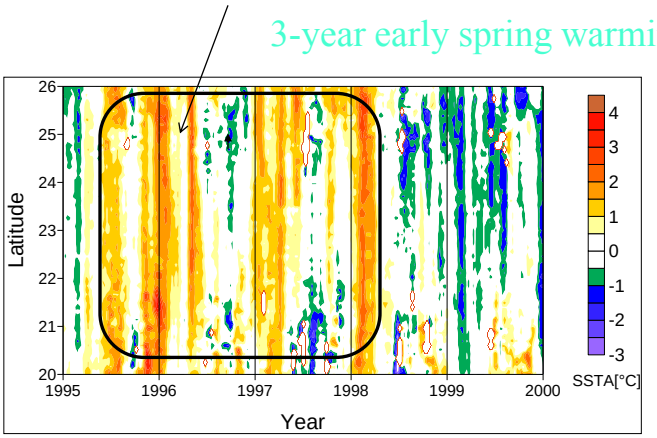
Weighted mean bottom depth by year

(Gravity point of the stock)

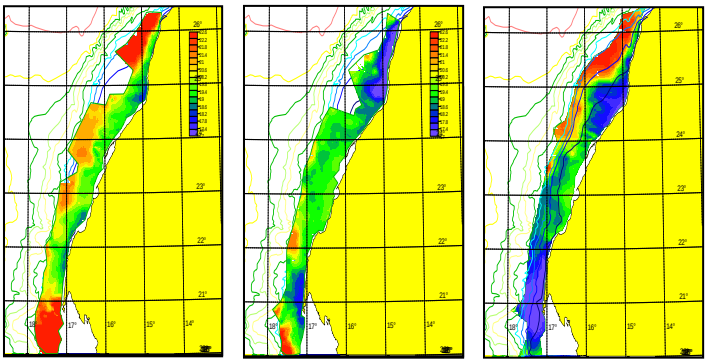




The Annual cycle of SST along the coast of Western Sahara derived from the Pathfinder dataset 1985-2006



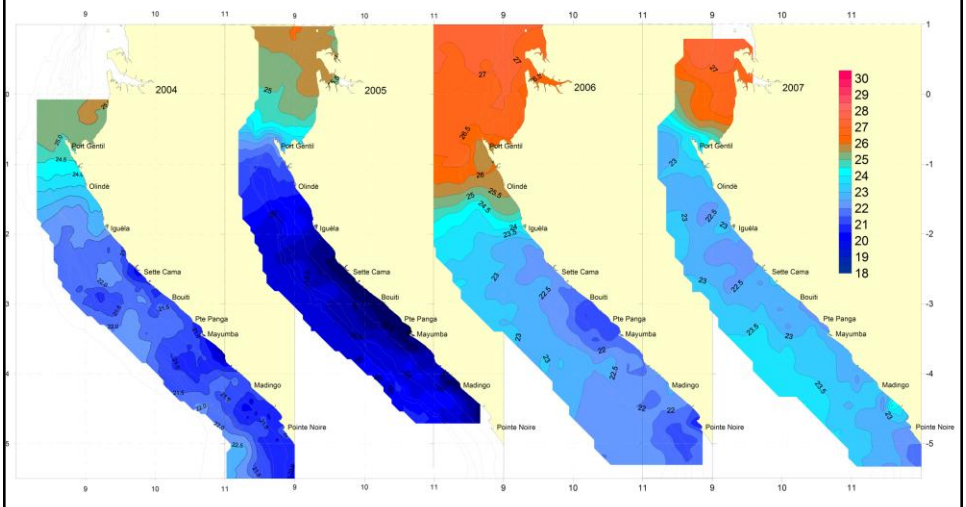
The SST anomaly 1995-2000. The anomaly is defined as the difference between the observed temperature and its long term mean from the previous slide.



