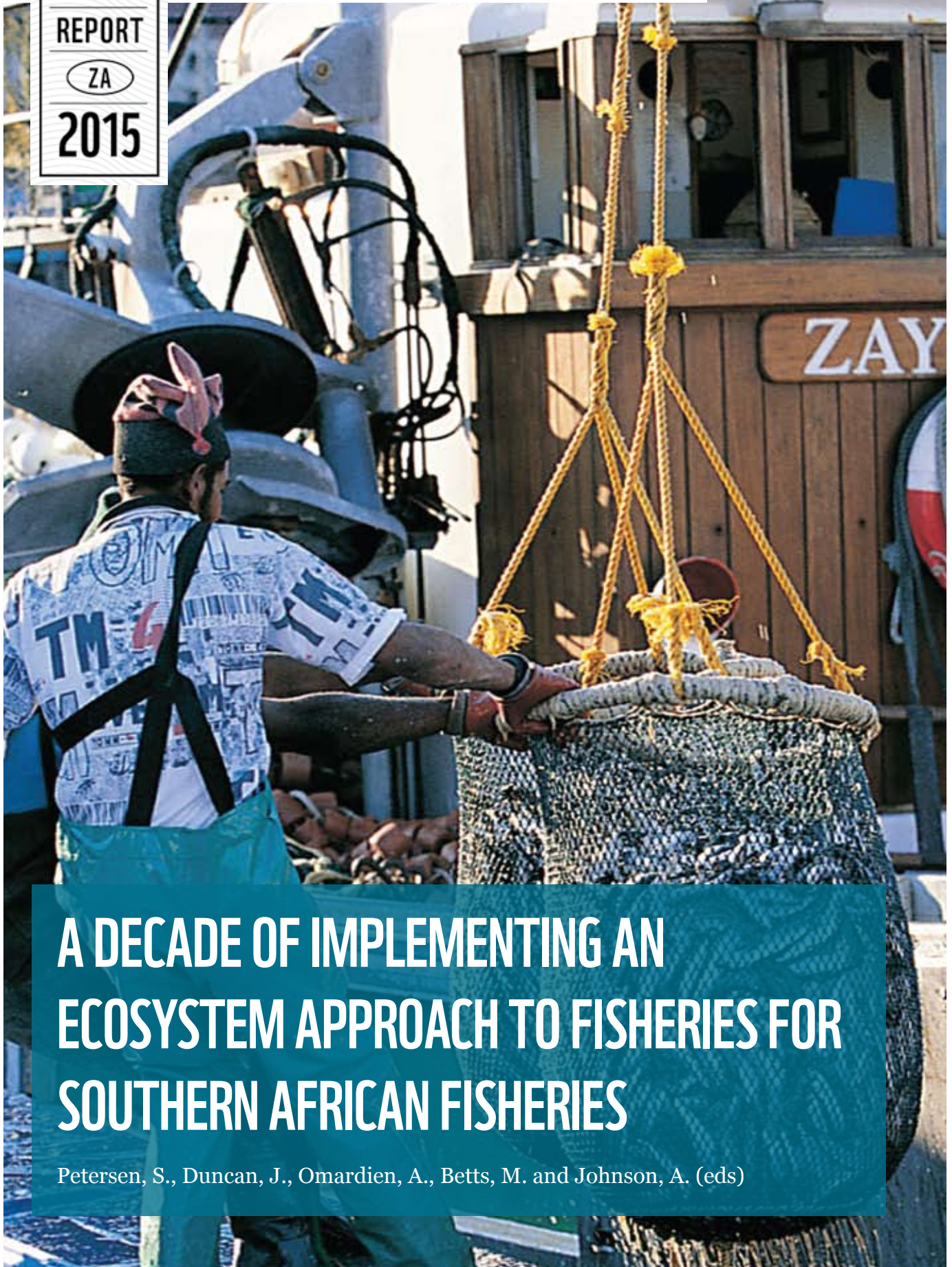# A DECADE OF IMPLEMENTING AN ECOSYSTEM APPROACH TO FISHERIES FOR SOUTHERN AFRICAN FISHERIES

Petersen, S., Duncan, J., Omardien, A., Betts, M. and Johnson, A. (eds)

ABOUT WWF

WWF is one of the World's largest and most respected independent conservation organisations, with almost 5 million supporters and a global network active in over 100 countries.

WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

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Table of Contents

FOREWORD

While the concept of an Ecosystem Approach to Fisheries (EAF) remains somewhat confusing to some stakeholders, including some scientists, the principle is very simple and is just an acknowledgement that, in order to ensure sustainable and productive ecosystems and fisheries, it is essential to take into account the interactions that inevitably take place between different species and other elements making up an ecosystem, the fisheries operating in that ecosystem and other sectors impacting on it. The rationale for EAF is therefore no different to recognizing that when driving on public roads it is essential to take into account other users of those roads, be they other cars, heavy vehicles, pedestrians or wandering animals. Failure to do so is likely to lead to nasty accidents, as will failure to implement an ecosystem approach to fisheries. There is ample evidence for this conclusion in the history of modern fisheries and fisheries management.

As this report shows, reasonable progress is being made in implementation of an EAF in the region. The 2012 reports on the status of stocks by the Benguela Current Commission[1] and the South African Department of Agriculture Forestry and Fisheries[2] provide additional evidence of progress across a number of fisheries. It is apparent from this progress that that the Benguela Current countries, Angola, Namibia and South Africa, have the capacity to implement an EAF. This report notes, however, that a lack of EAF skills is a problem in South Africa and this probably also applies to the other countries. The certification by the Marine Stewardship Council (MSC) of the South African hake trawl fishery also demonstrates that South Africa, and by extension the member countries of the BCC as a whole, have the capacity and ability to meet the highest international standards in fisheries management when they set out to do so.

The highpoints and successes in fisheries management are not the full story, however, and there are many areas of concern too. The available information, including the ERA reports reviewed here, provides examples of target stocks that are over-exploited and depleted and in which overfishing is still taking place, threats to some seabirds and other top predators as a result of fishing and other human activities, the widespread prevalence of poverty amongst small-scale fishers across the region, and other issues that require urgent attention. Climate change and the unprecedented interest in and expansion of offshore mining and oil and gas extraction are additional challenges to the fishing sector and the ecosystems it depends on. All of these demand effective implementation of EAF if the diversity, resilience and productivity of the region's marine ecosystems are to be maintained, which in turn is a pre-requisite for sustaining the region's fisheries and the livelihoods of those who depend on it.

A key conclusion referred to in this report, based on the lessons learnt from the ecological risk assessments of the last ten years, is that implementation of EAF is still commonly seen as an add-on to existing management, rather than as the central theme around which all fisheries management is arranged. The report therefore calls for mainstreaming EAF into existing fisheries management procedures. I can only endorse that call and urge the BCC, national governments and other stakeholders to increase efforts to ensure effective implementation of EAF in all three of the pillars that comprise it: ecological well-being, human well-being and effective governance.

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1. Benguela Current Commission. 2012. State of stocks review. Report No. 2 (2012). BCC, Swakopmund. 105pp.
2. Department of Agriculture, Forestry and Fisheries. 2012. Status of the South African marine fishery resources. DAFF, Cape Town. 75pp.

EXECUTIVE SUMMARY

This is the third publication produced by WWF describing the progress made towards implementing an Ecosystem Approach to Fisheries (EAF) in the Benguela Current Large Marine Ecosystem (BCLME) region over the last decade. This publication builds on the two previous reports by Nel et al. in 2007 and Petersen et al. in 2010 and reviews those earlier assessments and updates them, presenting the reports of all the ecological risk assessments (ERAs) undertaken in Namibia and South Africa between 2010 and 2013, as well as the report of a training workshop held in Luanda, Angola on 18-19 May 2011. The report also tracks the history of EAF implementation and reviews the tools developed through the BCLME project. It includes a practical guide to facilitating ERAs and Review workshops and provides a set of recommendations to guide the future implementation of an EAF in the region.

During this third phase of the on-going assessment and review programme, ERAs were completed for 10 fisheries in South Africa and three in Namibia, encompassing a range of fisheries including the Patagonian toothfish fishery around South Africa's Prince Edward Islands, the prawn trawl fishery on the east coast of South Africa, the demersal hake fishery in Namibia and a lot more in-between. Overall, in these three series WWF has reported on ERAs conducted on 29 fisheries, to which can also be added those undertaken on three Angolan fisheries under the BCLME-FAO project that ran from 2004-2006 (Cochrane et al.,2007). These reports provide an important window for the Benguela Current Commission, the governments of Namibia and South Africa in particular, and a range of stakeholders on progress being made in the implementation of an ecosystem approach to fisheries (EAF) in the region and the remaining priority threats and challenges.

Key findings and recommendations

2010-2013 ERA report highlights

During the third phase (2010-2013), ERAs and/or ERA Reviews were held for 10 fisheries in South Africa and three in Namibia. Each of the assessments or reviews were facilitated by a combination of WWF-SA and either the Department of Agriculture, Forestry and Fisheries (DAFF) in South Africa or the Ministry of Fisheries and Marine Resources (MFMR) in Namibia. While all of the assessment and review workshops were completed, due to limited capacity within the relevant government departments, not all of the workshop reports were completed but all of the reports have been included in this report to facilitate transparency and stakeholder feedback. A list of all the ERAs is included in Table 1 below:

Table 1: List of fisheries assessed during the 3rd phase (2010-2013)

Fishery	Report Status[3]
SOUTH AFRICA	
Patagonian toothfish fishery ERA	Complete
KZN prawn trawl fishery ERA	Draft
South Coast Rock Lobster fishery ERA	Tables only
Abalone fishery ERA Review	Complete
Demersal hake fishery ERA Review	Complete
Large pelagic fishery ERA Review	Complete
Squid fishery ERA Review	Complete
Linefishery ERA Review	Complete
Small pelagic fishery ERA Review	Tables only
West Coast Rock Lobster fishery ERA Review	Complete
NAMIBIA	
Monkfish fishery ERA	Complete
Large pelagic fishery ERA	Complete
Demersal hake fishery ERA Review	No report

The key findings across the different ERAs and ERA Reviews are summarised below against the 10 generic objectives (adapted from Paterson and Petersen, 2010):

Objective 1: The managing authority has a good understanding of the ecosystem impacts of fisheries including target, non-target and general ecosystem impacts.

Fisheries such as abalone, hake and small pelagics recorded substantial progress towards understanding ecosystem impacts while there are still a number of uncertainties regarding the ecosystem impacts of the following fisheries: squid, West Coast rock lobster (WCRL) and East Coast rock lobster (ECRL). One of the key areas of concern across South African fisheries was the shortage of dedicated fisheries research scientists and the absence of an observer programme which has significant impacts on the management authority's ability to effectively monitor the ecosystem impact of the assessed fisheries.

Objective 2: Ecosystem impacts of fisheries are included into management advice.

There have been improvements in the management of seabird bycatch in the hake trawl and longline fisheries as well as well as the Patagonian toothfish and large pelagic fisheries. In addition some bycatch strategies for other species have been implemented in the form of precautionary upper limits (PUCL). Many of the fisheries also now include ecosystem considerations in the development of their Operational Management Procedures (OMPs), however more needs to be done to manage bycatch of vulnerable species such as sharks and turtles. The implementation of MPAs, island closures and other regulatory measures also need to be more effectively monitored and assessed to better understand their role as fisheries management measures. The lack of offshore marine protected areas (MPAs) remains a concern.

3.   While WWF-SA co-facilitated the ERA and ERA Review workshops, the relevant fishery managers were tasked with compiling the final reports, some of which were not completed

Objective 3: The social wellbeing of dependent fishing communities is accounted for in management advice.

