Agulhas and Somali Current Large Marine Ecosystems Project

National Report on the Causal Chain Analysis Meetings (14th July to 15th August 2011)

(Draft 1)

Seychelles

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1 ACRONYMS

ASCLME	Agulhas and Somali Currents Large Marine Ecosystem
CCA	Causal Chain Analysis
GEF	Global Environment Facility
MAC	Main Area of Concern
MEDA	Marine Ecosystem Diagnostic Analyses
TDA	Transboundary Diagnostic Analysis
SAP	Strategic Action Programme
SWIOPF	South-Western Indian Ocean Fisheries Project
WIO-Lab	Western Indian Ocean Land Based Sources Project

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INTRODUCTION

The Agulhas and Somali Currents Large Marine Ecosystem (ASCLME) Project is one of three parallel projects within the multi-agency ASCLME Programme which aims to institutionalize cooperative and adaptive management of the Agulhas and Somali LME. The ASCLME Programme projects include the

- Agulhas and Somali Currents Large Marine Ecosystem (ASCLME) Project (implemented by UNDP),
- Western Indian Ocean-Land Based Sources (WIO-LaB) Project that addresses land-based sources of pollution (implemented by UNEP); and
- South-Western Indian Ocean Fisheries Project (SWIOFP) that aims to build knowledge for managing industrial offshore fisheries (implemented by the World Bank).

These three projects are all supported by the Global Environment Facility (GEF) and coordinated by the UNDP ASCLME Project.

The ASCLME Project has adopted a phased approach that aims to progressively build the knowledge base and strengthen the technical and management capabilities at the regional scale to address transboundary environmental concerns within the LMEs, build political will to undertake threat abatement activities and leverages finances proportionate to management needs. ASCLME Project activities focus on filling the significant coastal and offshore data gaps by capturing information relating to the dynamic ocean-atmosphere interface and other interactions that define the LMEs, along with data on artisanal fisheries, larval transport and nursery areas along the coast.

The objective of the intensive data capture phase is to deliver national Marine Ecosystem Diagnostic Analyses (MEDAs) that will form the basis for a regional Transboundary Diagnostic Analysis (TDA) and a Strategic Action Programme (SAP). The addition of this data capture phase to produce the MEDA at the national level is a new addition to the standard TDA to SAP process that is unique to the ASCLME (Figure 1 and Figure 2). The parallel UNEP and World Bank Projects will also supply information that will feed into the process. Together the three projects will provide the basis to help identify policy, legal and institutional reforms and investments to address transboundary priorities.

All nine of the countries participating in the ASCLME project were tasked with preparing a MEDA. The documents were drafted by national technical experts following a standard format. In preparing the MEDAs the technical experts were also asked to identify particular issues or areas of concern at the national level. The issues or areas of concern were consolidated into an annex to the MEDAs, and it is these annexes and the draft MEDA that provided the basis for this work.

The purpose of this work is to commence the process of consolidating the information captured at the national level in the MEDA in preparation for the development of the regional TDA and SAP. The standard TDA to SAP process applied by GEF International Waters, requires the identification and prioritisation of transboundary issues, an analysis of nature and extent of the 'problems' or issues in terms of their environmental and socio-economic consequences, followed by Causal Chain Analysis (CCA), which is used to identify direct (immediate), underlying and ultimately root causes. The identification of root causes is important because root causes tend to be more systemic and fundamental contributors to environmental degradation. Interventions and actions directed at the root causes tend to be more sustainable and effective than interventions directed at immediate or underlying causes. However, because

the linkages between root causes and solutions are often not clear to policymakers, interventions are commonly erroneously directed at immediate or underlying causes.

Traditionally, GEF IW LME projects have applied this process of identifying priority transboundary issues, and analysing the impacts and causes, and root causes has been applied at the regional level. The addition of the MEDA within the ASCLME Project, provides the countries with the opportunity to undertake a more detailed analysis of the issues of concern at the country level first and to explore their specific national level root causes for the priority issues. In order to achieve this, the ASCLME organised series of national Causal Chain Analysis meetings to discuss and identify priority issues at the national level, and to analyse the cause-effect relationships from immediate to root causes, and to identify those causes that most significantly contribute to the problem at the national level. Prioritizing the causes will be a crucial component of the next stage in the process, taking contextual, financial and political issues into consideration, to select the causes amenable to remediation at the regional level.

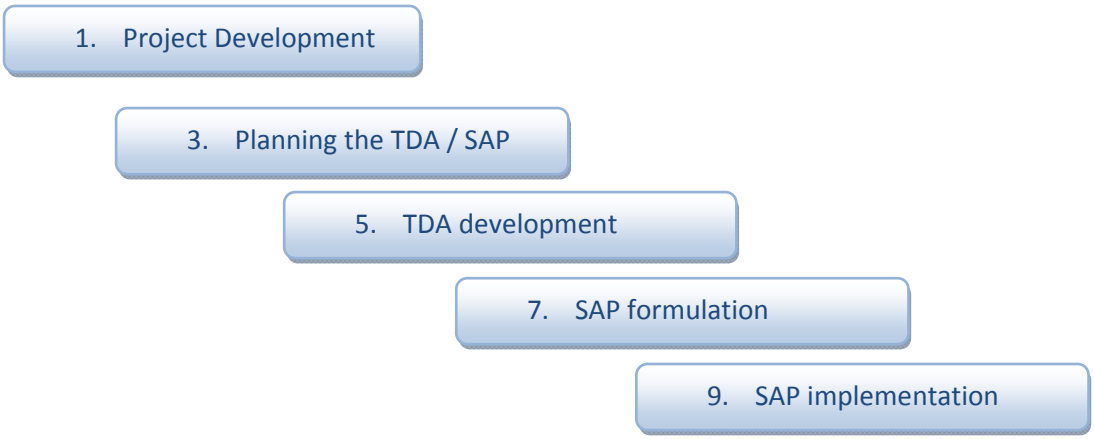

Figure 1: The standard GEF IW LME TDA to SAP process, which involved 5 steps from the initial project development to implementation of the SAP

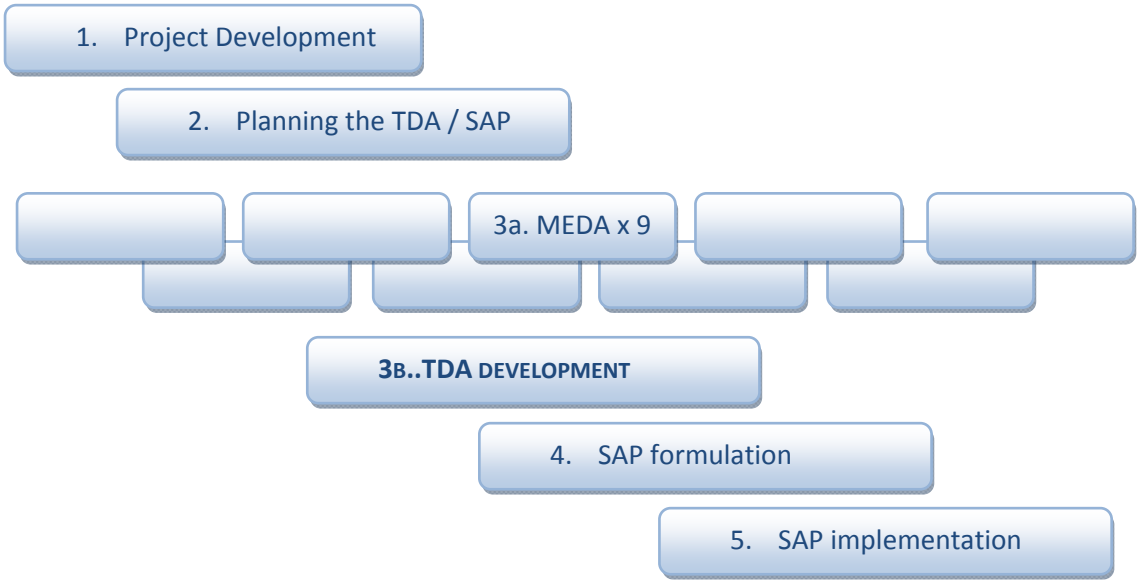

Figure 2: The ASCLME TDA to SAP process, with the 5 steps from the initial project development to implementation of the SAP, with the additional MEDA step, which allows for a more detailed analysis of the issues and causal relationships at the national, before TDA development.

4 PURPOSE AND SCOPE

The purpose and overall objective of this assignment was to assist the ASCLME Project Coordination Unit Project to develop national Causal Chain Analyses in support of the regional TDA. The specific responsibilities outlined in the terms of reference were:

- Reading and reviewing ASCLME MEDA documents and key literature
- Causal Chain Analysis meeting preparation
- Facilitation of National Causal Chain Analysis workshops (in each country)
- Causal Chain Analysis reporting and follow-up

This report outlines (i) the findings from the initial review and issue scoping from the draft MEDA, (ii) the process used to prepare the draft issues framework for discussion at the Causal Chain Analysis meetings (iii) the standard methodology used during the National Causal Chain Analysis workshops to assist the countries to develop causal chains for the top priority issues and, (iv) the initial results from each of the national meetings.

5 METHOD

5.1 REVIEW OF AVAILABLE DOCUMENTATION

The documents provided for the purposes of the review in advance of the National CCA meetings are listed in Table 1. These documents included the draft MEDA for eight out of the nine countries (with the exception of Comoros), and a draft version of Annex XIII for all nine countries, which summarised the Areas of Concern identified from the MEDA.

Table 1: List of the documents provided for the review in advance of the CCA meetings.

Country	Source	Document Date
Comoros	Comoros Annex XIII Areas of Concern.doc	
Kenya	Kenya MEDA v5b for review.doc – excluding annexes	01/06/2011
	Kenya Annex XIII Areas of Concern.doc	01/06/2011
Madagascar	Madagascar MEDA v5 for review.doc – excluding annexes	01/06/2011
	Madagascar Annex XIII Areas of Concern.doc	01/06/2011
Mauritius	Mauritius MEDA for review v3c.doc – excluding annexes	07/06/2011
	Mauritius Annex XIII Areas of Concern.doc	07/06/2011
Mozambique	Mozambique MEDA for review v2a.doc – excluding annexes	12/06/2011
	Mozambique Annex XIII Areas of Concern.doc	12/06/2011
Seychelles	Seychelles MEDA for review.doc – excluding annexes	12/06/2011
	Seychelles Annex XIII Areas of Concern.doc	12/06/2011
Somalia	Somalia MEDA v4.doc – excluding annexes	01/06/2011
	Somalia Annex XIII Areas of Concern.doc	01/06/2011
South Africa	South Africa MEDA for review.doc – excluding annexes	01/06/2011
	South Africa Annex XIII Areas of Concern.doc	01/06/2011
Tanzania	Tanzania MEDA for review.doc – excluding annexes	01/06/2011
	Tanzania Annex XIII Areas of Concern.doc	01/06/2011

The MEDA documents were all prepared following a standard format (the outline table of contents is provided below Table 2). After each subsection, the local technical experts had been asked to identify and bullet the Issues or 'Areas of Concern' as discussed in the preceding section. These lists had then been consolidated by the PMU and used to prepare the draft Annex XIII.

In this context, the purpose of the review of the MEDAs was to identify and extract the issues or concerns at the national level for the purposes of the Causal Chain Analysis meetings. The MEDA's were meanwhile also undergoing a more comprehensive peer review process by national and regional experts[1].

[1]The MEDA documents were concurrently being review by (i) national experts in each of the countries and, (ii) by two regional experts, who were assigned the task of reviewing the MEDAs from all the mainland countries (Somalia, Kenya, Tanzania, Mozambique and South Africa) and from the island nations (Seychelles, Mauritius, Madagascar, Comoros).

The review revealed that, in general, the quality of the content of the text in the main body of the MEDA was high. However, the identification and analysis of these issues or 'Areas of Concerns', was generally poorly developed. The majority of the MEDA documents were also still missing information from some sections and annexes. Various background documents that were to be included in the MEDAs, either in the main body of the text, or as annexes were either still under preparation or were not made available in advance of the national CCA meetings (e.g. Coastal Livelihood Assessments, Cost-Benefit Analyses and Policy and Governance Analyses).

A more in depth comparison of the issues listed as 'Areas of Concern' in Annex XIII with those discussed in the MEDA documents, revealed that not all the issues were captured in the Annex. Conversely, not all of the issues listed in the 'Areas of Concern' were discussed in the MEDA. In some instances, example issues that had been supplied with the MEDA document template, were left in as bullet points in the 'Areas of Concern'. While these may have been pertinent issues to the country, they were not discussed in the main body of the text of the MEDA. The Annex XIII documents were therefore disregarded from this point forward, and the review efforts focussed on extracting issues from the MEDAs themselves.

In most of the MEDA, the section of the document that was consistently nearest completion between all countries (with the exception of Comoros), and for which most 'Areas of Concern' had been identified if not analysed, was section 2 on the 'Biophysical Environment'. Typically, the first step in causal chain analysis is the identification and prioritisation of the environmental issues of greatest concern. It was thus agreed that the discussions during the national CCA meetings should focus first on these biophysical environmental issues. Other parts of the MEDA, which could provide the detail to help explain the underlying higher level relationships that contribute towards environmental degradation, could then be drawn upon at a later date.

Table 2: Table of contents for the Marine Environmental Diagnostic Analysis (MEDA) documents.

5.2 DEVELOPMENT OF DRAFT ISSUES FRAMEWORK

5.2.1 Issue Identification and Capture

Each MEDA document was reviewed and the issues that were discussed in the body of the text, and those highlighted in the bulleted lists at the end of each subsection, were extracted and copied into an Excel spreadsheet. This process aimed to capture the full range (scope) of different issues that are impacting upon different parts of the marine ecosystems within these LMEs and those that the countries of the ASCLME are particularly concerned about.

5.2.2 Issue Categorization

There was a wide range issues extracted from the MEDA and the phraseology used to describe the issues was highly variable, which was to be expected as the MEDA documents had been written by different national technical experts. There were however common themes and suites of issues that were identifiable between countries. A mechanism was therefore needed to categorise and catalogue these issues into a consistent issues framework to allow comparability between countries. Given the broad spectrum of issues highlighted in the MEDA, it was also apparent that the framework to be developed would need to be holistic and adopt an ecosystem approach. The issues identified from the MEDA were thus used to develop a comprehensive draft list of specific issue categories, using consistent terminology.

5.2.3 Identification of Main Areas of Concern

The issues were allocated into four Main Areas of Concern, as follows:

- Main Area of Concern 1: Water quality degradation
- Main Area of Concern 2: Habitat and community modification
- Main Area of Concern 3: Declines in living marine resources
- Main Area of Concern 4: Unpredictable Environmental Variability and Extreme Events

5.2.4 Classification of Issues and Construction of Issues Framework

Each of the issues extracted from the individual MEDA documents were then classified according to the Issue Categories.

For example, an issue highlighted in the Kenya MEDA which related to mangroves, "*Mangroves in Kenya have been heavily impacted by human activities particularly through the removal of wood products, conversion pressure, and pollution. Recent estimates indicate a 20% decline in mangrove area over the last two decades*", was classified as issue *3.2.6. Disturbance, damage and loss of mangrove habitats*.

Some of the issues expressed in the MEDA were relevant to more than one issue category. In this instance they were recorded under both issue categories. For example, an issue related to the degradation of seagrass beds, which was also reportedly to be affecting the status of dugong populations, was recorded as an issue under both relevant issue categories.

This process enabled the production of an initial Draft Issues Framework (Table 3), which identified common issues between countries, and provided one of the first points for discussion and validation at the National CCA meetings.

Table 3 Draft Issues Framework for discussion at Causal Chain Analysis Workshops (July-August 2011)

Major Area of Concern	Issue No.	Issues	Comoros	Kenya	Madagascar	Mauritius	Mozambique	South Africa	Seychelles	Somalia	Tanzania	TOTAL
1. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load		✓	✓	✓	✓	✓	✓	✓	✓	8
	1.2.	Degradation of ground and surface water quality		✓	✓	✓		✓	✓	✓	✓	7
	1.3.	Degradation of coastal and marine water quality		✓	✓	✓	✓	✓	✓	✓	✓	8
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources		✓	✓	✓	✓		✓	✓		6
	1.3.2	Nutrient enrichment from land-based (domestic, industrial, agriculture, livestock) and marine (mariculture) sources		✓	✓	✓	✓		✓	✓	✓	7
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources			✓	✓	✓	✓	✓	✓	✓	7
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone		✓	✓	✓	✓	✓	✓	✓		7
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources		✓	✓	✓			✓	✓	✓	6
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).		✓	✓	✓	✓	✓	✓	✓	✓	8
2: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion		✓	✓	✓	✓	✓	✓	✓	✓	8
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats		✓	✓	✓	✓	✓	✓	✓	✓	8
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)			✓	✓		✓	✓	✓		5
	2.2.2.	Disturbance, damage and loss of coastal forest habitats		✓	✓			✓			✓	4
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)		✓	✓	✓	✓	✓	✓	✓	✓	8
	2.2.4.	Disturbance, damage and loss of wetland habitats		✓	✓	✓						3
	2.2.5.	Disturbance, damage and loss of estuarine habitats		✓				✓		✓		3
	2.2.6.	Disturbance, damage and loss of mangrove habitats		✓	✓	✓	✓	✓		✓	✓	7
	2.3.	Disturbance, damage and loss of subtidal benthic habitats		✓	✓	✓	✓	✓	✓		✓	7
	2.3.1.	Disturbance, damage and loss of coral reef habitats		✓	✓	✓	✓	✓	✓	✓	✓	8

Major Area of Concern	Issue No.	Issues	Comoros	Kenya	Madagascar	Mauritius	Mozambique	South Africa	Seychelles	Somalia	Tanzania	TOTAL
	2.3.2.	Disturbance, damage and loss of seagrass habitats		✓	✓	✓	✓		✓	✓	✓	7
	2.3.3.	Disturbance, damage and loss of macroalgal habitats						✓				1
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		✓	✓	✓	✓	✓	✓	✓	✓	8
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)			✓			✓				2
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore<30 m, neritic 30-200m and oceanic >200m depth)		✓	✓	✓		✓	✓	✓		6
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)		✓	✓	✓			✓	✓	✓	6
	2.6.	Introduction of exotic non-native species, invasives and nuisance species		✓	✓	✓	✓	✓	✓	✓	✓	8
3: Declines in living marine resources	3.1.	Declines in populations of focal species		✓	✓	✓	✓	✓	✓	✓	✓	8
	3.1.1.	Declines in populations of marine mammals		✓	✓	✓	✓	✓	✓	✓	✓	8
	3.1.2.	Declines in populations of cetaceans			✓		✓		✓	✓		4
	3.1.3.	Declines in populations of seabirds		✓	✓	✓	✓	✓	✓	✓		7
	3.1.4.	Declines in populations of turtles		✓	✓	✓	✓	✓	✓	✓	✓	8
	3.2.	Declines in populations of commercial fish stocks		✓	✓	✓	✓	✓	✓	✓	✓	8
	3.2.1.	Declines in populations of sharks and rays			✓	✓	✓	✓	✓	✓		6
	3.2.2.	Declines in populations of large pelagic			✓	✓		✓	✓	✓		5
	3.2.3.	Declines in populations of small pelagic			✓			✓		✓	✓	4
	3.2.4.	Declines in populations of deep water demersals						✓			✓	2
	3.2.5.	Declines in populations of reef and demersal fish		✓	✓	✓	✓	✓	✓	✓	✓	8
	3.3.	Declines in populations of commercial invertebrates		✓	✓	✓	✓	✓	✓	✓	✓	8
	3.3.1.	Declines in populations of molluscs (bivalves, gastropods)			✓			✓		✓	✓	4
	3.3.2.	Declines in populations of abalone						✓				1
	3.3.3.	Declines in populations of cephalods			✓	✓					✓	3

Major Area of Concern	Issue No.	Issues	Comoros	Kenya	Madagascar	Mauritius	Mozambique	South Africa	Seychelles	Somalia	Tanzania	TOTAL
	3.3.4.	Declines in populations of sea cucumbers		✓	✓	✓			✓	✓	✓	6
	3.3.5.	Declines in populations of sea urchins			✓							1
	3.3.6.	Declines in populations of prawns and shrimp			✓	✓	✓			✓	✓	5
	3.3.7.	Declines in populations of lobsters			✓					✓	✓	3
	3.3.8.	Declines in populations of crayfish			✓					✓		2
	3.3.9.	Declines in populations of crabs		✓	✓					✓		3
	3.4.	Excessive bycatch and discards		✓	✓	✓	✓	✓		✓	✓	7
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)		✓	✓	✓	✓	✓	✓			6
4: Risks, unpredictable environmental variability and extreme events	4.1.	Climate hazards and exteme weather events (cyclones, storms, rainfall, coastal flooding)		✓	✓	✓	✓	✓	✓	✓	✓	8
	4.2.	Sea level change		✓	✓	✓	✓	✓	✓	✓	✓	8
	4.3.	Ocean acidification		✓	✓	✓		✓	✓	✓	✓	7
	4.4.	Changes in seawater temperatures		✓	✓	✓	✓	✓	✓	✓	✓	8
	4.5.	Changes to hydrodynamics and ocean circulation			✓		✓	✓		✓		4
	4.6.	Changes in productivity (shifts in primary and secondary production)		✓	✓	✓		✓	✓	✓		6
	4.7.	Geohazards (tsunamis, volcanic eruptions, earthquakes)		✓		✓	✓	✓		✓	✓	6

5.3 NATIONAL CAUSAL CHAIN ANALYSIS MEETINGS

5.3.1 National CCA Meeting Schedule

National CCA meetings were organised for each of the nine ASCLME countries between 14th July 2011 and 15th August 2011. Meeting attendees were identified and invited by the local ASCLME focal point and they included national experts in a wide range of topics from different government authorities and partner organisations. The meetings were typically facilitated by a team of three or sometimes four people, which included:

- Dr Rebecca Klaus (International Consultant - CCA)
- Ms Lucy Scott (Data Manager - ASCLME)
- Dr Ranjeet Bhagooli (Regional Consultant – ASCLME island nations)
- Dr Johnson Kitheka (Regional Consultant – ASCLME mainland nations)
- Mr Rondolph Payet (Chief Technical Advisor – SWIOPF project)

In Madagascar and Mozambique, national counterparts assisted in leading the facilitation of the working group sessions in order to address the language challenge.

The meeting schedule and associated travel workplan (which includes the list of facilitators at each meeting) is included in Annex 1.

5.3.2 National CCA Meeting Agenda

Each of the National CCA meetings followed the same outline agenda. During the first session, after the Registration and Welcome, attendees were introduced to the proposed list of activities through a series of presentations given by the Data Manager (Ms Lucy Scott) and the consultant (Dr Rebecca Klaus).

The first presentation provided attendees with an update on progress on the ASCLME Project. The second presentation introduced the process of Causal Chain Analysis and the third presentation provided an overview of the National Issues of Concern that had been identified from the MEDAs for that country and were included in the Draft Issues Framework.

The attendees were then divided into three roughly equal sized groups, one group for each of the first three Main Areas of Concern (MAC01, MAC02 and MAC03). A separate group was not created for the fourth Main Area of Concern (Risks, unpredictable environmental variability and extreme events) as the issues included in this MAC should arise through the CCA.

For the remainder of the day the groups worked through a series of different exercises:

- Session 1: the groups were asked to review the issues included in the Draft Issues Framework and to conduct a first level prioritisation. The aim of the first level prioritisation was to identify the issues of relevance at the national level, to validate the Draft Issues Framework, and to rank them in terms of their national importance.
- Session 2: the groups conducted a second prioritisation exercise, which considered the severity of the issue at the national level and the scope of each of the issue at the regional level. The result of this exercise was used to identify the top priority issues for inclusion in the Impact Analysis and CCA.
- Sessions 3 and 4: the groups commenced the Impact Analysis and CCA for a subset of high priority issues. Each group was advised to try to complete chains for between 3 to

5 of the top priority issues. Attendees then constructed two spider diagrams per issue, one to illustrate the impact analysis and the other to illustrate causal relationships between the direct (immediate), underlying and root causes.