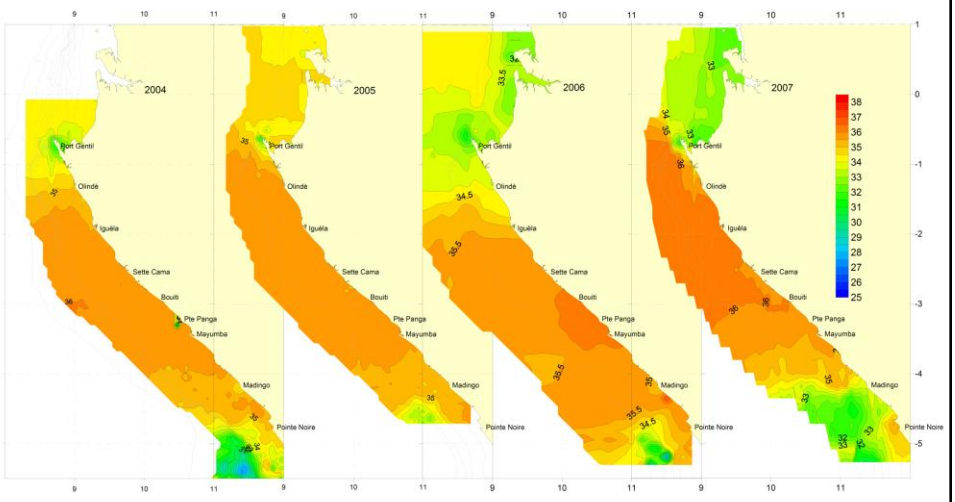
1995 1996 1997

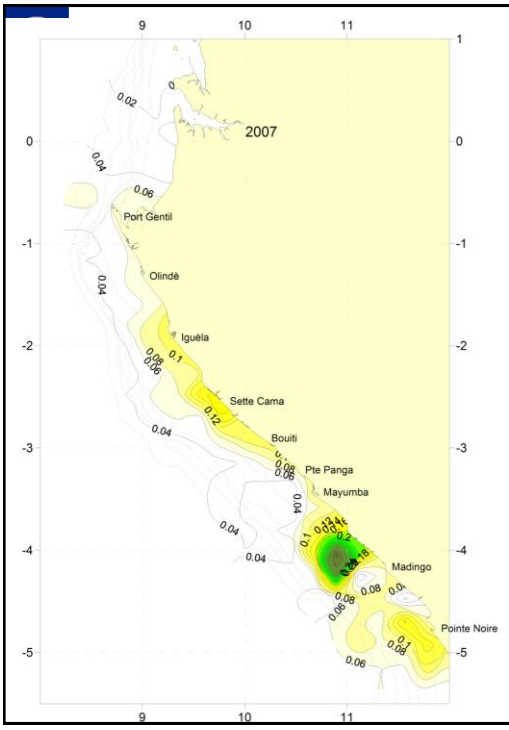
Note: survey derived surface temp. distributions: november-december