Consideration of the social wellbeing of dependent fishing communities was found to be lacking in management advice across all of the fisheries assessments. This is largely due to the lack of skilled researchers in the field of socio economics and EAF management and the failure of the management authorities to prioritise this important area of work. Although an EAF working group had been established, it requires more specialist skills and resources in order for to be fully effective.

Objective 4: The economic wellbeing of the fishing industry is maintained.

It was evident in most of the ERAs that the economic wellbeing of the different fisheries is not being explicitly considered in management decisions. While rights-holders involved in important export fisheries such as the hake trawl, Patagonian toothfish, large pelagics, WCRL and South Coast rock lobster (SCRL) fisheries are generally well informed about market trends, these economic considerations are generally poorly integrated into management decisions on issues such as the economic viability of rights allocations. The threat of increased poaching in the abalone and WCRL fisheries also raised concerns for the long-term economic viability of these fisheries.

Objective 5: The managing authority has transparent and participatory management structures that ensure good communication and information sharing locally and regionally.

The majority of assessments noted that communication between management and scientific working groups had improved. Industry representation was found to be good in several fisheries but lacking in fisheries such as squid and linefish. Importantly communication between compliance and monitoring was found to be poor across all ERAs and reviews.

Objective 6: Management plans incorporate EAF considerations.

None of the fisheries assessed had developed formal management plans, although a number of fisheries had draft plans some of which incorporated EAF considerations to a lesser or greater extent. A national plan of action (NPOA) for seabirds has been implemented and adapted by the relevant fisheries. However, this report requires review and update. A NPOA for sharks, illegal, unreported and unregulated fishing (IUU) and capacity are still in draft phases and need to be finalised as soon as possible.

Objective 7: Good compliance to regulations reduces ecosystem impacts of fisheries.

Concerns around the monitoring, both of landings and at-sea, were recorded across many of the fisheries with issues ranging from the lack of 24hr monitoring of landings, limited sea-based patrols and the termination of the observer programme. Particularly in high value fisheries such as abalone, WCRL and Patagonian toothfish the absence of an effective compliance strategy was seen as a significant threat to the fishery. It was also highlighted that a dedicated court for marine cases is needed and that prosecutors need to be trained effectively in order to ensure cases are tried timeously and with the desired outcomes.

Objective 8: Sufficient capacity, skills, equipment and funding exist to support the implementation of an EAF.

Most of the fisheries reported a shortage of certain key skills and financial resources required to effectively implement an EAF. Key concerns related to a lack of socio-economic researchers and associated EAF funding, DAFF's current structure to support an EAF, unreliable availability of research and patrol vessels and the split between DEA and DAFF which has negatively impacted upon the ability of government to effectively implement EAF. Improvements were noted with the formation of the EAF working group and fisheries such as the large pelagics and hake trawl have undergone Responsible Fisheries Training to improve the fishers understanding of an EAF and their role in its implementation.

Objective 9: Good data procedures exist to support EAF implementation.

In almost all the ERA assessments progress had been made towards improving the logbooks and the capture of data by incorporating the data onto centralised databases. The lack of an effective observer programme was highlighted as an issue in the majority of fisheries assessed.

Objective 10: External impacts of fisheries are addressed (e.g. the effect of other sectors, other industries, climate change etc.).

Every fishery assessed noted that external impacts require further investigation. There are substantial interactions between squid, hake trawl, linefish, small pelagics and large pelagics fisheries as fishing grounds overlap and there are a number of conflicts between the different sectors as a result of unintended bycatch and gear interactions. The need for effective monitoring of bycatch was highlighted in all these ERAs. In addition more information is needed on the impacts of mining, oil and gas and climate change across all the fisheries.

Process recommendations

The following recommendations have arisen from the past 10 years' experience of facilitating ERA and Review workshops, developing EAF tools, interviewing South African experts and participants, and reviewing international literature.

1. Implement an appropriate structure to drive EAF implementation across the BCLME region and within country

It has become clear that without an over-arching structure and dedicated capacity, EAF implementation is likely to suffer from fragmented implementation and as a result fail to fulfil the promise of a truly holistic approach to fisheries management. Figure 1 below describes the proposed structure to drive EAF implementation in the region. The structure proposed below emanates from a BCC workshop held in Cape Town in 2013. It recommends establishing an EAF Regional Working group for the BCLME region, national working groups for each country and an EAF co-ordinator/ focal point (as well as an alternate) within each fisheries department. Table 2 unpacks the proposed composition, frequency of meetings as well as the roles and responsibilities of the various components.

A key point to highlight is the importance for the EAF co-ordinator for each country to be a dedicated resource with sufficient status within the relevant department to drive and co-ordinate action across fisheries and departments (e.g. MCS, fisheries management, observer programmes, research etc. competencies). A severe limitation to date has been the fact that staff tasked with EAF matters, including ERA workshop facilitation, have had these responsibilities allocated to them in addition to their already fully subscribed terms of reference, which has tended to result in EAF matters being given limited focus and attention. They have also had limited ability to call ERA workshops, drive the development of management plans and co-ordinate action emanating from ERA workshops. The skills requirements for the EAF co-ordinator should include workshop facilitation, report writing, a basic understanding of fisheries research and management across biological, social and economic sciences.
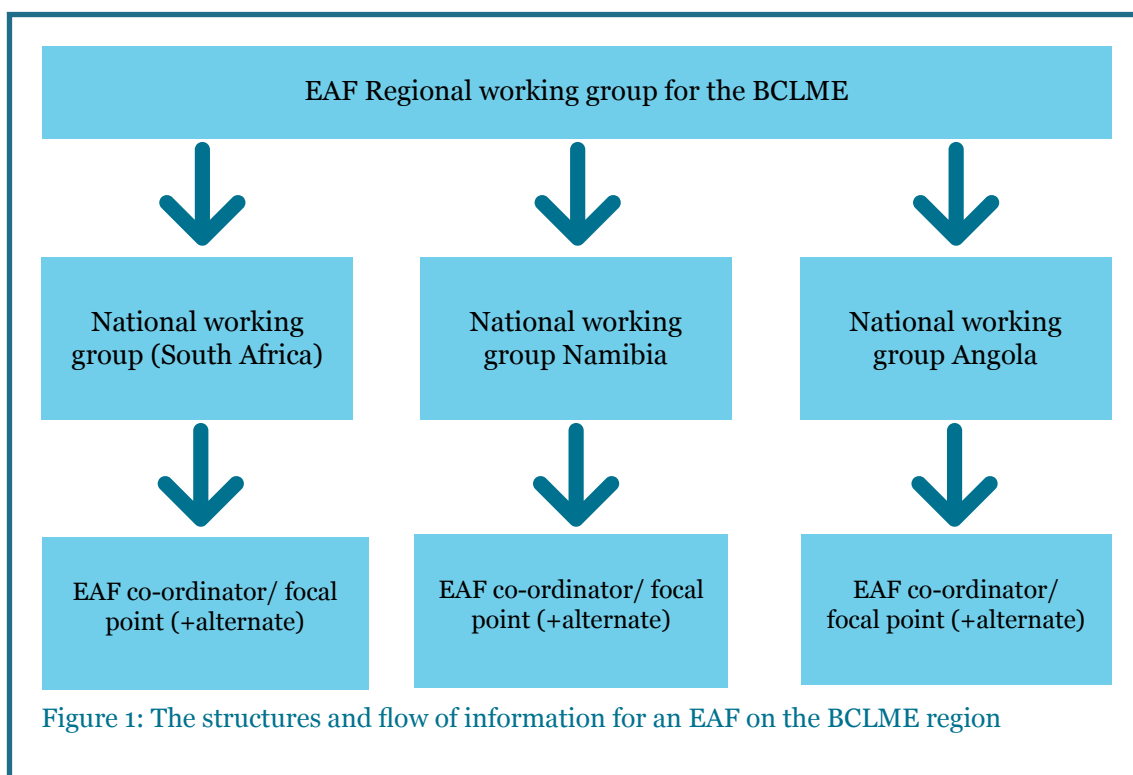

Figure 1: The structures and flow of information for an EAF on the BCLME region

Table 2: A summary of the composition and responsibilities of the proposed structure

Level	Composition	Responsibilities
Regional working group (to meet annually)	• Benguela Current Commission • High level government from all three countries	• Regional coordination • Champion ERAs regionally • Provide capacity building for EAF practitioners and ERA facilitations • Facilitate inter-country information sharing
National working group (to meet 3-4 times per year)	• Multi sectoral government representation (fisheries, environment, mining, etc)	• National coordination • Champion ERAs nationally • Capacity building • Institutionalisation of ERAs • Support and guidance to focal points • Report to regional working group
National EAF co-ordinator (to act as EAF focal point)	• Dedicated person to lead and champion EAF implementation within fisheries government department	• Operational coordination of ERAs • Facilitation of workshops • Coordination of report write up • Follow up on incorporation of actions in management plans and work plans • Follow up on implementation of actions • Report to national working group • Integration across fisheries to identify generic or cross cutting issues

2. EAF implementation should be mainstreamed into existing fisheries management procedures

To date, EAF implementation including ERAs and reviews have been seen as an additional requirement and have not been aligned with existing fisheries management procedures. This has been a cause of much frustration from stakeholders who have allocated time to participate in the process with little evidence that the process catalyses action in the areas identified by the group. In order to ensure improved implementation of ERA outcomes, a more integrated process is recommended in this report. The proposed process and sequence of events has been informed by interviews conducted with South African experts and participants, as well as a review of the international literature and is illustrated in Figure 2. This proposed process recommends that ERAs should provide a baseline for developing fisheries management plans and the EAF tracking tool provides a mechanism to review the management plan and progress towards milestones annually. This process would ensure that the outcomes from the ERAs and Review workshops ultimately inform management plans and guide fishery working group agendas, activities and resource allocation annually.
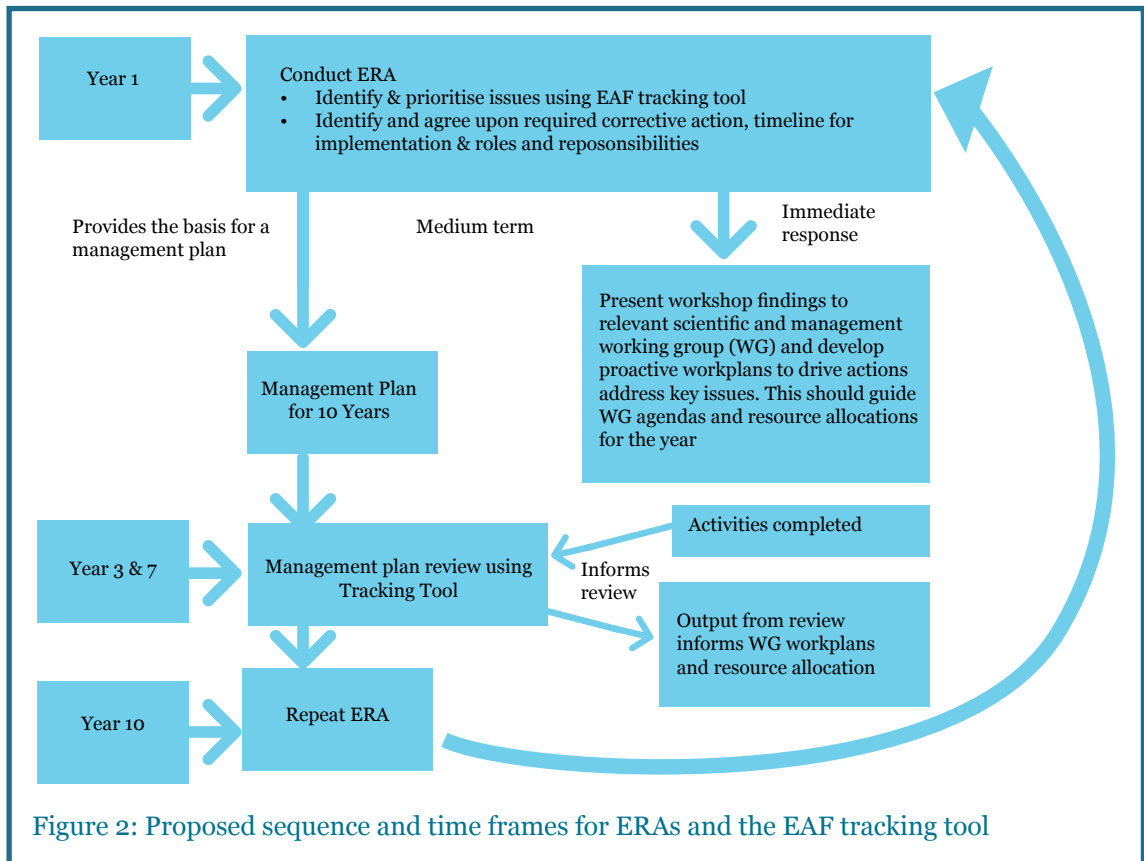
Figure 2: Proposed sequence and time frames for ERAs and the EAF tracking tool