5.3.3 Group Work Session 1: Prioritisation Level 1

The Draft Issues Framework was validated at the national CCA meetings during the first level 1 Prioritisation exercise. Attendees were asked whether or not the issue was relevant at the national level, or would be relevant in 10 years time if no action was taken. If the issue was not relevant now or likely to be relevant in the future, the issue was not discussed further. During this exercise, the facilitator for each group asked a series of 6 questions:

Question 1 National relevance?

The facilitator asked the group to identify if the issue was relevant in their country. The responses were classified as follows:

- ***Relevant*** (R): Relevant issue at the national level now and will continue unless acted upon.
- ***Future Relevance*** (FR): Not relevant now but likely to be relevant in 10 years time.
- ***Not relevant*** (NR): Not relevant now and unlikely to become an issue in 10 years time.

If the issue was relevant now or likely to be relevant in the future, the facilitator continued with questions 2 to 8.

If the issue was not relevant, and thought unlikely to become relevant, it was disregarded from this point forward.

Question 2 National Importance?

The groups were asked to rank the issues according to whether or not it was considered to be of high, medium or low priority at the national level and in the present day.

Question 3 Transboundary?

The group was then asked if they thought the issue was transboundary and responses were classified as follows:

- ***Transboundary*** (T): Relevant transboundary issue and likely to continue unless acted upon.
- ***Future Transboundary*** (FT): Not transboundary now but likely to be relevant in 10 years.
- ***Not transboundary*** (NT): Not a serious transboundary issue and unlikely to become a transboundary issue in 10 years time.

Question 4 Baseline?

The facilitator asked the group whether there was baseline data available related to the issue. If the answer was ‘yes’, the facilitator asked who collected the data orginally, what the data consisted of and who held responsibility for the data.

Question 5 Monitoring?

The facilitator asked the group if there was an ongoing monitoring programme related to the issue. If the answer was ‘yes’, the facilitator asked who was responsible for collecting the monitoring data, what the data consisted of, and who held responsibility for the data.

Question 6 Any missing issues?

Once the group had finished answering the above questions, the facilitator asked if there are were other issues that were not captured in the Draft Issues Framework.

5.3.4 Group Work Session 2: Prioritisation Level 2

A second level prioritisation was then carried out to assess the severity and scope of the issues. The facilitators asked the attendees the following two questions for each issue:

Question 7 Severity of the issue at the national level?

The facilitator asked the group to rank the issues again, now and how they imagine it could be in 10 years time, in terms of the:

- Environmental impact
- Socio-economic impact
- Macro-economic impact

The severity of each different impact type was ranked using the following categories:

- ***Very High (VH)***: Already a serious issue at the national level, likely to destroy or eliminate part of the ecosystem, or have severe socio- or macro-economic impacts, and will be even more widespread in 10 years time.
- ***High (H)***: The issue is becoming more of a problem, likely to seriously degrade part of the ecosystem, or have serious socio- or macro-economic impacts, and will become a more widespread problem in 10 years time.
- ***Medium (M)***: The issue is localized now, only likely to moderately degrade part of the ecosystem, or have moderate socio- or macro-economic impacts, and will still only affect a moderate part of these systems in 10 years.
- ***Limited (LR)***: The issue is not a serious issue now, will likely only slightly impair part of the ecosystem, or have mild socio- or macro-economic impacts, and will remain localized in 10 years.

Question 8: Scope of the issue at the regional level?

The facilitator then explained to the group that they wanted them to think about the geographic scope and impact of the issue at the regional level.

Transboundary scope

The facilitator asked the group to consider whether they consider the transboundary nature of the issue. The group was asked to rank the issue as follows:

- ***Very High***: Already a widespread issue in its scope and will continue to have a widespread affects on the ecosystem throughout the ASCLME region in 10 years.
- ***High***: Becoming more widespread and will affect the ecosystem in many parts of the ASCLME region in 10 years.
- ***Medium***: Is moderately localized in its scope now, but will spread and affect the ecosystem in some parts of the of the ASCLME region in 10 years.
- ***Limited***: Is localized in scope and will continue to only affect a limited part of the ecosystem in the ASCLME region in 10 years.

Scale of benefits of resolving the issue

The facilitator asked the group to consider whether they thought that it would be beneficial to try to resolve the issue. The group was asked to rank the issue as follows:

- ***Very High***: Very likely to bring widespread benefits throughout the ASCLME region in 10 years.
- ***High***: Likely to bring some benefits throughout the ASCLME region in 10 years.
- ***Medium***: The issue is localized and will benefit only some parts of the ASCLME region in 10 years.
- ***Limited***: Likely to only bring very localized benefits within the ASCLME region in 10 years.

Feasibility of finding solutions to the issue

The facilitator asked the group to consider whether they thought it was feasible to find a solution to the problem. The group was asked to rank the issue as follows:

- ***Very High***: Very likely to be able find a solution to this issue for the whole ASCLME region in 10 years.
- ***High***: Likely to be able find a solution to this issue for the whole ASCLME region in 10 years.
- ***Medium***: Likely to only be able to find localized solutions for some parts of ASCLME region in 10 years.
- ***Limited***: Likely to only be able to find very localized solutions in limited parts ASCLME region in 10 years.

The results of the Level 2 Prioritisation were consolidated and used to identify the top priority issues at the national level. Attendees were asked to compare the results with the Level 1 Prioritisation, and to determine if they agreed with those that had been identified as high priority.

5.3.5 Group Work Session 3: Impact Analysis

An Impact Analysis was carried out for the top three to five ranked issues identified through the Prioritisation exercises. Facilitators asked attendees to consider the environmental impacts of the issue, the ecosystem services most likely to be affected, the socio-economic consequences and the stakeholder groups most affected. The facilitator led the groups through the process of creating spider diagrams to illustrate the impacts for each issue:

Step 1: Environmental Impacts.

The facilitator started by writing the issue at the top of a sheet of flip-chart paper. They then asked the group to identify the environmental impacts, and using a spider diagram format, to record each impact. Once the group has identified the impacts, the facilitator asked the group to identify which ecosystem services would also be affected by that impact.

Step 2: Socio-economic Impacts.

The facilitator then asked the group to consider the socio-economic consequences for each impact, in terms of the economic impacts (welfare), social impacts (wellbeing) and ecological impacts (sustainability) aspects. The group were also asked to identify which of the stakeholder groups they thought would be impacted.

5.3.6 Group Work Session 4: Causal Chain Analysis

The final two Sessions in the meeting were used to construct causal chain analyses on the prioritised issues; to determine the direct causes and the sectors involved, the underlying resource use practices, legal, social, economic and political causes and then the root causes.

Constructing a causal chain is a relatively simple process which involves several different levels (direct causes (and sectors), underlying causes (resource use practices as well as social, economic, legal and political factors), and root causes. Each link in the chain is forged by asking the question 'Why?' Each time the question 'Why?' is asked, the response can be used to add another link in the chain, and repeatedly asking this same question, will eventually lead to the root cause. The facilitators led the groups through the process of constructing causal chains, by using the following steps to help the groups to construct the causal chain:

Step 1: Identify direct causes of the issue

Groups were first asked to identify the 'direct' causes of the issue. There may be multiple direct causes of any one issue, and the facilitators encouraged the attendees to identify as many of these as possible.

Step 2: Identify the sectors

The facilitator asked the group to identify the sectors that contribute to the direct causes in parallel with Step 1. For example, if a direct cause of an issue was 'Sedimentation' the sectors that contributed towards 'Sedimentation were identified.

Step 3: Link the sectors to the direct causes

The facilitator explained that some sectors may contribute to only one direct cause of any one particular issue, whereas as other sectors may contribute towards more than one of the direct causes of the issue. The facilitator asked the group to interlink the causes with the sectors.

Step 4: Identify the resource uses and practices that are the underlying causes

For each sector, the facilitator asked the attendees to identify what were the fundamental resource use practices that contribute to each direct cause.

Step 5: Identify social, economic, legal and political factors that are the underlying causes

For each sector, the facilitator asked the attendees to identify the social, economic, legal and political causes of the direct cause.

Step 6: Link the resource uses and practices, and social, economic and legal causes

The facilitator asked the attendees link the resource use practices with the social, economic, legal and political causes of the direct cause.

Step 7: Determine the root causes

The facilitator continued to ask the attendees why the resource use practices or social, economic and legal causes behind the issue persisted in an effort to reveal the root cause.

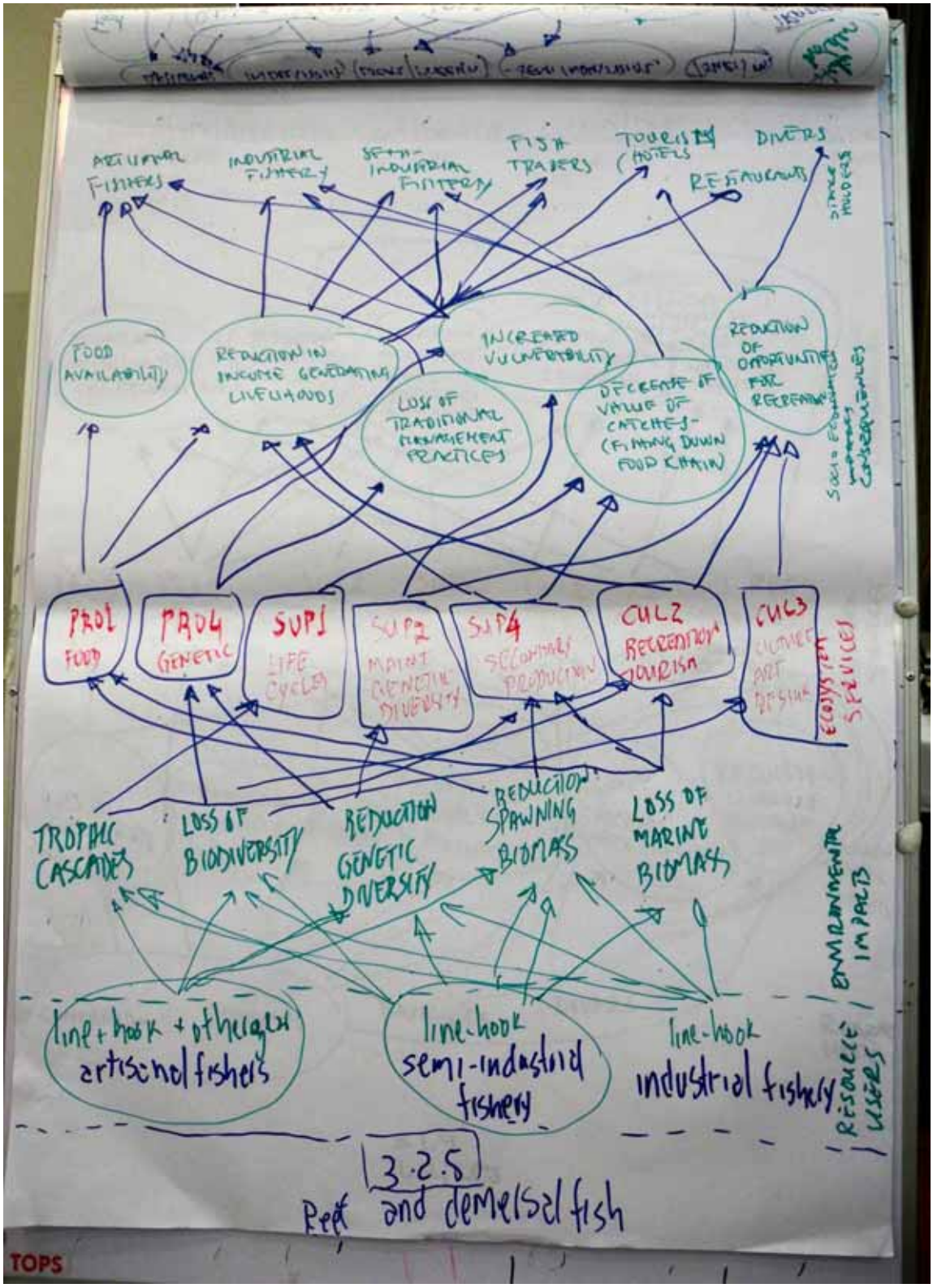

Figure 3:Example of the Impact Analysis for the issue *3.2.5 Declines in populations of reef and demersal fishes* from the National Causal Chain Analysis meeting in Mozambique.

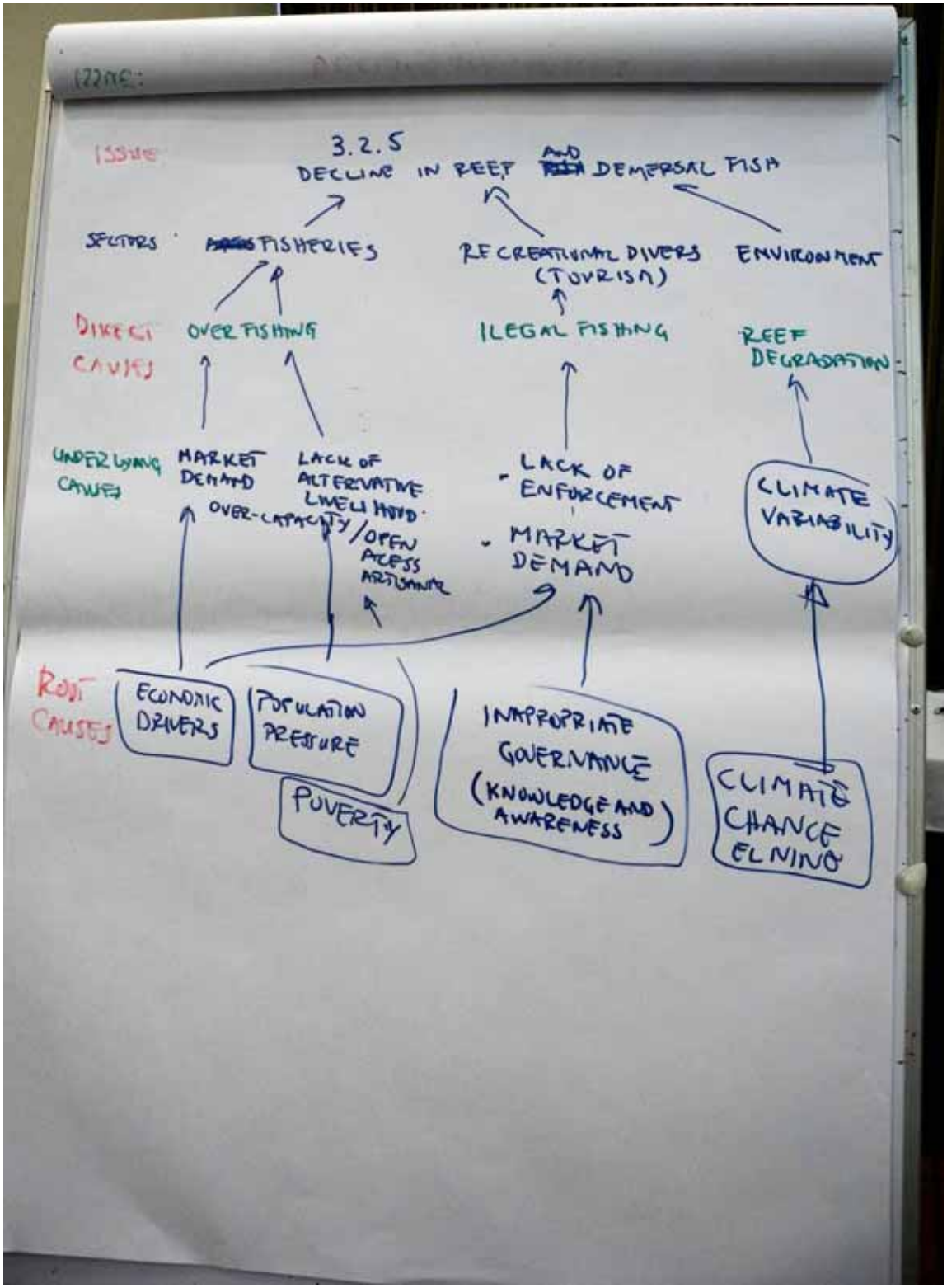

Figure 4: Example of the Causal Chain Analysis for the issue *3.2.5 Declines in populations of reef and demersal fishes* from the National Causal Chain Analysis meeting in Mozambique.

6 RESULTS

The outputs from the national Causal Chain Analysis meeting for each country are presented in Annex 3. For each country, these outputs include a table with results of the Level 1 prioritisation exercise, a table with the results of the Level 2 prioritisation exercise and a set of spider diagrams that illustrate both the Impact Analysis and Causal Chain Analysis for the set of issues for each Main Area of Concern, that were discussed at the meetings. The results from all countries been summarised and these are briefly presented below in a series of tables.

6.1.1 Group Work Session 1: Prioritization Level 1

Table 4 shows an updated version of the Draft Issues Framework presented in Table 3, as validated by the countries during the national CCA meetings. This table identifies which issues are considered to be relevant to the countries now (and in 10 years time).

Table 5 shows the first level ranking of the issues, in terms of whether countries consider the issue to be important at the national level, as completed during the Level 1 prioritisation.

Table 6 shows the availability of baseline data pertinent to each of the issues. If there was further specific details provided on the type of data, or the organisations that holds the data, these information are included in the Level 1 Prioritization tables in Annex 3.

Table 7 shows whether or not the countries have a monitoring programme related to the issue. If there was further specific details provided on the programme, such as the organization responsible for the monitoring, these information are included in the Level 1 Prioritization tables in Annex 3.

Table 8 shows whether or not the countries considered the issue to be transboundary in nature as part of the Level 1 prioritisation.

6.1.2 Group Work Session 2: Prioritization Level 2

Prioritisation Level 2 results for all countries are shown in Table 9 to Table 17.

Table 9 shows the ranking of the issues in terms of the severity of the environmental impacts caused by the issue. Table 10 shows the ranking of the issues in terms of the severity of the socio-economic impacts caused by the issue. Table 11 shows the ranking of the issues in terms of the severity of the macro-economic impacts caused by the issue. Table 12 shows the overall ranking in terms of the severity of the issues at the national scale for all countries.

Table 13 shows the perceived transboundary nature of the issues. Table 14 shows the ranking in terms of the scale of benefits that could be brought about by resolving the issue at the regional scale. Table 15 shows the perceived feasibility of solving the issue. Table 16 is the ranking of the issues in terms of the overall scope of the issue.

Table 17 presents the Level 2 prioritisation of the issues overall. The results presented here were used to select the issues for further examination in the Impact Analysis and the Causal Chain Analysis.

6.1.3 Group Work Session 3: Impact Analysis

Impact analysis was carried out for 29 of the issues. The impact analyses carried out for each country are shown in Table 18, and the results of the impact analysis for each of the issues completed during the national meetings are shown in Annex 3.

6.1.4 Group Work Session 4: Causal Chain Analysis

The issues for which Causal Chain Analysis was carried out are shown in Table 18, and the results of the CCA for each of the issues completed during the national meetings are shown in Annex 3.

Table 4 National Relevance of issues presented in Draft Issues Framework, as validated during Causal Chain Analysis Workshops (July-August 2011)

Major Area of Concern	Issue no.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	Relevant now	Relevent future	Not relevant
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	1.2.	Degradation of ground and surface water quality	✓f	✓	✓	✓	✓	✓	✓	✓	✓	8	1	0
	1.3.	Degradation of coastal and marine water quality	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	✓	✓	✓	✓	✓f	✓	✓	✓	✓	8	1	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	✓	✓	✓	✓	✓	NR	✓	✓	✓	8	0	1
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	✓	✓	✓	NR	NR	✓	✓	✓	✓	7	0	2
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.2.4.	Disturbance, damage and loss of wetland habitats	NR	✓	✓	✓	✓f	✓	✓	✓	✓	7	1	1
	2.2.5.	Disturbance, damage and loss of estuarine habitats	NR	✓	✓	NR	✓	NR	✓	✓	✓	6	0	3

Major Area of Concern	Issue no.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	Relevant now	Relevent future	Not relevant
	2.2.6.	Disturbance, damage and loss of mangrove habitats	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.3.	Disturbance, damage and loss of subtidal benthic habitats	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.3.1.	Disturbance, damage and loss of coral reef habitats	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.3.2.	Disturbance, damage and loss of seagrass habitats	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	✓	NR	✓	NR	✓	NR	✓	✓	✓	6	0	3
	2.3.4.	Disturbance, damage and loss of soft sediment habitats	NR	✓	✓	✓	✓	✓	✓	✓	✓	8	0	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	NR	NR	✓f	NR	NR	NR	✓	✓	✓	3	1	5
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	NR	✓	✓	✓	✓f	✓f	✓	✓	✓	6	2	1
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	✓	✓	✓	✓	✓	NR	✓	✓	✓	8	0	1
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	✓f	✓	✓	✓	✓	NR	✓	✓	✓	7	1	1
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	3.1.1.	Decline in populations of marine mammals	✓	✓	✓	✓f	✓	✓	✓	NR	✓	7	1	1
	3.1.2.	Decline in populations of cetaceans	NR	✓	✓f	✓	✓	✓	✓	NR	✓	6	1	2
	3.1.3.	Decline in populations of seabirds	✓	✓	✓f	✓	✓	✓	✓	✓	NR	7	1	1
	3.1.4.	Decline in populations ofturtles	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	3.2.	Decline in populations of commercial fish stocks	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	3.2.1.	Decline in populations of sharks and rays	✓	✓	✓	✓	✓	✓	✓	✓	NR	8	0	1
	3.2.2.	Decline in populations of large pelagic	✓	NR	✓	✓	✓f	✓	✓	✓	✓	7	1	1
	3.2.3.	Decline in populations of small pelagic	✓	NR	✓f	NR	✓f	NR	✓	✓	✓	4	2	3
	3.2.4.	Decline in populations of deep water demersals	NR	NR	NR	✓	✓f	✓	✓	✓	NR	4	1	4
	3.2.5.	Decline in populations of reef and demersal fish	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	3.3.	Decline in populations of commercial invertebrates	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	✓f	✓	✓f	✓	✓f	NR	NR	✓	✓	4	3	2

Major Area of Concern	Issue no.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	Relevant now	Relevent future	Not relevant
	3.3.2.	Decline in populations of abalone	NR	NR	NR	NR	NR	NR	NR	✓	NR	1	0	8
	3.3.3.	Decline in populations of cephalods	✓	✓	✓	✓	✓f	✓	✓	NR	✓	7	1	1
	3.3.4.	Decline in populations of sea cucumbers	✓	✓	✓	✓	✓	✓	✓	NR	✓	8	0	1
	3.3.5.	Decline in populations of sea urchins	NR	NR	✓f	NR	✓f	NR	NR	NR	NR	0	2	7
	3.3.6.	Decline in populations of prawns and shrimp	✓	✓	✓	✓	✓	NR	✓	✓	✓	8	0	1
	3.3.7.	Decline in populations of lobsters	NR	✓	✓	✓	✓	✓	✓	NR	✓	7	0	2
	3.3.8.	Decline in populations of crayfish	NR	NR	NR	NR	✓f	NR	✓	NR	NR	1	1	7
	3.3.9.	Decline in populations of crabs	✓	✓	✓	✓	✓f	NR	✓	NR	✓	6	1	2
	3.4.	Excessive bycatch and discards	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	✓	✓	✓	✓	✓f	✓	✓f	✓f	✓	6	3	0
MAC04: Unpredicable Environmental Variability and Extreme Events	4.1.	Climate hazards and extreme weather events (cyclones, storms, rainfall, coastal flooding)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	4.2.	Sea level change	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	4.3.	Ocean acidification	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	4.4.	Changes in seawater temperatures	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	4.5.	Changes to hydrodynamics and ocean circulation	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	4.6.	Changes in productivity (shifts in primary and secondary production)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0
	4.7.	Geohazards (tsunamis, volcanic eruptions, earthquakes)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	0	0

