

Ecosystem Services for Poverty Alleviation: Marine & Coastal Situational Analysis

Appendix 4

National Stakeholder Workshop Reports

**Kenya
Tanzania
Mozambique
Philippines
Vietnam**

Kenya National Stakeholder Workshop Report

10th May 2008

Organised by: CRCP

SaiRock Hotel,

Mombasa, Kenya

Summary

The results of the workshop on ecosystem services and poverty alleviation for marine and coastal systems of Kenya are presented. The workshop included an introduction to the problems and literature, a broad discussion of factors that influence poverty and ecosystem services, a listing and ranking of key ecosystem services and drivers, and discussions of their interactions, gaps in knowledge and actions to improve their management. General discussions of the main themes influencing the local coastal economy brought up the issues of coastal land use change and degradation associated with increased tourism, economic growth, industrialization and associated immigration, governance and infrastructure, and climate change. The ranking exercise identified food, land, and water as the most important provisioning, water and air quality and beach erosion and waste disposal as important regulating, tourism and local traditions as the key cultural and coral reef and mangrove habitats as the key supporting ecosystem services. Losses and degradation of habitat and coastal erosion were all seen to have changed considerably in recent times. Drivers of change were overexploitation of resources, increased human populations, poverty, and associated urbanization as locally important and climate change as globally important. A considerable amount of the closing discussion focused on governance and policy issues where policies were either seen as unsustainable and not well legislated or implemented. A key gap is that information is concentrated in a few places and there is poor link to clear policies and implementation of governance focused on the key ecosystem services. More knowledge is needed on stocks and their sustainable levels of use and the links between biodiversity and ecosystem services as well as the best ways to link local, economic, and scientific knowledge to educate resources users and better manage resources, create livelihood alternatives, and reduce poverty. A series of recommendations was made including regular assessment of resources and services, their use and benefits, addressing improved communication and integration of activities, strengthening both top-down and bottom-up management, encourage the evolution of policies focused on ecosystem-based management and that anticipate economic and climate change effects, and establishing or strengthening institutions and mechanisms for achieving these goals.

Background

The Kenya National workshop was part of a research programme on Ecosystem Services and Poverty Alleviation (ESPA), whose aim is to assess the dynamics of change in ecosystem services associated with marine and coastal systems, and identify how they support the livelihoods and well-being of human societies and particularly the poor in developing countries. The outputs of the workshop include identifying key challenges for research, current gaps in knowledge and capacity in order to inform the development of a research strategy to support the maintenance of ecosystem services explicitly for poverty alleviation.

Ecosystems provide a range of services which support human well-being in a number of different ways. The Millennium Ecosystem Assessment identifies supporting services, regulating and cultural services which in many different ways influence human well-being. Changes of access to ecosystem services, or changes in the flow of ecosystem services may be critical for survival or may be critical in providing pathways out of poverty.

The Kenyan national workshop was attended by 14 participants drawn from a wide array of fields and from government and non governmental organization (Annex 1) with the objective of gaining insights from scientific and policy specialists from a diverse perspectives, bearing in mind main ES issues in Kenya ranging from resource exploitation/ management, as well as global issues including climate change. Nevertheless, participants from Coral Reef Conservation Project (CRCP) with different backgrounds as well as the Fisheries Department dominated workshop. The workshop started with brief presentation of aims, objectives and findings of the first stage of assessment as well as feedback/ structured discussion on the issues raised by the assessment. Later in the day, participants embarked on scenario exercise aimed at

identifying trade-offs, possible options and likely futures and discussed Critical challenges, uncertainties, knowledge gaps and capacities.

The aim of the workshop was:

- to verify and receive feedback on the first stage of the assessments;
- to derive further information on the dynamics of change in ecosystem services, the policy and management options, trade-offs and possible futures, and to identify knowledge gaps and capacities in the countries and regions for our regional assessments.

The assessment of the links between ecosystem services and poverty was undertaken through a knowledge assessment and stakeholder consultation adopting and adapting the conceptual framework developed by the Millennium Ecosystem Assessment (MEA).

We examined the status and condition of ecosystem services and their benefits for human well-being and poverty alleviation, changes in ecosystem services and management and policy response options, and key challenges and critical gaps in knowledge and strategies to address them as well as recommendations of how to address them.

General identification of problems

The regional assessment indicated that there are seven issues that can be considered as marine and coastal. However land use changes and land degradation driven through subsidization of commercial ventures, economic growth driven by industrialization, increasing social governance and climate climatic changes are believed to be unique to various countries.

Land use changes and land degradation driven through subsidization of commercial ventures

Land degradation is thought to be associated with tourism and lack of legal rights to land. At Marina, a fisher landing site located North of Mombasa, fishers have no access to the landing site as a tourist hotel and private developer have sealed access routes. At Kuruwitu, the land was turned to commercial production of sisal, which locals feels have taken their farming land yet the rate of employment and even the wages given to the few employed has but increased the level of poverty. Gongoni area in Malindi has been turned into a salt production site, a situation which the community have not appreciated for the reason that it has reduced their farming lands and that salt sediments have made the available farming lands more infertile.

Economic growth driven by industrialization

Large-scale migration of to towns and Coast has affected the poor people at the Coast through lack of employment opportunities because of low levels of education by coastal population. Consequently, the immigrants get better paying jobs. In Mtwapa, Likoni and Ukunda, the locals have been pushed further inland while the prime lands taken by these rich developers.

Local governance and infrastructure

Social governance of resources is increasing through initiation of local actions for example the formulation of the Beach Management Units (BMU) in Kenya. Lack of proper roads has made most Kenyans poorer. They have been forced only to deal with products for local markets, which have fewer returns. For example in Lamu, despite the booming and high fish biomass fishers are still poor as they only fish small sized fish returning the bigger ones in water and selling the small ones to the locals at Ksh. 35/kg as compared to 140/= in Mombasa.

Climate change

Climate change became more noticeable after the 1998 El Nino rains. Since then, the climate has become very unpredictable and so farmers have continued to lose due to lack of rains, which does not come when expected.

Ranking ecosystem services

Participants were requested to write down (a) ecosystem services most importance to the poor, (b) changes occurring in ecosystem service benefits to poor and (c) the most important drivers of change. The answers to (a) and (c) were grouped into points and presented back to participants for them to rank their importance. The focus on ecosystem services providing benefit for poor people meant that there was more emphasis on provisioning, regulating and cultural services. The importance of supporting services is implicit in the importance of these services of direct benefit to the poor.

Table 1: ES identified and ranked by workshop participants. Mean rank is the average rank assigned to each by 12 participants

Overall Rank	Mean Rank	Provisioning
Provisioning		
1	1.4	a)Food (fish, mangrove crabs, turtles, honey)
2	2.8	b)Land for food & shelter
3	3.9	c)Water for domestic, agric/aquaculture
4	4.0	f)Building material for house and boats, wood, rock, cement, poles (trees, shrubs, corals, mangroves)
5	4.4	e)Fuel wood (mangrove, coastal forest)
6	5.7	g)Medicines (forest, mangroves – lack of maternity services in rural areas)
7	5.9	d)Artisanal craft products (pupae, shells, seeds for)
Regulating		
1	2.0	d)Water & air quality
2	2.3	b)Control of beach erosion (mangroves)
3	2.8	a)Removal and disposal of sewage waste (phyto-remediation)
4	3.0	c)Storm and flood protection
Cultural		
1	1.8	a)Tourism and ecotourism (direct & indirect employment, tax revenues)
2	2.3	b)Cultural traditions, values, religions (kayas, forests, reefs)
3	3.8	c)Existence value
4	3.9	e)Open space for recreation, interaction, education, teaching (widely accessible)
5	4.1	f)Provisions for future generations
6	5.0	d)Aesthetic quality
Supporting		
1	1.4	b)Habitat (coral reef, mangroves) (food and important species)
2	2.2	d)Mangroves, corals, sea grass, coastal forest
3	2.9	a)Tides (production, nutrient dynamics)
4	3.5	c)Sediment accretion

Ecosystem services were ranked within each of the Millennium Assessment (MA) categories (Table 1) and drivers were ranked within the categories of Local, National, Global and Governance (Table 2).

All ecosystem services were listed in different categories, including provisioning, regulating, cultural and supporting (Table 1). The participants were then asked to rank them based on their experience. Food, water and air quality, tourism and habitat were considered to be the most important ecosystem services. However the importance of the ecosystem services for poor people and potentially for poverty alleviation was not addressed explicitly by the participants.

Important observed changes on these ES

- Ecosystem conservation/degradation
- Lose of species
- General ecosystem changing to supporting ecosystem e.g. corals and mangroves
- Forests converted to agricultural lands
- Loss of wetland vegetation
- Moderation of river flows with mangroves clearance
- Coastal erosion (Diani, Bamburi, and Shanzu)

Drivers of changes and what to do

Participants were requested to list all drivers of change on the two most important ecosystem services (Food and Tourism). These drivers were then grouped into three categories Local, National and Global (Table 2). All drivers seemed to fit in all the 3 categories but they were all listed under global. National drivers that were ranked highly included overexploitation of resources, increased number of fishers as well as lack of alternative opportunities with coastal occupations considered occupation of the last resort. At a national scale, the general increase in human population, as well as urbanisation were ranked highly. Increased climate change anomalies, and global demand for ES were some of the global drivers of change while governance drivers related to the lack of benefit sharing policies by the government and inadequate participation of stakeholders in management.

The participants' discussions dwelt more on gear management and reducing fishing pressure (Table 3). At the beginning of the discussion points mixed up as to what will reduce the use of unsustainable gears and what really reduces fishing pressure. It was felt that although MPAs are meant to reduce fishing pressure, the underlying aim has been tourism. Recent examples in Kenya include a community managed MPA at Kuruwitu and Bureni.

Some participants felt that fishermen are never ready for change in terms of alternative gear or profession for some reasons that may include cultural (for example a fisher family requiring a member of that family undertakes fishing). Capitalization was also viewed as a hurdle to gear diversification. Studies in Tanzania have shown that it is not always true that the higher you invest in gear the higher the returns. The cost on maintaining the boats and other fishing gears has proved too expensive for fishers due to capitalization. In addition, increase in global fuel price is making it hard for fishers to own motorised fishing vessels.

Other alternatives which could help reduce fishing pressure are aquaculture and gear exchange programs. However they have been faced by a number of challenges including lack of market and lack of professionalism where fishers are not reluctant to adapt new gears but maintain the outdated ones or even destructive gears for various reasons. Other challenges have related to local politics, and lack of access to funds.