Figure 2 illustrates that in the first year an ERA should be conducted, providing the baseline data for the management plan that should follow shortly and in the same year preferably. It is important to note that the outputs of the ERA will be dependent on the stakeholder representation at the workshop, and it is therefore essential to ensure broad representation. However, it is possible that the ERA will not capture all the risks and it should remain at the discretion of the fisheries manager to add issues not captured, but that follow adopted fisheries policy, into the management plan. In addition to informing the management plan in the long term, the immediate agreed upon activities should be presented to the scientific working groups (SWGs) and management working groups (MWGs) to drive implementation, agendas and resource allocation. The outcomes of these activities should in turn feed back into the management plan review recommended to take place at least every 3 years (i.e. year three and seven). In the 10th year it is envisaged that the fishery repeats the ERA and the cycle begins again.

It is clear that without a core body mandated to drive the ERA process, EAF tracking tool and subsequent EAF implementation, these processes are unlikely to achieve their goals. ERAs constitute a fundamental building block in developing an understanding of all of the different components of a fishery (social, ecological and economic) and ultimately provide a mechanism to drive action, it is therefore crucial that a dedicated EAF co-ordinator is tasked with the responsibility to champion the process and ensure processes are followed through and maintained.

3. The workshop structure and methodology for conducting ecological risk assessments and management plan reviews (using the EAF tracking tool) should be streamlined to ensure greater efficiency and effectiveness.

Below are specific recommendations of how the workshop process itself should be improved:

a) Documents should be circulated before the workshop so that participants can familiarise themselves with the outputs from previous workshops and can gain input from a broader group of stakeholders prior to the workshop. This will increase the stakeholder participation and benefit from a broader set of views as well as increase the efficiency of the workshops by much of the work having already been completed.

b) The workshop should commence with a presentation by key stakeholders of the key issues raised at previous workshops and actions already underway to address these.

c) Feedback to plenary from group work during the workshop should be concise with a report on highlights and key challenges raised.

d) The workshop report should be clear and concise with an executive summary of the key challenges and proposed actions up-front with a more detailed report appended.

e) The ERA and EAF tracking tool methodology should be viewed as a framework and not as a recipe to be followed. The aim of the framework is to enable participation and to guide discussions. Workshop participants should be encouraged to provide on-going feedback to ensure improvements to the tool.

Section 1: A decade of the Ecological Risk Assessments (ERA) and Reviews in the Benguela region (2004 – 2013): Learnings and recommendations

This chapter describes the global context of an Ecosystem Approach to Fisheries (EAF) and how the Benguela Current Large Marine Ecosystem (BCLME) programme fits into this context. It also provides a review of the development and implementation of the tools used to implement an EAF which has been informed by interviews with South African stakeholders who have been involved in the ERA.

The global context

The goal of an Ecosystem Approach to Fisheries (EAF) is "to balance diverse societal objectives, by taking into account 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" (FAO, 2003).

The EAF is not a novel concept. The origins of the EAF can be found in Chapter 17 of Agenda 21 of the 1992 Rio Declaration on Environment and Development (Cochrane et al., 2004). It follows that sustainable development, aiming at both human and ecosystem well-being, is the root and foundation of an EAF (Garcia et al., 2003; Serge et al., 2004). Furthermore, Gracia and Cochrane (2004) argue that the fundamental principles of the EAF stem from the traditional inland-water fisheries, wildlife and forest management. In other words, traditional fishery management, as practiced by small-scale fishing communities applied at a more holistic, ecosystem-based level than modern, conventional management approaches in large-scale fisheries.

Shortly after the Rio Declaration, the next major advancement towards recognising an EAF was the development of the Code of Conduct for Responsible Fisheries by the Food and Agriculture Organisation of the United Nations (FAO, 1995). Almost all the major requirements for an EAF can be found within the Code, even though it does not refer to it explicitly (Cochrane et al., 2004). The end of the 1990's made further progress as the leading fishing nations, namely Australia and the USA, started actively moving towards an ecosystem orientation in their fisheries management (Smith et al., 1999). In 2001, the Reykjavik Declaration on Responsible Fisheries in the marine ecosystem, member countries declared "...that, in an effort to reinforce responsible and sustainable fisheries in the marine ecosystem, we will individually and collectively work on incorporating ecosystem considerations into that management..."(FAO 2001, p. 106). This declaration was further recognised and reinforced at the World Summit for Sustainable Development (WSSD) in Johannesburg in 2002 (Cochrane et al., 2004; Garcia, S. and Cochrane L. 2004).

These global commitments spurred a flurry of important scientific activity aimed at understanding complex marine ecosystem interactions, however the practical implementation of EAF principles in fisheries management protocols have proved more difficult to achieve (Nel et al., 2007). Until the mid-2000's, there had been little progress in developing simple and structured guidelines to implement an EAF (Arkema et al., 2006; Hope, 2006; Petersen et al., 2010). Since then, a number of technical guidelines have been produced by the FAO (FAO 2003, 2005) as well as EAF implementation guidelines by Garcia and Cochrane (2004) and Ward et al. (2002). A further contribution was provided by the Australian Ecological Sustainable Development Framework (Fletcher et al., 2002). However, all of these frameworks were generic and somewhat fuzzy and it was clear that the principles of a global EAF framework needed to be translated into operational ones at regional, national and local levels (Garcia S. and Cochrane K. 2004). In 2004 the BCLME partnered with the FAO, WWF South Africa, Integrating Multiple

Demands on Coastal Zones with Emphasis on Aquatic Ecosystems and Fisheries (INCOFISH), the South African Directorate of Marine and Coastal Management (MCM), the South African Department of Environment Affairs and Tourism (DEAT), the National Institute of Fisheries Research (INIP) in Angola and the Namibian Ministry of Fisheries and Marine Resources (MFMR) to investigate the practical ways of implementing an EAF in the Benguela region.

Implementing an EAF in the Benguela Current Large Marine Ecosystem

The Benguela Current Large Marine Ecosystem (BCLME) is a physically and ecologically complex eastern boundary upwelling system. The area encompasses three developing countries namely South Africa, Namibia and Angola, who harvest marine resources and conduct marine mining and oil and gas extraction within the region, both on the coast and offshore (Augustyn et al., 2014). The primary aims of the BCLME were to investigate the feasibility of EAF management in the 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 (Nel et al., 2007). This project was developed over three phases. The first phase commenced with a project by the Benguela Current Large Marine Ecosystem programme (BCLME see www.bclme.org), in partnership with the Food and Agriculture Organisation (FAO), to investigate the feasibility of implementing an EAF in the BCLME (Cochrane et al., 2007). The project made use of an ERA approach based on the Australian Ecological Sustainable Development Framework (see Fletcher et al., 2002), which had also been adopted in the FAO Guidelines on implementation of EAF (FAO, 2003). WWF-SA was contracted by the project to take the lead on conducting the South African and Namibian ERAs, and the FAO led on the Angolan component. Nel et al. (2007) explains that there were two main issues which the participants in the BCLME steering committee were grappling with at the outset of the project:

1. The complexity of implementing an EAF and how to prioritise resources and management actions.
2. Building a simple common understanding of an EAF with stakeholders; more specifically what is required for an EAF, and the implications and benefits thereof for stakeholders.

As the lead implementation partner in South Africa and Namibia, WWF-SA undertook the task of refining the Australian framework for local use. Another component completed during this period of the project was a cost benefit analysis on the implementation of an EAF in the region by an external consultant (See Cochrane et al., 2007). On the basis of the success of the initial ERAs, it was recommended by the steering committee that ERAs were a viable tool to track and stimulate the implementation of an EAF as they encourage stakeholders to communicate and prioritise issues within a fishery. During this period a total of eight ERAs were conducted (five in South Africa and three in Namibia). See Section 3 for a detailed list of ERAs conducted. On completion of the first phase, the report titled "Ecological risk assessment: a tool for implementing an ecosystem approach for South Africa Fisheries" was published by Nel et al. (2007), which complemented the final report of the BCLME/FAO project.

WWF-SA provided funding for the second phase of the project from 2007 to 2010, to continue running the ERAs in South Africa and Namibia. During this second phase, it was identified that there was a need to review the progress of EAF implementation against the original ERAs conducted for each fishery. WWF-SA conducted two ERAs (one in South Africa and one in Namibia) and six ERA reviews (three in South Africa and three in Namibia). See Section 3 for a detailed list of ERAs and ERA reviews. All ERAs and ERA reviews published during this phase are published in Petersen et al. (2010). WWF-SA also facilitated training workshops in South Africa and Namibia to train local facilitators. Furthermore, templates and training manuals were developed to assist new facilitators. Capacity building was one of the key aspects of this phase of the project, as the ultimate intention was for the three countries to lead their own ERAs and review workshops, in order to ensure that the EAF was fully integrated into the fisheries management systems for South Africa, Namibia and Angola. Additionally, this component of the project was highly successful in equipping fishers with the skills and expertise required to implement EAF measures at sea (Augustyn et al., 2014).

WWF-SA partnered with the Benguela Current Commission (BCC) and the FAO for the third phase of the project (2010 - 2013). The intention for this final phase was to institutionalise the ERA process and EAF tracking tool into the three government's fisheries management structures in South Africa, Namibia and Angola. The agreement was that in year one WWF-SA would lead the facilitation of workshops with the government institute's support, in year two the government institute would facilitate the workshops with WWF-SA's support and in year three the government institutes would solely lead and facilitate the workshops without support from WWF. While there were some challenges experienced during this process, which are detailed later in this chapter, during this time six ERAs (three in South Africa, two in Namibia and 1 in Angola (incomplete) were conducted and eight ERA reviews (seven in South Africa and one in Namibia), the completed reports are included under Section 3 of this report. Further training and capacity building of South African, Namibian and Angolan governmental staff was also completed in order to develop and capacitate facilitators for each region. Focal points from each country's fishery management agency were appointed to lead on ERAs in their respective country.

The following segment of the report details the development and evolution of tools used to implement an EAF in the BCLME region.

Evolution of EAF tools developed in the BCLME region (2004 – 2013)

The signatories of the WSSD committed to implement an EAF by 2010, five years ago to date, it is therefore important to understand what steps were and currently are being taken to demonstrate achievements and implementation of an EAF. Ecological Risk assessments (ERAs) and ERA reviews have been identified as an effective means of demonstrating whether an EAF is being achieved. To better understand the development of the ERA process, a short history is necessary.