Table 5 Prioritization Level 1: National Importance of Issues

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania		H	M	L	NR
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	H	H	L	H	M	M	H	H		6	2	1	0
	1.2.	Degradation of ground and surface water quality	H	H	H	L	H	M	M	H	H		6	2	1	0
	1.3.	Degradation of coastal and marine water quality														
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	M	M	H	L	M	M	L	H	M		2	5	2	0
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	L	H	H	L	H	M	L	M	H		4	2	3	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	H	M	M	L	L	M	H	M	M		2	5	2	0
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	H	H	H	L	H	M	M	M	M		4	4	1	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	H	H	H	L	H	M	H	M	H		6	2	1	0
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	H	H	H	M	H	L	H	H	M		6	2	1	0
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	M	H	H	H	H	H	L	M	H		6	2	1	0
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats														
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	H	H	M	H	NR	H	H	H		7	1	0	1
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	H	H	M	NR	M	H	H	H		5	3	0	1

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania		H	M	L	NR
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	H	H	H	H	H	H	H	H	H		9	0	0	0
	2.2.4.	Disturbance, damage and loss of wetland habitats	NR	H	M	H	M	M	H	H	H		5	3	0	1
	2.2.5.	Disturbance, damage and loss of estuarine habitats	NR	M	H	NR	H	NR	H	H	M		4	2	0	3
	2.2.6.	Disturbance, damage and loss of mangrove habitats	L	H	H	H	H	L	H	L	H		6	0	3	0
	2.3.	Disturbance, damage and loss of subtidal benthic habitats														
	2.3.1.	Disturbance, damage and loss of coral reef habitats	H	H	H	H	H	H	H	M	H		8	1	0	0
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M	H	H	M	H	L	H	L	H		5	2	2	0
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	M	NR	M	NR	M	NR	M	M	L		0	5	1	3
	2.3.4.	Disturbance, damage and loss of soft sediment habitats	NR	M	M	L	H	M	M	H	H		3	4	1	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	NR	NR	H	NR	NR	NR	L	H	H		3	0	1	5
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	NR	H	H	H	M	L	H	H	H		6	1	1	1
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	H	M	H	H	L	NR	M	H	M		4	3	1	1
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	L	M	H	M	M	NR	L	H	H		3	3	2	1
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species														
	3.1.1.	Decline in populations of marine mammals	M	H	M	H	H	H	H	NR	H		6	2	0	1
	3.1.2.	Decline in populations of cetaceans	NR	H	H	H	M	H	H	NR	M		5	2	0	2
	3.1.3.	Decline in populations of seabirds	H	L	L	H	M	H	L	M	NR		3	2	3	1
	3.1.4.	Decline in populations ofturtles	H	H	H	H	H	H	H	M	H		8	1	0	0

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania		H	M	L	NR
	3.2.	Decline in populations of commercial fish stocks														
	3.2.1.	Decline in populations of sharks and rays	H	H	H	H	H	H	H	H	NR		8	0	0	1
	3.2.2.	Decline in populations of large pelagics	H	NR	H	H	H	H	H	L	H		7	0	1	1
	3.2.3.	Decline in populations of small pelagics	H	NR	H	NR	L	NR	H	L	M		3	1	2	3
	3.2.4.	Decline in populations of deep water demersals	NR	NR	NR	H	L	H	H	L	NR		3	0	2	4
	3.2.5.	Decline in populations of reef and demersal fish	H	H	H	H	H	H	H	H	H		9	0	0	0
	3.3.	Decline in populations of commercial invertebrates														
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	M	H	M	H	L	NR	NR	M	M		2	4	1	2
	3.3.2.	Decline in populations of abalone	NR	M	NR	NR	NR	NR	NR	H	NR		1	1	0	7
	3.3.3.	Decline in populations of cephalods	H	H	H	H	M	H	H	NR	H		7	1	0	1
	3.3.4.	Decline in populations of sea cucumbers	H	H	H	H	H	H	H	NR	H		8	0	0	1
	3.3.5.	Decline in populations of sea urchins	NR	NR	L	NR	L	NR	NR	NR	NR		0	0	2	7
	3.3.6.	Decline in populations of prawns and shrimp	H	H	H	H	M	NR	H	M	H		6	2	0	1
	3.3.7.	Decline in populations of spiny lobsters	NR	H	H	H	H	H	H	NR	H		7	0	0	2
	3.3.8.	Decline in populations of deepwater lobster (crayfish)	NR	NR	NR	NR	L	NR	H	NR	NR		1	0	1	7
	3.3.9.	Decline in populations of crabs	H	H	H	H	M	NR	M	NR	H		5	2	0	2
	3.4.	Excessive bycatch and discards	H	H	H	H	H	H	H	M	H		8	1	0	0
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H	H	H	H	H	L	M	M		6	2	1	0

Table 6 Prioritization Level 1: Availability of baseline data related to the issue.

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	✗	✓	✓	✓	✓	✓	✓	✓	✓
	1.2.	Degradation of ground and surface water quality	✗	✓	✗	✓	✓	✗	✓	✓	✓
	1.3.	Degradation of coastal and marine water quality									
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	✗	✓	✓	•	✓	✗	✗	✓	✓
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	✗	✓	✓	•	✗	✗	?	✓	✓
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	✗	✓	✗	•	✓	✗	✓	✓	✓
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	✗	✓	✗	•	✓	✗	✗	•	✓
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	✗	✓	✓	•	✓	✗	✗	✓	✓
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	✗	✓	✓	✗	✓	✗	✗	✓	✓
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	✓	•	✓	✓	✓	✓	✗	✓	•
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats									
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	✓	•	✓	✓	✓	✓	✓	✓	•
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	✓	✓	✓	?	NR	✓	✓	✓	✓
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	✓	?	?	✗	✓	✓	?	✓	•
	2.2.4.	Disturbance, damage and loss of wetland habitats	NR	✓	✓	✓	✓	✓	?	✓	•
	2.2.5.	Disturbance, damage and loss of estuarine habitats	NR	✓	✓	NR	✓	NR	?	✓	•
	2.2.6.	Disturbance, damage and loss of mangrove habitats	✓	✓	✓	✓	✓	✓	✓	•	•

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
	2.3.	Disturbance, damage and loss of subtidal benthic habitats									
	2.3.1.	Disturbance, damage and loss of coral reef habitats	✓	✓	✓	✓	✓	✓	✓	✓	•
	2.3.2.	Disturbance, damage and loss of seagrass habitats	✓	✓	✓	✗	✓	✓	✓	✗	•
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	✓	NR	✓	NR	✓	NR	✓	✗	✓
	2.3.4.	Disturbance, damage and loss of soft sediment habitats	NR	✗	?	✗	✓	✗	?	✗	•
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	NR	NR	✓			NR	✗	✗	•
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	NR	✓	✓	✓	✗	✗	✓	✗	•
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	✓	✓	✓	✓	✓	NR	✓	✗	•
	2.6.	Introduction of exotic non-native species, invasives and nuisance species		✓	?	✗	✓	NR	✗	✗	•
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species									
	3.1.1.	Decline in populations of marine mammals	•	✓	✗	✓	•	✗	✓	NR	✓
	3.1.2.	Decline in populations of cetaceans		✓	✗	✓	•	✗	✓	NR	✓
	3.1.3.	Decline in populations of seabirds	✗	✓	✓	✓	✓	✓	✗	✓	NR
	3.1.4.	Decline in populations ofturtles	✓	✓	✓	✓	✓	✗	✓	✓	✓
	3.2.	Decline in populations of commercial fish stocks									
	3.2.1.	Decline in populations of sharks and rays	✗	✓	✓	✓	✗	✗	✓	✓	NR
	3.2.2.	Decline in populations of large pelagics	✓	NR	✓	✓	•	✓	✓	✓	✓
	3.2.3.	Decline in populations of small pelagics	✗	NR	✓	NR	•	NR	✓	✓	✓
	3.2.4.	Decline in populations of deep water demersals	NR	NR	NR	✓	•	✓	✓	✓	NR
	3.2.5.	Decline in populations of reef and demersal fish	✗	✓	✓	✓	•	✓	✓	✓	✓

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
	3.3.	Decline in populations of commercial invertebrates									
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	✗	✓	✗	✓	•	NR	NR	•	✓
	3.3.2.	Decline in populations of abalone	NR	✓	NR	NR	NR	NR	NR	✓	NR
	3.3.3.	Decline in populations of cephalods	✗	✓	✓	✓	•	✗	✗	NR	✓
	3.3.4.	Decline in populations of sea cucumbers	✗	✓	✓	✓	•	✓	✗	NR	✓
	3.3.5.	Decline in populations of sea urchins	NR	NR	✗	NR	•	NR	NR	NR	NR
	3.3.6.	Decline in populations of prawns and shrimp	✗	✓	✓	•	✓	NR	✓	✓	✓
	3.3.7.	Decline in populations of lobsters	NR	✓	✓	•	•	✓	✓	NR	✓
	3.3.8.	Decline in populations of crayfish	NR	NR	NR	NR	•	NR	✗	NR	NR
	3.3.9.	Decline in populations of crabs	✗	✓	✓	•	•	NR	✗	NR	✓
	3.4.	Excessive bycatch and discards	✗	✓	✓	•	✓	✗	✓	✓	✓
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	✗	✓	✓	✓	•	✗	✗	✓	✓

Key	
✓	Yes baseline data available
•	Limited baseline (site specific)
✗	No baseline data
?	Don't know
NR	Not relevant

Table 7 Prioritization Level 1: Existence of a monitoring programme related to the issue.

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	✓	✗	✗	•	✓	✓	✓	✓	•
	1.2.	Degradation of ground and surface water quality	S	✗	✗	✓	✓	✗	✓	✓	•
	1.3.	Degradation of coastal and marine water quality									
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	✗	✗	✗	S	•	✗	✗	•	•
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	✗	✗	✓	✓	✗	✗	✗	✓	•
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	✗	✗	✓	✗	✗	✗	✗	✓	•
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	S	✗	✗	✗	✗	✗	✗	•	•
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	S	✗	✓	✗	✗	✗	✗	•	•
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	✗	✗	✓	✗	✓	✗	✗	✗	•
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	✗	✓	✗	•	•	✓	✗	✗	•
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats									
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	✗	✗	?	•	✓	NR	?	✓	?
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	✗	✓	✓	NR	•	•	?	•	?
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	✗	•	?	✗	•	✗	✗	✗	?
	2.2.4.	Disturbance, damage and loss of wetland habitats	✗	•	?	✗	•	✗	✗	✓	?
	2.2.5.	Disturbance, damage and loss of estuarine habitats	✗	✗	?	NR	•	NR	✗	✓	•
	2.2.6.	Disturbance, damage and loss of mangrove habitats	✗	✗	✓	✓	•	✓	✗	✗	•

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
	2.3.	Disturbance, damage and loss of subtidal benthic habitats									
	2.3.1.	Disturbance, damage and loss of coral reef habitats	?	✓	✓	✓	•	✓	✗	✗	✓
	2.3.2.	Disturbance, damage and loss of seagrass habitats	?	•	✓	✗	•	✗	✗	✗	✓
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	?	NR	?	NR	•	NR	✗	✗	✗
	2.3.4.	Disturbance, damage and loss of soft sediment habitats	NR	✗	?	✗	✓	✗	✗	✗	✗
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	NR	NR	?	NR	NR	NR	✗	✗	✗
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	NR	•	✓	✓	✗	✗	✗	✗	✗
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	?	✓	✓	✓	✗	NR	✗	✗	?
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	?	✓	✗	✓	✗	NR	✗	✗	?
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species									
	3.1.1.	Decline in populations of marine mammals	✗	✓	✗	✓	•	✗	✗	NR	?
	3.1.2.	Decline in populations of cetaceans	NR	✓	✗	✓	•	✗	✗	NR	✗
	3.1.3.	Decline in populations of seabirds	✗	?	✓	✓	•	✓	✗	✓	NR
	3.1.4.	Decline in populations of turtles	✓	✓	✓	?	•	✓	✗	✓	✓
	3.2.	Decline in populations of commercial fish stocks									
	3.2.1.	Decline in populations of sharks and rays	✗	•	✗	✓	✗	✗	✗	✓	NR
	3.2.2.	Decline in populations of large pelagic	✓	NR	✓	✓	•	✓	✓	✓	✗
	3.2.3.	Decline in populations of small pelagic	✗	NR	✓	NR	•	NR	✗	✓	✓
	3.2.4.	Decline in populations of deep water demersals	NR	NR	NR	✓	✗	✓	✗	✓	NR
	3.2.5.	Decline in populations of reef and demersal fish	✗	✓	✓	✓	•	✓	✗	✓	P

Main Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
	3.3.	Decline in populations of commercial invertebrates									
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	✗	•	✗	✓	•	NR	NR	✓	✗
	3.3.2.	Decline in populations of abalone	NR	NR	NR	NR	NR	NR	NR	✓	NR
	3.3.3.	Decline in populations of cephalods	✗		✗	✓	•	✗	✗	NR	✗
	3.3.4.	Decline in populations of sea cucumbers	✗		✗	✓	✗	✓	✗	NR	✗
	3.3.5.	Decline in populations of sea urchins			✗		✗	NR	NR	NR	NR
	3.3.6.	Decline in populations of prawns and shrimp	✗	✓	✓	✓	✓	NR	✗	✓	?
	3.3.7.	Decline in populations of lobsters	NR	•	✓	✓	•	✓	✓	NR	?
	3.3.8.	Decline in populations of crayfish	NR	NR	NR	NR	•	NR	✗	NR	NR
	3.3.9.	Decline in populations of crabs	✗	•	✗	✓	•	NR	✗	NR	?
	3.4.	Excessive bycatch and discards	✗	•	✓	✓	✓	✗	✗	✓	?
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	✗	✓	✓	✓	✓	✗	✗	✓	?

Key	
✓	Yes monitoring programme (operational)
•	Limited monitoring (site specific or periodic)
✗	No monitoring programme
?	Don't know
NR	Not relevant

Table 8 Prioritization Level 1: Transboundary nature of the issue.

Major Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	FT	T	NT	NT	T	NT	T	T	T
	1.2.	Degradation of ground and surface water quality	FT	T	NT	T	T	NT	T	T	T
	1.3.	Degradation of coastal and marine water quality									
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	NT	T	T	T	T	FT	T	T	S
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	T	T	T	T	T	NT	T	T	S
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	T	T	T	T	T	T	T	T	S
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	T	T	NT	T	T	NT	T	T	S
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	T	T	FT	T	T	T	T	T	S
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	T	T	T	T	T	T	T	T	S
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	T	T	NT	T	T	T	T	S	T
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats									
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	NT	T	NT	NT	T	NR	T	S	T
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	T	T	NT	NT	NR	T	T	S	T
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	T	T	NT	T	T	T	T	S	T
	2.2.4.	Disturbance, damage and loss of wetland habitats	NR	T	NT	NT	NT	T	T	S	T
	2.2.5.	Disturbance, damage and loss of estuarine habitats	NR	T	NT	NR	T	NR	T	T	T
	2.2.6.	Disturbance, damage and loss of mangrove habitats	T	T	T	NT/T	T	T	T	T	T

Major Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
	2.3.	Disturbance, damage and loss of subtidal benthic habitats									
	2.3.1.	Disturbance, damage and loss of coral reef habitats	T	T	T	T	T	T	T	T	T
	2.3.2.	Disturbance, damage and loss of seagrass habitats	T	T	T	NT	T	T	T	T	T
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	T	NR	NT	NR	NT	NR	T	S	NT
	2.3.4.	Disturbance, damage and loss of soft sediment habitats	NR	T	NT	NT	T	T	T	S	T
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	NR	NR	T	NR	NR	NR	T	S	T
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	NR	T	T	T	T	T	T	T	T
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	T	T	T	T	T	NR	T	S	T
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	T	T	T	T	T	NR	T	T	T
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species									
	3.1.1.	Decline in populations of marine mammals	T	T	NT	T	T	T	T	NR	T
	3.1.2.	Decline in populations of cetaceans	NR	T	T	T	T	T	T	NR	T
	3.1.3.	Decline in populations of seabirds	T	T	T	T	T	T	T	T	NR
	3.1.4.	Decline in populations ofturtles	T	T	T	T	T	T	T	T	T
	3.2.	Decline in populations of commercial fish stocks									
	3.2.1.	Decline in populations of sharks and rays	T	T	NT	T	T	T	T	T	NR
	3.2.2.	Decline in populations of large pelagic	T	NR	T	T	T	T	T	T	T
	3.2.3.	Decline in populations of small pelagic	T	NR	T	NR	T	NR	T	NT	T
	3.2.4.	Decline in populations of deep water demersals	NR	NR	NR	T	T	NT	T	S	NR
	3.2.5.	Decline in populations of reef and demersal fish	NT	T	NT	T	NT	FT	T	T	T

Major Area of Concern	Issue No.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania
	3.3.	Decline in populations of commercial invertebrates									
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	NT	T	NT	T	T	NR	NR	T	NT
	3.3.2.	Decline in populations of abalone	NR	T	NR	NR	NR	NR	NR	T	NR
	3.3.3.	Decline in populations of cephalods	NT	T	NT	T	T	FT	T	NR	T
	3.3.4.	Decline in populations of sea cucumbers	NT	T	NT	NT	T	FT	T	NR	T
	3.3.5.	Decline in populations of sea urchins	NR	NR	NT	NR	NT	NR	NR	NR	NR
	3.3.6.	Decline in populations of prawns and shrimp	NT	T	NT	T	T	NR	T	T	T
	3.3.7.	Decline in populations of lobsters	NR	T	FT	T	T	T	T	NR	T
	3.3.8.	Decline in populations of crayfish	NR	NR	NR	NR	NT	NR	T	NR	NR
	3.3.9.	Decline in populations of crabs	NT	T	NT	T	T	NR	S	NR	T
	3.4.	Excessive bycatch and discards	T	T	T	T	T	T	T	T	T
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	NT	T	NT	T	T	FT	NT	T	T

Key	
T	Transboundary
S	Shared
FT	Future transboundary
NT	Not transboundary
NR	Not relevant

Table 9: Prioritisation Level 2: Severity of Environmental Impact at National Level

Main Area of Concern	Issue No.	Issue	Environmental Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	H	VH	L	H	VH	M	VH	VH	1	1	3	4
	1.2.	Degradation of ground and surface water quality	L	M	M	L	VH	H	H	VH	H	2	2	3	2
	1.3.	Degradation of coastal and marine water quality													
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	H	LR	VH	L	L	H	H	LR	M	2	1	3	1
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	L	H	L	L	M	H	M	M	M	3	4	2	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	L	M	M	L	L	M	VH	LR	M	3	4	0	1
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	L	H	H	L	M	H	M	LR	H	2	2	4	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	H	H	M	L	H	VH	H	LR	H	1	1	5	1
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	M	H	H	L	M	VH	H	M	M	1	4	3	1
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	M	VH	VH	VH	L	L	VH	2	1	2	4
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	VH	M	VH		H	H	H	0	1	4	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	H	H	VH			M	H	H	VH	0	1	4	2
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	VH	H	M	VH	VH	H	M	H	VH	0	2	3	4
	2.2.4.	Disturbance, damage and loss of wetland habitats		H	H	VH	VH	M	M	H	H	0	2	4	2

Main Area of Concern	Issue No.	Issue	Environmental Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	2.2.5.	Disturbance, damage and loss of estuarine habitats		L	M		H		M	H	H	1	2	3	0
	2.2.6.	Disturbance, damage and loss of mangrove habitats	M	VH	VH	VH	VH	L	H	H	VH	1	1	2	5
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	VH	VH	M	VH	VH	VH	VH	H	VH	0	1	1	7
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M	L		H	VH	L	H	L	VH	3	1	2	2
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L	?			VH		M	H	L	2	1	1	1
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		VH	LR	?	VH	L	M	H	VH	1	1	1	3
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	L	?	M			L	L	H	H	3	1	2	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	L	VH	H	H	VH	L	H	M	VH	2	1	3	3
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	M	M	M	H	M		L	L	M	2	5	1	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	L	H	LR	H	VH		L	M	H	2	1	3	1
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	VH	VH	M	M	VH	L	H		M	1	3	1	3
	3.1.2.	Decline in populations of cetaceans		M	M	H	H	VH	?		M	0	3	2	1
	3.1.3.	Decline in populations of seabirds	VH	H		H	H	VH	?	VH		0	0	3	3
	3.1.4.	Decline in populations of turtles	VH	VH	M	H	VH	VH	VH	VH	M	0	2	1	6
	3.2.	Decline in populations of commercial fish stocks													

Main Area of Concern	Issue No.	Issue	Environmental Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.1.	Decline in populations of sharks and rays	H	M	M	H	VH	VH	VH	VH		0	2	2	4
	3.2.2.	Decline in populations of large pelagics	H			H	VH	VH	VH	M	H	0	1	3	3
	3.2.3.	Decline in populations of small pelagics	H				VH		H	H	H	0	0	4	1
	3.2.4.	Decline in populations of deep water demersals				VH	L	M	L	H	H	2	1	2	1
	3.2.5.	Decline in populations of reef and demersal fish	VH	VH		VH	VH	VH	VH	H	H	0	0	2	6
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	VH	VH		VH	H			M	M	0	2	1	3
	3.3.2.	Decline in populations of abalone		H						M		0	1	1	0
	3.3.3.	Decline in populations of cephalods	VH	VH		M	H	M	L		H	1	2	2	2
	3.3.4.	Decline in populations of sea cucumbers	VH	VH		H	VH	VH	L		H	1	0	2	4
	3.3.5.	Decline in populations of sea urchins					L					1	0	0	0
	3.3.6.	Decline in populations of prawns and shrimp	VH	VH	H	H	VH		H	M	H	0	1	4	3
	3.3.7.	Decline in populations of lobsters		H		H	H	M	VH		M	0	2	3	1
	3.3.8.	Decline in populations of crayfish					L		VH			1	0	0	1
	3.3.9.	Decline in populations of crabs	VH	VH		H	M		M		M	0	3	1	2
	3.4.	Excessive bycatch and discards	H	VH		VH	VH	H	VH	H	H	0	0	4	4
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	VH		VH	VH	VH		M	H	0	1	2	4

Table 10: Prioritization Level 2: Severity of Socio-economic Impact at National Level

Main Area of Concern	Issue No.	Issue	Socio-economic Impact: Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	M	VH	H	L	VH	H	M	H	VH	1	2	3	3
	1.2.	Degradation of ground and surface water quality	L	H	H	L	H	M	H	VH	H	2	1	5	1
	1.3.	Degradation of coastal and marine water quality				L		VH							
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	M	LR	VH	L	H	H	H	M	M	1	3	3	1
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	L	M	H	L	M	H	M	LR	M	2	4	2	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	L	LR	H	L	L	M	VH	LR	M	3	2	1	1
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	L	M	M	L	H	H	L	LR	H	3	2	3	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	L	H	M	L	H	H	M	LR	H	2	2	4	0
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	L	M	H	L	L	VH	M	LR	L	4	2	1	1
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	M	VH	VH	VH	L	H	VH	1	1	3	4
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	VH	M	VH		H	H	H	0	1	4	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	H	VH			L	H	H	VH	1	1	3	2
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	H	H	M	VH	VH	L	M	H	VH	1	2	3	3
	2.2.4.	Disturbance, damage and loss of wetland habitats		VH	H	M	VH	L	M	H	H	1	2	3	2