Table 2: Key drivers of change identified by the 12 participants and their ranks

Overall rank	Mean rank	Driver
LOCAL SCALE		
1	2.85	Over exploitation of common resources
2	3	↑poverty (↑fishers and bad gear use, over exploitation)
3	4	Lack alternative/high dependence, Coastal occupations 'employer of last resort'
4	5.35	Destructive gears
5	6.2	↑no of fishers
6	6.45	Land-use change
7	8.2	Beach development
8	9.15	Deforestation (forests)
9	9.25	Demand for agric land
10	10.05	Lack of NRM knowledge
11	10.55	Pollution
12	11.25	Sensitisation/awareness creation
13	12.75	Agric use of chemicals
14	13.75	Belief in traditional medicines
15	13.8	Use of charcoal (especially Lamu)
16	14.3	Lack of medical services (drives demand for traditional medicines (inc turtle fat in Lamu))
17	14.55	Restoration of degraded sites
18	16.25	↑ number of religious denominations
NATIONAL SCALE		
1	1.45	Human population (demand for ES)
2	4.1	Urbanisation
3	4.4	↑ migration
4	4.7	Economic development
5	4.85	Coastal development & industrialisation
6	5.1	Tourism development (lack of policies)
7	6.35	↑ education
8	6.4	Fluctuation in tourism jobs
9	8.95	↑national self-reliance
10	9.6	Creation of conservation areas
11	10.1	Declining donor aid programs
GLOBAL SCALE		
1	1.5	↑ climate anomalies
2	1.95	Climate change, Sea level
3	2.55	Global demand (for ES)
GOVERNANCE ISSUES		
1	3.3	Lack of benefit sharing policies
2	3.35	Lack of governance (not enough understanding of need for participatory mgmt)

3	3.7	Lack of policies on sustainable utilisation
4	4.15	Political agendas based on individual greed
5	4.6	Lack of integration/cooperation between govt depts.
6	4.6	Inadequate legislation
7	5.55	↑ bottom-up & local management
8	6.85	Poor forest governance

Table 3. Factors listed as important in fishing management

Fishing pressure	<ul style="list-style-type: none"> • Poverty (Lack of money for proper gears) • Gear exchange • Encourage out reef fishing • Creation of MPAs • Educate fishers • Involve fishers in planning • Improved technology
Gear management	<ul style="list-style-type: none"> • Education and monitoring • Gear exchange • Law enforcement • Gear diversification • Documentation • Religious views

Nevertheless, in order for aquaculture to be embraced and be successful, the following solutions were suggested:

- Lead institution to be put in place e.g. fisheries department, KMFRI,
- Training on altitude change-this has been done in Wundanyi with success
- Encourage co-operative action in order to reach the poor

Knowledge concentration

Knowledge was thought to be concentrated at the Kenya Marine and Fisheries Research Institute (KMFRI), Coastal and Ocean Research and Development in the Indian Ocean (CORDIO), CRCP/WSC and various universities.

Important gaps

- Information on available fish stocks/ species and potential yield, their habitats and breeding behaviour
- There are no studies at a local scale on the fisheries dependence on mangroves as most of the quantitative data available are from outside the region
- It is unclear on how over-exploitation affect biodiversity status and how these further influence ecosystem capabilities in terms of provision of services
- Lack of adequate knowhow (by fishers) on the use of different gear and the best mechanism to professionalise the fishery

- Non-point sources of pollution and sediment loads (sediments, agricultural, chemicals, sewage, etc) and their impacts on the poor
- Lack of understanding of the actual value of ecosystem services, their interdependence and biodiversity distribution as well as thresholds of ecosystems to provide services. Several areas have not been studied/ investigated
- Gaps in available local/ indigenous and scientific knowledge, what has been done before as well as trends over time to provide knowhow on where to go.
- Impacts of markets on the poor
- Whether alternative livelihoods actually reduce fishing pressure and the type of tradeoffs in resource condition along the poverty reduction gradient
- There is no information on the extent of community control on the process of bottom-up approach in resource management
- Impacts of markets forces on fishery and livelihoods
- Which alternative livelihoods actually reduce fishing pressure
- Knowledge of available institutional capacity and how they are in sustainably handling resource management lacks as well as external mechanisms for interaction
- The type of management actions and capacity that has the potential to trickle down to the poor, and how to maintain the resident households while reducing fishing pressure.
- There is also a gap in terms of how to maintain resource management forums
- Best mechanisms to train professional fishers. For example demonstration centres and facilities for learning are not available to the poor
- Consequences of top down resource management institutions
- Funding to sustain important interventions
- Fishing gear and new technology and their specific impacts
- Understand why the use of beach seines persists
- It is still not known how the introduction of improved technologies in fishing can be replicated by fisher communities without external aid assistance
- Climate change effects on fisheries and the meaning of predictions for Kenya on important climate variables (based on climate change models for example rainfall, sea level rise) for ecosystem services
- How biodiversity and habitat cover affects ecosystem provision
- Link between ecosystem services and poverty
- Trickle down effect on the poor
- What capacity exists

It was felt that more often than not, there may be enough information which is not effectively passed to the right people or place. In addition, there are very few policy organizations yet they act as an important link to the poor. Policy reach and development have not been demand driven making the process slow and unsuccessful.

The lack of harmonization has led to duplication of research topics which in turn has not helped the poor but confused them as they don't know which report to believe in. To overcome these participants felt that the following policy options need to be put in place to support ecosystem services and poverty alleviation:

- Regular assessment of fish/species stocks
- Documentation of ecosystem benefits to the local community
- Mechanisms for dissemination of knowledge on benefits (both traditional and scientific) of ecosystem services
- Address issues through policies that encourage integrated diversification of livelihoods, targeting fishers and the entire fisher community (aquaculture for women, tourism ventures for the youth, farming for old men) and also access to credit facilities
- There is need for simultaneous strengthening of top-down and bottom-up processes of management and reduce the chances of unilateral central management processes
- Strengthen bottom up management systems and create a link between collaborative management and poverty alleviation.
- Encourage evolution of policies that not only transfer responsibilities to communities living adjacent to the resource but those that also cede authority and ownership, and encourage the development of professionalism and adequate enforcement of legislation among resource users and by the government

- Draw management plans for the management of key ecosystems and encourage policies that encourage ecosystem-based approach to management (e.g. non-consumptive use)
- Ensure quality control through certification of export species
- Formulate policies that are informed by science and research including policies that anticipate climate change

Institutional arrangements needed to implement suggested policy options include

- Establishment of an institution that will provide policy and oversight support in ecosystem services and poverty alleviation or identify current institutional strength, integrate and distribute fisheries collaborative management based on an institution (e.g. KMFRI and Fisheries Department) better placed to carry out specific tasks. This should be collaborated with networking among institutions and information sharing as well as strong data collection and analysis for continued reference as a way of harmonising activities and avoiding conflicts and duplication of effort. Additionally, there is need to link government and non-governmental organizations.
- Encourage the evolution of co-management and strengthen existing ones to in addition to other activities monitor trends in services provided by various ecosystems
- Develop benefit-sharing mechanism through government/ community-based institutions
- Set up a centre for coastal resource (for policy research development)
- Set up of a forum for training fishers in various issues including small-scale enterprises. Such forums will also serve as a coastal knowledge sharing forums
- Ensure that benefit/responsibility sharing with community is properly guided
- Expand the Western Indian Ocean Marine Science Association (WIOMSA)

Annex1: List of Kenyan Workshop Participants

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Tanzania National Stakeholder Workshop Report

14th May 2008

Organised by CRCP

White Sands Hotel and Resort,

Dar Es Salaam

Summary

The results of the workshop on ecosystem services and poverty alleviation for marine and coastal systems of Tanzania are presented. The workshop included an introduction to the problems and literature, a broad discussion of factors that influence poverty and ecosystem services, a listing and ranking of key ecosystem services and drivers, and discussions of their drivers and interactions, gaps in knowledge and policies and actions to improve their management. General discussions of the main themes influencing the coastal economy brought up the issues of population growth and migration, low agriculture productivity, health, crime, unplanned tourism and infrastructure developments, conflicts around land, and strong government control but weak dissemination of information, justification, and enforcement of resource management.

The ranking exercise identified fisheries, building material, and fuel as the most important provisioning, fish habitat and spawning areas as the most important supporting, coastal protection and flood protection as important regulating, and local school education and identification with fishing as the key cultural ecosystem services.

Drivers of change were over or destructive exploitation of resources, increased human populations, urbanization, and lack of alternatives, and poor political support as locally important. Changes in the global economy and donor priorities were seen as globally important. Recently observed changes included increased habitat destruction and conflicting perceptions and desires for management, but also better understanding of resource use effects and improved data on natural resources. A considerable amount of discussion focused on the importance of governance and policy issues where policies were seen as poorly communicated and implemented and where a gap between top-down and bottom-up management exists. Many gaps were identified including gaps in knowledge concerning socioeconomics, climate change, key species, technologies, global markets, measure of poverty, alternatives and reliance on agriculture, effects of enforcement and transparency of donor and government spending.

A series of recommendations were made including promoting policies and actions that encourage sustainable utilization, linking sectors, empowering resource users and diversifying their livelihoods, decentralization of management, increased transparency and communication between government, donors, and coastal people, increased fisheries technology, and improved understanding of global economic and climate change effects.

Background

The Tanzania National workshop was part of a research programme on Ecosystem Services and Poverty Alleviation (ESPA), whose aim was to assess the dynamics of change in ecosystem services associated with marine and coastal systems, and identify how they support the livelihoods and well-being of human societies and particularly the poor in developing countries. The outputs of the workshop include identifying key ecosystem services, current gaps in knowledge and knowledge concentration that may be relied upon in the development of a research strategy to support the maintenance of ecosystem services for poverty alleviation.

Ecosystems provide a range of services, which support human wellbeing in a number of different ways. The Millennium Ecosystem Assessment identifies supporting services, regulating and cultural services, which in many different ways influence human wellbeing. Changes of access to ecosystem services, or changes in the flow of ecosystem services may be critical for survival or providing pathways out of poverty.

The workshop brought together 14 participants drawn from a wide array of fields and from government and non-governmental organization (Annex 1) with the objective of gaining insights from scientific and policy

specialists with diverse perspectives, bearing in mind that the main ecosystem service issues in Tanzania range from resource exploitation/ management to global issues.

The aims of the workshop were:

- To verify and receive feedback on the first stage of the assessments;
- To derive further information on the dynamics of change in ecosystem services, the policy and management options, trade-offs and possible futures, and to identify knowledge gaps and capacities in the country.