Surface Temperature Congo and Gabon



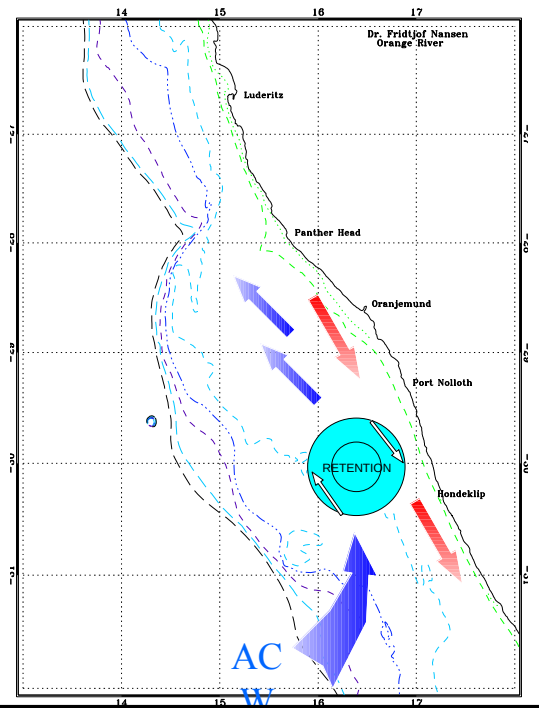
Surface Salinity Congo and Gabon

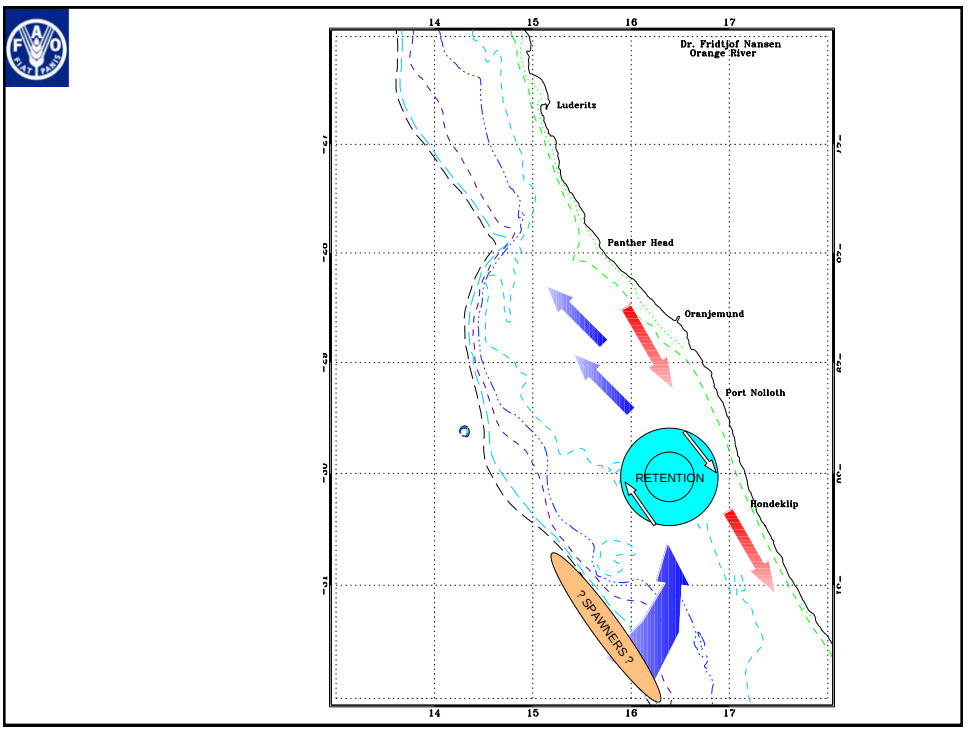




Fluorescence, Gabon- Congo 2007

Using survey data in study of life cycles, conceptual models

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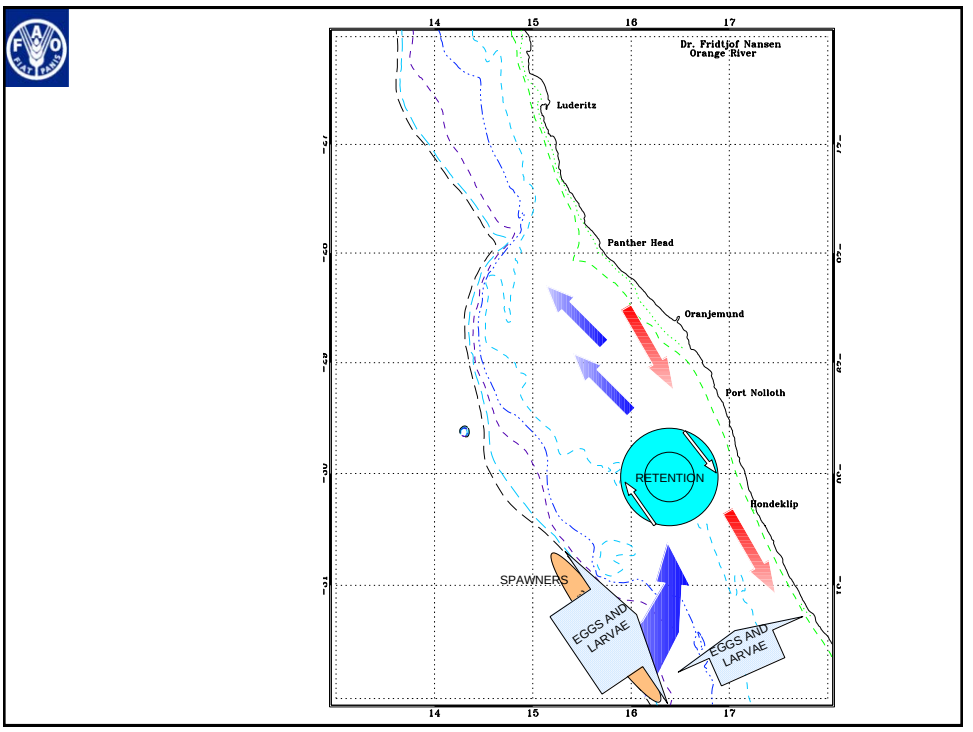
Dr. Fridtjof Nansen
Orange River
Luderitz
Panther Head
Oranjemund
Port Nolloth
RETENTION
Hondeklip
? SPAWNERS ?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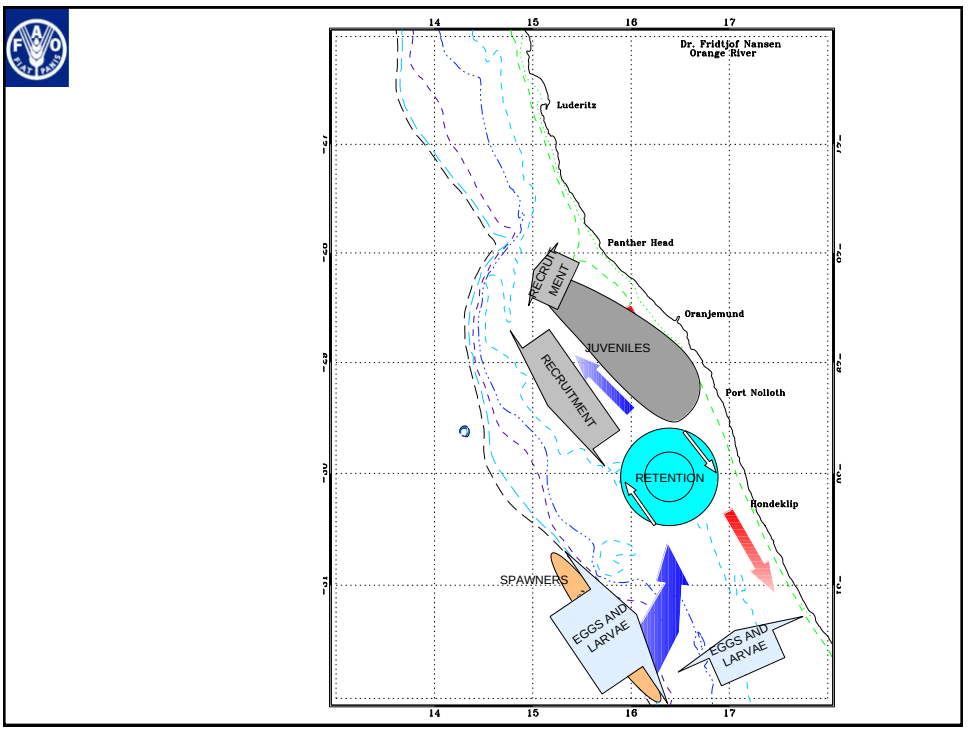
SPAWNERS
EGGS AND LARVAE
EGGS AND LARVAE