In 1983 in the United States (US), the National Research Council defined a risk assessment as an evaluation of the "probability that an adverse effect may occur as a result of some human activity" and recommended that assessments be conducted to assess the impacts that humans have on the environment and that this be done in a structured manner by means of a framework (NRC. 1983; Hope, 2006). A framework was subsequently developed by Suter et al. (2003) with three phases: problem formulation, analysis (of exposure and effects) and risk characterisation (Hope, 2006). This framework was used mainly for pre-manufacture notification and waste management in the US. Hope (2006) examined the existing risk assessment frameworks used worldwide in comparison to the US and discovered that at the time risk assessment frameworks only existed in Australia, Canada, the European Union and South Africa. In terms of fisheries, guidelines have been produced specifically for the implementation of an EAF (FAO, 2003; FAO, 2005; Ward et al., 2005). All of these guidelines point towards using a risk assessment for EAF implementation. The FAO code of conduct and technical guidelines for implementation also proposed a set of practical approaches to develop and use a "sustainable development reference system" to measure progress of implementation (FAO, 1999).

The South African ERAs are based on and specifically adapted from the framework developed in Australia by Fletcher et al. (2005) for the implementation of Ecologically Sustainable Development (ESD), a conceptual model which is effectively synonymous with the EAF. The understanding was that the implementation of ESD processes through the framework should assist management agencies to deal with decisions and to deliver more effective and transparent outcomes (Fletcher et al., 2005). The framework was developed in response to the fact that ESD is very complex and there was a need for a structured method in which to practically implement its practices. Similarly, South Africa had committed itself to implementing an EAF, which is a similarly complex concept to ESD. It therefore required an approach that could help cut through this complexity, make opposing objectives and trade-offs explicit and build a common understanding. It was recognised that without this, the implementation and ultimate success of an EAF was likely to flounder. ERAs and ERA reviews therefore provided the tools and structures to address these challenges and facilitate the implementation of an EAF in southern Africa as well as provide a simple and structured method to track and stimulate on-going implementation (Paterson and Petersen, 2010).

The full ERA and ERA Review process is described in Nel et al. (2007) and updated in Petersen et al. (2010). In summary, the process broadly follows two steps:

Step 1: Ecological Risk Assessments: Identification, prioritisation of issues and performance reports

The first step of the process involves a multi-stakeholder workshop to identify and prioritise issues and actions, in the process building consensus amongst diverse stakeholders and defining the ecosystem in its broadest sense. This definition equally includes the ecological, social, economic and government systems (Paterson, B. and Petersen, S., 2010). It follows that the stakeholder group that attends and participates in this workshop is as broad as possible and includes, but is not limited to, stakeholders who represent management, biological sciences, social sciences, economics, industry and NGOs. At the outset, all issues pertaining to the three major categories namely human wellbeing, ecological wellbeing and ability to achieve (i.e. governance) are raised by stakeholders and recorded, regardless of their perceived importance. The methodology utilises generic component trees to help participants to tease out the main issues that the fishery faces. These issues are then prioritised by rating the consequences of a given issue and the likelihood of it occurring on respective Kent Scales and a risk value is generated as a product of the two scores (Patersen and Petersen, 2010). Finally performance reports are compiled for high risk issues only, which describe the appropriate management response necessary to address the issue (Nel et al. 2007). In order to measure progress against agreed targets, the performance report requires the development of an operational objective, the identification of indicators, targets and milestones.

In the first phase of the BCLME programme (2004 - 2007), ten ERAs were conducted in southern Africa: six in South Africa and four in Namibia (Nel et al., 2007). On average 77 issues per fishery were raised at each ERA workshop. Even though the fisheries assessed were diverse in nature and in different countries, there was a high degree of concurrence in the issues raised between fisheries (Nel et al., 2007; Petersen et al., 2010). Nel et al. (2007) used the synthesis of the generic issues (28 in South Africa and 23 in Namibia) and the performance reports to generate a checklist of 22 broad operational objectives, with linked management indicators that could be used to guide the implementation of an EAF in South Africa and Namibia. Furthermore, Nel et al. (2007) suggested that this checklist of management indicators developed for South Africa and Namibia be used to develop an EAF management tracking tool by which managers can measure their progress towards an EAF.

Step 2: Ecological risk assessment review process or tracking tool

Implementing an EAF is not an instant change but a process that is likely to be adopted as an incremental extension of current fisheries management approaches (FAO, 2003; Murawski, 2007). Patersen and Petersen (2010) therefore suggest that it is important to measure progress of the implementation process itself; and that reviewing ERAs regularly is essential in order to monitor and track the progress made in implementing the programme of action identified in the ERA.

Paterson and Petersen (2010) therefore developed an ERA review tool that synthesized the checklist that Nel et al. (2007) had produced into ten generic (i.e. non fishery specific) objectives; to be used as criteria with which to measure the success of the implementation of EAF in the region (Augustyn et al., 2014) namely:

1. The managing authority has a good understanding of the ecosystem impacts of fisheries including target, non-target and general ecosystem impacts;
2. Ecosystem impacts of fisheries are included into management advice;
3. The social wellbeing of dependent fishing communities is accounted for in management advice;
4. The economic wellbeing of the fishery is accounted for in management advice;
5. The managing authority has transparent and participatory management structures that ensure good communication and information sharing locally and regionally;
6. Management plans incorporate EAF considerations;
7. Good compliance to regulations reduces ecosystem impacts of fisheries;
8. Sufficient capacity, skills, equipment and funding exist to support the implementation of an EAF;

9. Good data procedures exist to support EAF implementation; and
10. External impacts of fisheries are addressed (e.g. the effect of other sectors, other industries, climate change etc.).

A framework for tracking progress was then developed by breaking the ten objectives above into increasingly specific sub-objectives, which resulted in 71 operational management objectives for the implementation of an EAF. For each operational objective a seven step process was outlined which delineates the road towards achieving the objective. The tool produces numerical output values from the ERA review framework results which can be visualised as Netweaver bar charts, excel bar charts or test tube charts depending on the stakeholder preferences. It is suggested that the review is administered every 18-24 months, however, it is likely that after a few years (10 years on average) the original ERA may become redundant and will need to be repeated in order to reassess the status of the fishery (Paterson and Petersen, 2010). A potential disadvantage of the generic approach adopted by the EAF tracking tool is the potential loss of fishery specific detail. This potential disadvantage highlights the importance of conducting a fishery specific ERA as a first step. An ERA allows for the identification of fishery specific issues and ensures that these do not fall through the cracks in the generic review process. However, the EAF tracking tool is simply a tool to structure and facilitate discussion. The true value of the approach emanates from the detailed discussions, which arise from within a fisheries specific context (Paterson and Petersen, 2010; Augustyn et al., 2014). The advantage of a generic approach is that it allows for comparison, interrogation and reporting at any level. For instance, operational managers can track progress of management actions in a participatory and transparent manner to develop a work plan to address issues. A middle manager can use the tool to compare progress at a sector or per fishery level or even compare progress between fisheries. Senior managers can use the tool to track EAF implementation between fisheries, compare implementation of various objectives (e.g. how does their organisation fare in addressing human wellbeing issues or risks, compared with ecological issues or risks) or investigate progress in over-arching issues (e.g. the development a network of representative marine protected areas) that could not be tackled by a single sector. In this way, wise use of a limited resource is enhanced through improved information, gaps in progress are identified and progress rewarded (Augustyn et al., 2014). At a policy level, including reporting on inter alia WSSD commitments, EAF implementation progress can be tracked and reported on by means of a simple effective diagram, without placing additional burden on managers.

At the end of 2010, the second phase of the BCLME programme, four review workshops had been held in South Africa and Namibia collectively. These workshops provided an excellent forum for reflection and the opportunity to further refine and improve the framework. For instance, it became apparent that some objectives, which previously covered a larger group of issues raised in the ERA, needed to be unpacked in order to allow for focused attention on particular issues; the process steps for some objectives were also not chronological and therefore had to be modified (Paterson and Petersen, 2010). It follows that the main purpose of the framework is to structure and facilitate discussion around individual fisheries and to enable the next steps for management. The framework should be used as a flexible and adaptable structure to accommodate the needs for each fishery. This completed the second phase of the BCLME programme.

The third phase of the BCLME programme (2010 – 2013) continued with administering the ERAs and reviews for fisheries in South Africa, Namibia and Angola. Drawing from the experience in both the first and second phases of the programme, the ERAs and review processes were further refined; namely the use of Netweaver to illustrate and track changes was discarded and only excel charts were used. Sadly, the original intention for the respective governments to facilitate and lead on the ERAs and reviews for their countries has not materialised outside of South Africa, although a lack of political will and reorganisation of government departments has impeded progress in South Africa too. This next section of the report discusses some of the key challenges and problems that have hindered the implementation of the EAF in South Africa. The ERA reports and Review reports for this phase of the programme are published in this report (see Section 3). Furthermore, a detailed guide on how to facilitate ERAs and reviews in a step-by-step process has been included in this report.

The South African experience

Methodology:

In order to better understand the key challenges to EAF implementation in South Africa, experiences and practice of an EAF in South Africa, twelve interviews were conducted in February and March of 2013 with key fishery stakeholders across a number of different interest groups who had been involved in EAF activities in South Africa. These stakeholders included four researchers from academic institutions (both ecological and social), five researchers and two managers from the Department of Agriculture, Forestry and Fisheries (DAFF) in South Africa and one fishing industry representative. All stakeholders interviewed have been involved in the ERA process at some point throughout the 9 years of the BCLME programme. There were varying levels of understanding from the stakeholders in terms of what the ERA process entailed, as some had been heavily entrenched in the system whereas others had not been as involved. Those who had not been as involved were generally more senior in their organisation and therefore tended to delegate the responsibility to their staff. No interviews were conducted in Namibia and Angola due to logistical and financial constraints as well as the difficulty of accessing key stakeholders.

The stakeholders were asked a total of 24 questions that scoped a brief introduction of the interviewees' affiliation to an EAF, their general understanding of an EAF and their opinion on the effectiveness of ERA processes undertaken to implement an EAF.

Outcomes:

General understanding of an EAF

Many of the interviewees have been involved in the implementation of an EAF since its inception in 2004 and all have attended at least one of the ERA or review workshops. Despite their long history of involvement with an EAF, many of the interviewees could not easily explain their understanding of what an EAF is and were mostly vague in their responses. Many of them began answering the question with words describing an EAF as "complex" and "difficult". To quote one of the interviewees: *"Nobody really knows what it is, and it is interpreted differently... You have some people who do an ecosystems approach to fisheries management and you have other people trying to do ecosystems management... and then you get a lot of conflict and a lot of clashing"*.

The scientists interviewed, both in government and academic institutions, answered this question best by noting that an EAF includes not only the ecological wellbeing of the fishery as well as the human/social and the governance dimensions.

Implementation challenges:

The interviews revealed that the lack of capacity (both a lack of skills and personnel) was considered a key issue that hindered the implementation of an EAF. The lack of EAF skills is likely to be because many of the current scientists have been trained in traditional single-species fisheries management. While understandable, this is a significant challenge to EAF implementation and needs to be addressed at multiple levels, during the scientist's academic university career as well as through ongoing training interventions in the workplace. The lack of personnel is similarly a significant concern and many interviewees noted that DAFF was understaffed and did not have enough manpower to deliver on the requirements to implement an EAF. Furthermore, it was noted that the senior management (Deputy Director Generals and Chief Directors) of departments are often not fisheries scientists and therefore have limited understanding of fisheries management processes. A particular interviewee has had experience of mentoring and growing senior staff's knowledge and skills of an EAF, however the rapid staff turnover of staff in these key positions inhibits the continuity and momentum for practicing an EAF.