The workshop started with brief presentation of aims, objectives and findings of the regional assessment of the literature, followed by a structured discussion on the issues raised by the assessment. Later in the day, participants identified ecosystem services important to the poor and scenario exercise aimed at identifying interactions, trade-offs, possible options, likely futures, critical challenges, and knowledge gaps and capacities.

Regional Literature Assessment and Discussion

The review of coastal and marine issues was presented to open discussion and receive feedback from participants on its accuracy and gaps. In the presentation, it was indicated that the regional assessment was done to provide a timely and regionally informed state of current state of knowledge and capacity on ecosystem services and poverty alleviation, to identify specific regional problems and issues including key drivers of change and policy response options. The presentation of the regional assessment was meant to:

1. Check the reality of issues in Tanzania (within the region).
2. Add other major issues relating to ecosystem services and poverty alleviation.
3. Add other important sources of regional information relating to ES, poverty, and poverty alleviation.

Participants were informed that the ESPA project is expected to identify impacts that have either positive or negative effects on the condition of regional ecosystem services. The purpose was to identify the recognisable issue relating to service provision and that drivers would be discussed later. Because the “issues-based” approach is by definition concerned with the human dimension in the environment, most issues listed should have at least one positive connotation albeit temporary or short-term. However, it will not be an issue unless the majority of the impacts are large scale, long-term and with serious implications for coastal livelihoods and human wellbeing.

The literature review identified nine points that were the basis of the discussion. There were 1) human migration, 2) low coastal agricultural production, 3) land use change often associated with fuel, forestry, and agriculture, 4) health and sanitation issues, 5) under-developed and poorly planned tourism, 6) overexploitation and unsustainable use of resources, 7) land-based pollution, 8) effects of protected area declarations, and 9) climate change.

Several discussion points were raised relating to the regional assessment:

- Some villages in Tanzania experience increased pressure on natural resources. This is closely linked to health issues, and the resultant high cost of treatment and the potentially even higher costs of funerals.
- Increased crime, including the murder of fisher's children in Dar es Salaam, (perpetrators identified as petty thieves) were seen to be related to increasing population pressure in fishing communities and the poverty and marginalization of their children. The local participants were not fully aware of this problem and most did not identify it as a major problem.
- The workshop was cautioned to beware of environmental consequences that may arise due to discovery of oil in the Mtwara marine park.
- It was argued that people turn to fishing because they do not have few other livelihood options and low agricultural productivity.
- The impact of nutrient runoff from agricultural fields into the marine ecosystem was not fully understood. In areas including Tanga and within the proposed new harbour, mangrove clearing was seen as an issue.
- It was also pointed out that there is a lot of government and non-government focus on HIV AIDS, where as malaria kills more people. The inadequate diets of coastal Tanzanians affect the victim's

ability to cope with illness. High mobility of fishers leads to greater spread of contagious diseases including HIV.

- Conflict between local use and tourist development are common because of pay offs and the loss of state/common property (see first bullet below). Examples of such cases are in Tanga and Mafia and were identified as an ongoing trend, which may lead to limited or no access to the beach and fishing grounds.
- Most coastal land is state property and the president has the final say in the use of land. However, in practise local villages may sell land independently of presidential control. There are arising conflicts between these two types of control over land.
- There are cases where seaweed farms conflict with tourist development and its resolution is challenging.
- There is a conflict between bottom-up and top-down forms of management. Under the existing legislation there are provisions for educating coastal communities and using a bottom up approach to protect the coastal ecosystem. The Fisheries Act of 2003 and 2005 is under revision to allow for collaborative management with fishermen. The focus of the revision is catalyzed by the Marine Stewardship Council's desire for accreditation and the need for conservation and sustainable use of resources. The main actor is the Government of Tanzania through the Fisheries Department and conflicts occur because the act has not been fully realised, but this is now being harmonised to provide incentives to strengthen operations of Beach Management Units (BMUs).
- Currently, there is lack of collaboration between the BMU process and local communities. The aim now is to change the mindset of local communities so that they understand that they have ownership and control of their own resources where as it has been law that the government owned the resources.
- In Tanzania, the World Bank (WB) is major donor for ICZM projects and an authority has been created to examine law and policy issues such that the community may be enabled to influence the development of local bylaws.
- One of the challenges has been that most laws are in English apart from the policy and are not widely read or known. However, the WB project is developing a project to translate documents into Swahili and local languages.
- Wastewater treatment or lack of it was seen as an issue as sources of pollution are not identified and there are no effective actions to resolve this problem at this time.
- The planning and development of Marine Protected Areas (MPAs) is meet with suspicion. There are incidences where investigators have been chased away when suspected of planning MPAs. The lack of consultation with local communities in the creation of the Mafia Park has created a problem at many places along the coast. There is a concern regarding the negative effects of add-on activities such as increased tourism associated with MPAs. In addition, parks are seen as an elite organisation, which creates resentment concerning revenue sharing.
- There is uncertainty about the effects of climate change on coastal communities. Regardless, communities are aware of the impacts of climate change even if they are not fully aware of causal factors.
- The literature review was weak in identifying governance issues as one of the key constraints on the management of ecosystem services.

Identifying Important Ecosystem Services

The conceptual framework of the Millennium Ecosystem Assessment was used to assess the participants' knowledge of the links between ecosystem services and poverty. The workshop examined the status and condition of ecosystem services and their benefits for human wellbeing and poverty alleviation, changes in ecosystem services, management, policy options, and key challenges and critical gaps in knowledge. In doing this, participants were requested to write down (1) ecosystem services most importance to the poor, (2) changes occurring in ecosystem service benefits to poor and (3) the most important drivers of change. The answers to (1) and (2) were grouped into synthetic summary points and presented back to participants for ranking their importance (Table 1).

Table 1. Ecosystem services identified and ranked by workshop participants.

Services			Total	Mean
Provisioning	A	Fisheries (fish, crabs, molluscs, octopus, seacucumbers)	45	5
Supporting	W	Habitat for biodiversity	40	4.44
Supporting	AA	spawning areas	40	4.44
Supporting	Y	important habitat	39	4.33
Supporting	Z	Productivity	39	4.33
Supporting	X	Nutrient flows/cycling	34	4.25
Regulating	N	Protection of coast and inland habitat (wave erosion)	38	4.22
Provisioning	G	Fuel (mangroves, coastal forests)	36	4
Provisioning	K	transport routes	35	3.89
Provisioning	D	Building materials (Timber)	33.5	3.72
Supporting	AB	hydrological cycle	31	3.44
Cultural	S	education for local schools	27	3.38
Provisioning	M	water (fresh)	23.5	3.36
Regulating	O	flood control	30	3.33
Cultural	V	fishing identity	29	3.22
Regulating	P	carbon sink	28	3.11
Provisioning	H	seaweed culture	28	3.11
Provisioning	B	Tourism income	26	2.89
Provisioning	C	ecotourism	25	2.78
Cultural	R	Recreation (swimming, diving, boat riding)	25	2.78
Cultural	T	sacred areas (forests)	25	2.78
Supporting	AD	migratory routes	22	2.75
Supporting	AC	ocean currents	24	2.67
Provisioning	L	salt production	23	2.56
Cultural	U	cool breeze (especially in hot weather)	22	2.44
Provisioning	E	Medicine (mangroves)	21	2.33
Provisioning	I	sea shells	21	2.33
Provisioning	F	Honey (beekeeping)	20	2.22
Provisioning	J	driftwood	11	1.22

All ecosystem services were listed in different categories, including provisioning, regulating, cultural, and supporting. The participants were then asked to score them on a scale of 1-5 based on their experience. Fisheries (fish, crabs, molluscs, octopus, sea cucumbers), habitat for biodiversity, protection of coast and inland habitat and education for local schools were listed as important ecosystem services.

Drivers of Changes and their Effects

Participants were requested to list all drivers of change on ecosystem services. These drivers were then grouped into six categories: resource use, social, economic, political/governance, information and technology, and global (Table 2). Drivers that score high included destructive fishing, population pressure, inadequate policies and legal framework, and donor funding.

Table 2. Drivers of change

		<i>Drivers of change</i>	<i>Total</i>	<i>Mean</i>
Resource uses	c	destructive fishing (dynamite, beach seine)	47	4.7
social	j	population pressure	44	4.4
Resource uses	a	over cutting of mangroves and coastal forest	39	4.33
social	k	Poverty	42	4.2
Resource uses	b	over fishing	42	4.2
social	o	unemployment	40	4
Political/governance	ae	inadequate policy and legal framework	40	4
Political/governance	ZA	lack of political will	28	4
social	l	lack of alternatives	39	3.9
Resource uses	e	reduced/low capacity/effectiveness of enforcement	38	3.8
Political/governance	ah	lack of efficient regulatory mechanisms	38	3.8
social	n	growth of coastal settlements	37	3.7
Resource uses	h	open access fisheries	37	3.7
Political/governance	aj	inadequate environmental education in management and sustainable resource utilization	37	3.7
Resource uses	g	trawlers conflicting with local fishing grounds	33	3.67
Information & education	ak	More environmental Education	33	3.67
Political/governance	ag	changing and inconsistent in government policy -	29	3.63
Political/governance	af	limited capacity/resources	36	3.6
Political/governance	zz	community dynamics which limit self-regulation/organization	18	3.6
Information & education	am	Lack of clarity/agreement on reasons for mpa	36	3.6
Economy	v	improved infrastructure	36	3.6
Information & education	al	Better communications and wider access to intelligence	32	3.56
social	m	rapid urbanization	35	3.5
Economy	p	Inflation of food prices & pressure on individuals	35	3.5
Political/governance	z	lack of political support for key ecosystem factors	34	3.4
Information & education	an	some fisheries staff collusion with dynamite fishing	34	3.4
Economy	s	trade liberalization	26	3.25
Political/governance	ai	poor coastal development planning	32	3.2
Resource uses	d	IUU fishing ?? Large scale fleets	28	3.11
Political/governance	aa	land grabbing pushing out local people	28	3.11
Political/governance	ad	ltd community empowerment	31	3.1
Economy	t	privatization of land	31	3.1
Economy	q	Land grabbing etc driven by expectation of new Tanga harbor	30	3
Economy	r	market failures within fisheries market chain inc international trade	27	3
Economy	u	increased tourism	30	3
Res uses	f	improved technology (e.g. fishing gear)	29	2.9
Global	ar	Donor funding/financing	26	2.89
Global	ap	climate change	28	2.8

Economy	w	Hotel construction	28	2.8
Economy	x	Mining	28	2.8
Global	aq	Chinese market (sea cucumbers, timber, sharkfin)	25	2.78
		massive infrastructure (sometimes donor funded)		
Political/governance	ab	destroying marine ecosystem	27.5	2.75
Global	ao	International trade	26	2.6
Economy	y	oil and gas exploration	26	2.6
		long-term doubts about political stability affecting		
Political/governance	ac	tourism (Zanzibar)	23	2.56
		government more interested in sustainably		
Resource uses	i	development	20	2.5

Lack of political will or using political alignment to influence policy were important drivers. Additionally, reticence on the part of the community to adopt regulations and weak or sometimes poor enforcement of infringements were commonly listed. In essence, government policy in relation to management has changed inconsistently and many actions do not reflect policy. Further, it was indicated that there is lack of clarity in terms of the justification for MPA establishment.