Main Area of Concern	Issue No.	Issue	Socio-economic Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	2.2.5.	Disturbance, damage and loss of estuarine habitats		?	LR		H		L	H	H	1	0	3	0
	2.2.6.	Disturbance, damage and loss of mangrove habitats	L	VH	VH	VH	VH	L	M	M	VH	2	2	0	5
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	VH	VH	H	VH	M	VH	VH	M	VH	0	2	1	6
	2.3.2.	Disturbance, damage and loss of seagrass habitats	L	L		M	H	L	H	L	VH	4	1	2	1
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L	?			H		L	M	L	3	1	1	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		VH	H	?	H	L	L	H	H	2	0	4	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	L	?	H			VH	L	L	L	4	0	1	1
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	L	VH	H	H	VH	VH	H	M	H	1	1	4	3
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	M	H	H	H	L		L	M	M	2	3	3	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	L	M	LR	H	H		L	H	M	2	2	3	0
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	M	VH	M	L	H	L	L		M	3	3	1	1
	3.1.2.	Decline in populations of cetaceans		M	H	VH	M	M	L		M	1	4	1	1
	3.1.3.	Decline in populations of seabirds	M	M		M	M	H	L	M		1	5	1	0
	3.1.4.	Decline in populations of turtles	VH	H	VH	H	H	H	H	M	H	0	1	6	2
	3.2.	Decline in populations of commercial fish stocks													

Main Area of Concern	Issue No.	Issue	Socio-economic Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.1.	Decline in populations of sharks and rays	VH	H	VH	VH	VH	H	VH	M		0	1	2	5
	3.2.2.	Decline in populations of large pelagics	VH			VH	L	H	VH	M	M	1	2	1	3
	3.2.3.	Decline in populations of small pelagics	H				H		H	H	H	0	0	5	0
	3.2.4.	Decline in populations of deep water demersals				VH	L	H	L	H	H	2	0	3	1
	3.2.5.	Decline in populations of reef and demersal fish	VH	VH		VH	VH	VH	H	H	H	0	0	3	5
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	H	M		H	VH			H	M	0	2	3	1
	3.3.2.	Decline in populations of abalone		M						H		0	1	1	0
	3.3.3.	Decline in populations of cephalods	H	VH		VH	VH	M	L		H	1	1	2	3
	3.3.4.	Decline in populations of sea cucumbers	VH	VH		H	VH	VH	L		H	1	0	2	4
	3.3.5.	Decline in populations of sea urchins					M					0	1	0	0
	3.3.6.	Decline in populations of prawns and shrimp	VH	VH	VH	VH	VH		M	M	H	0	2	1	5
	3.3.7.	Decline in populations of lobsters		VH		VH	M	M	VH		H	0	2	1	3
	3.3.8.	Decline in populations of crayfish					L		H			1	0	1	0
	3.3.9.	Decline in populations of crabs	M	VH		M	H		L		H	1	2	2	1
	3.4.	Excessive bycatch and discards	H	VH		VH	VH	H	H	M	H	0	1	4	3
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H		VH	VH	H		L	M	1	1	3	2

Table 11: Prioritization Level 2: Severity of Macro-economic Impact at National Level

Main Area of Concern	Issue No.	Issue	Macro-economic Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	L	M	H	L	H	H	M	VH	VH	2	2	3	2
	1.2.	Degradation of ground and surface water quality	L	LR	M	L	M	M	H	H	H	2	3	3	0
	1.3.	Degradation of coastal and marine water quality				L		VH							
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	L	LR	VH	L	M	M	H	LR	M	2	3	1	1
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	L	LR	L	L	L	H	H	LR	M	4	1	2	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	L	LR	H	L	L	M	VH	LR	L	4	1	1	1
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	L	LR	M	L	M	H	L	LR	M	3	3	1	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	L	LR	M	L	M	H	L	LR	M	3	3	1	0
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	L	LR	H	L	L	VH	M	LR	L	4	1	1	1
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	M	VH	VH	VH	L	L	VH	2	1	2	4
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	VH	L	VH		H	H	H	1	0	4	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	L	VH	VH			L	M	L	VH	3	1	0	3
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes,	VH	H	M	M	VH	L	L	H	VH	2	2	2	3

Main Area of Concern	Issue No.	Issue	Macro-economic Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
		coastal vegetation and flood plain habitats to 10 m elevation)													
	2.2.4.	Disturbance, damage and loss of wetland habitats		VH	M	M	VH	L	L	H	H	2	2	2	2
	2.2.5.	Disturbance, damage and loss of estuarine habitats		?	M		M		L	H	M	1	3	1	0
	2.2.6.	Disturbance, damage and loss of mangrove habitats	L	VH	VH	M	VH	H	M	L	VH	2	2	1	4
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	M	VH	M	VH	H	VH	M	L	VH	1	3	1	4
	2.3.2.	Disturbance, damage and loss of seagrass habitats	L	L		L	H	L	L	L	VH	6	0	1	1
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L	?			H		L	L	L	4	0	1	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		M	M	?	H	L	L	H	VH	2	2	2	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	L	?	H			VH	L	L	VH	3	0	1	2
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	L	M	LR	L	H	VH	M	M	VH	2	3	1	2
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	L	L	LR	L	L		L	L	L	7	0	0	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	L	L	LR	M	H		L	M	M	3	3	1	0
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	L	L	LR	L	H	L	L		L	6	0	1	0
	3.1.2.	Decline in populations of cetaceans		L	H	M	M	L	L		L	4	2	1	0
	3.1.3.	Decline in populations of seabirds	L	L		M	M	M	L	L		4	3	0	0
	3.1.4.	Decline in populations of turtles	VH	M	VH	M	H	L	L	L	M	3	3	1	2

Main Area of Concern	Issue No.	Issue	Macro-economic Impact												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.	Decline in populations of commercial fish stocks													
	3.2.1.	Decline in populations of sharks and rays	VH	M	VH	H	H	H	VH	L		1	1	3	3
	3.2.2.	Decline in populations of large pelagics	VH			VH	H	VH	VH	L	H	1	0	2	4
	3.2.3.	Decline in populations of small pelagics	H				M		H	L	M	1	2	2	0
	3.2.4.	Decline in populations of deep water demersals				VH	L	H	L	L	M	3	1	1	1
	3.2.5.	Decline in populations of reef and demersal fish	M	VH		VH	H	H	H	L	M	1	2	3	2
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	L	L		M	L			L	L	5	1	0	0
	3.3.2.	Decline in populations of abalone		L						L		2	0	0	0
	3.3.3.	Decline in populations of cephalods	H	H		M	M	L	L		L	3	2	2	0
	3.3.4.	Decline in populations of sea cucumbers	H	H		M	H	H	L		M	1	2	4	0
	3.3.5.	Decline in populations of sea urchins					L					1	0	0	0
	3.3.6.	Decline in populations of prawns and shrimp	L	H	VH	VH	VH		M	L	H	2	1	2	3
	3.3.7.	Decline in populations of lobsters		H		M	M	L	H		H	1	2	3	0
	3.3.8.	Decline in populations of crayfish					L		VH			1	0	0	1
	3.3.9.	Decline in populations of crabs	L	H		M	M		L		H	2	2	2	0
	3.4.	Excessive bycatch and discards	H	H		M	L	H	H	L	M	2	2	4	0
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H		VH	VH	H		L	L	2	0	3	2

Table 12: Prioritization Level 2: Overall Severity at National Level

Main Area of Concern	Issue No.	Issue	OVERALL SEVERITY												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
1. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	M	H	H	L	H	H	M	VH	VH	1	2	4	2
	1.2.	Degradation of ground and surface water quality	L	M	M	L	H	M	H	VH	H	2	3	3	1
	1.3.	Degradation of coastal and marine water quality				L		VH							
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	M	LR	VH	L	M	H	H	LR	M	1	3	2	1
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	L	M	L	L	M	H	M	LR	M	3	4	1	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	L	LR	H	L	L	M	VH	LR	M	3	2	1	1
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	L	M	M	L	M	H	L	LR	H	3	3	2	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	M	M	M	L	H	H	M	LR	H	1	4	3	0
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	L	M	H	L	L	VH	M	LR	L	4	2	1	1
2: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	M	VH	VH	VH	L	M	VH	1	2	2	4
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	VH	M	VH		H	H	H	0	1	4	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	H	VH			L	H	H	VH	1	1	3	2
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m	VH	H	M	H	VH	M	M	H	VH	0	3	3	3

Main Area of Concern	Issue No.	Issue	OVERALL SEVERITY												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
		elevation)													
	2.2.4.	Disturbance, damage and loss of wetland habitats		VH	H	M	VH	L	M	H	H	1	2	3	2
	2.2.5.	Disturbance, damage and loss of estuarine habitats			L		H		L	H	H	2	0	3	0
	2.2.6.	Disturbance, damage and loss of mangrove habitats	L	VH	VH	H	VH	M	M	M	VH	1	3	1	4
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	H	VH	M	VH	H	VH	H	M	VH	0	2	3	4
	2.3.2.	Disturbance, damage and loss of seagrass habitats	L	L		M	H	L	M	L	VH	4	2	1	1
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L				H		L	M	L	3	1	1	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		H	M	?	H	L	L	H	VH	2	1	3	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	L		H			H	L	M	H	2	1	3	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	L	H	M	M	VH	H	H	M	VH	1	3	3	2
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	M	M	M	M	L		L	M	M	2	6	0	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	L	M	LR	H	H		L	M	M	2	3	2	0
3: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	M	H	M	L	H	L	M		M	2	4	2	0
	3.1.2.	Decline in populations of cetaceans		M	H	H	M	M	L		M	1	4	2	0
	3.1.3.	Decline in populations of seabirds	M	M		M	M	H	L	M		1	5	1	0
	3.1.4.	Decline in populations of turtles	VH	H	VH	H	H	H	M	M	M	0	3	4	2
	3.2.	Decline in populations of commercial fish stocks													
	3.2.1.	Decline in populations of sharks and rays	VH	M	VH	H	VH	H	VH	M		0	2	2	4
	3.2.2.	Decline in populations of large pelagics	VH			VH	H	VH	VH	M	H	0	1	2	4

Main Area of Concern	Issue No.	Issue	OVERALL SEVERITY												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.3.	Decline in populations of small pelagics	H				H		H	H	H	0	0	5	0
	3.2.4.	Decline in populations of deep water demersals				VH	L	H	L	H	H	2	0	3	1
	3.2.5.	Decline in populations of reef and demersal fish	H	VH		VH	VH	VH	H	H	H	0	0	4	4
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	H	M		H	H			M	M	0	3	3	0
	3.3.2.	Decline in populations of abalone		M						M		0	2	0	0
	3.3.3.	Decline in populations of cephalods	H	VH		M	H	M	L		M	1	3	2	1
	3.3.4.	Decline in populations of sea cucumbers	VH	VH		M	VH	VH	L		H	1	1	1	4
	3.3.5.	Decline in populations of sea urchins					L					1	0	0	0
	3.3.6.	Decline in populations of prawns and shrimp	H	VH	VH	VH	VH		M	M	H	0	2	2	4
	3.3.7.	Decline in populations of lobsters		VH		H	M	M	VH		H	0	2	2	2
	3.3.8.	Decline in populations of crayfish					L		VH			1	0	0	1
	3.3.9.	Decline in populations of crabs	M	VH		M	M		L		H	1	3	1	1
	3.4.	Excessive bycatch and discards	H	VH		VH	VH	H	H	M	H	0	1	4	3
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H		VH	VH	H		L	M	1	1	3	2

Table 13: Prioritization Level 2: Transboundary Scope

Main Area of Concern	Issue No.	Issue	Transboundary Scope									L	M	H	VH
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania				
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	M	L	VH	H	H	M	VH	H	1	2	4	2
	1.2.	Degradation of ground and surface water quality	H	H	VH	VH	M	VH	L	H	H	1	1	4	3
	1.3.	Degradation of coastal and marine water quality				`		VH							
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	H	LR	VH	VH	M	M	H	H	VH	0	2	3	3
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	M	M	VH	H	M	H	M	H	M	0	5	3	1
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	M	LR	VH	H	M	VH	L	LR	M	1	3	1	2
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	H	M	VH	H	M	VH	M	LR	H	0	3	3	2
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	M	VH	VH	H	M	VH	H	H	VH	0	2	3	4
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	H	LR	VH	H	L	VH	M	M	M	1	3	2	2
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	M	LR	VH	VH	VH	VH	VH	VH	0	1	1	6
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	LR	M	VH		H	VH	H	0	1	3	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	M	LR			L	H	VH	H	1	2	2	1
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	M	M	LR	H	VH	L	H	VH	VH	1	2	2	3
	2.2.4.	Disturbance, damage and loss of wetland habitats		M	LR	M	H	M	H	VH	H	0	3	3	1

Main Area of Concern	Issue No.	Issue	Transboundary Scope									L	M	H	VH
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania				
	2.2.5.	Disturbance, damage and loss of estuarine habitats			H		VH		M	VH	H	0	1	2	2
	2.2.6.	Disturbance, damage and loss of mangrove habitats	M	VH	VH	H/VH	VH	VH	VH	VH	VH	0	1	0	7
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	VH	VH	VH	VH	VH	VH	VH	VH	VH	0	0	0	9
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M	L		M	VH	M	H	VH	H	1	3	2	2
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L	?			VH		L	VH	L	3	0	0	2
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		M	LR	M	VH	L	H	VH	H	1	2	2	2
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)		?	H			L	M	VH	H	1	1	2	1
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)		M	VH	VH	VH	VH	H	M	H	0	2	2	4
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	H	M	M	H	VH		L	H	H	1	2	4	1
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	H	M	VH	VH	VH		M	H	VH	0	2	2	4
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	VH	VH	LR	VH	VH	VH	H		H	0	0	2	5
	3.1.2.	Decline in populations of cetaceans		VH	VH	VH	H	VH	H		H	0	0	3	4
	3.1.3.	Decline in populations of seabirds	VH	VH		VH	VH	VH	M	M		0	2	0	5
	3.1.4.	Decline in populations of turtles	VH	VH	VH	VH	VH	VH	H	H	VH	0	0	2	7
	3.2.	Decline in populations of commercial fish stocks													
	3.2.1.	Decline in populations of sharks and rays	VH	VH	LR	VH	VH	VH	VH	VH		0	0	0	7

Main Area of Concern	Issue No.	Issue	Transboundary Scope									L	M	H	VH
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania				
	3.2.2.	Decline in populations of large pelagics	VH			VH	VH	VH	VH	VH	VH	0	0	0	7
	3.2.3.	Decline in populations of small pelagics	H				M		H	M	H	0	2	3	0
	3.2.4.	Decline in populations of deep water demersals				VH	M	M	M	M	M	0	5	0	1
	3.2.5.	Decline in populations of reef and demersal fish	L	VH		VH	VH	M	VH	H	M	1	2	1	4
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	L	VH		VH	M			H	L	2	1	1	2
	3.3.2.	Decline in populations of abalone		L						L		2	0	0	0
	3.3.3.	Decline in populations of cephalods	L	VH		M	M	L	H		L	3	2	1	1
	3.3.4.	Decline in populations of sea cucumbers	L	VH		L	VH	L	H		L	4	0	1	2
	3.3.5.	Decline in populations of sea urchins					L					1	0	0	0
	3.3.6.	Decline in populations of prawns and shrimp	L	VH	LR	H	VH		H	H	M	1	1	3	2
	3.3.7.	Decline in populations of lobsters		VH		VH	M	L	H		M	1	2	1	2
	3.3.8.	Decline in populations of crayfish					L		M			1	1	0	0
	3.3.9.	Decline in populations of crabs	L	VH		M	L		H		M	2	2	1	1
	3.4.	Excessive bycatch and discards	M	VH		VH	VH	VH	VH	H	H	0	1	2	5
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	M	VH		VH (future)	VH	L		M	L	2	2	0	2

Table 14: Prioritization Level 2: Scale of Benefits of finding a solution to the issue

Main Area of Concern	Issue No.	Issue	Scale of Benefits												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
1. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	M	M	VH	H	VH	M	M	H	0	4	3	2
	1.2.	Degradation of ground and surface water quality	H	H	VH	VH	H	H	M	H	VH	0	1	5	3
	1.3.	Degradation of coastal and marine water quality						VH							
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	H	M	VH	VH	VH	M	M	LR	H	0	3	2	3
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	M	H	VH	H	H	H	VH	LR	M	0	2	4	2
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	H	M	VH	H	VH	VH	M	LR	M	0	3	2	3
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	M	H	VH	VH	H	H	M	LR	VH	0	2	3	3
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	VH	H	VH	VH	VH	VH	VH	LR	H	0	0	2	6
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	VH	H	VH	VH	M	VH	VH	M	H	0	2	2	5
2: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	LR	VH	VH	VH	VH	VH	VH	0	0	2	6
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	M	VH	LR	H	VH		H	VH	H	0	1	3	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	H	VH			L	H	VH	H	1	1	3	2
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches,	M	VH	LR	VH	VH	L	H	VH	VH	1	1	1	5

Main Area of Concern	Issue No.	Issue	Scale of Benefits												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
		dunes, coastal vegetation and flood plain habitats to 10 m elevation)													
	2.2.4.	Disturbance, damage and loss of wetland habitats		VH	H	VH	M	H	H	VH	H	0	1	4	3
	2.2.5.	Disturbance, damage and loss of estuarine habitats			LR		H		M	VH	H	0	1	2	1
	2.2.6.	Disturbance, damage and loss of mangrove habitats	M	VH	VH	VH	VH	VH	H	VH	VH	0	1	1	7
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	H	VH	VH	VH	H	VH	H	VH	VH	0	0	3	6
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M	L		M	H	L	H	VH	H	2	2	3	1
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L	?			H		L	H	L	3	0	2	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		VH	LR	M	H	L	M	VH	H	1	2	2	2
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)		?	H			L	M	L	H	2	1	2	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)		M	VH	VH	H	VH	H	M	VH	0	2	2	4
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	H	H	LR	H	H		M	H	M	0	2	5	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	VH	VH	VH	VH	H		M	H	H	0	1	3	4
3: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	VH	VH	LR	VH	VH	H	H		H	0	0	3	4
	3.1.2.	Decline in populations of cetaceans		H	H	VH	VH	VH	H		H	0	0	4	3
	3.1.3.	Decline in populations of seabirds	VH	H		H	H	M	M	L		1	2	3	1
	3.1.4.	Decline in populations of turtles	VH	H	M	VH	VH	H	H	M	VH	0	2	3	4

Main Area of Concern	Issue No.	Issue	Scale of Benefits												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.	Decline in populations of commercial fish stocks													
	3.2.1.	Decline in populations of sharks and rays	VH	H	M	VH	VH	VH	VH	M		0	2	1	5
	3.2.2.	Decline in populations of large pelagics	VH			VH	VH	VH	VH	H	VH	0	0	1	6
	3.2.3.	Decline in populations of small pelagics	VH				VH		H	M	VH	0	1	1	3
	3.2.4.	Decline in populations of deep water demersals				VH	M	H	M	M	H	0	3	2	1
	3.2.5.	Decline in populations of reef and demersal fish	H	VH		VH	VH	H	VH	H	VH	0	0	3	5
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	H	H		VH	M			H	M	0	2	3	1
	3.3.2.	Decline in populations of abalone		H						M		0	1	1	0
	3.3.3.	Decline in populations of cephalods	M	H		VH	H	M	H		H	0	2	4	1
	3.3.4.	Decline in populations of sea cucumbers	H	H		VH	VH	L	H		H	1	0	4	2
	3.3.5.	Decline in populations of sea urchins					M					0	1	0	0
	3.3.6.	Decline in populations of prawns and shrimp	H	H	LR	VH	VH		H	H	VH	0	0	4	3
	3.3.7.	Decline in populations of lobsters		H		VH	H	L	H		H	1	0	4	1
	3.3.8.	Decline in populations of crayfish					L		M			1	1	0	0
	3.3.9.	Decline in populations of crabs	H	H		M	H		M		H	0	2	4	0
	3.4.	Excessive bycatch and discards	H	H		VH	VH	VH	VH	H	VH	0	0	3	5
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H		VH	VH	M		M	H	0	2	3	2

Table 15: Prioritization Level 2: Feasibility of finding a solution to the issue

Main Area of Concern	Issue No.	Issue	Feasibility												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	VH	M	M	H	L	M	M	M	1	5	2	1
	1.2.	Degradation of ground and surface water quality	H	M	VH	M	L	M	M	M	M	1	6	1	1
	1.3.	Degradation of coastal and marine water quality													
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	VH	VH	VH	H	H	M	M	M	M	0	4	2	3
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	VH	VH	M	M	M	M	M	M	M	0	7	0	2
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	VH	VH	M	H	H	L	M	M	M	1	4	2	2
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	H	M	M	M	H	L	M	H	M	1	5	3	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	VH	VH	M	VH	H	L	H	H	H	1	1	4	3
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	VH	M	H	M	L	M	VH	LR	H	1	3	2	2
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	M	VH	VH	M	M	VH	M	L	M	1	5	0	3
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	VH	M	L		M	L	H	2	2	2	2
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	H	VH	VH			L	M	H	H	1	1	3	2
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes,	M	VH	H	M	H	VH	M	M	H	0	4	3	2

Main Area of Concern	Issue No.	Issue	Feasibility												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
		coastal vegetation and flood plain habitats to 10 m elevation)													
	2.2.4.	Disturbance, damage and loss of wetland habitats		VH	M	M	M	H	M	M	H	0	5	2	1
	2.2.5.	Disturbance, damage and loss of estuarine habitats			LR		M		M	M	M	0	4	0	0
	2.2.6.	Disturbance, damage and loss of mangrove habitats	M	M	VH	M	H	VH	M	H	VH	0	4	2	3
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	H	M	VH	VL	L	VH	M	M	H	1	3	2	2
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M	VH		M	H	VH	M	M	H	0	4	2	2
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L	?			H		M	H	H	1	1	3	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		H	LR	M	H	H	M	M	H	0	3	4	0
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)		?	M			H	M	M	H	0	3	2	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)		M	VH	M	M	L	M	M	H	1	5	1	1
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	H	VH	LR	M	VH		L	L	H	2	1	2	2
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	VH	VH	VH	M/L	H		M	L	M	1	2	1	3
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	H	M	VH	H	H	L	M		M	1	3	3	1
	3.1.2.	Decline in populations of cetaceans		M	LR	H	H	M	M		M	0	4	2	0
	3.1.3.	Decline in populations of seabirds	H	M		H	H	L	M	M		1	3	3	0
	3.1.4.	Decline in populations of turtles	VH	L	H	H	VH	M	M	H	M	1	3	3	2

Main Area of Concern	Issue No.	Issue	Feasibility												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.	Decline in populations of commercial fish stocks													
	3.2.1.	Decline in populations of sharks and rays	H	L	LR	H	M	H	M	H		1	2	4	0
	3.2.2.	Decline in populations of large pelagics	VH			VH	H	M	M	H	H	0	2	3	2
	3.2.3.	Decline in populations of small pelagics	VH				H		M	H	H	0	1	3	1
	3.2.4.	Decline in populations of deep water demersals				VH	VH	M	M	H	H	0	2	2	2
	3.2.5.	Decline in populations of reef and demersal fish	H	L		VH	M	L	M	M	M	2	4	1	1
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	M	L		VH	M			M	M	1	4	0	1
	3.3.2.	Decline in populations of abalone		L						M		1	1	0	0
	3.3.3.	Decline in populations of cephalods	M	L		H	H	M	H		M	1	3	3	0
	3.3.4.	Decline in populations of sea cucumbers	M	L		H	L	H	M		M	2	3	2	0
	3.3.5.	Decline in populations of sea urchins					VH					0	0	0	1
	3.3.6.	Decline in populations of prawns and shrimp	H	M	VH	H	VH		M	M	M	0	4	2	2
	3.3.7.	Decline in populations of lobsters		L		H	VH	H	M		M	1	2	2	1
	3.3.8.	Decline in populations of crayfish					VH		M			0	1	0	1
	3.3.9.	Decline in populations of crabs	H	L		M	M		M		M	1	4	1	0
	3.4.	Excessive bycatch and discards	H	L		H	M	M	H	M	H	1	3	4	0
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	M		M	H	H		H	M	0	3	4	0