Interviewees also raised concerns about the need for the ERA reports and reviews to be integrated into DAFF's planning processes as the responsible governing body. The ERAs and review workshops and reports cannot be the end result for implementing an EAF, as one interviewee noted, they are in fact the starting point and further action and continuous engagement is required to ensure implementation of the identified actions. Furthermore, concerns regarding the lack of institutional structures to facilitate and implement an EAF were voiced. It was noted that the dissolution of the EAF working group at DAFF was another challenge and it was suggested that reinstituting this working group would go some way towards ensuring that the feedback from ERAs and review workshops is included in management plans.

The lack of accurate data was another concern noted by two of the scientists interviewed. Good data forms the basis for developing effective management plans and, if the data is flawed, the resultant management of the resource is unlikely to succeed. Some interviewees also noted that stakeholders participating in the workshops have become fatigued by the ERA process as there is no obvious action and follow through after the workshops; hence the need to integrate the ERAs and reviews into the government planning cycle. One interviewee noted that there seems to be a lack of support or buy-in from some of the senior managers at DAFF for the implementation of an EAF and this needs to be addressed as a priority. The ERAs and review workshops are time-consuming exercises, and unless there is support at senior management level for these processes there is no point in participating in the ERA process.

The following quotes come from two interviewees describing their responses to the challenges faced to implementing an EAF.

"People just don't understand it. It is a very scary concept. It can get enormous which is why we are using this recipe based system that we are using now to try and make it somehow digestible, otherwise nobody quite knows how to do it. Those are the major challenges. Also as soon as you start talking about ecosystem and things like that you start to integrate and you integrate things across government departments and to do that you open up a whole new can of worm challenges…"

"Partly because of understanding, internationally it is a huge problem in terms of the fact that nobody has done it, so many places will say that they are implementing an EAF but very few people are actually successfully doing it because nobody really knows how to do it. There is not a framework in place where you can follow a specific process. Many of the fisheries internationally have historical management. Then if you come with new pieces of information then it is quite a challenge in how to put that into a process that is already there."

The effectiveness of ERA processes:

The interviewees' responses to the processes of an EAF have been split between the stakeholder engagement phase and how effective they felt the workshops were.

Stakeholder engagement

All the interviewees agreed that including stakeholders from across a broad spectrum of interests (environmental, governance and socio-economic), was important to help participants' understanding a of number of different perspectives and to ultimately agree on the priority issues that were of concern for implementing an EAF. A quote from an interviewee describes the stakeholder process as *"broadening your views and becoming aware of perspectives that you may not have been aware of before. You get more integrated, the EAF is all about integrating things; it is not a single system or a single species target resource orientated management. That is no longer a way of doing business and is complimented by the bigger world view."*

Another interviewee mentioned that the stakeholder engagement process may not always be easy because of conflicting opinions, however it is an important process for gaining consensus and understanding of the issues. This is captured well in the following quote: *"I really think that there is enormous value just in getting the different stakeholders together because they come from completely different disciplines and often they talk completely different languages. But when they have to focus on a structured way of doing things and have something common to work on, there is enormous value and you can't capture that in an ERA report."*

One interviewee did however raise a concern regarding the fact that poor representation of any of these sectors would influence the outcome of the report and it would therefore not be a true reflection of the issues for that fishery. Furthermore, it was noted that certain individuals' personalities may sway the direction of the conversations and the facilitator needs to be strong enough to address this during the discussions. A further critique was that the discussions happen within each sector and this does not allow for integration across the different sectors.

Effective ERAs and Review workshops

The intention of this question posed to the interviewees was to gain a better understanding of whether the ERAs and review workshops had assisted stakeholders in the implementation of an EAF. There were mixed responses from interviewees with most of them agreeing that the stakeholder workshops have been crucial to improving the understanding of an EAF and moving beyond a single-species focus. Most interviewees were however concerned that the actual follow through after workshops on actions that were formulated during the workshops or written in the ERA reports, have not been addressed. Whilst there has been a huge effort to "break an EAF down into bite-size chunks" by developing ERAs and the EAF tracking tool, the implementation of an EAF has been limited. One interviewee explained that the management systems are not in place to address the actions that come out of the reports, more specifically he notes that *"if your score improved then you have made progress, but what that means and who is going to use it, and what they are going to do with that information is very unclear to me."* Another interviewee states that the ERA process was *"not as effective as we would have hoped, but hugely effective in terms of gathering EAF information and getting researchers on-board, making stakeholders aware of the whole process - very effective at those levels ... but in terms of how we are effecting how we actually manage things there are only a few examples where it has made a difference."*

A further challenge noted regarding the effectiveness of the ERAs was the high number of issues raised at the workshops, it was felt that this can become overwhelming and lead to inertia setting in because individuals become despondent about the size of the task. A related challenge was the fact that many of the ERA reports produced from the workshops were very long and resulted in participants feeling overwhelmed by the enormity of the implementation challenges. It was suggested that perhaps a further prioritisation of the top ten issues could be captured and documented to reduce the number of issues raised to a more functional and neat package.

Suggested Improvements to ERA implementation and review

Interviewees were asked for their suggestions on improving the ERAs and review implementation process. Most of the interviewees were very positive and complimentary about the manner the workshops were conducted. However, one interviewee felt that the process was too long winded and that participants should be encouraged to do more preparation before the meeting, thereby reducing the amount of time spent going through general presentations in the workshop itself.

The main stumbling block identified was that too many issues were raised at the ERA workshops and this process became tedious. Interviewees had already raised this point in relation to the effectiveness of the ERA process, and others reiterated it in this section. Furthermore, the need to identify appropriate representation for each of the sectors and to have them attend the workshops is crucial. One of the interviewees felt that the ecological representatives were present but that building relationships with individuals from the governance and socio-economic sectors was necessary.

Length of workshop

Interviewees were asked to give their opinion on the length of the workshop and most of them agreed that one-day would be sufficient. Two individuals felt that because the workshops have been run since 2004 that a basic understanding of an EAF existed, some of the presentations could be removed from the agenda. Additionally, lunch and tea times could be reduced too.

Summary

Based on the interview responses, the following table was devised to capture the challenges and successes of implementing an EAF experienced by South African stakeholders from 2004 to 2013.

Table 3. Key challenges and successes highlighted by South African stakeholders

Challenges	Successes
There continues to be a poor understanding, at all levels within government and other institutions, of an EAF which is largely seen as "in addition to 'normal' fisheries management" and this reduces buy-in to the process especially at a high level. There is very little co-ordination of EAF implementation . At present the three pillars of an EAF i.e. ecological wellbeing, social wellbeing, and ability to implement, are acting in silos. There is very little follow-up on actions after ERA and Review workshops which results in stakeholders questioning the validity of the process. ERAs are not clearly integrated into DAFF planning processes and work plans. There is a lack of capacity for implementation especially in the form of a dedicated champion to drive the implementation and co-ordination required for ERAs and EAF in general.	ERAs have been successful in bringing a diverse group of stakeholders together and developing a set of priorities and actions to address them. The process allows for all views to be heard, debated and prioritised in as objective a manner as possible. ERAs have built stakeholders' understanding of an EAF. ERAs help to build consensus and an understanding of other stakeholders' perspectives. ERAs are a useful communication tool to share research and management updates. The identification and prioritisation of issues is seen as a valuable process.

The EAF is a complex concept and the ERAs and the review/tracking tool are seen as methods to simplify something very complex into a series of manageable tasks, however this is not how those tasked with the job of implementing an EAF understand it. It follows, that there is a fundamental lack of understanding as to how to use these ERAs and the EAF tracking tool effectively. There appears to be some key elements missing which are needed to push the implementation of an EAF to the next level, and to ensure that ERAs and the Review tracking tool are used for their intended purpose of stimulating the implementation of an EAF. Foremost of these elements, is a willing and able champion/body within the management authority to drive the process forward, which requires improved coordination of EAF implementation as well as building a better understanding of an EAF and its implementation with all stakeholders, and the political will to follow through with the implementation of the ERAs and Review outcomes.

A final quote which summarises many of the interviewees' perspective of an EAF: *"I think that the strength of the whole process goes beyond what you see on paper. That would be my main take home message. The educational value of the process, imparting awareness and getting people's buy-in. I think that those things are not things that you can catch in your report."*

Conclusion

Implementing an EAF is a complex and often challenging task. As one author concludes "EAF seems to be less about managing ecosystems and more about managing the fear of losing them; less about understanding ecosystems, and more about understanding ourselves." (Koeller, 2007). Within the BCLME region, progress has been made towards implementing an EAF but it is a continually evolving process and there are a number of areas where all three BCLME countries can improve current implementation. Perhaps most importantly, in order to drive effective EAF implementation, it is recognised that dedicated capacity is required to run ERA processes and follow up on the outcomes. Garcia et al. (2005) reiterates that the implementation of an EAF requires a nested set of processes at regional, national, sectoral levels and local levels. While the main conceptual steps may be similar for all levels, the focus, scope, means and approaches may be different. This requires top-down guidance and decisions to provide and develop an enabling institutional environment, within which the lower level processes can develop. However, as Degnbol (2002) explains renovating management institutions has a number of implications. The costs of producing high quality research and the associated management costs of implementing scientific recommendations increase exponentially if the requirement for understanding, precision and implementation efficiency is maintained; while the complexity of issues to be addressed increases and a larger group of stakeholders with diverse interests is accommodated in the management institution.

In the South African case, it has been shown that the inclusion of a broader group of stakeholders has been beneficial to the EAF process, however the large number of required management responses identified and the lack of capacity to implement them has led to disillusionment with the process.

Degnbol (2002) noted the five basic challenges of integrating ecosystem aspects into fisheries management that must be addressed if ecosystem based management is to proceed from debate and policy to implementation. These challenges are:

1. The objectives of an EAF have not been clarified. In other words the concepts in policy documents are open to diverse interpretations.
2. The knowledge base is characterised by uncertainty and lack of knowledge.
3. Methods to operationalise existing knowledge in terms of management responses have not been developed.
4. Institutional frameworks within which decisions about policies and implementation can be made need to be developed.
5. Fisheries management institutions have struggled to implement existing and limited objectives of fisheries management.

The ERA processes in the BCLME region have attempted to address many of these problems, some more successfully than others. Through the WWF EAF capacity building programme significant capacity has been developed in the region, however, it is clear that EAF capacity building needs to be an ongoing activity in order to ensure an adequate understanding of what EAF processes entail. Progress towards operationalising EAF processes has also been made through the running of ERA and ERA Review workshops, however one of the key challenges remains the development of an effective institutional framework within which to operationalise the EAF.

The next chapter explains the steps undertaken to facilitate ERA and Review workshops.

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Section 2: A practitioner's guide to facilitating ERAs and Review workshops using the EAF tracking tool

Introduction

The ERA methodology has been refined for the Southern African context through on-going adaptation subsequent to workshops undertaken in the Benguela region (Petersen et al., 2010). Each ERA provides a snapshot of the current state of a fishery relative to overarching ecosystem objectives, but this snapshot is not sufficient to measure whether an EAF has been successfully implemented. Once the risks and priorities for a fishery have been identified through an ERA process, it is necessary to check regularly whether progress is being made to address key issues. The EAF tracking tool was developed to provide a generic framework to streamline this review (Paterson and Petersen, 2010). To date, ERAs have been conducted for all the major fishing sectors in South Africa and Namibia and the EAF tracking tool is used regularly to track and stimulate EAF implementation. The practical experience gained from facilitating Ecological Risk Assessments and Reviews has provided the insight and understanding to develop this guide that aims to assist practitioners to facilitate ERAs and Reviews as tools to implementing an EAF.