Very few driver effects were listed but these were discussed in more detail at the conclusion of the meeting (Fig. 1). Generally the effects of the drivers were seen in the areas of destructive fishing, ecosystem stress due to increased demand for coastal and marine resources, destruction of the marine ecosystems due to massive infrastructural development (e.g. Mwambani harbour), and lack of clearly set allocated responsibilities. Market failure was seen to impact the poor people, by affecting the price of fish, and this has the potential to link local conditions to foreign trade agreements and prices.

Trends in ecosystem services and were viewed ecologically, socially and economically. Overfishing, population and increase in income through fisheries, beekeeping, fish farming, crab fattening, small business and ecotourism were trends that scored higher (table 3). Others related to changing attitudes of resource users due to MPA initiative as well as climate change affects on coastal and marine environments.

Participants indicated that there was a general feeling by some resource users that their livelihoods are being denied through the creation of MPAs. The destruction of sea grass due to prawn trawling, destruction of mangroves for building and disappearance of flagship species especially dugongs reduced the productivity and economic benefits for the poor. Escalating inflation on the other hand increased food price thereby driving the poor to rely heavily on coastal resources, while massive infrastructural development was seen to destroy fishing grounds and seaweed farms

Table 3. Trends in ecosystem services

		<i>Trend</i>	<i>Total</i>	<i>Mean</i>
ecology	4	Overfishing (inshore fisheries, sharks)	45	4.5
ecology	6	Destruction of corals (dynamite and beach seining)	45	4.5
Social	23	Population growth	42	4.2
ecology	5	Resource depletion (non fisheries resources)	41	4.1
Econ	22	increasing income through fisheries, beekeeping, fish farming, crab fattening, SW farming, small business, ecotourism	40	4
ecology	11	declining stocks and production of inshore & deep sea fish	40	4
Econ	17	Escalating inflation	39	3.9
ecology	15	food production declining	35	3.89
ecology	8	Destruction of Mangroves (building)	38	3.8
ecology	12	Pollution of waters	38	3.8
Social	26	declining livelihoods	34	3.78
Social	25	increased poverty in coast	36	3.6
Econ	20	massive infrastructure	36	3.6
knowledge	3	Attitudes of resource users changing due to MPA initiative	28	3.5
Econ	21	change in development orientation to liberalisation/privatisation of coastal	35	3.5
ecology	7	Destruction of SGs (prawn trawling)	35	3.5
Social	24	Disrespect of traditional harvesting/fishing practises	34.5	3.45
Econ	19	inc tourism income	34	3.4
knowledge	2	Questions of sustainability of resource arises	27	3.375
Econ	18	Beach access denied	30	3.33
global	28	climate change affecting coastal and marine environment	28	3.11
knowledge	1	Better understanding and data available	27	3
knowledge	3.5	positive attitude changes coz of spillover	3	3
ecology	9	Disappearance of flagship spp (dugong)	27	3
ecology	10	coral siltation and bleaching	27	3
ecology	16	shoreline shrinking	30	3
Social	27	intermarriage between people from different parts of country	23	2.3

An important point raised was that a market for octopus has been created and although the price increase benefited fishermen, gleaning women cannot access octopus so some people are better off while others are worse off and the resource is generally overexploited. It was noted that even though the group considers certain aspects of climate change more important than others, poor people could have a different perspective.

Participants indicated that there has been considerable donor funding on research and consequently, there is more data available now than in the past. It was also indicated that MPAs are not always viewed negatively – some fishermen have a positive attitude due to belief in spill over effects and corresponding increased catches. Sea level rise was noted to have occurred in some area where local features have changed – including islets that have become sandbars.

Scenario Exercise

The scenario exercise initially employed the use of the two Millennium Ecosystem axes of poverty and ecosystem services. A conceptual model which linked key drivers with causal arrows was developed (Fig. 1).

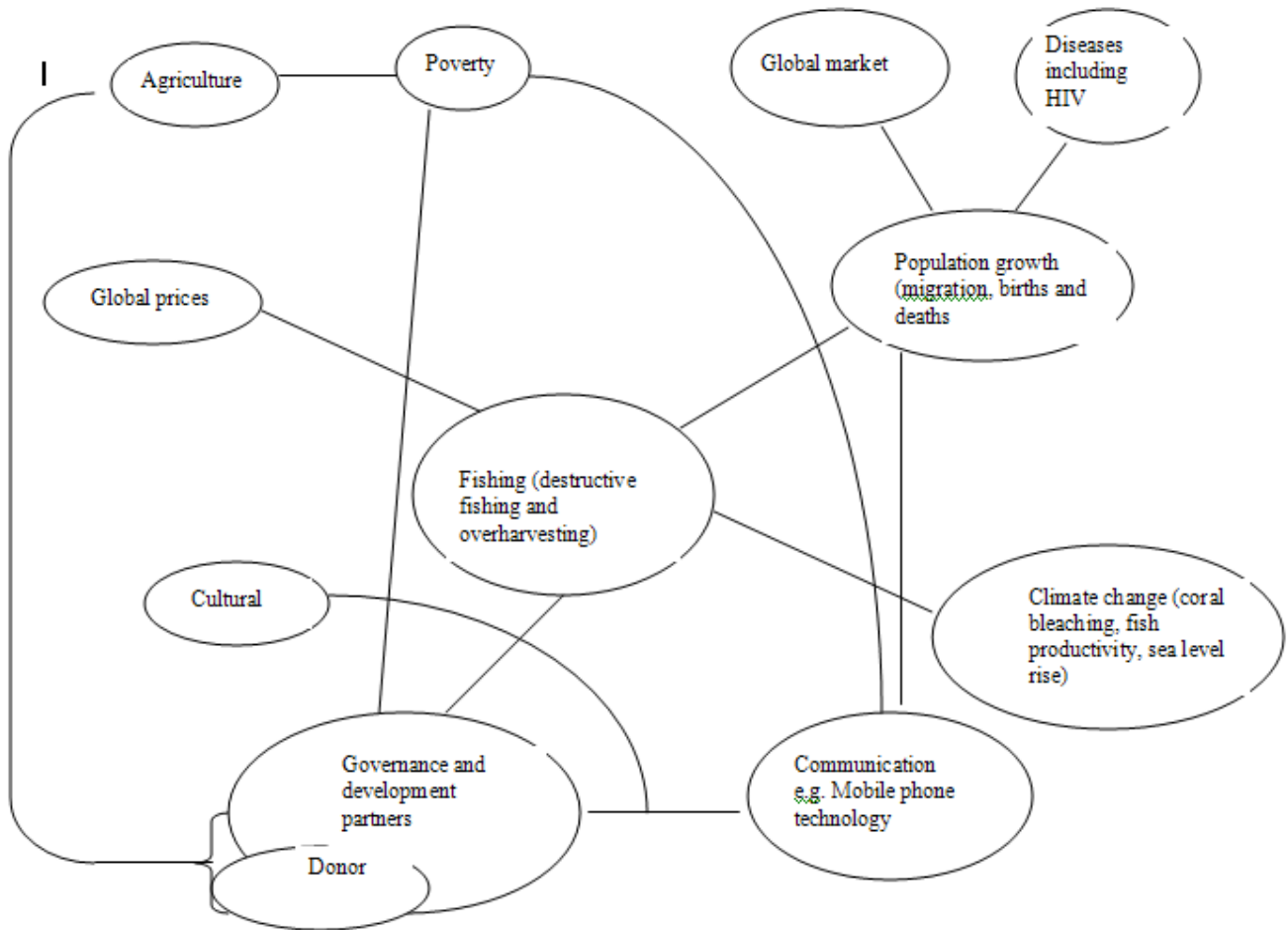


Figure 1. Conceptual model of key interactions based on the discussion of drivers and their interactions.

To prioritise the key drivers based on the open discussion, participants were invited to add their most important drivers to a flipchart. Participants highlighted the importance of ‘governance’. The foundation of all changes in terms of poverty alleviation lies in good governance, communication, and education. Governance includes accountability although governance decisions are sometimes influenced by the conditions set by development partners (donors). For example, the UK has pressured to the Tanzanian government to stop dynamite fishing.

Participants were asked to think about unexpected changes and the consequences to the future, for example the impact of climate change on agriculture, the price of fuel, and possible knock on effects. The issue of the impact of climate change on agriculture and livelihoods was raised and seen to support the theme of interconnectedness between food production and fisheries. Other factors included donors and their policies and the ability to implement and effectively use this support. It was generally thought that there is lack of transparency in terms of the application of policy decisions about governance, which was undermining

development and the efficient use of money and resources. Finally, it was thought that coastal population growth is brought about by inland poverty and migration to the coast, which again leads to a spiral of increasing poverty, and this may be influenced by unexpected changes in climate, disease, and other factors that influence population growth.