Dr. Fridtjof Nansen
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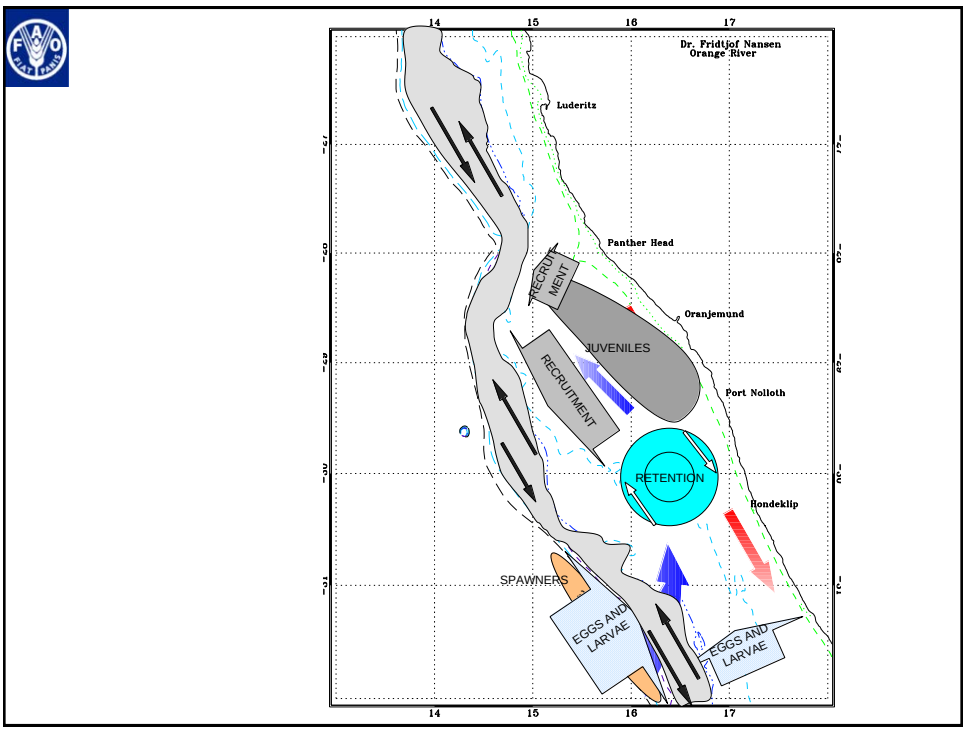
EGGS AND LARVAE
EGGS AND LARVAE


Dr. Fridtjof Nansen
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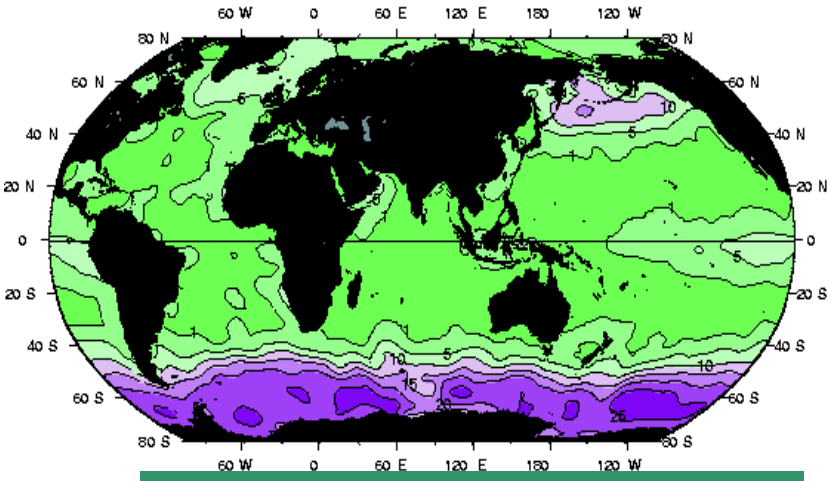
EGGS AND LARVAE
EGGS AND LARVAE