This guide aims to provide a step-by-step process for practitioners wishing to undertake an ERA or utilise the EAF tracking tool. It provides suggestions of what to consider prior to undertaking an ERA, how to bring the correct stakeholders to the table, requirements and tips for facilitating the process and finally guidance to aid the translation of workshop outcomes into action. This guide should be used in conjunction with the "Ecological Risk Assessment (ERA) Training DVD" which contains the EAF tracking tool as well as electronic templates and additional background information needed to conduct an ERA or ERA review.

A step-by-step guide for hosting an ERA or ERA review workshops

In order to facilitate and host and ERA or review workshop it is imperative that the facilitator begins preparing in advance. This increases the likelihood of the workshops running smoothly as there may be as many as 30 participants at the workshop depending on the fishery. Box 1 below provides a user friendly step-by-step guide to assist the facilitator with preparing for the workshops.

Step 1: At least six weeks before the workshop
  a) Accurately identify and describe the fishery under assessment
  b) Prepare time-lines and deadlines for documents to be sent before the workshop, at the workshop and after the workshop.
  c) Identify facilitators and opening speakers
  d) Workshop logistic - book venue and caterers
  e) Identify stakeholders to attend the meeting and send invitations in advance
  f) Prepare EAF tracking tool

Step 2: A week before the workshop
  a) Send out reminders
  b) Finalise participation – make name tags, prepare registration forms and assign groups
  c) Print the necessary documents for the workshop
  d) Ensure that the equipment you need for the workshop is booked and functioning

Step 3: Preparations during the workshop
  a) Ecological risk assessment workshop

   i) ERA workshop: Day 1
     • Prepare and administer the expanded agenda for Day 1
     • Identifying issues
     • Prioritise issues using consequence and likelihood
   ii) Preparation between Day 1 and Day 2
     • The table of issues raised in Day 1 need to be printed for use on day 2. During Day 1 the issues are raised under specific objectives but not the sub objectives, they therefore need to be assigned to a sub objective.
   iii) ERA workshop: Day 2
     • Develop management response to key issues

       OR

  b) ERA Review workshop

   i) ERA review workshop: Day 1
     • Prepare and administer the expanded agenda for day 1
     • Facilitate group work to update progress and agree on next steps
   ii) Preparation between day 1 and day 2
     • Facilitator collates all the groups' data sheets into one sheet for discussion and editing the next day
   iii) ERA review workshop: day 2
     • Prepare and administer the expanded agenda for day 2

Step 4: Post workshop - Report write-up and follow up

Box 1: Outline of the steps-by-step process for ERA and Review workshops

STEP 1 - Six weeks prior to the ERA or review workshop

At least six weeks before the workshop the following processes need to be undertaken to ensure the success of the ERA or Review workshops.

The following processes need to be implemented six weeks before the ERA meeting.

a) Accurately identify the fishery to be assessed

Note that the ERA methodology can be applied to any fishery. This includes any species or fishing method and can be applied to small or large scale, commercial or subsistence fisheries. However, to ensure that you invite the correct stakeholders to the workshop and are adequately prepared it is important to accurately identify and describe the fishery you are about to assess. This is especially true when multiple gear types target the same species as in the case of the South Africa or Namibia hake fishery (targeted by trawl, longline and handline gear types) or when one gear type catches a number of species as in the case of the small pelagic fishery which targets both sardine and anchovy.

b) Timing considerations

Given that ERA outcomes ideally feed into the fishery management plans, it is important to attempt to undertake the workshop in line with the timing of management plan development or review. It is important to be aware of particularly busy times in the fishing season and plan around these times as attempting to run workshops during peak fishing season will limit stakeholder participation which will result in reduced quality and validity of ERA outcomes.

c) Identify facilitators and opening speakers

In order to run the workshop effectively, it is important to have two facilitators; one person to facilitate the conversation and the other person to scribe and take notes during the two days. The facilitators need to have an understanding of the fishery; therefore the convener needs to ensure that the facilitators are given background information with time to prepare prior to the workshop. It is important that the facilitator identified to facilitate the discussion has good facilitation skills especially when there are disagreements or when discussions veer off the topic. The facilitator also needs to have a good understanding of the ERA process to ensure that the workshop is run efficiently.

The workshop convenor will also need to organise speakers. Firstly, a senior government official should open the workshop, clearly state the objectives of the workshop, the importance of the workshop and ERA process to the department, how workshop outcomes will be used and what follow up action can be expected. This is important to ensure that workshop participants feel that their participation is worthwhile and valued by the department, especially considering that they have taken time out of their busy schedules and frequently forfeited a day at sea and hence their livelihood, to attend and participate in the ERA meetings. Secondly, the fisheries manager or chief scientist should give a brief presentation to provide some background to the fishery or sector under consideration as the participants should have received this information in the pre-workshop pack.

d) Workshop logistics: date, venue, catering

The venue should be able to comfortably seat at least 30 people (this is dependent on the fishery). Ideally, the venue should provide tables for stakeholders to work at. These should be arranged in a "U" shape for the first day and in 2-4 groups depending on the workshop size for the second day.

Catering will also need to be organised for both days of the workshop. This includes two teas and lunch for each day. It is important to enquire whether workshop participants have any particular dietary requirements.

e) Stakeholder participation

Stakeholder participation is critical to this process and to the successful implementation of an EAF. However, participation can only be constructive when all views are represented. Thus effort is required to achieve true and representative stakeholder representation. A further point to consider is that there are limits to the number of participants that can constructively be engaged at any one time. Exceeding this limit can lead to chaos. The resulting confusion and frustration can severely hinder progress. Thus a balance needs to be struck between ensuring that all views are represented, and not allowing one group or individual to dominate the process and discussion.

The ERA framework provides a clear method to effectively engage stakeholders and elicit their views. It also provides a platform for views to be aired and a structure to build a common understanding of frequently opposing opinions. The ERA or ERA review workshops are frequently the first occasion that such a broad group of stakeholders including natural and social scientists, interact. These divergent worldviews can potentially be a source of conflict and frustration. However, having a structured process allows these two groups to interact constructively and aids in the broadening of each other's perspectives and understanding of the issues.

Invitations should be extended to scientists (including stock assessment scientists, ecological scientists, social scientists and fisheries economists), fisheries managers, compliance and enforcement, NGOs and the fishing industry (including associations, rights holders etc.) and fishing community representatives. Once all the relevant stakeholders have been identified the convener of the workshop should send out an invitation to all stakeholders. The invitation should include some background to the ERA process as well as the dates, times and contact persons for RSVPs. It is important to follow up with stakeholders to ensure their attendance. See "Training CD" for invitation template and draft background document for circulation. In addition to this, background information on the fishery should also be provided.

f) Preparation EAF tracking tool

The ERA data collection sheets and EAF tracking tool have been set up for a 'generic fishery'. Thus the tool needs to be tweaked for the specific fishery at hand. This requires selecting which criteria are relevant to the particular sector. Find the copy of the EAF tracking tool and data collection on the "Training CD" in Section 4 of this report. Importantly, the workshop convener needs to work with key fishery stakeholders prior to the workshop to prepare the data entry table. The 8 step process is outlined below in

Step 1 and 2 for an ERA workshop:

1. Open the spreadsheet entitled "ERA_Data entry table template" on the "Training DVD".
2. Use the sheet entitled "DAY 2 output".

Step 1 and 2 for an ERA review workshop:
1. Open the spreadsheet entitled "ERA review_Data entry table template" on the "Training DVD".
2. 2. Use the sheet entitled "Datasheet".

Follow on from step 2:

3. Input the relevant species for objective 1 and 2 into the cells which say "species a, species b, species c, etc.)
4. Choose which communication channels apply to the fishery under objective 5.7 and delete ones which do not apply.
5. Choose which national plans of actions are relevant for the fishery under objective 6.2 and delete the rest.
6. Choose which compliance initiatives are relevant under objective 7.3 and delete the rest.
7. Adapt objective 8 objectives to reflect the government department's structure, if deemed necessary.
8. Consider which data fields are relevant under objective 9 and delete those which are not.

Box 2: An eight step guide to completing data sheets for ERAs and review workshops

STEP 2 - A week before the ERA or review workshop

A week before the ERA or review workshops the following processes need to be administered:

a) Send out reminders

The week before the workshop the workshop convenor should send out a confirmation email to all stakeholders along with the background document (See "Training CD" - Intro to ERA process.doc) and the agenda (see templates on "Training CD"), and background information on the fishery.

b)   Finalise participation – make name tags, prepare registration forms and assign groups

Prepare the registration form with all confirmed participants. Divide the participants into 4 groups and ensure that all groups have an equal spread of research, management, compliance and industry representatives. Design, print and prepare name tags.

c) Print documents

Print all relevant documents (all can be found on "Training DVD"):
For an ERA workshop print the following documents:

• Registration forms – two copies (one for Day 1 and one for Day 2)
• Names tags for each participant (can be used on Day 1 and 2)
• Consequence and Likelihood tables – one copy per person (to be used on Day 1)
• Discussion trees – one copy per person (to be used on Day 1)
• Step tables – two copies per group (to be used on Day 2)

Note that at the end of Day 1 you will need to print out the outcomes of day 1 (this will be used by workshop participants on Day 2).
For an ERA review workshop print the following documents:

• Registration forms – two copies (one for Day 1 and one for Day 2)
• Names tags for each participant (can be used on Day 1 and 2)
• The "Issues" table – two copies per group (taken from the original ERA)
• Step tables – two copies per group (to be used on Day 1 and Day 2)

d) Equipment you'll need on the day

• Data projector
• One computer to scribe on Day 1
• Four computers to scribe on Day 2 for the ERA workshop or both days of the ERA review workshop.

STEP 3 - Preparations during the workshop

On the morning of the workshop arrive early to prepare the meeting space by ensuring that there are enough tables and chairs and that the tables are arranged according to what you are going to be doing for that day. For day one of the ERA workshop the tables should be arranged in a "U" shape. For day two the tables must be arranged in groups. For the ERA review workshop the tables must be arranged in "U" shape on day one and in groups on day two. Additionally, ensure the following:

• The data projector is working and that the presentations are visible for all participants.
• If sound equipment is needed for a bigger venue, ensure it is working.
• Set out registration forms and names tags for when participants arrive.

Facilitating the ERA and Review workshops

The following section of the report will explain the procedure that needs to be followed for an ERA workshop as well as an ERA review workshop and the reporting frameworks that need to be completed as a record of the fishery status.

Ecological Risk Assessment methodology

Below is an example of the expanded agenda and the issues that will need to be addressed.

Expanded Agenda for Day 1

8.30am - Welcome and workshop objectives

A senior government official should open the workshop and cover the following issues:

• clearly state the objectives of the workshop ;
• the importance of the workshop and ERA process to the department; and
• how workshop outcomes will be used and what follow up action can be expected.

This is important to ensure workshop participants, who have taken time out of their busy schedules and frequently forfeited a day at sea, and hence their livelihood, feel that this sacrifice is worthwhile and valued by the department.

8.45am   Background and Introduction

This should comprise of two presentations. The first (presented by the workshop facilitator) should provide:

- an introduction to an EAF;
- why ERAs can assist in the implementation of an EAF; and
- introduce the ERA process.

A draft presentation is available on the "Training DVD". Introductions to the ERA process and proceedings for the day are presented by the facilitator.