Table 16: Prioritization Level 2: Overall Scope

Main Area of Concern	Issue No.	Issue	OVERALL SCOPE												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
1. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	M	M	H	H	H	M	M	H	0	4	5	0
	1.2.	Degradation of ground and surface water quality	H	H	VH	H	M	H	M	H	H	0	2	6	1
	1.3.	Degradation of coastal and marine water quality													
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	H	M	VH	VH	H	M	M	M	H	0	4	3	2
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	H	H	VH	H	M	H	H	M	M	0	3	5	1
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	H	M	VH	H	H	H	M	L	M	1	3	4	1
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	H	M	VH	H	H	H	M	M	H	0	3	5	1
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	H	VH	VH	VH	H	H	H	M	H	0	1	5	3
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	VH	M	VH	H	L	H	H	M	H	1	2	4	2
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	M	H	VH	VH	H	VH	H	0	1	5	3
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	M	M	VH		H	VH	H	0	2	3	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	H	H			L	H	VH	H	1	1	4	1
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches,	M	H	M	H	VH	L	H	VH	VH	1	2	3	3

Main Area of Concern	Issue No.	Issue	OVERALL SCOPE												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
		dunes, coastal vegetation and flood plain habitats to 10 m elevation)													
	2.2.4.	Disturbance, damage and loss of wetland habitats		H	M	H	M	H	H	VH	H	0	2	5	1
	2.2.5.	Disturbance, damage and loss of estuarine habitats			M		H		M	VH	H	0	2	2	1
	2.2.6.	Disturbance, damage and loss of mangrove habitats	M	VH	VH	H	VH	VH	H	VH	VH	0	1	2	6
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	H	H	VH	H	H	VH	H	VH	VH	0	0	5	4
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M	M		M	H	M	H	VH	H	0	4	3	1
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L				H		L	H	M	2	1	2	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		H	LR	M	H	M	M	VH	H	0	3	3	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)			H			M	M	M	H	0	3	2	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)		M	VH	H	H	H	H	M	H	0	2	5	1
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	H	H	LR	H	VH		L	H	H	1	0	5	1
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	VH	H	VH	H	H		M	H	H	0	1	5	2
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	VH	H	M	VH	VH	H	H		H	0	1	4	3
	3.1.2.	Decline in populations of cetaceans		H	H	VH	H	VH	H		H	0	0	5	2
	3.1.3.	Decline in populations of seabirds	VH	H		H	H	H	M	M		0	2	4	1
	3.1.4.	Decline in populations of turtles	VH	H	H	VH	VH	H	H	H	VH	0	0	5	4

Main Area of Concern	Issue No.	Issue	OVERALL SCOPE												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.	Decline in populations of commercial fish stocks													
	3.2.1.	Decline in populations of sharks and rays	VH	H	L	VH	H	VH	H	H		1	0	4	3
	3.2.2.	Decline in populations of large pelagics	VH			VH	VH	VH	H	H	VH	0	0	2	5
	3.2.3.	Decline in populations of small pelagics	VH				H		H	M	H	0	1	3	1
	3.2.4.	Decline in populations of deep water demersals				VH	H	M	M	M	H	0	3	2	1
	3.2.5.	Decline in populations of reef and demersal fish	M	H		VH	H	M	H	H	M	0	3	4	1
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	M	H		VH	M			H	M	0	3	2	1
	3.3.2.	Decline in populations of abalone		H						M		0	1	1	0
	3.3.3.	Decline in populations of cephalods	M	H		H	H	M	H		M	0	3	4	0
	3.3.4.	Decline in populations of sea cucumbers	M	H		H	L	M	H		M	1	3	3	0
	3.3.5.	Decline in populations of sea urchins					M					0	1	0	0
	3.3.6.	Decline in populations of prawns and shrimp	M	H	M	H	VH		H	H	H	0	2	5	1
	3.3.7.	Decline in populations of lobsters		H		H	H	M	H		M	0	2	4	0
	3.3.8.	Decline in populations of crayfish					M		M			0	2	0	0
	3.3.9.	Decline in populations of crabs	M	H		M	M		M		M	0	5	1	0
	3.4.	Excessive bycatch and discards	H	H		VH	H	VH	VH	H	H	0	0	5	3
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H		VH	VH	M		M	M	0	3	2	2

Table 17: Prioritization Level 2: Overall Ranking

Main Area of Concern	Issue No.	Issue	OVERALL RANKING (LEVEL 2)												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	H	H	H	M	H	H	M	H	VH	0	2	6	1
	1.2.	Degradation of ground and surface water quality	M	H	H	M	H	H	H	VH	H	0	2	6	1
	1.3.	Degradation of coastal and marine water quality													
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	H	M	VH	M	H	H	H	M	M	0	4	4	1
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	M	H	H	M	M	H	H	M	M	0	5	4	0
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	M	M	H	M	M	H	H	L	M	1	5	3	0
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	M	M	H	M	H	H	M	M	H	0	5	4	0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	H	H	H	M	H	H	H	M	H	0	2	7	0
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	M	M	H	M	L	VH	H	M	M	1	5	2	1
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	H	H	M	VH	VH	VH	M	H	VH	0	2	3	4
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats													
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	H	VH	H	M	VH		H	VH	H	0	1	4	3
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	H	VH			L	H	VH	VH	1	1	2	3
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	H	H	M	H	VH	M	H	VH	VH	0	2	4	3

Main Area of Concern	Issue No.	Issue	OVERALL RANKING (LEVEL 2)												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	2.2.4.	Disturbance, damage and loss of wetland habitats		VH	H	H	H	M	H	VH	H	0	1	5	2
	2.2.5.	Disturbance, damage and loss of estuarine habitats			M		H		M	VH	H	0	2	2	1
	2.2.6.	Disturbance, damage and loss of mangrove habitats	M	VH	VH	H	VH	H	H	H	VH	0	1	4	4
	2.3.	Disturbance, damage and loss of subtidal benthic habitats													
	2.3.1.	Disturbance, damage and loss of coral reef habitats	H	VH	VH	VH	H	VH	H	H	VH	0	0	4	5
	2.3.2.	Disturbance, damage and loss of seagrass habitats	M			M	H	M	H	H	VH	0	3	3	1
	2.3.3.	Disturbance, damage and loss of macroalgal habitats	L				H		L	H	M	2	1	2	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats		H	M	M	H	M	M	H	VH	0	4	3	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)			H			M	M	M	H	0	3	2	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)		H	H	H	VH	H	H	M	VH	0	1	5	2
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	M	H	M	H	M		L	H	H	1	3	4	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	M	H	M	H	H		M	H	H	0	3	5	0
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species													
	3.1.1.	Decline in populations of marine mammals	H	H	M	M	VH	M	H		H	0	3	4	1
	3.1.2.	Decline in populations of cetaceans		H	H	VH	H	H	M		H	0	1	5	1
	3.1.3.	Decline in populations of seabirds	H	H		M	H	H	M	M		0	3	4	0
	3.1.4.	Decline in populations of turtles	VH	H	VH	VH	VH	H	H	H	H	0	0	5	4
	3.2.	Decline in populations of commercial fish stocks													

Main Area of Concern	Issue No.	Issue	OVERALL RANKING (LEVEL 2)												
			Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	L	M	H	VH
	3.2.1.	Decline in populations of sharks and rays	VH	H	M	VH	VH	VH	VH	H		0	1	2	5
	3.2.2.	Decline in populations of large pelagics	VH			VH	VH	VH	VH	H	VH	0	0	1	6
	3.2.3.	Decline in populations of small pelagics	VH				H		H	H	H	0	0	4	1
	3.2.4.	Decline in populations of deep water demersals				VH	M	H	M	H	H	0	2	3	1
	3.2.5.	Decline in populations of reef and demersal fish	H	VH		VH	VH	H	H	H	H	0	0	5	3
	3.3.	Decline in populations of commercial invertebrates													
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	H	H		VH	H			H	M	0	1	4	1
	3.3.2.	Decline in populations of abalone		H						M		0	1	1	0
	3.3.3.	Decline in populations of cephalods	H	VH		M	H	M	M		M	0	4	2	1
	3.3.4.	Decline in populations of sea cucumbers	H	VH		H	M	H	M		H	0	2	4	1
	3.3.5.	Decline in populations of sea urchins					M					0	1	0	0
	3.3.6.	Decline in populations of prawns and shrimp	H	VH	H	VH	VH		H	H	H	0	0	5	3
	3.3.7.	Decline in populations of lobsters		VH		H	H	M	VH		H	0	1	3	2
	3.3.8.	Decline in populations of crayfish					M		H			0	1	1	0
	3.3.9.	Decline in populations of crabs	M	VH		M	M		M		H	0	4	1	1
	3.4.	Excessive bycatch and discards	H	VH		VH	VH	VH	VH	H	H	0	0	3	5
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	H	H		VH	VH	H		M	M	0	2	3	2

Table 18 Issues for which Impact Analysis and Causal Chain diagrams have been prepared during the national CCA meetings (see Annex 3 for diagrams)

Major Area of Concern	Issue no.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	Causal Chain Analysis
MAC01. Water quality degradation	1.1.	Alteration of natural river flow and changes in freshwater input and sediment load			✓		✓	✓		✓	✓	5
	1.2.	Degradation of ground and surface water quality		✓			✓			✓		3
	1.3.	Degradation of coastal and marine water quality										
	1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources				✓						1
	1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources		✓		✓						2
	1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources				✓						1
	1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone										0
	1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	✓	✓			✓					3
	1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).			✓			✓				2
MAC02: Habitat and community modification	2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	☐	☐	☐	✓	✓	✓	☐	☐	✓	4
	2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	☐	☐	☐	☐	✓	☐	☐	☐	☐	1
	2.2.2.	Disturbance, damage and loss of coastal forest habitats	☐	☐	✓	☐	☐	✓	☐	☐	✓	3
	2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	☐	☐	☐	☐	☐	✓	☐	✓	☐	2
	2.2.4.	Disturbance, damage and loss of wetland habitats	☐	☐	☐	☐	☐	☐	☐	✓	☐	1
	2.2.5.	Disturbance, damage and loss of estuarine habitats	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	2.2.6.	Disturbance, damage and loss of mangrove habitats	☐	✓	✓	✓	✓	✓	☐	☐	☐	5

Major Area of Concern	Issue no.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	Causal Chain Analysis
	2.3.	Disturbance, damage and loss of subtidal benthic habitats	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	2.3.1.	Disturbance, damage and loss of coral reef habitats	✓	✓	✓	✓	☐	✓			✓	6
	2.3.2.	Disturbance, damage and loss of seagrass habitats									☐	0
	2.3.3.	Disturbance, damage and loss of macroalgal habitats									☐	0
	2.3.4.	Disturbance, damage and loss of soft sediment habitats							☐	✓	☐	1
	2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)							☐	☐	☐	0
	2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	☐	☐	✓	☐	☐	☐	☐	☐	☐	1
	2.5.	Increase in the occurence of harmful or toxic algal blooms (HABs)	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	2.6.	Introduction of exotic non-native species, invasives and nuisance species	☐	☐	☐	✓	☐	☐	☐	☐	☐	1
MAC03: Declines in living marine resources	3.1.	Decline in populations of focal species	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	3.1.1.	Decline in populations of marine mammals	☐	☐	✓	☐	☐	☐	☐	✓	☐	2
	3.1.2.	Decline in populations of cetaceans	☐	☐	✓	✓	☐	✓	☐	☐	☐	3
	3.1.3.	Decline in populations of seabirds	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.1.4.	Decline in populations ofturtles	☐	☐	✓	☐	✓	☐	☐	☐	☐	2
	3.2.	Decline in populations of commercial fish stocks	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	3.2.1.	Decline in populations of sharks and rays	☐	☐	✓	☐	☐	☐	☐	☐	☐	1
	3.2.2.	Decline in populations of large pelagics	✓	☐	☐	✓	☐	✓	☐	☐	☐	3
	3.2.3.	Decline in populations of small pelagics	☐	☐	☐	☐	☐	☐	☐	☐	✓	1
	3.2.4.	Decline in populations of deep water demersals	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.2.5.	Decline in populations of reef and demersal fish	☐	✓	☐	✓	✓	☐	☐	✓	☐	4

Major Area of Concern	Issue no.	Issue	Comoros	Kenya	Madagascar	Mauritius	Mozambique	Seychelles	Somalia	South Africa	Tanzania	Causal Chain Analysis
	3.3.	Decline in populations of commercial invertebrates	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.3.2.	Decline in populations of abalone	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.3.3.	Decline in populations of cephalods	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.3.4.	Decline in populations of sea cucumbers	☐	☐	✓	✓	☐	✓	☐	☐	☐	3
	3.3.5.	Decline in populations of sea urchins	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.3.6.	Decline in populations of prawns and shrimp	☐	✓	✓	☐	✓	☐	☐	☐	✓	4
	3.3.7.	Decline in populations of lobsters	☐	☐	☐	☐	☐	☐	✓	☐	☐	1
	3.3.8.	Decline in populations of crayfish	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.3.9.	Decline in populations of crabs	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	3.4.	Excessive bycatch and discards	☐	✓	☐	☐	☐	✓	☐	☐	✓	3
	3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	☐	✓	☐	✓	☐	✓	☐	☐	☐	3
MAC04: Unpredicable Environmental Variability and Extreme Events	4.1.	Climate hazards and exteme weather events (cyclones, storms, rainfall, coastal flooding)	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	4.2.	Sea level change	☐	☐	☐	☐			☐	☐	☐	0
	4.3.	Ocean acidification	☐	☐	☐	☐	☐	☐	☐	☐	☐	0
	4.4.	Changes in seawater temperatures										0
	4.5.	Changes to hydrodynamics and ocean circulation										0
	4.6.	Changes in productivity (shifts in primary and secondary production)										0
	4.7.	Geohazards (tsunamis, volcanic eruptions, earthquakes)										0

Annex 1: National Causal Chain Analysis Meetings Schedule.

Country	Date	Location	Workshop Venue
Madagascar	14th July 2011	Antananarivo	Ivotel, V C 29 Ambohidahy Rue Razafindratandra, Antananarivo 101, MADAGASCAR
Seychelles	19th July 2011	Beau Vallon	Coco d'Or, Beau Vallon, Mahe, SEYCHELLES
Mauritius	21st July 2011	Ebene	The Link Hotel, 65, Ebene Cybercity, Ebene, MAURITIUS
Kenya	1st August 2011	Mombasa	Kenya Marine Fisheries Research Institute, English Road, Mombasa, KENYA
Comoros	3rd August 2011	Moroni	Ministère de l'Agriculture de la Pêche et de l'Environnement Moroni, COMOROS
Somalia	4th August 2011	Nairobi	Nomad Palace Hotel, General Wairungi Street, Nairobi, KENYA
Tanzania	8th August 2011	Dar es Salaam	Mbezi Garden Hotel, Bagamoya Road, DAR ES SALAAM
Mozambique	11th August 2011	Maputo	Tivoli Hotel, Av 25 de Setembro 1321, Maputo, MOZAMBIQUE
South Africa	15th August 2011	Cape Town	Department of Environmental Affairs (DEA), 8th Floor, 1 Dorp Street, Cape Town, 8000 Cape Town, SOUTH AFRICA.

Annex 2: Causal Chain Analysis Workshop Agenda

Time	Activity	Type
08h00	Registration	
08h30	Welcome and Introduction	
08h45	**Session 1**	
08h45	ASCLME Project Overview and Update	Presentation 1
09h00	Introduction to Causal Chain Analysis (CCA)	Presentation 2
09h15	National Issues of Concern identified from MEDAs	Presentation 3
09h30	Issues of Concern – Part 1 – Prioritisation	Group Work 1
10h30	Tea	
11h00	**Session 2**	
11h00	Issues of Concern – Part 2 – Impacts	Group Work 2
12h45	Issues of Concern – Review	Report Back 1
13h00	Lunch	
14h00	**Session 3**	
14h00	Causal Chain Analysis – Part 1	Group Work 3
15h30	Tea	
16h00	**Session 4**	
16h00	Causal Chain Analysis – Part 2	Group Work 4
17h00	Causal Chain Analysis – Report Back	Report Back 2
17h30	Closing and thanks	

Annex 3: National Causal Chain Meeting Results

A6.2 Seychelles – National Causal Chain Meeting Results

Table A6.2.1: Seychelles Prioritisation 1 Results

Issue No.	Issue	Relevance	Importance	Transboundary	Baseline	Baseline data held by	Monitoring	Monitoring by	Notes / Comments
1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	R	H/M	NT	Yes	Monthly flow recorded by the utilities corporation	yes	Monthly flow	
1.2.	Degradation of ground and surface water quality	R	L/M	NT	No		No	only ad-hoc / event-based	
1.3.	Degradation of coastal and marine water quality	R	H/M	T					
1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	R	L/M	FT	No		No	Ad-hoc	
1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	R	L/M	NT	No		No	Ad-hoc	
1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	R	L/M	T	No		No	Ad-hoc	
1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	R	M	NT	No		No	Ad-hoc	
1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	R	M	T	No		No	Ad-hoc	
1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	R	L	T	No		No	Ad-hoc	
2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	R	HP	T	Yes	Sandwatch programme. Baseline mapping.	Yes	NGOs and Gov Sey. Site specific monitoring.	Jica mapping. 1996 satellite

Issue No.	Issue	Relevance	Importance	Transboundary	Baseline	Baseline data held by	Monitoring	Monitoring by	Notes / Comments
									images and new images now available not processed - no body to dedicate the time to do this work
2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats	R	HP	T	Yes	Habitats mapped	No	No consistent monitoring.	
2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)	NR							In the Seychelles the upland watersheds are protected
2.2.2.	Disturbance, damage and loss of coastal forest habitats	R	MP	T	Yes	Habitats mapped	Yes (partial)	NGO projects - not consistent	Issues with NGO projects generally with regards data transfer and data management
2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	R	HP	T	Yes	Habitats mapped	No		
2.2.4.	Disturbance, damage and loss of wetland habitats	R	MP	T	Yes	Habitats mapped	No	NGOs and Gov. Sey.	

Issue No.	Issue	Relevance	Importance	Transboundary	Baseline	Baseline data held by	Monitoring	Monitoring by	Notes / Comments
								Not consistent	
2.2.5.	Disturbance, damage and loss of estuarine habitats	NR							
2.2.6.	Disturbance, damage and loss of mangrove habitats	R	LP	T	Yes	Habitats mapped	Yes	Monitoring and education	
2.3.	Disturbance, damage and loss of subtidal benthic habitats								
2.3.1.	Disturbance, damage and loss of coral reef habitats	R	HP	T	Yes	NGO and Gov. Sey.	Yes	Global Vision International monitoring (30+ sites Mahe and 20+ sites Praslin - 10 years of data)	Monitoring used to be done by rangers not now.
2.3.2.	Disturbance, damage and loss of seagrass habitats	R	LP	T	Yes	Seagrass habitats mapped during Shoals of Capricorn and by Univ. Cambridge.	No	No consistent monitoring	
2.3.3.	Disturbance, damage and loss of macroalgal habitats	NR							
2.3.4.	Disturbance, damage and loss of soft sediment habitats	R	MP	T	No	Some grab samples taken during IUCN study on invasives	No	No consistent monitoring	IUCN study invasives
2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	NR							
2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	FR	LP	T	No		No		
2.5.	Increase in the occurrence of harmful or toxic algal blooms (HABs)	NR							

Issue No.	Issue	Relevance	Importance	Transboundary	Baseline	Baseline data held by	Monitoring	Monitoring by	Notes / Comments
2.6.	Introduction of exotic non-native species, invasives and nuisance species	NR							
3.1.	Decline in populations of focal species								
3.1.1.	Decline in populations of marine mammals	R	H	T	No	Fragmented project activities	No	Fragmented (onboard observations)	Combined 3.1.1 and 3.1.2
3.1.2.	Decline in populations of cetaceans	R	H	T	No	Fragmented project activities	No	Fragmented (onboard observations)	
3.1.3.	Decline in populations of seabirds	R	H	T	Yes	Reasonable baseline on nesting sites but not on foraging	Yes	Ongoing by different institutions - fragmented	
3.1.4.	Decline in populations of turtles	R	H	T	No	Fragmented and project based	Yes	Ongoing - but fragmented.	
3.2.	Decline in populations of commercial fish stocks								
3.2.1.	Decline in populations of sharks and rays	R	H	T	No	Some catch data and occurrence. Underwater visual census surveys.	No	Very fragmented and project based.	
3.2.2.	Decline in populations of large pelagics	R	H	T	Yes	Very good (IOTC and SFA -IRD)	Yes	Stock assessment and catch monitoring	
3.2.3.	Decline in populations of small pelagics	NR							
3.2.4.	Decline in populations of deep water demersals	R	H	NT	Yes	Good catch data (Seychelles Fisheries Authority)	Yes	Good catch and landing sites (SFA)	
3.2.5.	Decline in populations of reef and demersal fish	R	H	FT	Yes	Good catch data (SFA)	Yes	Good catch and landing sites (SFA) and UVC from projects.	