Key Knowledge Gaps and Concentration

The main gaps listed by participants included:

- A lack of information on climate change specifically useful for Tanzania
- Fisheries information is focused on ecology but not on socio-economics.
- Fisheries were believed to be declining, although there are no data to support the assertion
- Lack of information concerning keystone species that may cause an ecological regime shifts if they are overfished.
- Lack of technology and infrastructure to access and utilise fish.
- Research is behind the pace of socio-economic change and complex dynamics of why and how fishermen act.
- No information on socioeconomic impacts of illegal fishing methods.
- Social inequality as influenced by government institutions and processes.
- Market dynamics and their impact on ecosystems.
- What constitutes overexploitation?
- Lack of clarity or definition for the measurement of poverty other than the use of 1 dollar per day benchmark.
- Lack of information about the status of available stock of marine resources.
- Lack of continuous assessment of various marine resources especially in deep waters.
- Most of the drivers and their impact on poverty are not well understood, especially when dealing with complex economies and food webs. According to a participant, there is no single solution for poverty alleviation in as much as some solutions do not work and other challenges or problems arise as a result of actions to alleviate problems.
- There are lack predictive models that can predict current and future policy impacts on rural and urban population growth and inflation on fishing effort and productivity.
- Little information on the attitudes of communities towards conservation of resources.
- Poor documentation of traditional community and fishing knowledge.
- Inadequate knowledge and capacity to use modern equipment to use resources.
- No technology on the utilisation of underexploited or unfamiliar species
- Poor understanding of the consequences of using biofuels and associated effects on prices of primary products.
- The lack of farmland for food crops and consequent pressure to shift or rely on fisheries.
- Lack of information about the value of marine resources (including global prices).
- Limited knowledge about the amount, destination, and impact of international unreported and unregulated (IUU) fishing on sustainability of stock, particularly from the European Union and Asia.
- Lack of scientific information on impact of enforcement. What actually happens when perpetrators are arrested, imprisoned, or released?
- Limited knowledge about the actual impact of ecosystem services drivers on poverty
- Limited transfer of knowledge to local communities about the importance of MPAs and ES, which leads to resentment.
- No real link between science and management (including policy making).

The question of where knowledge is thought to be concentrated and institutional arrangements was not discussed.

Challenges

The main challenges listed included:

- Lack of transparency in the use of government funding for resource management.
- Too many vested interests that block progress towards good governance.

Key Policy Options

The main policy options that were discussed included:

- Promoting policies that achieve sustainable utilisation of marine and coastal resources.
- Policies that increase linkages between different sectors that interact with the environment. These should include health and education.
- Policies that empower communities and diversify livelihoods. Such policies should strive to influence attitudes of local communities so that they can be self regulating.
- Decentralisation of resource use and management backed by legal mandate.
- Transparency in resource allocation and use.
- Monitoring of coastal tourism and establishment of thresholds.
- Allowing local level management of marine resources including retention of fees and some taxes to fund marine resource conservation at a local level.
- Allow more private sector involvement in biodiversity conservation. Resource management is a government monopoly in Tanzania.
- Reduce donor aid volume and shift funding towards direct support.
- Legislation and policies be translated into Swahili language for wider circulation.
- Effective enforcement of legislation.
- Macro-economic policies that address the impact of globalisation on management and sustainable use of coastal and marine resources.
- Regional approaches that address management of transboundary/shared resources, especially tuna and related species.
- Exercise a precautionary approach and ecosystem-based fisheries management where there are uncertainties and multiple species.
- Strengthen policy and legal and institutional frameworks on ocean governance.
- Strategic environmental assessments for strategic decision making to allow tradeoffs including balancing between economic development and environmental concerns.

Annex 1: List of Tanzania Workshop Participants

No.	Name	Affiliation	Email address
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Mozambique National Stakeholder Workshop Report

27th June 2008

Organised by: National Institute for the Development of Small-Scale Fisheries (IDPPE), Mozambique Oceanographic Research Institute (ORI), South Africa & Overseas Development Group (ODG), UK. Maputo, Mozambique

Summary

The outcome of the ESPA-MA national workshop in Mozambique is presented. Participants were drawn primarily from government with 14 of the 19 participants representing different functional units of the state. The meeting of these participants was facilitated to gain insight into three key elements of the ESPA project viz. recognisable national issues, key knowledge gaps and proposed policy options relating to ecosystem services, poverty and poverty alleviation in the coastal and marine environment. The discussion of national issues confirmed the importance and relevance of the issues identified in the regional report. A number of these issues were taken up in discussion by the participants. The declaration of protected areas and the benefits arising from this conservation measure elicited much discussion from the group. The important role of protected areas to enable habitat and resource conservation, and restoration was generally acknowledged. However, there was concern that, although the protected areas had ecological benefits, there was a need for greater understanding of the social and economic benefits to communities. This was emphasised by the apparent lack of understanding of the social structure and dynamics of coastal communities, and how this has influence over governance measures such as the participatory and consultative processes, and community management. This issue was also discussed in relation to the growth in coastal tourism and the process of obtaining consent for infrastructure development on the coast. The need to expand the national aquaculture sector, pollution and the overexploitation of coastal and marine resources were also taken up in discussion. There were participants that expressed concern regarding the current limitations imposed by incomplete implementation of important legislation, and the lack of monitoring and enforcement. The importance of global climate change, although confirmed and highly rated by the group, was not borne out by in-depth discussion. Unsurprisingly, the rating of ecosystem services identified the provisioning services, particularly food, as the most important to alleviate poverty and ensure human well-being. This service was also rated as undergoing the most change. In terms of identifying key knowledge gaps, the participants expressed concern that with no one agency assuming a coordinating role, it was difficult to assess how much knowledge and data exist. The lack of data and information sharing between agencies, and the inability to retain data generated by donor funding and foreign institutions working within Mozambique was also linked to the need for the development of a data and information infrastructure. The dependence on donor funding and outside expertise was indicative of the need to promote and development national research capacity. Some participants suggested that there is a deficit in anthropological studies to enhance understanding of community dynamics, social organization, and how communities value and interact with the environment. The discussion of key policy options aimed at alleviating poverty using an ecosystem service approach again focussed on the need for national coordination of socio-ecological research. This was coupled with the need to examine existing legislation in order to reduce overlap, and promote clear interpretation and implementation. The issue of legal interpretation and the overlapping mandate of government departments was emphasised by several participants.

Background

The Mozambique National workshop was convened as part of a research programme on Ecosystem Services and Poverty Alleviation (ESPA), whose aim was to assess the dynamics of change in ecosystem services associated with marine and coastal systems, and identify how they support the livelihoods and well-being of human societies and particularly the poor in developing countries. The outputs of the workshop were to include identifying key ecosystem services (ES), current gaps in knowledge and knowledge concentration that may be relied upon in the development of a research strategy to support the maintenance of ES for poverty alleviation.

Ecosystems provide a range of services, which support human well-being in a number of different ways. The Millennium Ecosystem Assessment identifies supporting services, regulating and cultural services, which in many different ways influence human well being. Changes of access to ES, or changes in the flow of ES may be critical for survival or providing pathways out of poverty.

The workshop brought together 19 participants drawn primarily from government and non-governmental organizations (Annex 1) with the objective of gaining insights from scientific and policy specialists with diverse perspectives, bearing in mind that the main ecosystem service issues in Mozambique range from resource exploitation/ management to global issues.

The aims of the workshop were:

- To verify and receive feedback on the first stage of the regional coastal and marine assessments;
- To derive further information on the dynamics of change in ES, the policy and management options, trade-offs and possible futures, and to identify knowledge gaps and capacities in the country.

The workshop started with brief presentation of aims and objectives of the ESPA project and the specific work in Mozambique. Participants were then asked to identify ES important to the poor, major changes in these services and the drivers causing these changes. Participants also rated the relative importance of the items listed. This was followed by a structured discussion on the issues raised by the regional assessment. Finally, the participants were asked to list and discuss the key knowledge gaps and policy options relating to ES and poverty alleviation.

Regional literature assessment and discussion

Participants were presented with ten coastal and marine issues identified in the regional assessment. The issues were not contextualised for Mozambique and the questions were posed to elicit responses as to the extent of these issues in the country. The issues, in no particular order, were:

1. Habitat modification, land use change and land degradation
2. Pollution and waste (land- and sea-based)
3. Overexploitation of coastal and marine natural resources
4. Human migration and particularly urbanisation
5. Governance vs. government
6. Extensive and intensive tourism activities and construction of associated facilities
7. Global climate change
8. Low coastal agriculture productivity
9. Environmental issues related to aquaculture and mariculture
10. Establishment of protected areas.

Participants were asked to give their insights with regards to what extent these are real issues in Mozambique, the scale, and implications for the poor in the country. These discussions are presented below.

Establishment of protected areas (Issue 10)

The representative from WWF noted that the impacts of protected areas for communities are positive. The participant specifically mentioned the benefits to the natural environment through the control of land conversion and building. In her opinion, in the short term, the population may not have access to certain areas initially, but in the long term, the resources recover and this benefits communities.

The representative from DNAC agreed on the positive aspect of protected areas, and mentioned the economic advantages, *viz.* 20% of income accrue to the local communities, which serves as an incentive to conserve. The communities also define local priorities, are involved in decision making, develop and manage some community projects.

The INAQUA/IDPPE representative drew attention to the negative impacts of protected areas, noting the conflicts between local populations and protected area managers. They have resulted in the loss of access to natural resources and even displacement of local populations. This process is linked with Issue 5 (governance vs government) because communities do not feel they have the power to express their views.

The WWF representative clarified this point and referred to the example of the Quirimbas National Park, where there are closed areas, but the fishers participate in the management of those areas. There are Community Fishing Councils (CCPs) which have a fundamental role in the management of these closed areas. They are involved in decisions and enjoy economic benefits. While they cannot fish on those areas, they have been shifting to alternative income generation e.g. in the service industry, hired to work as builders and plumbers, amongst other activities. In her opinion, the communities now have a greater understanding for the need to close areas and participate as stakeholders. There is however recognition by the WWF representative that the flow of benefits only starts after a long periods (5 years and longer).

The IDPPE representative raised the concern that there was a lack of understanding of how communities actually benefit from park declaration. He noted that it was important to examine the impacts of protected areas from different perspectives. He conceded that the impacts were positive from a biological point of view i.e. habitat recovery. However, he emphasised that protecting, or restricting access to resources must also generate a clear economic benefit for affected communities and thereby reduce poverty. There must be a link to economic gains for poverty reduction, because communities also need to survive using natural resources as part of their livelihood strategies. He contended that the observed switch to alternative livelihood in protected areas are not necessarily a positive choice but a lack of other alternatives.

The channelling of the 20% benefit is not yet clear, for example the periodicity and distribution of that disbursement to communities [who, when and how much benefits go to different communities] [IIP].

The distribution of socio-economic benefits from protected areas is unclear and is one area that requires further research (knowledge gap) [IDPPE].

Protected areas need to be accompanied by alternatives, to minimise negative impacts on local communities and enable them to survive in the short-term.

On the issue of alternatives, this implies people doing other activities that may have impacts on food habits and ultimately on health [INAQUA]. Many communities are accustomed to eating fish. Measures that restrict access to fish resources may contribute to altering food habits and lead people to shift to less nutritious foods.