Linking up with global data sets



Nitrate (µmol/liter) at the sea surface, from the climatological data set of Levitus and Boyer (1994).

EAF-Nansen and climate change

- Nansen surveys to set baselines and monitor climate change
- Establish indicators for climate change

1. EAF-Nansen and climate change

How will the distribution and abundance of marine species and communities alter with climate change?

Which species are candidate indicators for climate change impacts?

Species that provide structural integrity of habitat, such as corals and kelp, or species that have key ecological roles, such as phytoplankton that drive food chains, would be effective indicators of climate change impacts.

Within large marine domains, where are sensitive areas or hotspots of change?

1. EAF-Nansen and climate change

How will ocean productivity alter with climate change?

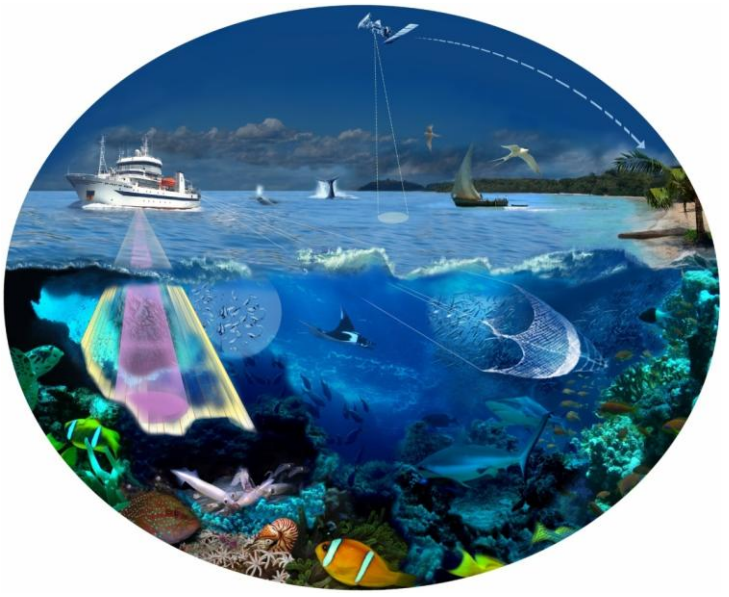
International studies indicate that productivity of marine systems will be affected by climate change

How would non-climate related stressors impact on ecosystem resilience to climate change?

To what extent will marine climate change impacts affect socially and economically important uses of marine ecosystems?

Effects of climate change on fisheries and tourism.

THANK YOU



Appendix 10.9

Development of a

COMMUNICATION STRATEGY

for the *EAF-Nansen Project*

Communication is a major component of a successful project

- It is important to communicate information about the project in a consistent way (hence a communication strategy)
- The communication strategy of a project should clearly define the specific objectives that need to be achieved and should include a clear understanding of the needs of the stakeholder communities

Developing the EAF-Nansen Communication Strategy

- Definition of the framework
- Development of draft outline of strategy
- Questionnaire to partners (attendees of EAF-Nansen project meetings/workshops)
- Analysis of responses received
- Identification of Target Audience/Stakeholders
- Formulation of Key Messages
- Identification of Communication Channels
- Identification of Tools and Methods
- Development of a draft strategy
- Finalization of strategy after internal/external review (to be done)
- Action Plan for implementation of the strategy

Goal

To market the EAF-Nansen project as widely as possible to ensure that all intended beneficiaries and stakeholders understand the project, its objectives and expected outcomes

Objectives

1. To increase the awareness on the importance of the EAF application in promoting responsible fisheries and sustainable use of marine ecosystems
2. To raise public awareness and understanding of the EAF-Nansen project during its implementation
3. To create synergies and develop collaborations among research institutions, fisheries management administrations and other key stakeholders on EAF
4. To ensure information flow within project components and partners

Identification of the Target Audiences

The target audiences are the groups or individuals at the local, regional, national, or international level with whom we need to collaborate and share information

- National, Regional and Local Government officials, IGOs
- Research Institutes, Teaching and training institutions
- Fisheries Industry, Fishing Companies, Artisanal Fishermen, Local communities
- Regional Fisheries Organisations
- Environmental and conservation non-governmental organisations (NGOs)
- Media
- Funding agencies
- General Public

Formulation of the Key Messages

What information do we want to communicate in order to achieve our objectives and motivate and mobilise the target audience?