Issue No.	Issue	Relevance	Importance	Transboundary	Baseline	Baseline data held by	Monitoring	Monitoring by	Notes / Comments
3.3.	Decline in populations of commercial invertebrates								
3.3.1.	Decline in populations of molluscs (bivalves, gastropods)	NR							
3.3.2.	Decline in populations of abalone	NR							
3.3.3.	Decline in populations of cephalopods	R	H	FT	No	Very little (SFA)	No	Very little (SFA)	
3.3.4.	Decline in populations of sea cucumbers	R	H	FT	Yes	Good (SFA)	Yes	Good (SFA)	
3.3.5.	Decline in populations of sea urchins	NR							
3.3.6.	Decline in populations of prawns and shrimp	NR							
3.3.7.	Decline in populations of lobsters	R	H	T	Yes	Good (SFA)	Yes	Good (SFA)	Combined 3.3.7 and 3.3.8
3.3.8.	Decline in populations of crayfish	NR							
3.3.9.	Decline in populations of crabs	NR							
3.4.	Excessive bycatch and discards	R	H	T	No	Limited (SFA)	No	Limited (SFA)	
3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	R	H	FT	No	Very limited (SFA)	No	Very limited (SFA)	Future issue

Table A6.2.2: Seychelles Prioritisation 2 Results

		Severity				Scope				
Issue No.	Issue	Environmental Impacts	Socio-economic Impacts	Macro-economic Impacts	**Severity Overall**	Transboundary	Scale of benefits	Feasibility of solution	**Scope Overall**	**Overall rating**
1.1.	Alteration of natural river flow and changes in freshwater input and sediment load	VH	H	H	H	H	VH	L	H	H
1.2.	Degradation of ground and surface water quality	H	M	M	M	VH	H	M	H	H
1.3.	Degradation of coastal and marine water quality	VH	VH	VH	VH	VH	VH	L	H	VH
1.3.1	Microbiological contamination from land-based (domestic, industrial, agriculture and livestock) and marine (mariculture, shipping) sources	H	H	M	H	M	M	M	M	H
1.3.2	Nutrient enrichment from land-based (domestic , industrial, agriculture, livestock) and marine (mariculture) sources	H	H	H	H	H	H	M	H	H
1.3.3	Chemical contamination (excluding oil spills) from land-based (domestic, industrial and agricultural) and marine (shipping, dumping at sea) sources	M	M	M	M	VH	VH	L	H	H
1.3.4	Suspended solids in coastal waters due to human activities on land and in the coastal zone	H	H	H	H	VH	H	L	H	H
1.3.5	Solid wastes / marine debris (plastics etc.) from shipping and land-based-sources	VH	H	H	H	VH	VH	L	H	H
1.3.6	Oil spills (drilling, exploitation, transport, processing, storage, shipping).	VH	VH	VH	VH	VH	VH	M	H	VH
2.1.	Shoreline change, due to modification, land reclamation and coastal erosion	VH	VH	VH	VH	VH	VH	VH	VH	VH
2.2.	Disturbance, damage and loss of coastal, watershed and upland habitats									
2.2.1.	Disturbance, damage and loss of upland / watershed habitats (>10 m elevation)									

		Severity				Scope				
Issue No.	Issue	Environmental Impacts	Socio-economic Impacts	Macro-economic Impacts	**Severity Overall**	Transboundary	Scale of benefits	Feasibility of solution	**Scope Overall**	**Overall rating**
2.2.2.	Disturbance, damage and loss of coastal forest habitats	M	L	L	L	L	L	L	L	L
2.2.3.	Disturbance, damage and loss of coastal habitats (beaches, dunes, coastal vegetation and flood plain habitats to 10 m elevation)	H	L	L	M	L	L	VH	L	M
2.2.4.	Disturbance, damage and loss of wetland habitats	M	L	L	L	M	H	H	H	M
2.2.5.	Disturbance, damage and loss of estuarine habitats									
2.2.6.	Disturbance, damage and loss of mangrove habitats	L	L	H	M	VH	VH	VH	VH	H
2.3.	Disturbance, damage and loss of subtidal benthic habitats									
2.3.1.	Disturbance, damage and loss of coral reef habitats	VH	VH	VH	VH	VH	VH	VH	VH	VH
2.3.2.	Disturbance, damage and loss of seagrass habitats	L	L	L	L	M	L	VH	M	M
2.3.3.	Disturbance, damage and loss of macroalgal habitats									
2.3.4.	Disturbance, damage and loss of soft sediment habitats	L	L	L	L	L	L	H	M	M
2.3.5.	Disturbance, damage and loss of deep water habitats (including sea mounts)	L	VH	VH	H	L	L	H	M	M
2.4.	Disturbance, damage and degradation of pelagic habitats (nearshore <30 m, neritic 30-200m and oceanic >200m depth)	L	VH	VH	H	VH	VH	L	H	H
2.5.	Increase in the occurrence of harmful or toxic algal blooms (HABs)									

		Severity				Scope				
Issue No.	Issue	Environmental Impacts	Socio-economic Impacts	Macro-economic Impacts	**Severity Overall**	Transboundary	Scale of benefits	Feasibility of solution	**Scope Overall**	**Overall rating**
2.6.	Introduction of exotic non-native species, invasives and nuisance species									
3.1.	Decline in populations of focal species									
3.1.1.	Decline in populations of marine mammals	L	L	L	L	VH	H	L	H	M
3.1.2.	Decline in populations of cetaceans	VH	M	L	M	VH	VH	M	VH	H
3.1.3.	Decline in populations of seabirds	VH	H	M	H	VH	M	L	H	H
3.1.4.	Decline in populations of turtles	VH	H	L	H	VH	H	M	H	H
3.2.	Decline in populations of commercial fish stocks									
3.2.1.	Decline in populations of sharks and rays	VH	H	H	H	VH	VH	H	VH	VH
3.2.2.	Decline in populations of large pelagics	VH	H	VH	VH	VH	VH	M	VH	VH
3.2.3.	Decline in populations of small pelagics									
3.2.4.	Decline in populations of deep water demersals	M	H	H	H	M	H	M	M	H
3.2.5.	Decline in populations of reef and demersal fish	VH	VH	H	VH	M	H	L	M	H
3.3.	Decline in populations of commercial invertebrates									
3.3.1.	Decline in populations of molluscs (bivalves, gastropods)									

		Severity				Scope				
Issue No.	Issue	Environmental Impacts	Socio-economic Impacts	Macro-economic Impacts	**Severity Overall**	Transboundary	Scale of benefits	Feasibility of solution	**Scope Overall**	**Overall rating**
3.3.2.	Decline in populations of abalone									
3.3.3.	Decline in populations of cephalopods	M	M	L	M	L	M	M	M	M
3.3.4.	Decline in populations of sea cucumbers	VH	VH	H	VH	L	L	H	M	H
3.3.5.	Decline in populations of sea urchins									
3.3.6.	Decline in populations of prawns and shrimp									
3.3.7.	Decline in populations of lobsters	M	M	L	M	L	L	H	M	M
3.3.8.	Decline in populations of crayfish									
3.3.9.	Decline in populations of crabs									
3.4.	Excessive bycatch and discards	H	H	H	H	VH	VH	M	VH	VH
3.5.	Expansion of mariculture industry (biosecurity, diseases in wildstocks, exotics, habitat implications, water quality)	VH	H	H	H	L	M	H	M	H

Figure 6.2.1.a: Seychelles MAC01 Impact Analysis for Issue (1.1) Alteration of natural river flow and changes in freshwater input and sediment load.

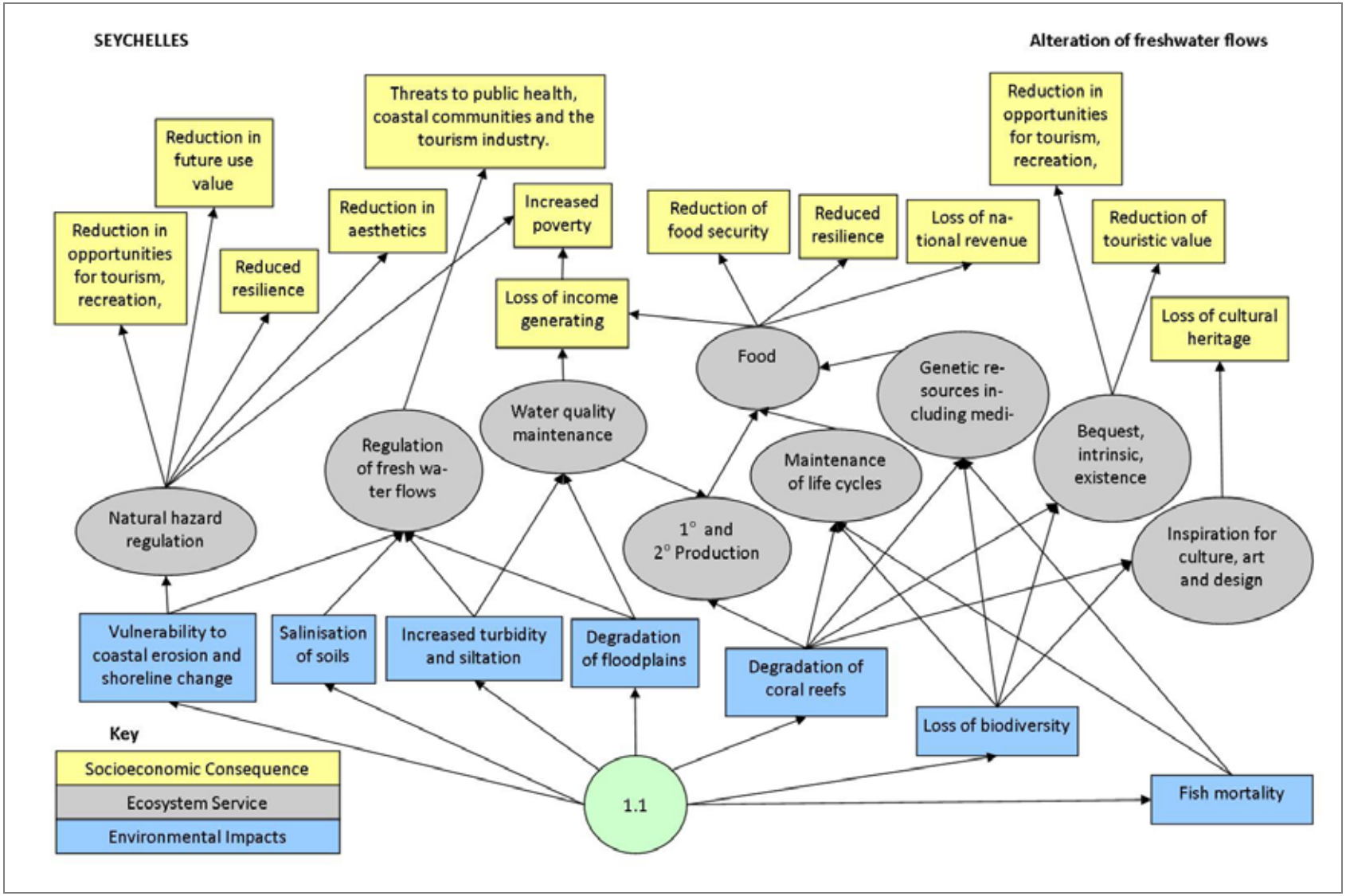

Figure 6.2.1.b: Seychelles MAC01 Causal Chain Analysis for Issue (1.1) Alteration of natural river flow and changes in freshwater input and sediment load.

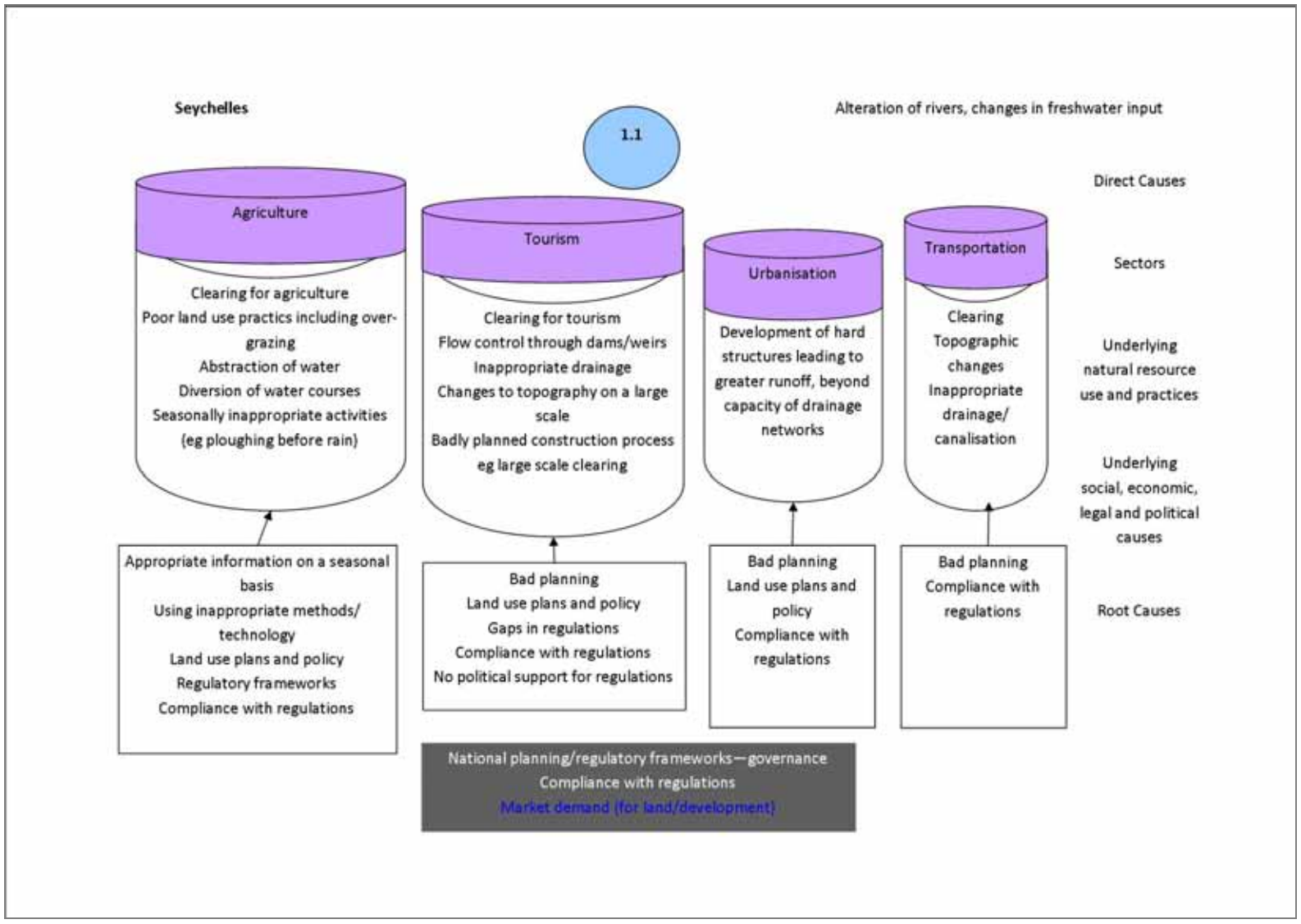

Figure 6.2.2.a: Seychelles MAC01 Impact Analysis for Issue (1.3.6) Oil spills.

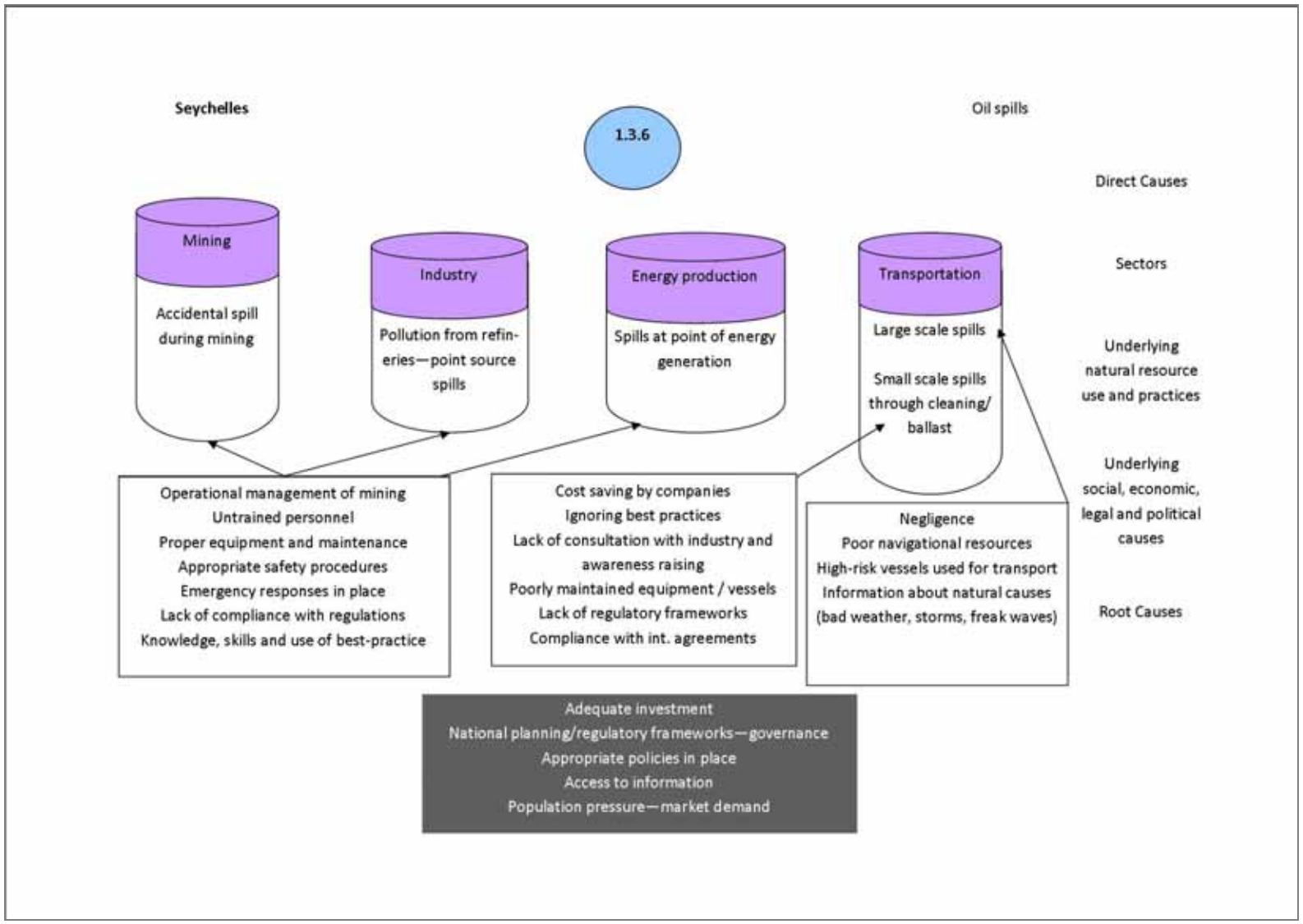

Figure 6.2.2.b: Seychelles MAC01 Causal Chain Analysis for Issue (1.3.6) Oil spills.

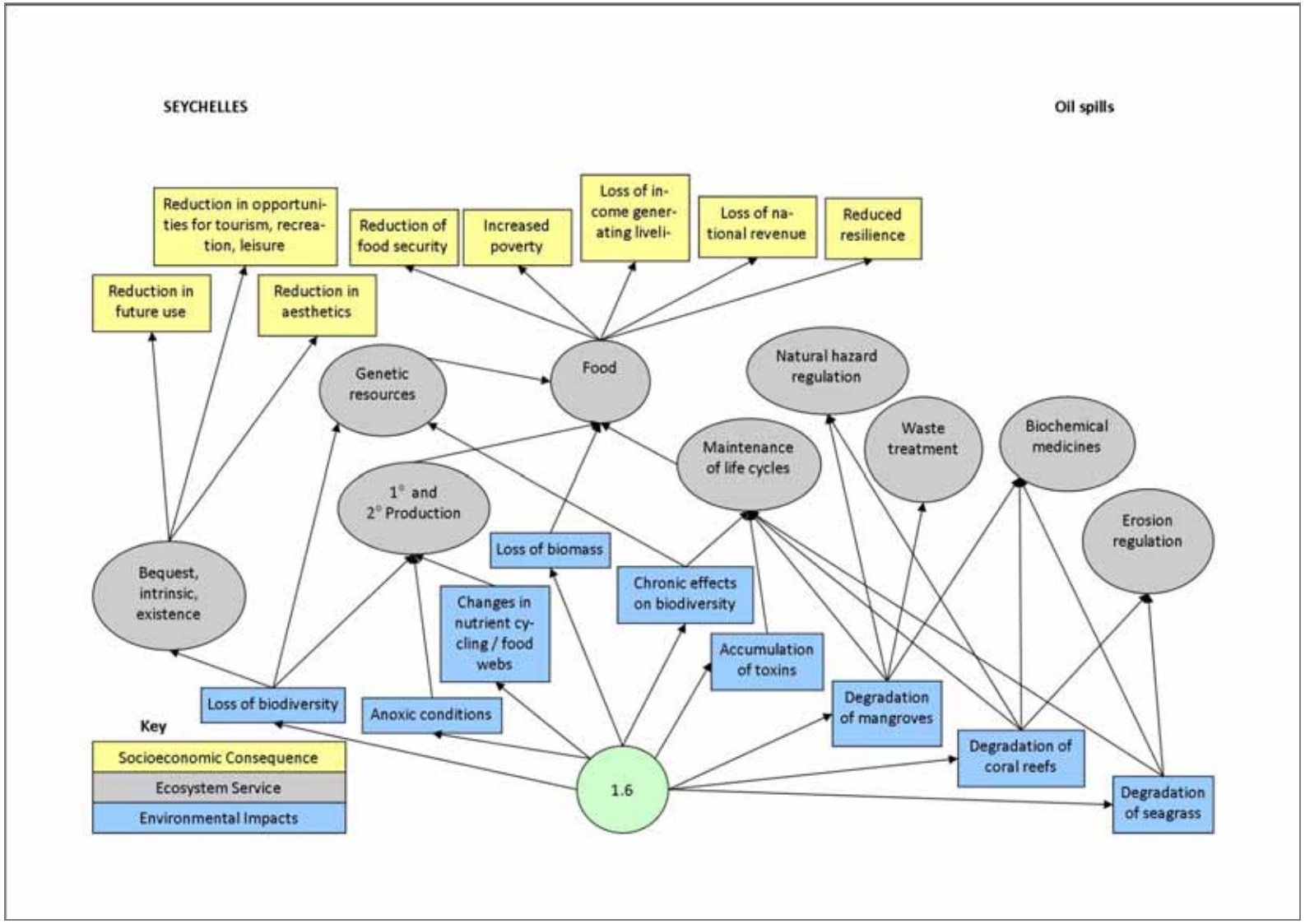

Figure 6.2.3: Seychelles MAC02 Impact Analysis for Issue (2.1) Shoreline change due to modification, land reclamation and coastal erosion.

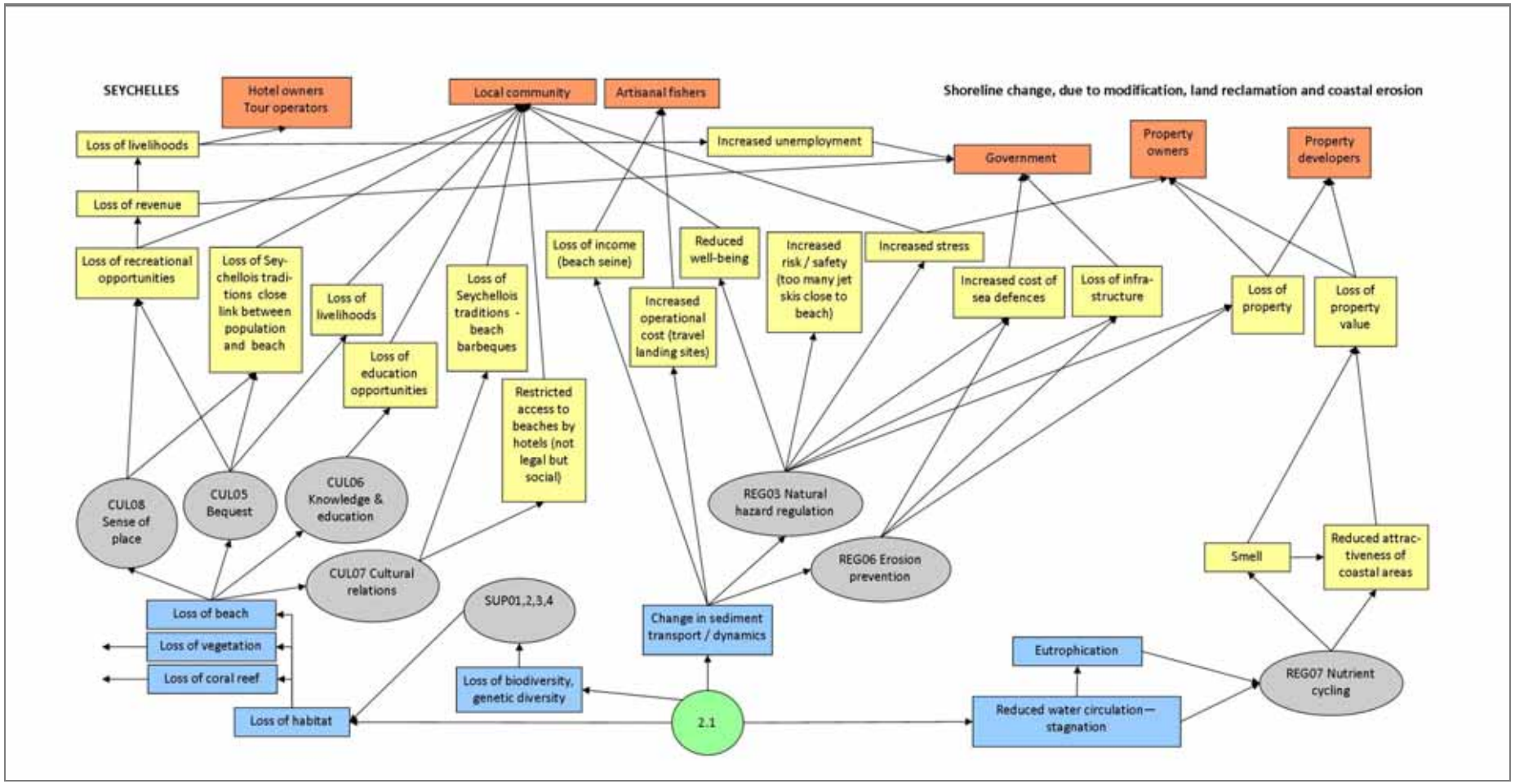

Figure 6.2.4: Seychelles MAC02 Impact Analysis for Issue (2.2.2) Disturbance, damage and loss of coastal forest.