Aquaculture (Issue 9)

The INAQUA representative stated that in Mozambique that there is legislation that defines that resources must be exploited in sustainable ways. Aquaculture facilities require an Environmental Impact Assessment (EIA) that does not allow the cutting mangrove to make way for aquaculture. In addition, the soils in mangrove areas are not generally suitable for aquaculture, becoming unusable after a few years. In Mozambique, aquaculture is usually developed in areas adjacent to mangroves, not in mangrove areas. Obviously, aquaculture units will have some impacts, for example, it may decrease access to some fishing areas and people will have to travel further to get to landing sites. However, the impacts are largely positive, insofar it creates employment. Seaweed aquaculture also creates a habitat suitable for the proliferation of other marine species.

ODG enquired about the scale of aquaculture activities in Mozambique. The INAQUA representative concede that the overall extent of this activity was still limited and that freshwater aquaculture was more developed than marine aquaculture. There are only a few marine aquaculture facilities in Mozambique.

[ODG] also enquired to the extent and status of national seaweed aquaculture, which was initiated in some areas in northern Mozambique, but was not considered viable because of markets (buyers stopped buying). The INAQUA representative stressed that this was considered a viable activity and that it could be successful. INAQUA pointed out that there were many examples that demonstrated the success of seaweed culturing, but recognises that there were problems related to management and markets. She noted that in neighbouring Tanzania seaweed aquaculture was being undertaken successfully, and the same can be done in Mozambique. She added that this activity would particularly benefit women and children, because they can also dedicate time to farming, which is important to guarantee their subsistence.

Pollution and waste (Issue 2)

This issue elicited comments from the INAMAR representative, and particularly that of pollution caused by boats in the ports and industries, as well as by refuelling of large ships at sea. Refuelling at sea often results in spillage and fuel-supply tender vessels are often not accompanied by the ports and customs authority as prescribed in the legislation. The representative also mentioned the destruction of coastal infrastructure due to insufficient setback from the shoreline. INAMAR was also concerned about diving activities in Mozambique and also raised the issue of a lack of knowledge relating to the location of reefs.

Expansion of tourism and tourism infrastructure (Issue 6)

Some tourists use spear guns, including to catch dolphins (Ponta do Ouro). Scuba diving is also resulting in the degradation of coral reefs [INAMAR].

Tourism complexes (tourism developments) do not respect the legislation. The construction of tourism infrastructure along the coast is causing deforestation, damage to coastal dunes and erosion. The 100 metre (from high-tide) construction setback was not respected. INAMAR also mentioned that coastal tourism developments also restricted access to the shoreline as areas were reserved for the exclusive use of tourists [CDS-ZC/INAMAR].

Some coastal areas have a very strong social significance and cultural value and communities were no longer able to pass through or access land that historically belonged to their ancestors. These values are not commensurable [IDPPE].

An important issue that was not listed but that were taken up in discussion was that of the lack of the implementation of legislation and law enforcement [IDPPE].

The fundamental concern is that of the mechanics for implementing these activities and the fact that the consultative process seems to be flawed. The social structure of communities in Mozambique does not promote a culture of participation because of general mistrust and a lack of experience with and understanding of the process. When consultation is required e.g. an investor wants to develop a particular area, he makes an approach to the community leaders, and it is then assumed that the decision of the leaders reflects the opinion of the community. The legislation requires participative processes to be conducted but often in these participative processes, only a limited number of people voice their concerns while the majority opinion of the community is not considered. This issue is closely linked to that of governance and government (Issue 5),

The IDPPE representative questioned the correctness of the participatory process in Mozambique, as well as the role of traditional leaders and the assumed consent of the communities. It is clear that the process should include clear communication and feedback channels for individuals from the entire community. Communication between decision makers and the community is clearly very important. The approach to communities is important since the majority of those living in these communities are very vulnerable and wider consultation is essential. The role (wisdom, greed, personal gain?) of traditional leaders was questioned. Decisions made and consent given by some leaders may not benefit the community over the long-term. This is not only true for creation of protected areas, but for many other activities, including fisheries, tourism, etc. How can the government create a programme to conserve ecosystems while at the same generate benefits for communities in the short-term? The IDPPE representative felt that there were more, and possibly adequate ecological and biological studies, but that there was a need for improved understanding of social structures.

The potential benefits of activities are often highlighted, such as the 20% conservation payback, but these often take a long time to be reach and impact communities who have immediate needs for survival. IDPPE suggested that Mozambique should consider the lessons learned in Asia regarding the participatory process of coastal and marine resource management. The perception was that countries in Asia were more advanced in community co-management approaches. [IDPPE]. ODG cautioned that there is no "one-size-fits-all" solution and what works in one country may fail in elsewhere due to, amongst other the difference in social structures already mentioned.

Overexploitation of coastal and marine resources (Issue 3)

This issue was raised in relation to education. In Mozambique, environmental education is being included in the school curriculum. Through local curriculum it is possible to reconcile local experience and science. The next generations will understand better the need to conserve and use resources rationally [INDE]. The representative conceded that this drive for greater environmental education is starting in relatively small dimensions. It would appear as if there is a generational issue insofar as positive impacts of environmental education will probably be felt in the future as younger generations reach adulthood.

Global climate change (GCC, Issue 7)

This issue was highlighted by the [ORI] representative. The question posed was, "To what extent is this an important issue for Mozambique? To what extent is GCC being taken into consideration by the different sectors and institutions?"

[IIP] stated that it is undertaking a preliminary study on the impacts of climate change on fisheries resources. Most studies have no GCC data -sets longer than 10 years.

WWF has also undertaken coral reef monitoring, where coral bleaching is an important indicator of climate change. They also monitor reef recovery and the catch statistics of reefs affected by coral bleaching.

GCC may have impacts for the poor, but there are other, more immediate domestic issues to consider. It is difficult to convey this idea of climate change to communities. Resources have a short life-cycle and people are concerned with using them today rather than thinking what will happen in the future. Climate change is like eating something that you are not sure how it will affect your health. The choice is between not dying of hunger today, or dying from cancer in 20 years time [INAQUA].

Some ecosystems take a long time to recover. One example is Mozambique Island, where I have been involved in coral reef monitoring. There are almost no marine resources remaining, despite conservation

measures [WWF]. The biology of species and system ecology needs to be considered as it is closely linked with communities and the poor.

Ecosystems are there to be used to the benefit of people, but at the same time, there are ecological limits that need to be recognised [ODG].

Identifying and ranking important ecosystem services

Participants were asked to give written feedback to three specific questions relating to ES, change and drivers (see below). Notepads were distributed to participants to respond in writing to each of the questions. The questions were as follows:

1. What are the most important ES for disadvantaged (poor) communities?
2. What are the most important changes happening in ecosystems that contribute to poverty?
3. What are the main drivers causing those changes?

Participants were also asked to rank the most important ES, changes and drivers, after these were summarised and grouped by the research team during the presentation and feedback of issues from the regional assessment. The complete list of responses are presented in Annex. 2, and Table1, 2 and 3 below presents a compilation and count of the responses.

Table 1. Ecosystem services identified and ranked by workshop participants of the ESPA national workshop that was held on 27 June 2008 in Maputo, Mozambique.

Ecosystem Service	Category	Count
Coastal and marine resources for food (fish, invertebrates etc.)	Provisioning	14
Sanitation and health through clean environment providing clean goods (water, air)	Provisioning	10
Shelter	Provisioning	9
Wood, fibre and other material for construction, boat -building etc.	Provisioning	11
Income generation through collection and sale of natural resources	Provisioning	11
Woodfuel and other natural resources as source of energy	Provisioning	12
Traditional medicines	Provisioning	8
Religious rituals and cultural events	Cultural	8
Protection against natural disasters	Regulating	7
Conservation of biodiversity through provisioning of habitat	Biodiversity	6
Tourism opportunity	Cultural	4
Sense of place, aesthetics, artistic inspiration	Cultural	2

Table 2. Key changes in ecosystem services as identified by 19 participants of the ESPA national workshop that was held on 27 June 2008 in Maputo, Mozambique.

Changes	Scale	Count
Unsustainable use and reduction in natural resources	Local	12
Natural disasters	Local	9
Climate change	Global	9
Reduction of marine fisheries resources / degradation of biodiversity resources	Local	8
Pressure caused by the exploitation of natural resources	Local	7
Coastal erosion	Local	7
Degradation of forests, mangroves and the loss of habitats	National	6
Reduced production	Local	5
Declaration of parks and reserves to the detriment of communities	Local	5
Water shortage and deterioration of quality	Local	5
Pollution	Local	5
Ecological instability	Local	4
Loss of biodiversity	Local	4
Urbanisation	National	4
Decreasing purchasing power	National	4
Population growth	National	3
Insufficient land-use planning	National	1
Insufficient scientific knowledge	Local	1
Increasing erosion	Local	1
Uncontrolled diving	Local	1
Conflict between artisanal fishers and industrial fisheries	Local	1

Table 3. Key drivers of change identified by 15 participants of the ESPA national workshop that was held on 27 June 2008 in Maputo, Mozambique.