MANAGEMENT	STOCKS/ ENVIRONMENT	STAKEHOLDERS
Benefits of EAF	Increasing threats to the ecosystem integrity	The effect of irresponsible fishing practices on marine ecosystems
Harmonization of regulations across sectors	The adverse effect of certain fishing practices such as trawling	The role of stakeholders in maintaining a good ecosystem and healthy fish stocks
EAF ensures better planning for resources management	The importance of large marine vertebrates in the ecosystem functioning, and the effect of their continuous removal on ecological balance	Abundance of fishery resources and good governance can promote social and economic wellbeing (production of fish for food, livelihoods, employment, foreign exchange earnings and support of coastal communities).
EAF emphasises the participation of stakeholders and aims at maximum benefit for the users	The urgency for stocks to recover	The health of the ecosystem is crucial in wealth creation from fisheries
Management measures ideal for various fisheries	Ecological relationships between species	Importance of collaborative planning to guarantee the success of the EAF application
EAF is not a revolution nor as complex as thought		

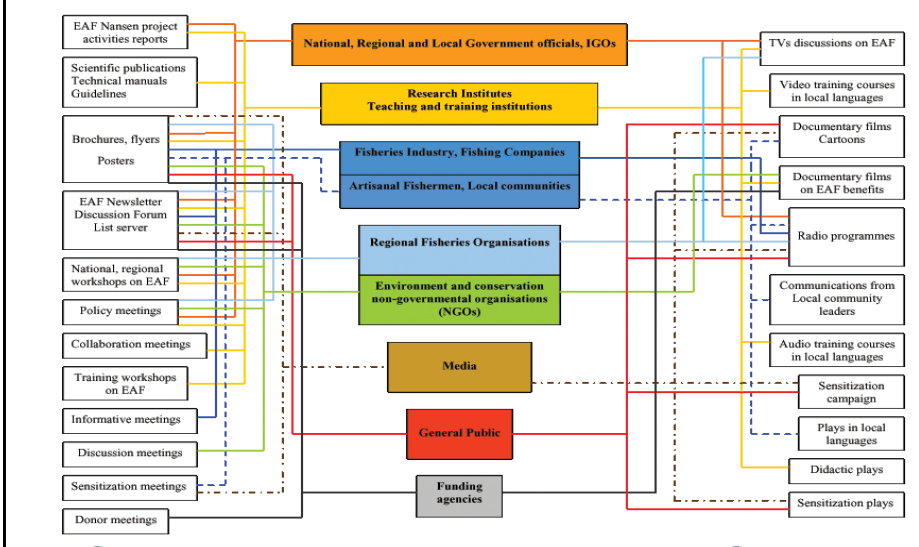
Definition of the Communication Channels and identification of the specific products

Print documents	Website/List server	Meetings/Workshops	Video, Audio and Theatre
• EAF-Nansen Project Reports • Activity reports • Scientific publication • Technical manuals • Guidelines • Brochures • Flyers • Booklets • Posters	• EAF- Nansen Project homepage • EAF Newsletter • Discussion Forum • List server	• National, regional workshops on EAF • Training workshops on EAF • Policy meetings • Collaboration meetings • Discussion meetings • Informative meetings • Donor meetings • Sensitization meetings	• TVs discussions on EAF • Documentary films on EAF benefits • Video training courses in local languages • Documentary films, Cartoons • Radio programmes • Communications from Local community leaders • Audio training courses in local languages • Sensitization campaign • Plays in local languages • Didactic plays • Sensitization plays