The second presentation (presented by the fisheries manager or chief scientist) should provide background to the fishery or sector under consideration. Both presentations should be brief as this information should have been sent to the participants prior to the workshop.

9.30am Prioritisation of issues (Objective 1)

The remainder of the first day is spent identifying (using the discussion trees) and prioritising issues (using the consequence and likelihood tables). This session should be conducted in plenary to allow all stakeholders to participate in the discussion. *Note that it is important to keep track of time as you will need to get through all 10 objectives by the end of the day.*

10.30am Tea
11am   Identification and prioritisation of issues (Objective 2, 3, and 4)
1pm   Lunch
1.45pm   Identification and prioritisation of issues (Objective 5, 6 and 7)
**3pm**   Tea
3.15pm   Identification and prioritisation of issues (Objective 8, 9, and 10)
4.30pm   Meeting closure

Identification of concerns or issues for an ERA

Generic discussion trees (see Figure 3 for example and available on the CD) are used to help participants tease out the main issues or concerns that the fishery faces. These hierarchical discussion trees were developed based on the outputs of the original ERA conducted in South Africa and Namibia and reported in Nel et al. 2007. Participants are given the opportunity to raise any issues or concerns within the fishery. The process starts by breaking the fishery down into 10 generic objectives (adapted from Paterson and Petersen, 2010):

1. The managing authority has a good understanding of the ecosystem impacts of fisheries including target, non-target and general ecosystem impacts.
2. Ecosystem impacts of fisheries are included into management.
3. The social wellbeing of dependent fishing communities is accounted for in management.
4. The economic wellbeing of the fishing industry is maintained.
5. The managing authority has transparent and participatory management structures that ensure good communication and information sharing locally and regionally.
6. Management plans incorporate EAF considerations.
7. Good compliance to regulations reduces ecosystem impacts of fisheries.
8. Sufficient capacity, skills, equipment and funding exist to support the implementation of an EAF.
9. Good data procedures exist to support EAF implementation.
10. External impacts of fisheries are addressed (e.g. the effect of other sectors, other industries, climate change etc.).

Figure 3: Generic discussion tree used for Objective 1.
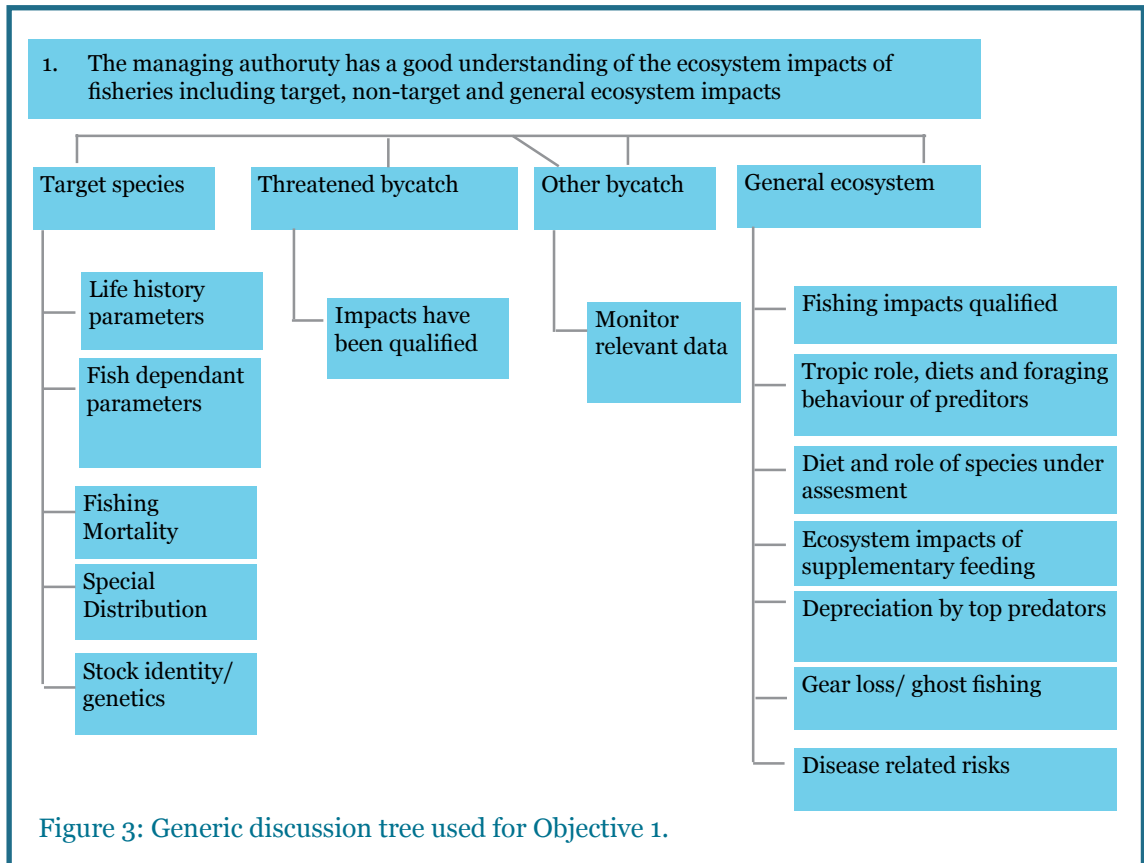
Each component is then further disaggregated using the discussion trees and issues are raised under the relevant objective. It is important to note that discussion should not be limited by the hierarchical trees. Rather the trees should serve to structure and facilitate discussion. Through the identification process all issues present in the fishery are recorded. Any issue identified by one or more participants is included in the list of issues, whether or not it is supported by others. The result is a comprehensive list of concerns as perceived by all participants in the workshop.

Identification of issues:
1. Open the spread sheet entitled "ERA_Data entry table template".
2. Use the sheet entitled "DAY 1 Output".
3. Go through each objective giving the participants a chance to raise issues. Use the discussion tress as a guide for issue raising.
4. Input each issue in the second column and make sure you number each issue for ease of reference later on.
5. Once all issues have been raised for an objective, conduct the prioritisation process as detailed below.

Prioritisation of issues for an ERA

Each identified issue is then prioritised by scoring the likelihood of a given risk and the consequences of it actually occurring. The likelihood is scored on a scale of 1 to 6, and the consequence is scored on a scale of 0 to 5 (likelihood and consequence tables are available on the CD). A risk value rating is then calculated as the product of the 'consequence' and 'likelihood' scores; these "risk scores" then provide a means of prioritising the entire set of identified issues. At this step it is important to gain consensus, as far as possible, on the consequences and likelihoods. While this can be a contentious stage during the workshop, there was generally a high level of agreement experienced during the workshops reported in Nel et al. (2007) and Petersen et al. (2010).

Each issue is then categorised as 'Negligible' (score of 0), 'Low' (score of 1-6), 'Moderate' (score of 7-12), 'High' (score of 13-17) and 'Extreme' (score of 18 or greater) priority, according to their overall risk score (see Table 4 below). Once ranked, it is assumed that issues scoring 'low' or 'negligible' should not require specific management actions whereas issues with 'high' and 'extreme' scores should all require urgent management actions. At the end of each ERA workshop, issues which scored 'risk' values of 7 and higher were retained as high priority issues to be brought to the attention of the relevant fisheries management agency for potential remedial management action.

Table 4: List of issues

ID	Issues	Consequence	Likelihood	Risk (product of Cons and likelihood)	Risk Category
e.g. 1	Stock status of Blue fin tuna	5	6	30	Extreme
2	Etc.				

At the end of day one it is important to clean up the data sheets and prepare for Day 2.

Preparation between Day 1 and 2

The table of issues raised in day 1 need to be printed for use on Day 2. The facilitators will need to go through all of the issues raised in day 1 and input them into the data entry table for Day 2. During Day 1 the issues are raised under specific objectives but not the sub objectives, they therefore need to be assigned to a sub objective. For example in Table 5 below the sub objective relates to the diet of dependant predators and in the second column there three numbers, 31, 32 and 33, these numbers all correlate to issues raised in day 1. Issues can fall under more than one objective or sub objective. It is important for the facilitator to ensure that all issues are represented in the relevant objective or sub objective. The data entry sheet then needs to be saved on a flash drive for the groups to copy and work off on Day 2.

Table 5: Management response report using EAF tracking tool

Objective	Issues	Priority	Step	Description of step	Comments (incl details of progree, barriers etc)	Next step (to be undertaken within the next 18 months)	Resonability
There is good understnding of the trophic role, diets and foraging behaviour of predators that are depentant on small pelagic species	31, 32, 33	Extreme	4	Prelimanary data available, but not yet analysed	A comprehensive project on moult counts, breeding success, diet sampling, tracking etc for penguins and gannets is underway. Feasibility study underway to assess impact of closed areas on penguins...	Continue monitoring of seabird (penguins, gannets & cormorants) on off shore islands. Analyses on how natural mortality in small pelagic fish attributable to cape gannets varies in relation to small pelagic biomass	Small Pelagic SWG/EAF SWG

Expanded Agenda for Day 2

8.30am   Group work - develop/identify the appropriate management or research response to priority issues

Day 2 is dedicated to developing and identifying the appropriate management response to address the priority issues raised during day 1. This process aims to assign scores to each objective to be able to quantitatively assess EAF implementation. It is also aimed at detailing any challenges or areas of progress in addressing specific issues, as well as developing management actions to address issues going forward. See below for a detailed description on this process.

10.30am   Tea
11am   Group work - Develop/identify the appropriate management or research response to priority issues
1pm   Lunch
1.45pm   Group work - develop/identify the appropriate management or research response to priority issues
3pm   Tea
3.15pm   Plenary - Group feedback on key areas of progress and challenges

For the last part of the day the groups feedback to plenary on the key areas of progress and the key challenges discussed in relation to their specific objectives. It is important for these discussions to be kept succinct to reporting on key areas instead of rehashing the groups' discussion. This session is an opportunity to get consensus from the broader group on each groups' discussions.

4.30pm   - Meeting closure

Develop/identify the appropriate management or research response to priority issues

Participants are ideally divided into four groups as follows:

Group 1: To develop management response to priority issues raised under objectives 1 and 9 (research and data procedures)

Group 2: To develop management response to priority issues raised under Objectives 2 and 10 (management and external impacts)

Group 3: To develop management response to priority issues raised under Objectives 3, 4 and 5 (social, economic and participatory structures)

Group 4: To develop management response to priority issues raised under Objectives 6, 7 and 8 (Management plans, compliance, and capacity and skills)

There should ideally be at least 3 individuals in each group. If there are insufficient workshop participants you can consider collapsing group 1 and 2 into one group and 3 and 4 in to a single group.

Each group needs to develop performance reports using the EAF tracking tool framework (Paterson and Petersen, 2010) for all issues of sufficient priority (i.e. greater than 'Moderate' risk) according to the template in Table 3 (full data entry template is available on the CD). This framework allows for the formulation of an operational objective, activities to address a particular issue already underway or barriers to progress to be recorded and additional actions still required to be identified. It is also important to identify which individual or group is responsible for taking the agreed activities forward. This forms a baseline against which to monitor and measure progress.

Each group is expected to follow these steps:

1. Open the relevant document: "DAY 2 Output" sheet in the "ERA_Data entry table template"
2. Identify the current process step – use the step tables provided on the training CD to assign the process step. Below is an example of a step table. There are different step tables for the different objectives; the data entry table does indicate which table to use for each objective in the column labelled "step table". The group must choose where on the table the fishery scores for the specific objective and the issues raised under that objective.