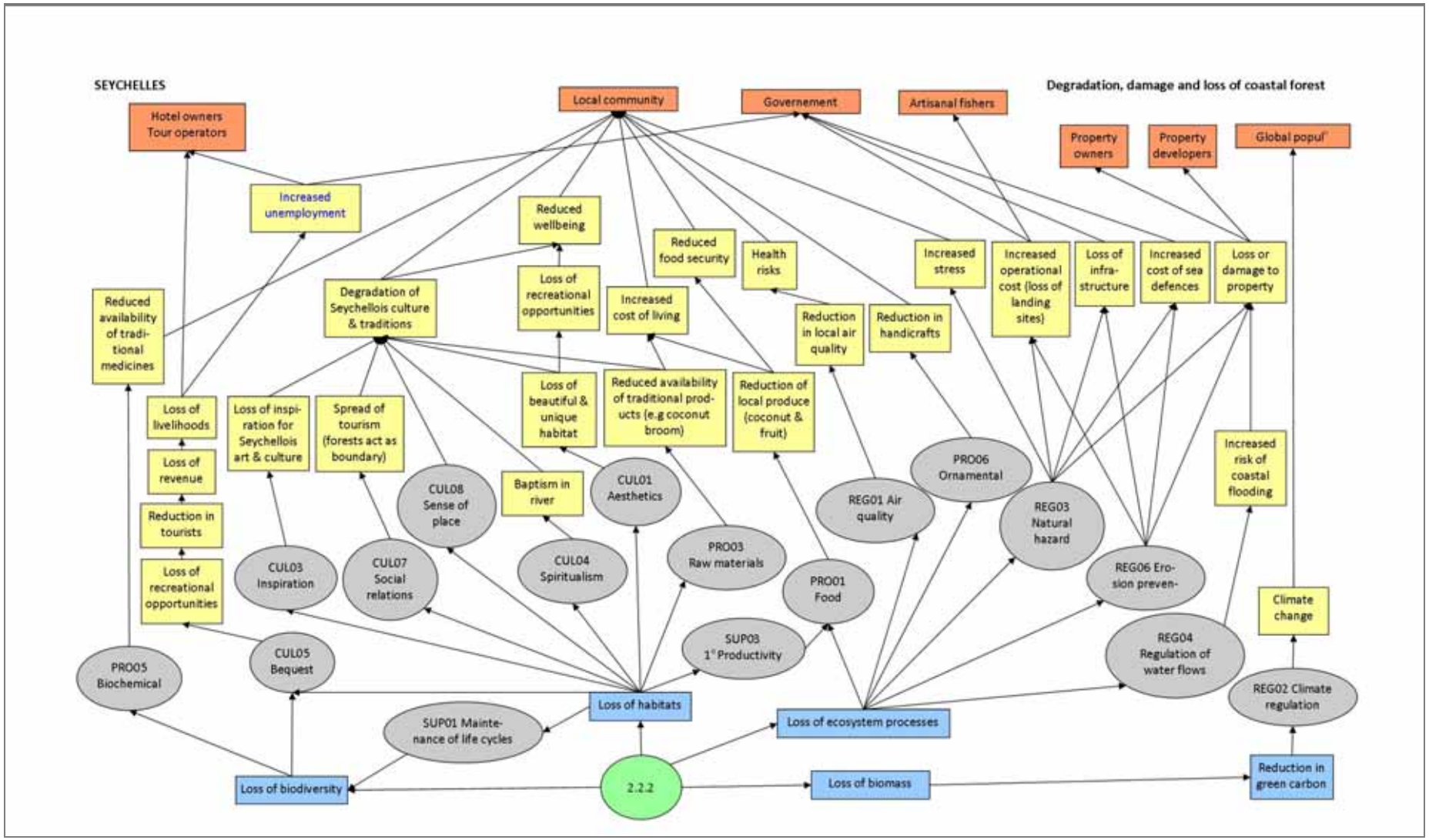

Figure 6.2.5: Seychelles MAC02 Impact Analysis for Issue (2.2.3) Disturbance, damage and loss of coastal habitats.

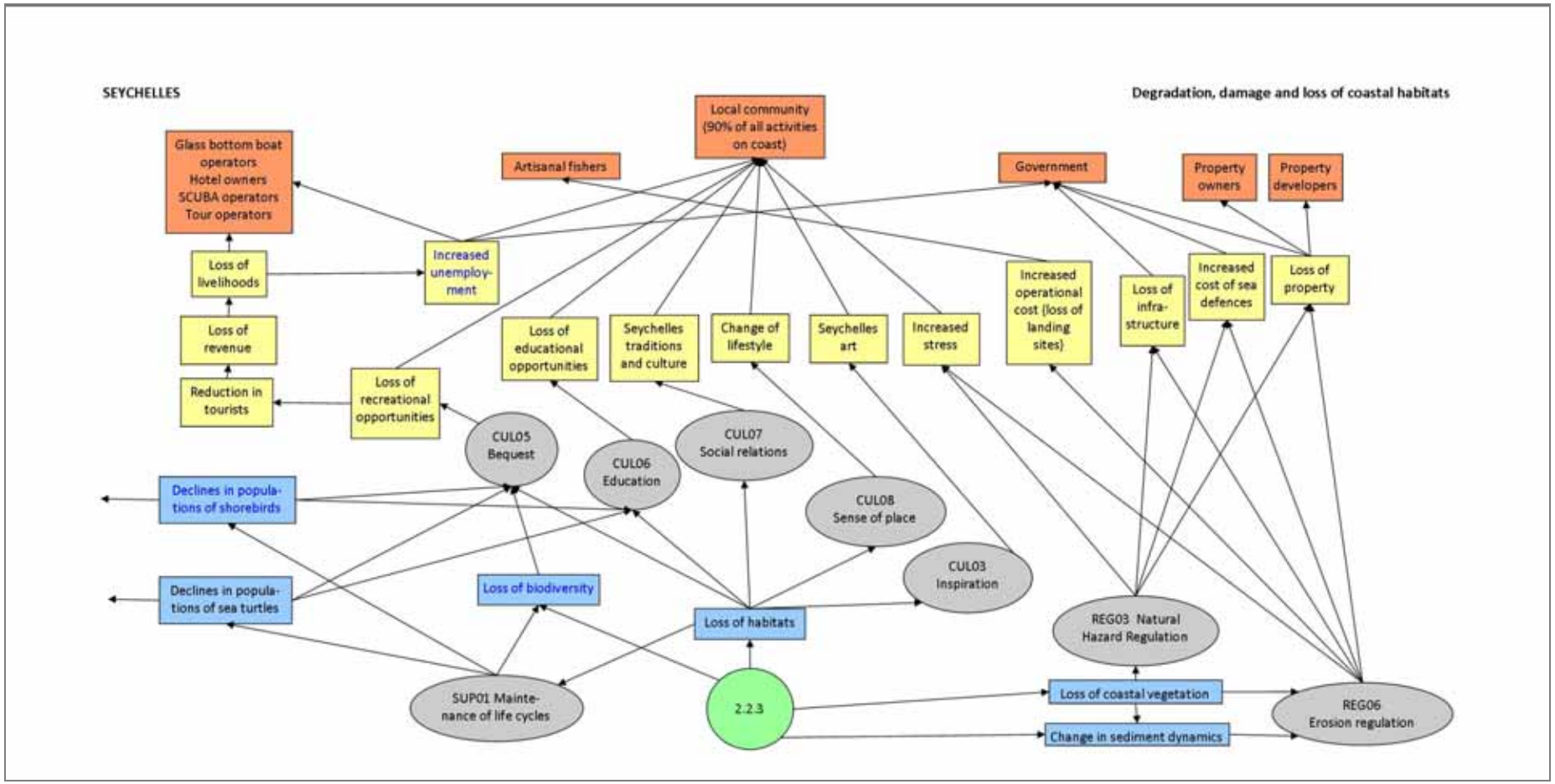

Figure 6.2.6: Seychelles MAC02 Impact Analysis for Issue (2.2.6) Disturbance, damage and loss of mangroves.

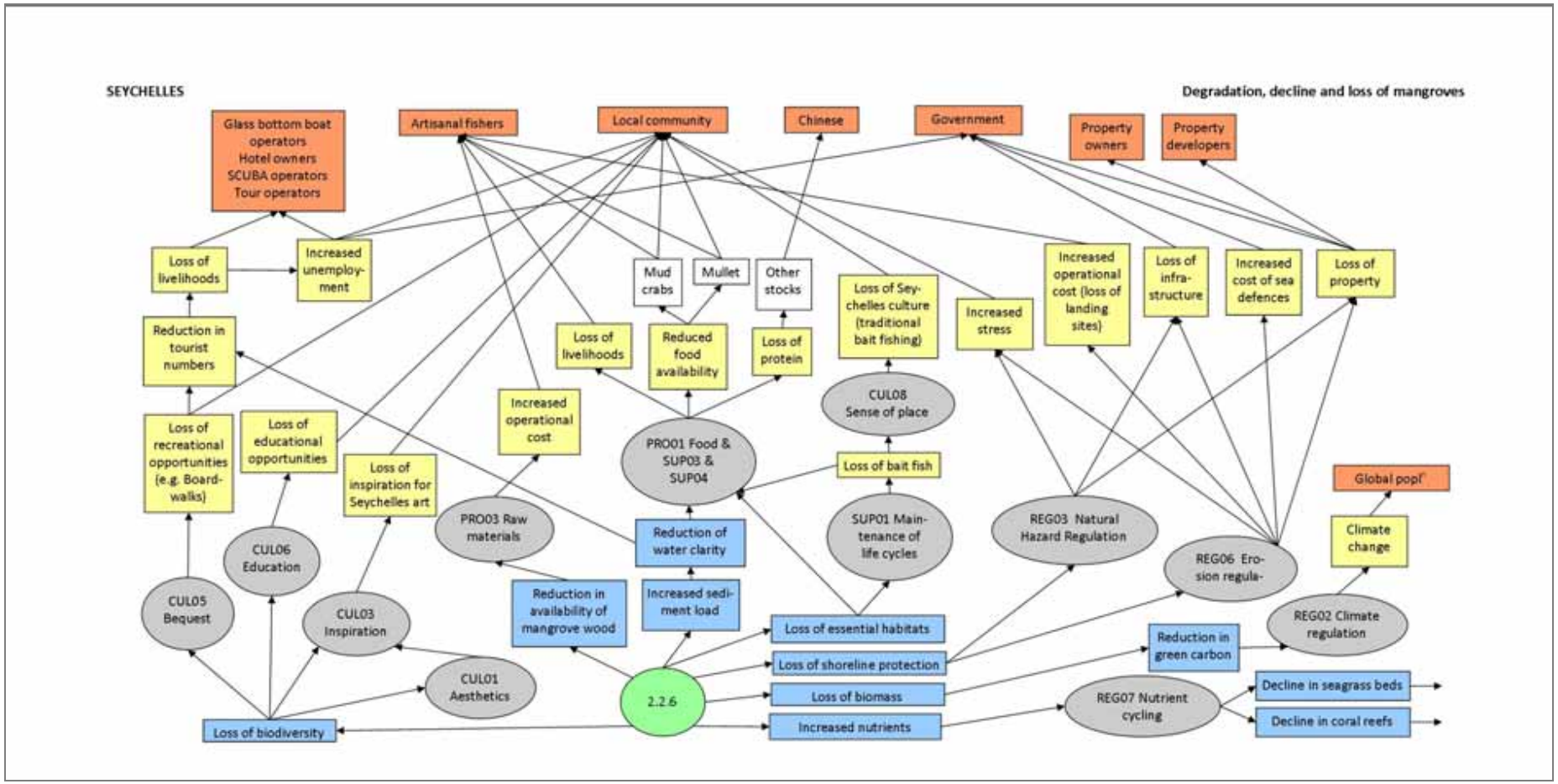

Figure 6.2.7.a: Seychelles MAC02 Impact Analysis for Issue (2.3.1) Disturbance, damage and loss of coral reefs.

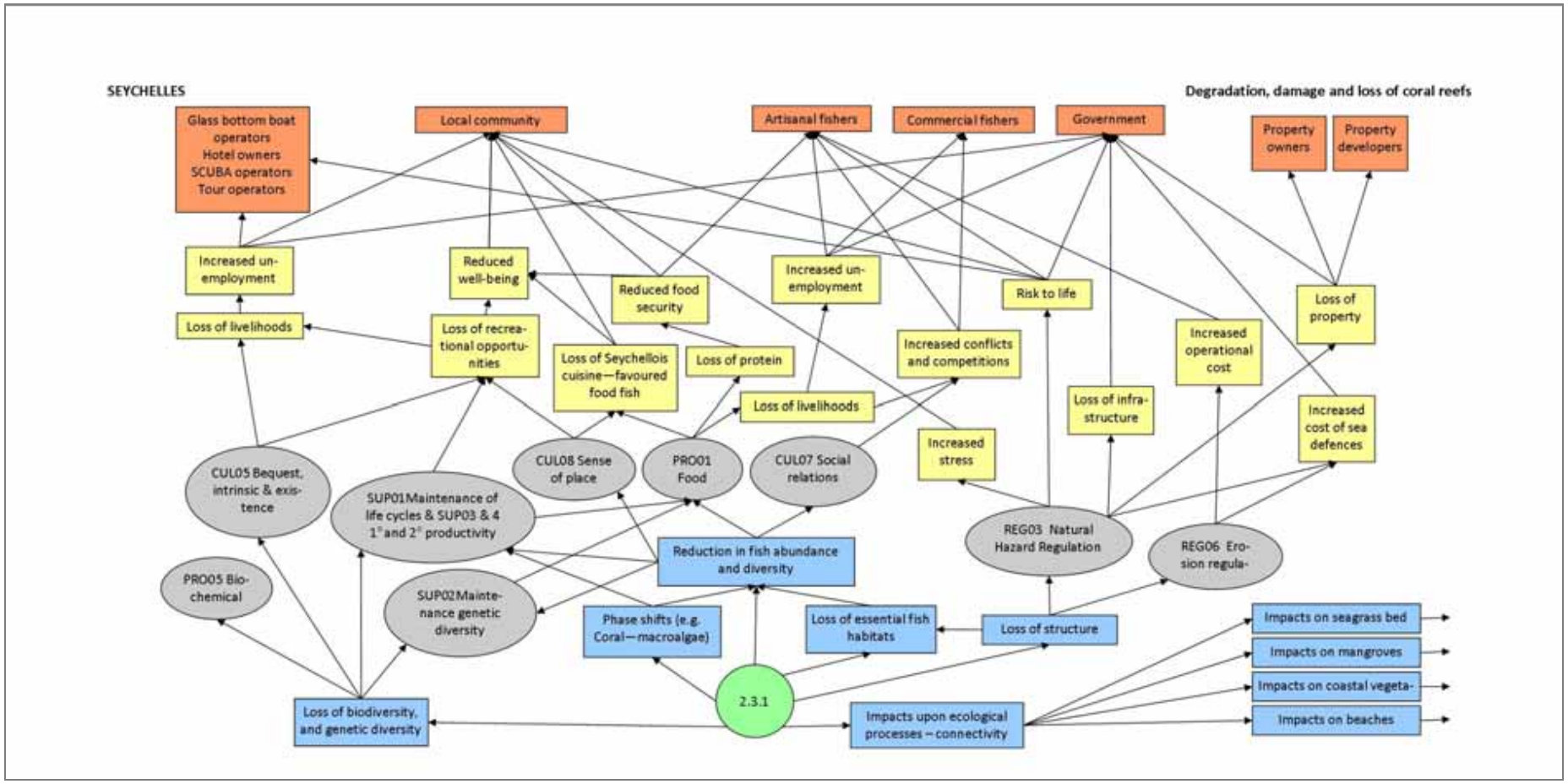

Figure 6.2.7.b: Seychelles MAC02 Causal Chain Analysis for Issue (2.3.1) Disturbance, damage and loss of coral reefs.

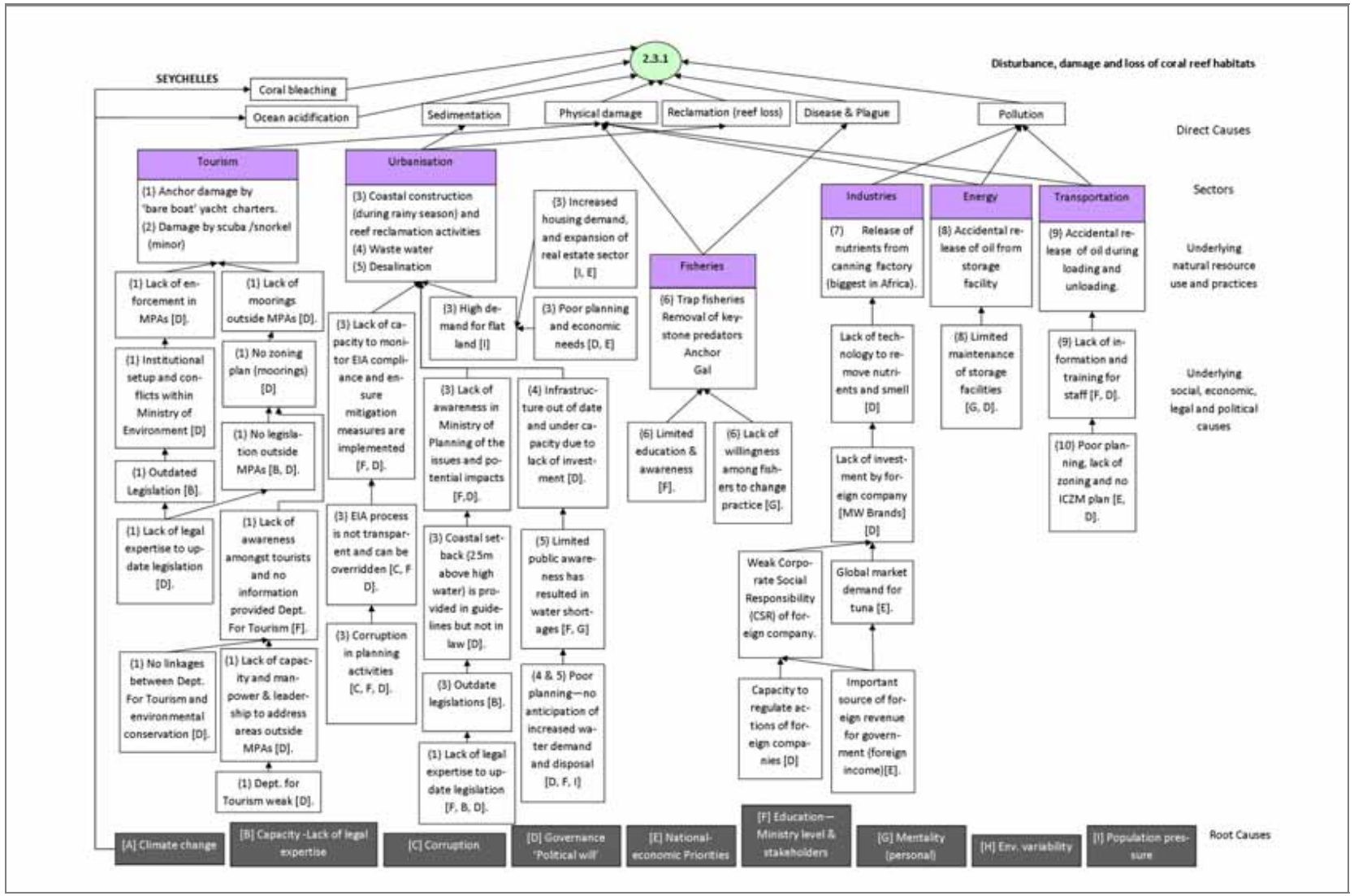

Figure 6.2.8: Seychelles MAC03 Impact Analysis for Issue (3.1.2) Declines in populations of cetaceans.

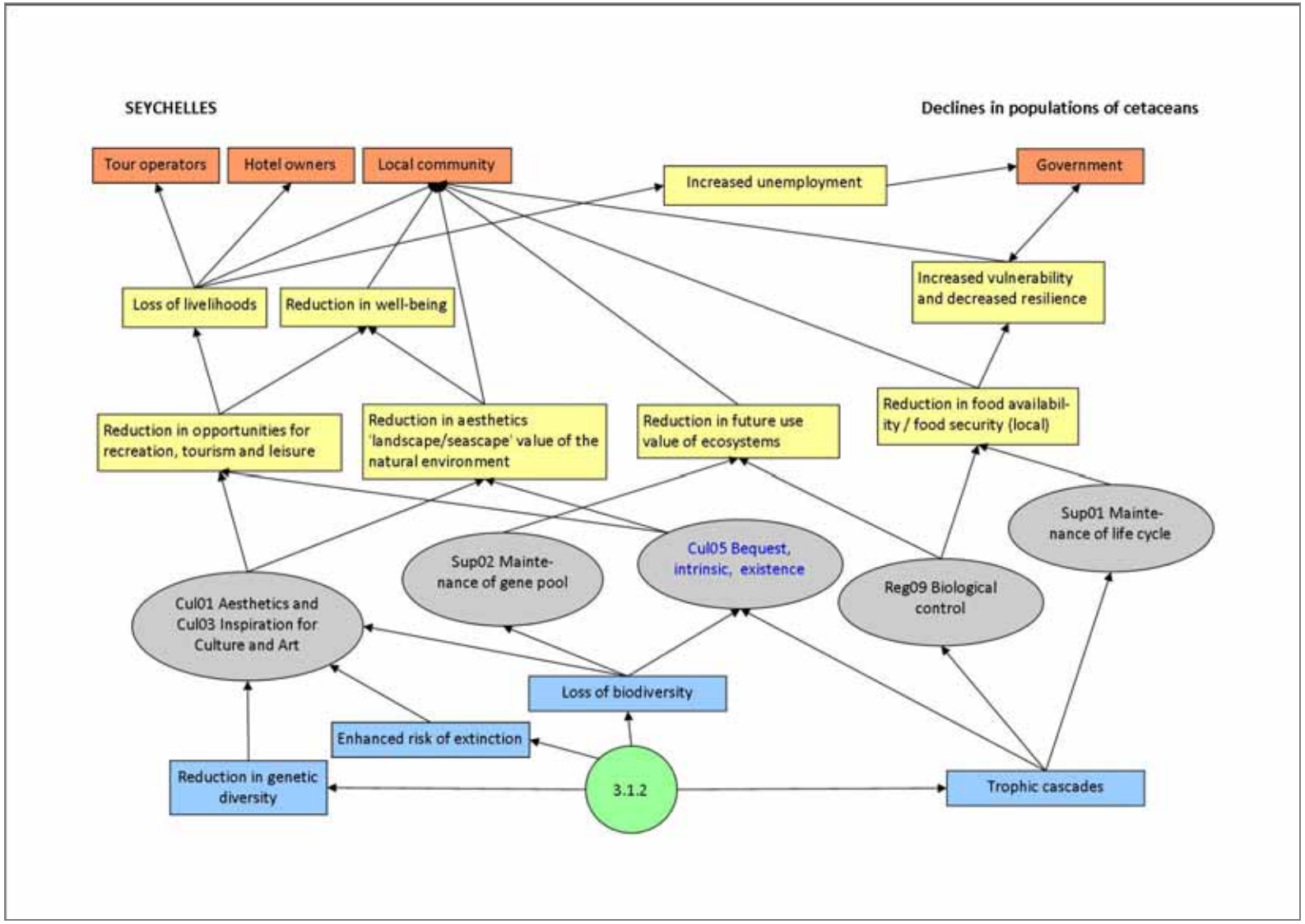

Figure 6.2.9.a: Seychelles MAC03 Impact Analysis for Issue (3.1.2) Declines in populations of large pelagics.