Communication Channels, Tools and Methods

	EAF-Nansen project Communication channels					
Target audience	**Documents**	**Web site/ List server (LS)**	**Meetings/Workshops**	**Video**	**Audio**	**Theatre**
National, Regional and Local Government officials, IGOs	EAF Nansen project activities reports, brochures, flyers	EAF Newsletter Discussion Forum LS	Policy meetings National workshop on EAF	TVs discussions on EAF	Radio programmes	
Regional Fisheries Organizations	Brochures, flyers, posters	EAF Newsletter Discussion Forum LS	Policy meetings Regional workshop on EAF	TVs discussions on EAF	Radio programmes	
Fisheries Industry Fishing Companies	Brochures, flyers	EAF Newsletter Discussion Forum LS	Informative meetings		Radio programmes	
Artisanal Fishermen, Local communities	Posters		Sensitization meetings	Documentary films Cartoons	Radio programmes Local community leaders	Plays in local languages
Environment and conservation non-governmental organizations (NGOs)	Brochures, flyers, posters	EAF Newsletter Discussion Forum LS	Discussion meetings Policy meetings National workshops	Documentary films		
Research Institutes	EAF Nansen project activities reports. Scientific publication Brochures, posters	EAF Newsletter Discussion Forum LS	Collaboration meetings Policy meetings National workshops	Documentary films TV discussions		
Teaching and training institutions	Technical manuals. Guidelines	EAF Newsletter Discussion Forum LS	Training workshop on EAF Collaboration meetings	Video training courses in local languages	Audio training courses in local languages	Didactic plays
Funding agencies	Brochures, flyers, posters	EAF Newsletter Discussion Forum LS	Donor meetings	Documentary films on EAF benefits		
Media	Brochures, flyers, posters	EAF Newsletter Discussion Forum LS	Sensitization meetings	Documentary films Cartoons	Radio programmes Sensitization campaign	Sensitization plays
General Public	Brochures, flyers, posters	EAF Newsletter Discussion Forum LS		Documentary films Cartoons	Radio programmes Sensitization campaign	Sensitization plays

Ranked Target Audiences and relevant Products



Action Plan

Prioritize and summarize: what do we want to achieve, with whom, by when and how will it be done?

- Which products (outputs) will be developed and by whom?
- When will the action be implemented?
- Who will carry out each action required in the framework?
- How much will these cost?

Where are we now?

We are discussing the Action Plan's components with the EAF Regional Task Group members