Drivers	Scale	Count
Unsustainable use of natural resources, over-exploitation	Local	7
Population growth	National	5
No effort to create alternative sources of livelihoods	Local	5
Absolute poverty and the need for survival	Local	5
Climate change	Global	4
Subsistence agriculture activities in the coastal dunes	Local	3
Uncontrolled fire (slash and burn, landscape management)	Local	3
Gaps in legislation	National	2
Pollution (irresponsible industrialization, oil from fishing vessels, no monitoring of oil refineries)	Local	2
Lack of environmental monitoring and enforcement (laws, strategies, policies)	National	2
Insufficient scientific knowledge	Local	2
Unmanaged tourism development	National	2
Lack of information to manage environmental risk	National	2
Lack of coordination in decision making	National	2
Lack of land use planning	Local	1
Use of destructive fishing gear	Local	1
Destruction of the environment	Local	1
Sediment starvation of mangroves caused by the construction of dams	Local	1
Insufficient land-use planning	National	1
Lack of awareness of sustainable management of natural resources	National	1
Inadequate financial resources to implement environmental management	Local	0
Lack of political will to promote and implement conservation measures/management and existing legislation.	National	0
Profit-making and greed	Local	0
Lack of integration of efforts, knowledge and data in the implementation of environmental solutions	National	0
Disintegrated/fragmented approaches to ecosystem services	National	0
Urbanization and land reclamation	Local	0

Knowledge gaps and policy options

Key knowledge gaps

The participants raised the following as critical knowledge gaps:

- Lack of research, documenting and validating of indigenous or local knowledge.
- Socio-economic benefits of protected areas and other natural resource management interventions in Mozambique. How effective are the existing mechanisms to distribute the 20% conservation payback i.e. who, when and how do this benefit accrue to communities and how can this be improved?
- Ecological knowledge is incomplete.
- Access to, and ownership of existing knowledge. National and local institutions do not have access to the scientific products undertaken by foreign institutions. There is also a lack of feedback to communities. Knowledge is dispersed among different institutions, most is kept by consultants and consultancy firms, often abroad. There was a general concern that data and information was not retained in Mozambique but were flowing out of the country.
- There is no culture of sharing knowledge. There are many studies and research outcomes but what is lacking is an institution to centralize data and information. There was specific mention of a lack of sharing of fisheries data and information. There is need for a data infrastructure and an agency to coordinate archiving and management of nationally important information and data.
- The geographical focus of existing research is towards the more accessible southern part of the country.
- There are important gaps the extent and completeness of legislation and regulatory instruments. There is a general lack of understanding of legislation and policy and there appears to be an overlap of legislation that causes confusion between organs of state in term of responsibility.
- The coordination of research between institutions including government working with itself is deficient. It is difficult to know what the knowledge gaps are because of lack of communication and coordination. It was suggested that MICOA could facilitate this process since it is an institution which aims specifically to coordinate environmental action amongst different sectors. This is not a realised function of MICOA at this time.
- It would appear as if ecological studies have been prioritized but there is a lack of complimentary studies dealing with for example the socio-economy of fishing communities. There are specific gaps in knowledge relating to the socio-economic costs and benefits of protected areas, and other measures for the management of coastal and marine resources.
- Lack of internal research capacity and dependency on international funding and cooperation to undertake research. Unmanaged, this contributes to information not being retained in the country. One positive step has been the creation of the Ministry for Science and Technology, which aims to build research capacity in Mozambique.
- There are encouraging examples of studies that make an effort to inform communities of research progress and outcomes. In the Quirimbas National Park, the results of all studies undertaken in the park are presented back to the communities in an event organized once a year. These projects are involving communities and acknowledge their participation. Individuals that participated in studies (for example turtle monitoring) have their names acknowledged in reports and information/awareness raising leaflets. This acts as an incentive for them and others to participate.

ODG enquired about specific knowledge gaps in artisanal fisheries:

- IDPPE reported that there is a lack of information and spatial distribution of near-shore resources accessible to artisanal fishers. IDPPE acknowledged that there has been progress in the quantification of artisanal fishing activities. There is now an established system (census) in place for collecting data relating to catch/effort, organizational structure, number and distribution of fishers, gear used and infrastructure, all of which are useful for the design of management measures.
- There is a deficit in anthropological studies to understand community dynamics, social organization and how communities understand and value the environment.
- There are gaps in knowledge about the dynamics and effects of global climate change. This includes impacts on the biophysical environment (productivity, etc.) as well as impacts on communities and the potential increase in poverty the coastal zone.
- It is worth noting that IIP has recently produced a research strategy, which identified knowledge gaps on the fisheries sector.

- Little has been done in terms of aquaculture research in Mozambique since this is a new activity [but lots of studies on aquaculture elsewhere, that could be useful for Mozambique].
- Enhance the potential of Mozambican institutions to undertake research (including equipment and funds) i.e. greater budget allocations, capacity building etc.

Key policy options

The following key policy options were identified:

- Generally recognized that the country has many policies, but needs to improve implementation of the existing legal instruments. The key issue is that of inadequate policy implementation
- There is lack of coordination between institutions with policies that has implications for ES and poverty.
- There are conflicts between different legal instruments and sectoral policies, which concomitantly constrains their implementation. It is necessary to reduce those conflicts, harmonize the different instruments and sectors.
- There is no coordination in the allocation of land for different activities such as agriculture, tourism, etc., partly because regulatory instruments overlapping and lacks appropriate interpretation.
- The law exists but is not well interpreted because of conflicting interests of different actors.
- There is lack of technical capacity to interpret the legislation and the application of legal instruments.

Annex 1: Participants of the ESPA-MA National Workshop that was held on 27 June 2008 in Maputo, Mozambique.

No.	Name	Affiliation	Sector	Email address
1	Simeão Lopes	National Institute for the Development of Small-Scale Fisheries (IDPPE)	Government	slopes@idppe.org
2	Mathilde	French Development Agency (AFD)	Government	gasperim@groupe-afd.org
3	Alice Costa	World Wildlife Fund for Nature - Mozambique (WWF)	NGO	adabulacosta@wwf.org.mz
4	Salvador Matavele	National Institute for the Development of Education (INDE)	Government	smatavel@yahoo.com.br
5	Elsa Patria	National Administration of Fisheries (DNAP)	Government	epatria@mozpesca.gov.mz
6	Barbara von Logchem	National Disaster Management Institute (INGC)	Government	barbaravanlogchem@gmail.com
7	Sónia Nordez	National Institute of Fisheries Research (IIP)	Government	sonianordez@moziip.org
8	Antonio	National Maritime Authority (INAMAR)	Government	
9	Christine Louro	Centro Terra Viva (CTV)	NGO	cristinamlouro@gmail.com
10	Isabel Omar	IIP Department of Aquaculture (INAQUA)	Government	iomar@mozpesca.gov.mz
11	Hoaquim Vate	Foundation for Community Development (FDC)	NGO	juate@fde.org.mz
12	Henriques Balidy	Centre for the Sustainable Development of Coastal Zones (CDS-ZC)	Government	hejaban@librero.it
13	Maria de Ascensão Pinto	National Institute for the Development of Small-Scale Fisheries (IDPPE)	Government	mascensao@idppe.org
14	Louis Celliers	Oceanographic Research Institute (ORI)	NGO	louis@ori.org.za
15	Eulalia Valez	National Institute for the Development of Small-Scale Fisheries (IDPPE)	Government	evales@idppe.org
16	Ernesto Poioisse Hele	National Institute for the Development of Small-Scale Fisheries (IDPPE)	Government	epoiosse@idppe.org
17	Dominique Condjo	National Directorate for Conservation Areas (DNAC)	Government	dcondjo@yahoo.com.br
18	Herminio Tembe	Directorate of Fisheries Economy (DNEP)	Government	Not given
19	Sarah Sinai	MPD-DOPDR		sarah.sinai@hotmail.com
20	Sergio Rosendo	Overseas Development Group (ODG)	Academic	s.rosendo@uea.ac.uk

Annex 2. Responses from participants of the ESPA National Workshop in Maputo, Mozambique, to questions about importance ecosystem services for the poor, key changes and drivers of change. The responses were translated from Portuguese and were not edited or interpreted.

Agency	Question 1: What are the most important ecosystem services for the poor?	Question 2: what are the most important changes happening in ecosystems that contribute to poverty?	Question 3: What are the main drivers causing those changes?
MITUR - DNAC	<ul style="list-style-type: none"> ● Opportunity to produce food (through agriculture, fishing, hunting, etc.) ● Collection of fuelwood, wild fruits, water, etc. 	<ol style="list-style-type: none"> 4. Loss of productive forests 5. Destruction of habitats 6. Reduction in the fauna population 7. Erosion 	<ul style="list-style-type: none"> ● Slash and burn agriculture ● Lack of implementation of land-use planning ● Lack of awareness about the need for conservation ● Unsustainable use of natural resources ● Absolute poverty
Unknown	<ul style="list-style-type: none"> ● All services are important for disadvantaged communities. The four categories of services are important and there are connections between them. 	<ul style="list-style-type: none"> ● Reduction in the provision of services in most ecosystems or total inability to provide services 	<ul style="list-style-type: none"> ● Bad use of services motivated by lack of knowledge for a more rational use.
INAQUA	<ul style="list-style-type: none"> ● Food (marine and farming products) ● Wood (for construction of houses, boats, furniture, fuelwood) ● Other coastal and marine products for the purposes of obtaining income of medicines such as seaweed, plants and shells 	<ul style="list-style-type: none"> ● Establishment of parks and reserves: they restrict the use of the various services in many cases leading to the displacement of communities. ● Devastation of mangrove forests: wipes out the reproduction habitat for many species in addition to loss of ability to provide timber 	<ul style="list-style-type: none"> ● Lack of coordination in decision-making ● Unsustainable use of natural resources ● Lack of knowledge and awareness by communities
Unknown	<ul style="list-style-type: none"> ● Fish ● Water ● Agricultural products ● Fuel ● Health ● Construction ● Shelter (housing) ● Handicrafts (for income) ● Tourism ● Recreation 		<ul style="list-style-type: none"> ● Population growth ● Floods ● Markets ● Deficient land use planning ● Land/real estate speculation ● Inadequate environmental studies

Unknown	<ul style="list-style-type: none"> ● Biodiversity conservation ● Fishing resources ● Nutrient cycling ● Primary production 		<ul style="list-style-type: none"> ● Destruction of mangroves ● Lack of 'strong' fisheries policy and law enforcement ● Environmental destruction (global warming, pollution)
MP	<ul style="list-style-type: none"> ● Provisioning services (food, etc) 	<ul style="list-style-type: none"> ● Soil degradation and loss of biodiversity ● Reduction of fishing and other marine resources 	<ul style="list-style-type: none"> ● Floods; water pollution ● Deficiency in resource management by resource users ●
INDE	<ul style="list-style-type: none"> ● Fuelwood for domestic use and income generation (wood, charcoal) ● Food (marine resources such as fish, crabs and other crustaceans) 	<ul style="list-style-type: none"> ● Degradation of vegetation that serves as nursery for many species of shellfish, especially shrimp ● Reduction in many species, in some cases leading to extinction of plant and animal species 	<ul style="list-style-type: none"> ● Over-exploitation of resources without restocking ● Lack of information about the risks of over-exploitation ● Drive for profit-making
FDC	<ul style="list-style-type: none"> ● Income generation from sale of fish ● Nutrition from fish consumption ● Traditional medicine (using marine plants and animals) ● Religious rituals associated with nature 	<ul style="list-style-type: none"> ● Competition between subsistence and commercial fishing ● Increasing poverty on land resulting in greater use of / reliance on marine resources 	<ul style="list-style-type: none"> ● Many drivers of change not well understood, requiring more research ● Increasing poverty leading to greater use of ecosystems
INGC	<ul style="list-style-type: none"> ● Food ● Water ● Protection from natural disasters (floods, droughts) 	<ul style="list-style-type: none"> ● Soil erosion, degradation, etc. ● Changes in water availability (floods and droughts) and quality (salinisation , pollution) as a result of many factors ● Reduction in regulatory services leading to increased exposure to natural disasters 	<ul style="list-style-type: none"> ● Over-exploitation of resources ● Climate change ● Lack of enforcement of environmental protection laws, policies and strategies e other relevant policies (i.e. energy, education, etc.) ●
DNEP-MP	<ul style="list-style-type: none"> ● Food ● Energy ● Sanitation ● Shelter 	<ul style="list-style-type: none"> ● Resource degradation ● Reduction in capacity (production, regulation, buffering, etc.) 	<ul style="list-style-type: none"> ● Excessive pressure on resources ● Pollution from irresponsible industrialization
IDA	<ul style="list-style-type: none"> ● Fish ● Water ● (seagrass, mangroves and wetlands as important ecosystems providing those services) 	<ul style="list-style-type: none"> ● Reduction in fish catches ● Climate change, changes in temperature ● Increase in the cycle (frequency) of calamities ● Increasing inability (lack of capacity) to deal 	<ul style="list-style-type: none"> ● Insufficient knowledge about environmental management ● Insufficient financial and material resources to implement environmental management programmes