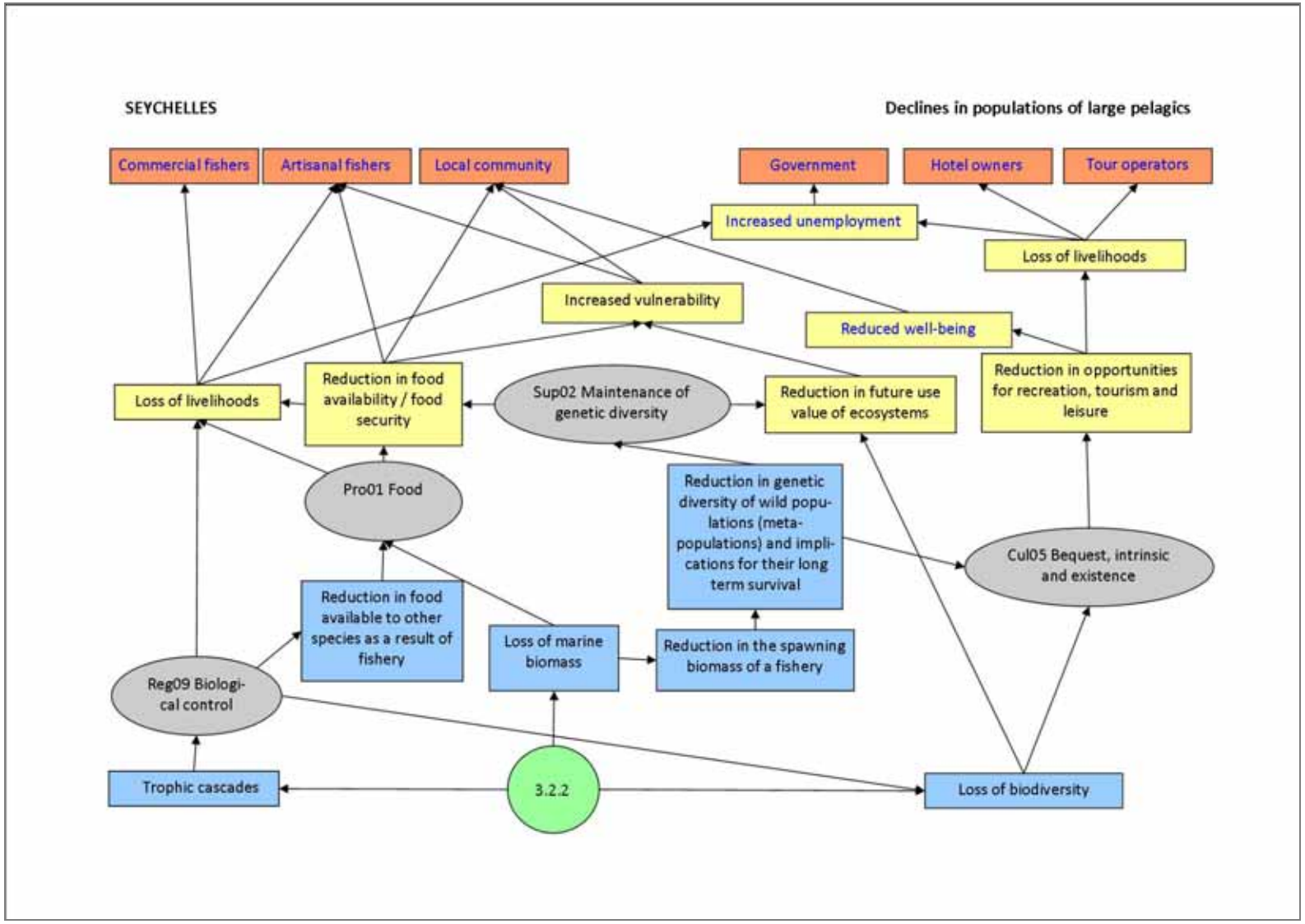

Figure 6.2.9.b: Seychelles MAC03 Causal Chain Analysis for Issue (3.1.2) Declines in populations of large pelagics.

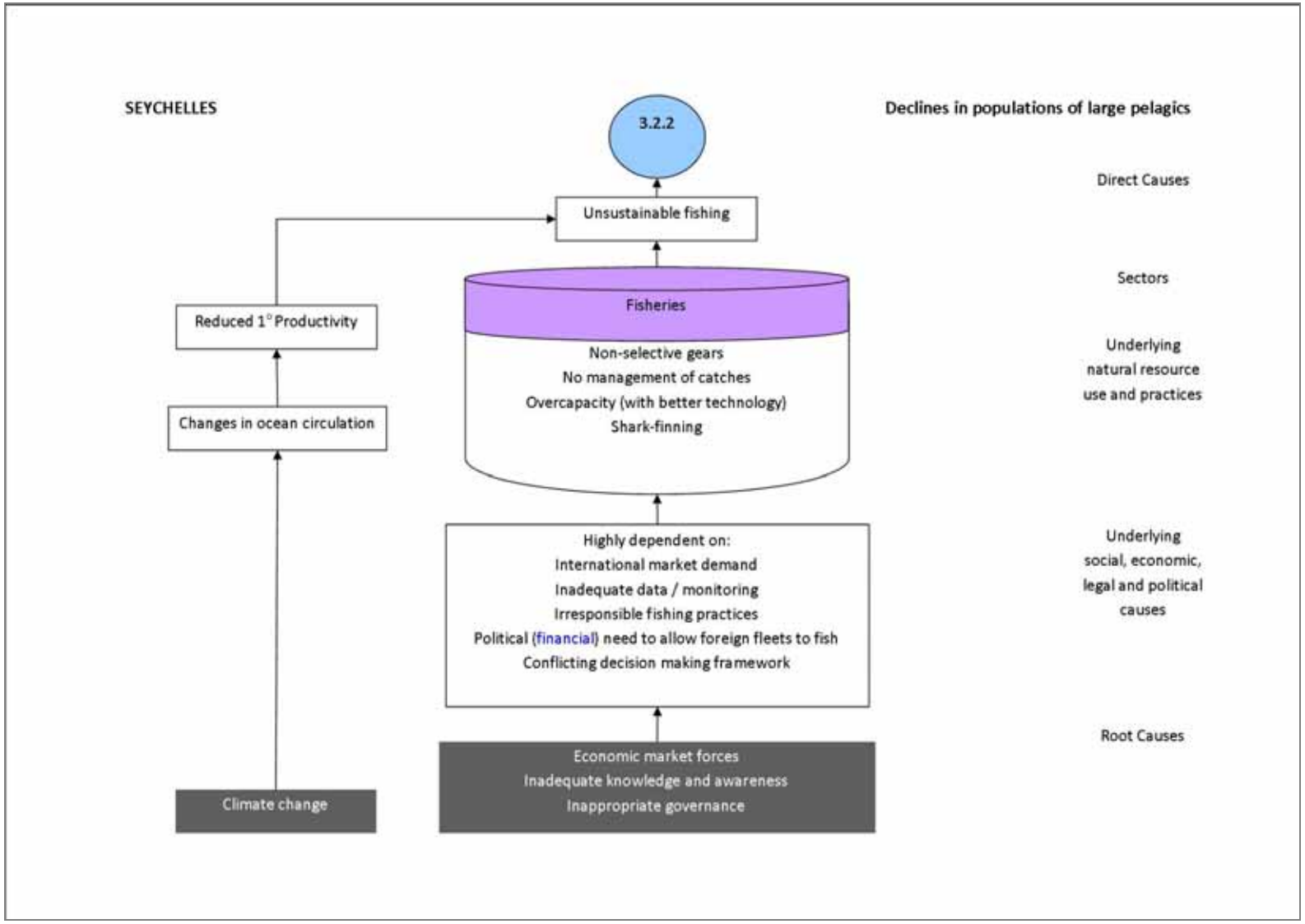

Figure 6.2.10.a: Seychelles MAC03 Impact Analysis for Issue (3.3.4) Declines in populations of sea cucumbers.

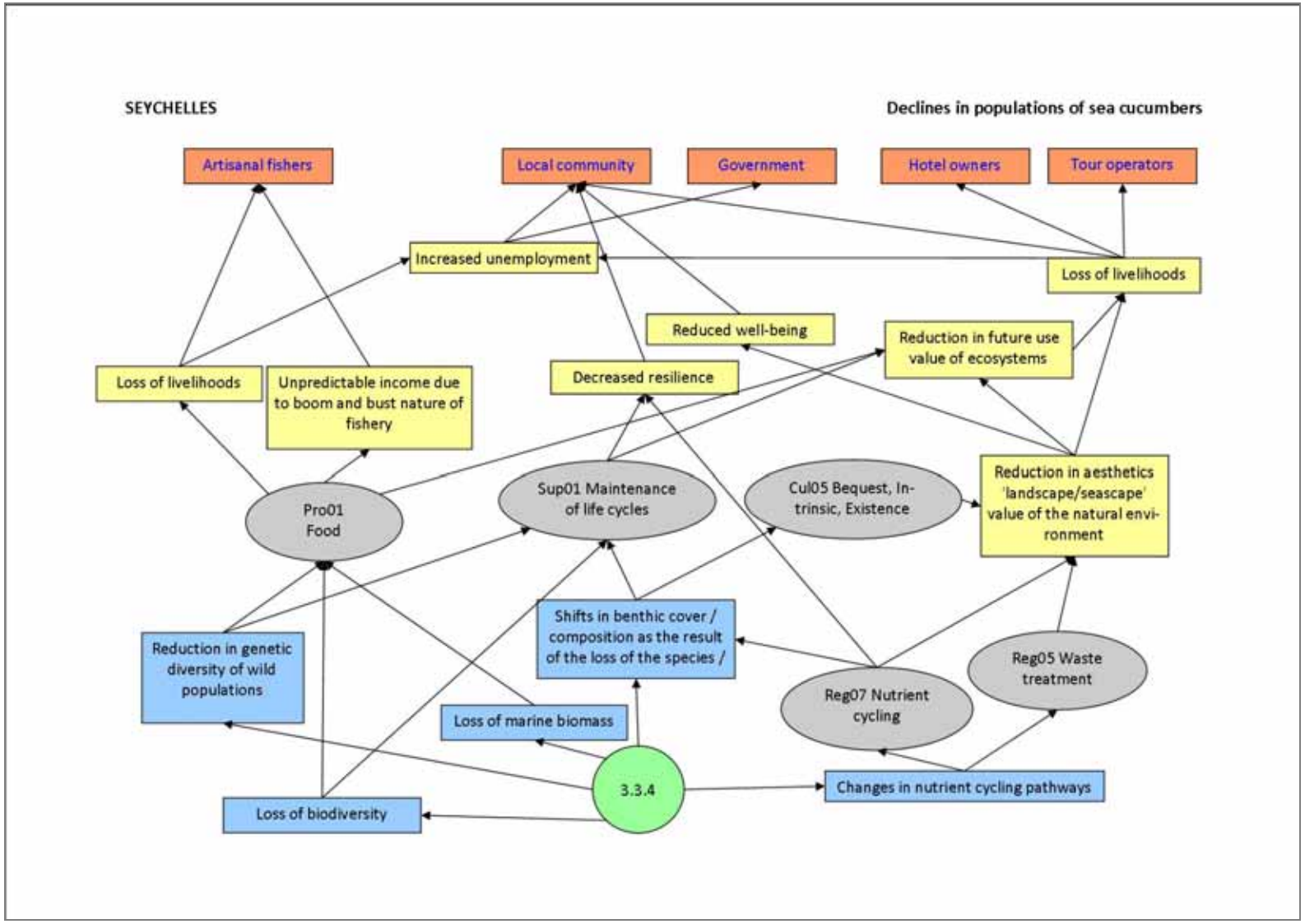

Figure 6.2.10.b: Seychelles MAC03 Causal Chain Analysis for Issue (3.3.4) Declines in populations of sea cucumbers.

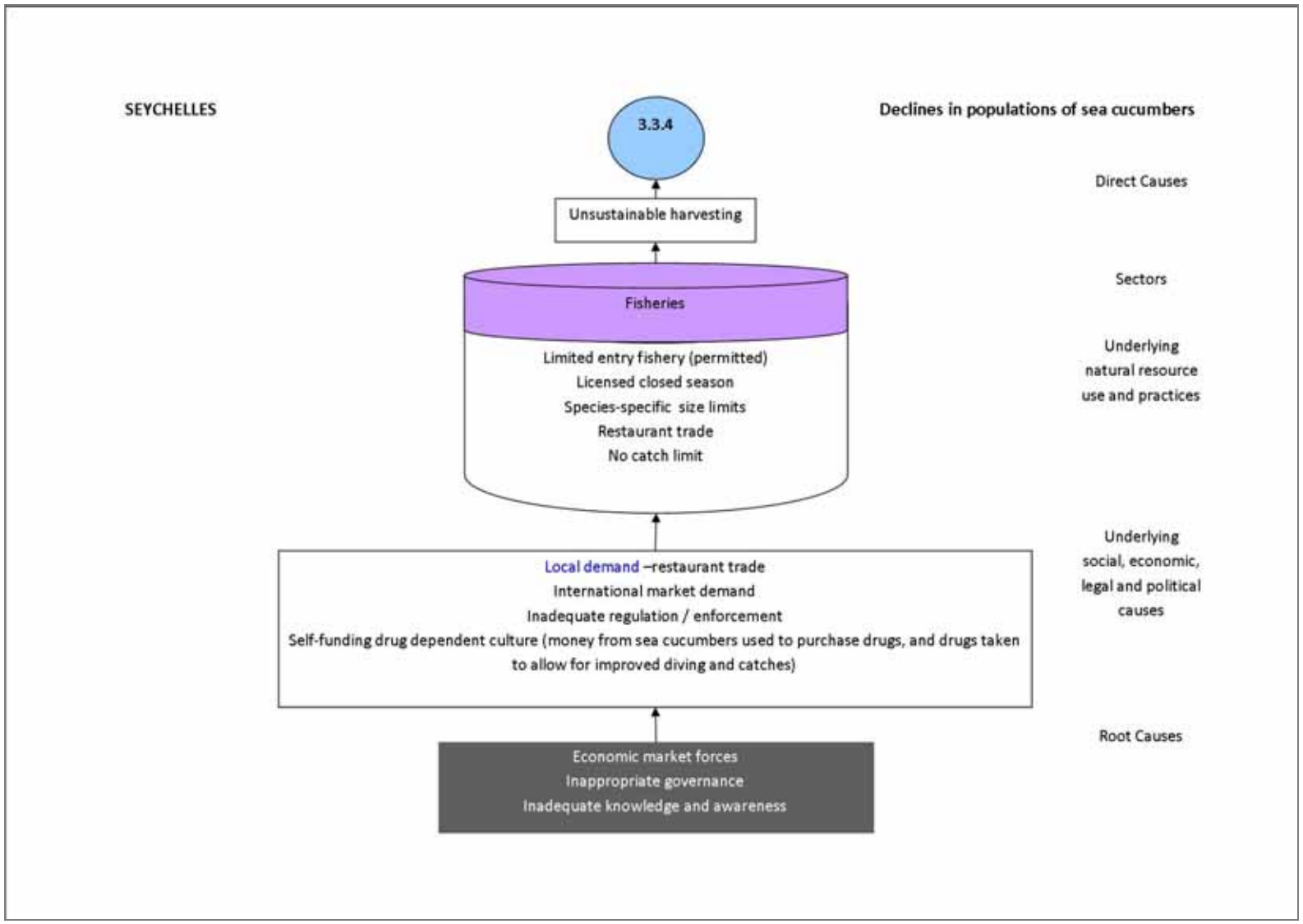

Figure 6.2.11.a: Seychelles MAC03 Impact Analysis for Issue (3.4) Excessive bycatch and discards.

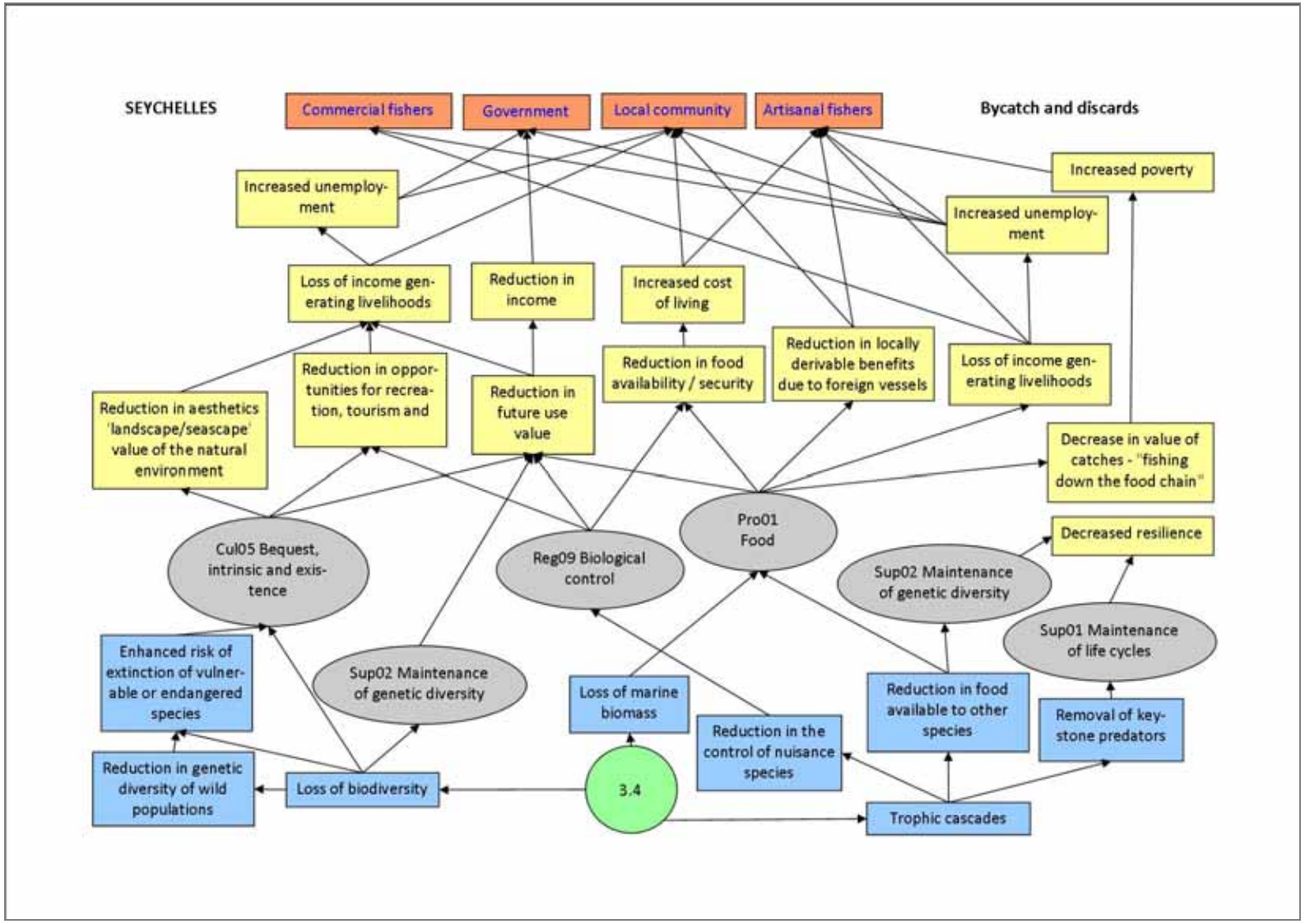

Figure 6.2.11.b: Seychelles MAC03 Causal Chain Analysis for Issue (3.4) Excessive bycatch and discards.

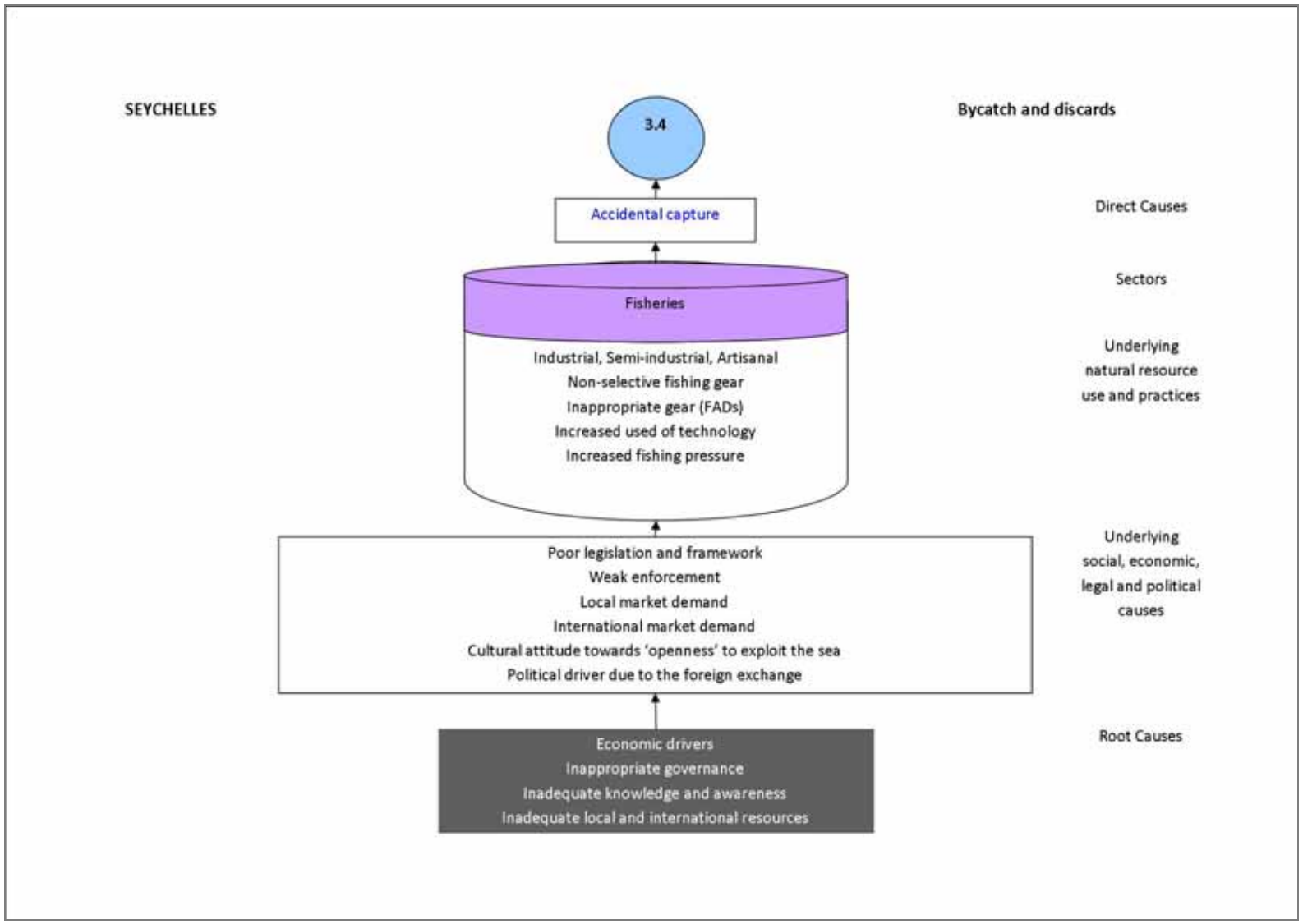

Figure 6.2.12: Seychelles MAC03 Impact Analysis for Issue (3.4) Expansion of mariculture industry.