We welcome comments from the forum

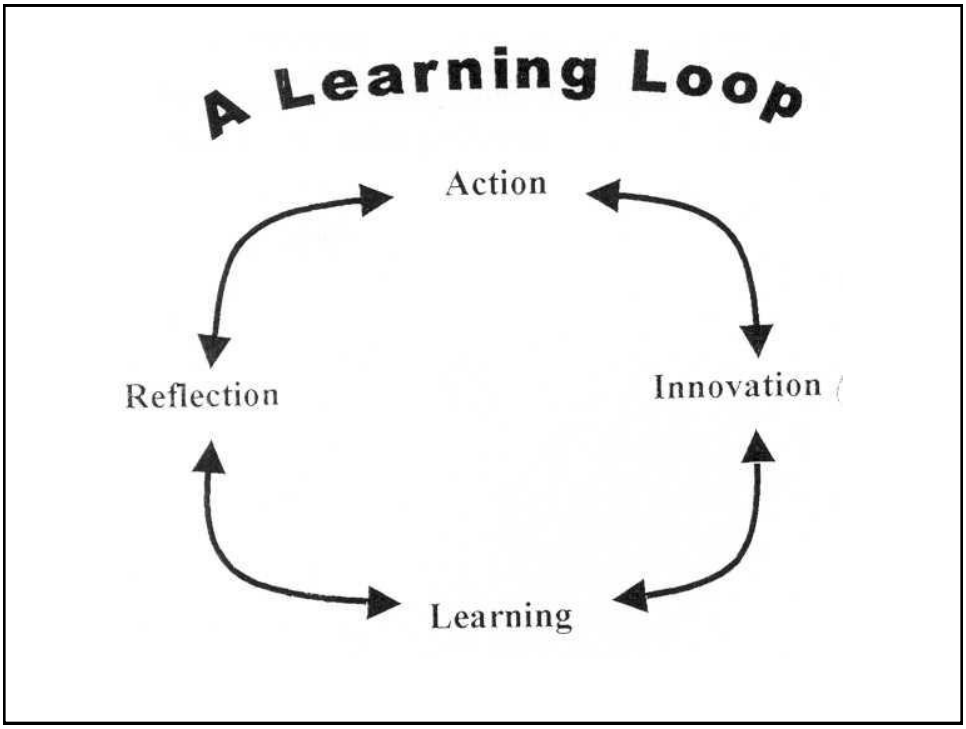
THANK YOU FOR YOUR ATTENTION

Appendix 10.10

Adult Learning Theory

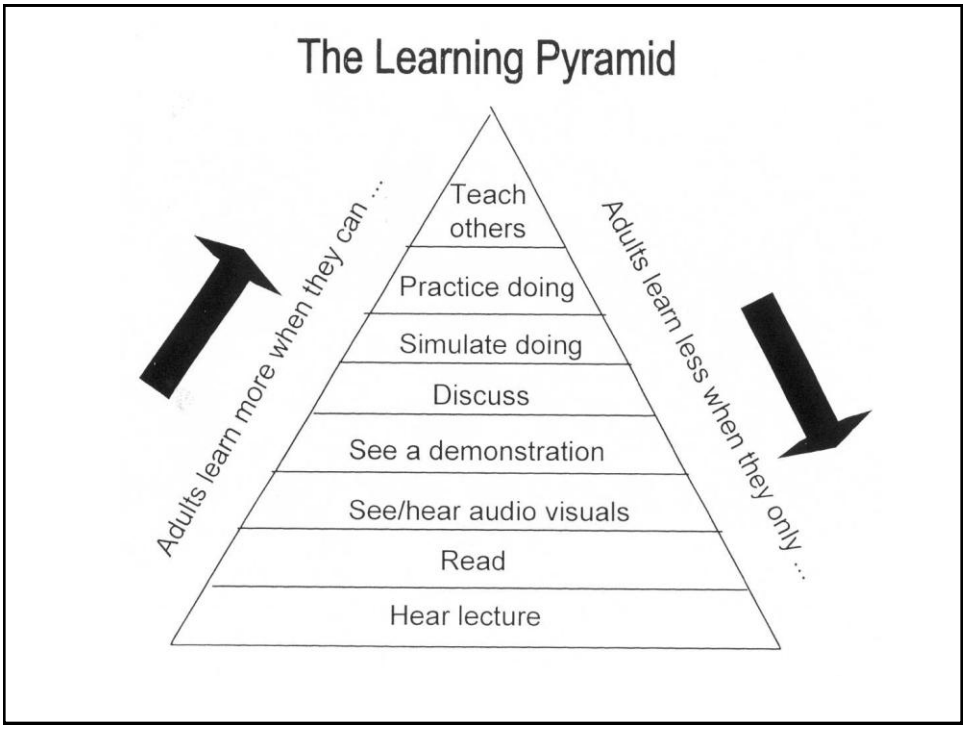
Adult Learning theory

- Thinking
- Understanding
- Applying



Abilities for Experiential Learning

- Direct experience - Action
- Reflect on experience - Observation
- Generalize and conceptualize - Learning
- Apply and experiment – Innovations



THE LEARNING LOOP
How do adults learn?

- Voluntary learners
- Attend for a particular reason
- Have experience to share with others
- Active involvement and participation
- Real-world approach

Fundamentals of Adult Learning

- Adults are motivated by needs and interests
- Learning is life or work - centered
- Experience and active participation
- Self-directing process
- Differ with age and experience

Traditional training

- Teacher's role: tell students
- Teacher is more knowledgeable
- Teacher shares his/her knowledge by lecturing
- Students are passive, (listen and take notes)

Participatory training

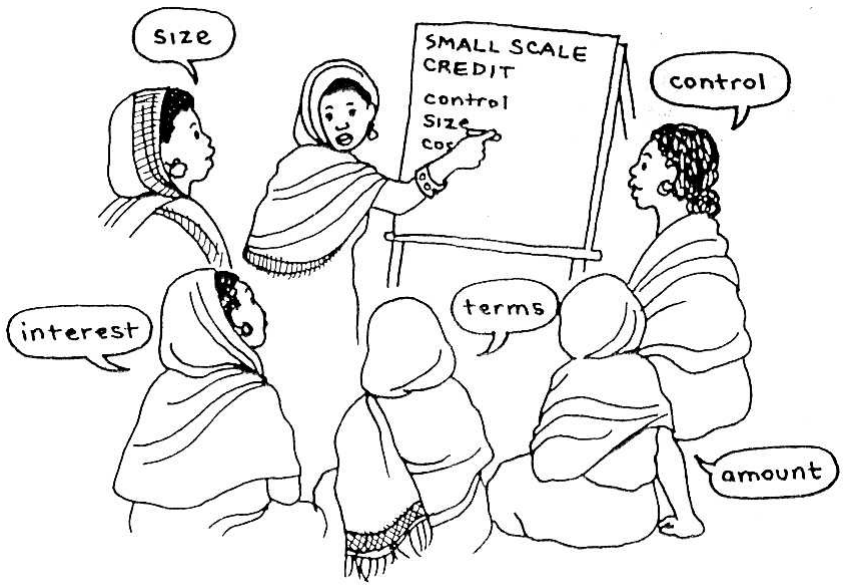
- Trainer's role: ask questions and facilitate discussions
- Both trainers and trainees are knowledgeable and have experience
- Everyone must reflect on his/her own, then share experiences and expertise
- Trainees are active and analytical (ask questions and explore alternatives)

How to be a good facilitator

- Active listener
- Observant
- Ask questions
- Flexible
- Be organized
- Knowledgeable and clear
- Assertive but not controlling

How to encourage participation?

- Choose place accessible to everybody
- Schedule at convenient time
- Allow each group to present its own views
- Involve quiet observers
- Ask questions to dominant participant

Training techniques

- Lectures and presentations
- Demonstration
- Case study
- Role play
- Small group discussion and exercises
- Brainstorming
- Practical field activities
- Field observations