SCORE	Research/good understanding
1	No research initiated or needs identified
2	Research needs/issues have been identified and prioritised
3	Research to address basic needs is underway
4	Preliminary data available, but not yet analysed
5	Research adequately addresses priority needs
6	Research is producing comprehensive results beyond priority needs
7	Research is producing comprehensive results beyond priority needs and are regularly published in peer reviewed reports/papers

1. Input the chosen step into the column titled "step".
2. Make note of achievements, or barriers that are hindering progress or any other comments in the column entitled "Comments (include details of progress, barriers etc.)".
3. Identity the priority next actions and type this into the column entitled "Next action (details of research or management required to fulfil objectives)".
4. Assign a responsible party to carry out the next actions and type this in the column entitled "Responsibility".
5. Prepare the key areas of progress and challenges and key next steps for each objective covered – to be presented at the end of the day in the plenary session.

ERA Review methodology

The ERA review methodology is similar to the original ERA methodology except the identification and prioritisation of issues step is not conducted. In an ERA review the aim is to assess progress and challenges met on the management actions developed in the original ERA.

Expanded agenda for Day 1

8.30am   Welcome

A senior government official should open the workshop and address the following:

• clearly state the objectives of the workshop;
• emphasise the importance of the workshop and ERA process to the department; and
• how workshop outcomes will be used and what follow up action can be expected.

This is important to ensure workshop participants, who have taken time out of their busy schedules and frequently forfeited a day at sea, and hence their livelihood, feel that this sacrifice is worthwhile and valued by the department.

8.45am   Background and Introduction

This should comprise of two presentations. The first (presented by the workshop facilitator) should provide:

- an introduction to an EAF;
- why ERA's can assist in the implementation of an EAF; and
- introduce the ERA process.

A draft presentation is available on the Training CD. Introductions to the ERA review process and proceedings for the day are presented by the facilitator. The second presentation (presented by the fisheries manager or chief scientist) should provide background to the fishery or sector under consideration as well as the key outcomes from the original ERA and some overarching progress and challenges met since the ERA was conducted.

9.30am   Group work – identifying areas of progress and next steps

For the remainder of the day the participants are broken up into groups which cover different objectives. Groups then assess progress made and challenges met on addressing issues since the previous ERAs as well as assigning step scores to each objective. A full description of the review methodology is detailed below.

10.30am   Tea
11am   Group work – identifying areas of progress and next steps
1pm   Lunch
1.45pm   Group work – identifying areas of progress and next steps
3pm   Tea
3.15pm   Group work – identifying areas of progress and next steps
4.30pm   Meeting closure

Identifying areas of progress and next steps

Participants are ideally divided into four groups as follows:

Group 1: To develop management response to priority issues raised under objectives 1 and 9 (research and data procedures)
Group 2: To develop management response to priority issues raised under Objectives 2 and 10 (management and external impacts)
Group 3: To develop management response to priority issues raised under Objectives 3, 4 and 5 (social, economic and participatory structures)
Group 4: To develop management response to priority issues raised under Objectives 6, 7 and 8 (Management plans, compliance, and capacity and skills)

There should ideally be at least 3 individuals in each group. If there are insufficient workshop participants you can consider collapsing group 1 and 2 into one group and 3 and 4 in to a single group.

Each group is expected to follow these steps:

1. Open the relevant document: ERA review workshop: "Datasheet" sheet in the "ERA review_ Data entry table template"

2. Identify the current process step – use the step tables provided on the training DVD to assign the process step. Below is an example of a step table. There are different step tables for the different objectives; the data entry table does indicate which table to use for each objective in the column labelled "step table". The group must choose where on the table the fishery scores for the specific objective and the issues raised under that objective.

SCORE	Research/good understanding
1	No research initiated or needs identified
2	Research needs/issues have been identified and prioritised
3	Research to address basic needs is underway
4	Preliminary data available, but not yet analysed
5	Research adequately addresses priority needs
6	Research is producing comprehensive results beyond priority needs
7	Research is producing comprehensive results beyond priority needs and are regularly published in peer reviewed reports/papers

3. Input the chosen step into the column titled "Step".
4. Make notes of achievements, or barriers that are hindering progress or any other comments in the column entitled "Comments (include details of progress, barriers etc.)".
5. Identity the priority next actions and type this into the column entitled "Next action (details of research or management required to fulfil objectives)".
6. Assign a responsible party to carry out the next actions and type this in the column entitled "Responsibility".
7. Prepare the key areas of progress and challenges and key next steps for each objective covered – to be presented at the end of the day in the plenary session.

Preparation between Day 1 and 2

If possible, as each group completes their discussions and recordings, print out the groups' data sheets for the larger group to take home and look over that evening. This way the report back the next day can be more constructive as participants would have had a chance to look over what was discussed during day one. After the work shop the facilitator must collate all the groups' data sheet into one sheet for discussion and editing the next day.

Expanded agenda for Day 2

8.30am   Plenary review of Day 1's outputs – Group 1

Each group is given a chance to report back in plenary. Be sure to keep this focused and do not re-hash all the discussion of the day before. Report back from each group must only cover the key areas of progress and challenges and the key next steps for each objective covered. Groups may also raise points where there was no consensus within the small group to gain consensus with the broader group. After the plenary session draw out the top 10 key actions which were identified through the workshop and get consensus from the group that these are the key areas for action.

It is useful to have one person facilitating and a second person scribing with the data sheet on a projector to make any changes on the data sheet as they are discussed. Be careful though to not let groups just read straight from the data sheet during feedback, as this tends to take a lot longer and it is not necessary to go over every point raised in the groups.

It is important to keep track of time on this day as it is possible for the workshop to run over time. If the groups stick to the suggested reporting format of only reporting on key barriers and successes the day can end at lunchtime.

10.30am	Tea
11am	Plenary review of Day 1's outputs – Group 2
1pm	Lunch
1.45pm	Plenary review of Day 1's outputs – Group 3
3pm	Tea
3.15pm	Plenary review of Day 1's outputs – Group 4
4.30pm	Meeting closure

During the meeting closure the facilitator can give a presentation (template on the "Training DVD") explaining how the results of the ERA can be interpreted. If possible, insert a graph of the current ERA reviews overall results to give the group and understanding of what the outcome is.

STEP 4 – Post workshop i.e. Report write-up and follow up

Once the workshops have concluded it is best to attempt compiling the reports as soon as possible whilst the discussions and results are fresh.

Post workshop procedure:
1. Workshop report
   a) Analyse results
   b) Write report
   c) Circulate to workshop participants
   d) Incorporate comments
   e) Distribute final report
2. Present workshop report and findings at key working groups
3. Outcomes to inform fishery management and implementation

Box 3: Guidance on the process following the ERAs and Review workshops

1. Workshop report

a) Analyse results (this section should be read in conjunction with the "results" excel sheet found on the CD)

- Input data into the "summary" spread sheet – the "step" scores (obtained from the "Data entry table template") and "Risk" ratings (obtained from the "DAY 1 output" sheet) must be input into the "summary" spread sheet found in the "Results" excel spread sheet.
- The step scores are then weighted according to their risk rating using the formula in the spreadsheet. These are then used to calculate an overall percentage score for each sub objective as well as each objective.
  - *During this step it is important to note that some objectives are not valid for all fisheries and therefore there won't be a score for it and this could skew the results. Therefore the person analysing the results needs to check that the data is copied across to the "summary" sheet correctly.*
- The percentages are then copied to the "graphs" spreadsheet where it is possible to produce overall graphs showing the percentage of EAF implementation.

b) Write report

The report should ideally be written by the fishery manager (with support from the facilitators). This is important to ensure the fishery manager 'owns' the report as he will be responsible for ensuring implementation and follow up on agreed actions. There is a suggested report template for an ERA and an ERA review on the Training CD. This report template is structured in a way to simplify and standardise report writing. It is important that the report is not just a repeat of what is written in the data entry table but rather a summary of the key areas of progress and challenges. The report is meant to be a short overview of the main discussions from the workshop. It is important that the report be written as soon after the workshop as possible so that the discussions are still fresh in the participants' minds and their comments and edits to the draft report should be more accurate.

c) Send report out for comment

The report should be sent out to workshop participants for their comments and edits. Participants should be given 2-3 weeks to provide comment. Note that step scores should not be changed based on individual comments as these were agreed in the workshop in a multi-stakeholder setting.

d) Consider comments, finalise and sign off

The comments received should be considered and incorporated (where relevant) into the report. The report should be finalised and sent out to workshop participants.

2. Present results at relevant working groups

Once the report is final, the fishery manager and relevant government personnel should present the outcomes of the workshops to senior management as well as management and scientific working groups (sector specific and cross cutting working groups such as EAF, biodiversity or MPA groups) to allow for the communication of the results to senior management and other key stakeholders. Each group should identify the issues and actions relevant to them, and develop an action plan to ensure implementation.

3. Outcomes to inform fishery management and implementation plans

The outcomes of the workshop should be used as a basis for a fishery management and implementation plan. As the tracking tool covers all aspects of EAF management the outcome provides a good basis to ensure that fishery management plans cover all the correct aspects. The EAF tracking tool can be used as a means to ensure monitoring and evaluation of the plan. Therefore every three years when the ERA reviews are conducted it is possible to monitor and evaluate progress on a management plan. This also provides a tool for stakeholders to hold management accountable for delivering on actions if these outcomes are formally fed into management plans.

Useful references for the facilitator:

FAO. 2005. Putting into practice the ecosystem approach to fisheries. Rome.

Fletcher, W.J., Chesson, J., Fisher, M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M., Whitworth, B. 2002) National ESD Reporting Framework for Australian Fisheries: The 'How To' Guide for Wild Capture Fisheries. FRDC Project 2000/145, Canberra, Australia, 120 pp.

Paterson, B., Petersen, S.L. 2010. EAF implementation in Southern Africa: Lessons learnt. *Marine Policy*. Vol **34**: 276-292.

Section 3: Ecological Risk Assessments and Review Reports for South Africa, Namibia and Angola (2010-2013)

Table 1 below lists the ERA and review reports published from 2004 to 2013. This section will publish the reports for 2010 to 2013. This was the final phase of the BCLME programme, with the respective country government departments leading and facilitating the ERA and Review workshops therefore some of the reports are incomplete due to capacity constraints.

Table 1: ERAs and Review reports 2004 - 2013

Phase One: 2004-2007 (Available online)
SOUTH AFRICA:
Demersal Hake Fishery ERA
West Coast Rock Lobster Fishery ERA
Small Pelagic Fishery ERA
Squid Fishery ERA
Large Pelagic Fishery ERA
NAMIBIA:
Demersal Hake Fishery ERA
Midwater Trawl Fishery ERA
Small Pelagic Fishery ERA
Phase Two: 2007-2009 (Available online Vol1 and Vol 2)
SOUTH AFRICA:
Linefishery ERA
Demersal Hake Fishery ERA Review
Small Pelagic Fishery ERA Review
West Coast Rock Lobster ERA Review
NAMIBIA:
Rock Lobster Fishery ERA
Demersal Hake Fishery ERA Review
Small Pelagic Fishery ERA Review
Midwater Trawl Fishery ERA Review
Phase Three: 2010-2013 (Available online, click ERA title below)
SOUTH AFRICA
Patagonian Toothfish Fishery ERA
KZN Prawn Trawl Fishery ERA (tables only)
South Coast Rock Lobster ERA (draft)
Abalone Fishery ERA Review
Demersal Hake Fishery ERA Review
Large Pelagic Fishery ERA Review
Squid Fishery ERA Review
Linefishery ERA Review (tables only)
Small Pelagic Fishery ERA Review
West Coast Rock Lobster Fishery ERA Review
NAMIBIA
Monkfish ERA
Large Pelagic ERA
Demersal Hake Fishery ERA Review (no report)
ANGOLA
Training workshop report