		<p>with or control changes</p> <ul style="list-style-type: none"> ● Increasing erosion ● Decreasing purchasing power / rising cost of living 	<ul style="list-style-type: none"> ● Insufficient combination of efforts, knowledge and data to address changes ● Insufficient attention (priority) given to environmental management ● Disintegrated approaches to ecosystem services ● Insufficient global (holistic) vision about ecosystem services with the aim of reducing poverty
INAMAR	<ul style="list-style-type: none"> ● Wood from mangroves used in the construction of boats and shelter 	<ul style="list-style-type: none"> ● Degradation of ecosystems due to excessive use ● Deterioration of ecosystems due to unregulated recreational scuba diving ● Water pollution ● Erosion ● Deforestation of mangroves 	<ul style="list-style-type: none"> ● Industrial pollution ● Oil pollution from boats and industrial waste ● Petrol companies (stations) do not comply with regulations ● Refuelling of ships in the port and at sea without adequate monitoring of authorities as required by law ● Demand for mangrove wood for construction
Unknown	<ul style="list-style-type: none"> ● All products generated by forests, by the sea, etc. for food (such as fish). ● Charcoal, wood ● Provisioning services appear to be the most important for the poor in Mozambique 	<ul style="list-style-type: none"> ● Pollution, unsustainable use of natural resources, reduction in stocks of natural resources (fish, forests), degradation of specific natural resources as a result of degradation of ecosystems. ● Floods and inundations ● Natural calamities ● Over-exploitation, intensive exploitation of resources ● Urbanization 	<ul style="list-style-type: none"> ● Ill management of natural resources, lack of education about sustainable use of natural resources ● Climate change
CDS-ZC	<ul style="list-style-type: none"> ● Direct values a) provide consumption goods): fish, molluscs, gastropods, birds, reptiles, plants, echinoderms and others; b) fuelwood; others like fodder for livestock, building materials, medicinal products; areas for cultivation, pasture and salt pans. 	<ul style="list-style-type: none"> ● Diminishing area of coverage of ecosystems and spatial distribution of resources ● Mangrove mortality ● Destruction of coastal dunes ● Destruction of wetlands ● Destruction of seagrass beds / seaweed ● Destruction of beaches 	<ul style="list-style-type: none"> ● Urbanization and land reclamation ● Expansion of unplanned tourism activities ● Gaps in legislation ● Decreasing sediment flux caused by dams, which directly affects mangroves

	<ul style="list-style-type: none"> ● Indirect values: fishing, trade, artistic inspiration, education, spiritual-religious rituals. ● Abstract values: landscape beauty 		<ul style="list-style-type: none"> ● Climate change ● Uncontrolled fire ● Subsistence agriculture on coastal dunes ● Erosion
CTV	<ul style="list-style-type: none"> ● Source of food (fish, crustaceans, etc.) ● Source of building materials (housing, boats) ● Source of fuelwood (for cooking and making charcoal) ● Source of traditional medicines ● Protection against the forces of nature 	<ul style="list-style-type: none"> ● Loss of stocks of coastal and marine resources ● Loss of biodiversity ● Loss of the structures that support biodiversity and consequent ecological disequilibrium, resulting in poverty 	<ul style="list-style-type: none"> ● High levels of poverty, need to ensure survival ● Lack of political will to implement awareness-raising and existing environmental management measures, as well as implementing legislation. ● Lack of government will to build the capacity of local communities for the improved management of natural resources and creation of alternative sources of income, and consequent pressure on coastal and marine resources
WWF	<ul style="list-style-type: none"> ● Community-based tourism ● Easy access to fishing resources (for food) ● Coastal protection against erosion ● Education (coastal communities have greater awareness in terms of protection of coastal and marine resources) ● Attenuation of some of the problems caused by climate change along the coast (i.e. increase in water temperature, increase in water turbidity caused by sedimentation) 	<ul style="list-style-type: none"> ● Destruction of habitats resulting in scarcity of coastal and marine resources, leading to famine 	<ul style="list-style-type: none"> ● Use of destructive fishing practices, with negative impacts on the environment ● Non-existent or weak law enforcement ● Lack of awareness-raising campaigns

Annex 3 – Stakeholder Analysis: Non-government Organisations and other organisations relevant to the ESPA Coastal and Marine Assessment in Mozambique

Organisation / Institution	Interest in coastal and marine ES and poverty alleviation	Approach	Scale of operation	Influence score	Contacts
Food and Agricultural Organisation (FAO) of the United Nations http://www.fao.org/world/mozambique/index.html	As a UN agency, FAO has a mandate to support the integration of globally formulated and approved principles and commitments into member state policies and programmes, resulting from Summits and international conferences on food security and sustainable rural development. These range from environmental and sustainable development principles, declarations on the rights of women, the global fight against the HIV/AIDS pandemic, World Food Summit declarations and most recently the Millennium Development Goals.	Policy formulation, programme development with emphasis on food security	Global	Moderate High	
International Union for Conservation of Nature (IUCN) http://cms.iucn.org/about/index.cfm	IUCN is mainly involved in providing technical expertise for conservation planning and building management capacity for protected areas. These are its main comparative advantages which derive partly from the fact that IUCN is well-networked regionally and globally and is at the forefront of new developments and concepts in conservation. Its three main areas of concern are the identification of priority areas for conservation; capacity building; and ensuring that conservation also meets socio-economic needs. It does not advocate conservation per se. Its vision is to promote conservation for development.	Conservation, but importance given to livelihoods	National	Moderate	Dr Ebenizario Chonguica, Head of Regional Programmes, Lusophone and Indian Islands States Coastal and Marine Ecosystems Programme. ebenc.iucn@tvcabo.co.mz Enga. Marta Monjane, Programme Officer. marta.iucn@tvcabo.co.mz Address: Rua Fernão Melo e Castro, 23, Maputo Tel: 21-490599, 21-499547
WWF	WWF has been instrumental in setting up and implementing The Bazaruto and Quirimbas National Parks, both of which include terrestrial and marine areas.	Mainly conservation, but includes activities aimed at improving livelihoods	National	High	Dr Helena Motta (Coordenadora do Programa) Cel: 823122250 hmotta@wwf.org.mz Alice Costa (Oficial do

					<p>Programa Marinho)</p> <p>Address: Rua Dom Joao IV, 213 Caixa Postal 4560 - Maputo – Moçambique</p> <p>Tel: 21-483121</p>
<p>Care International Moçambique http://www.careinternational.org.uk/?lid=11049</p>	<p>In 1999, CARE began a project in the capital city of Maputo that examined strategies for improving livelihoods in several urban neighbourhoods. In 2000, CARE launched a major emergency response to heavy flooding caused by heavy rains and cyclones, including emergency shelter and water supplies, managing camps for displaced persons, and distributing small grants to help families recover lost assets during the floods.</p>	<p>Poverty alleviation, livelihood security, disaster preparedness</p>	<p>National</p>	<p>Low??</p>	<p>Eduardo Telhano (Coordenador) Cel: 828046370 (need to check as he may not be based in Maputo)</p> <p>596 Av Mártires Mueda-MAPUTO</p> <p>Tel: 21 49 20 64</p> <p>Email:carem@care.org.mz</p>
<p>Foundation for Community Development</p> <p><i>Fundação para o Desenvolvimento da Comunidade (FDC)</i> http://www.fdc.org.mz/</p>	<p>The FDC is not an institution of an operational type. It facilitates access to funds and technical assistance for communities and for other non-profit making organizations who also seek to help improve the living conditions of the poorest strata of the Mozambican population. Its objectives are attained through the communities themselves and/or national NGOs and in partnership with groups and institutions at various levels of Mozambican society who share its objectives and its values. This collaboration makes possible the projection of the FDC's resources throughout the country and the achievement of concrete benefits for the target communities.</p> <p>The following are beneficiaries of the FDC's programmes: Poor and vulnerable grass roots communities;</p>	<p>Human development, promotion of governance, advocacy and lobbying.</p>	<p>National</p>	<p>Unknown</p>	

		<ul style="list-style-type: none"> ● Women, children and young people deserving of special attention because of their role, situation and level of vulnerability; ● Groups affected by the phenomenon of social exclusion, such as the elderly, the disabled, and the unemployed. 			
Centro Terra Viva http://www.ctv.org.mz (page under construction)	?	Poverty alleviation, securing land rights for communities	?	?	Alda Salomão (coordenadora) Cel: 823051660 asalomao@tvcabo.co.mz
Grupo de Trabalho Ambiental (GTA) Environment Working Group	?	Environmental conservation with some concern for livelihoods?	?	?	António Hoguane Maputo Tel: 21-493102 gtamb@zebra.uem.mz (but may not work)
University Eduardo Mondlane, Department of Biological Sciences	The Department of Biological Sciences carries out research in order to best understand the dynamics of coastal and marine resources and suggest better ways to protect such resources. Although most of its research is ecological, some also addresses resource use and management issues.	Mainly conservation	National	Medium	Salomão Bandeira Adriano Macia Almeida Gissamulo

Annex 4 - Stakeholder Analysis: Mozambican government agencies relevant to the ESPA Coastal and Marine Assessment

Ministry	Department/Directorate /Unit	Interest in coastal and marine ES and poverty alleviation	Approach	Scale of operation	Influence score	Contacts
	<p>Ministry for the Coordination of Environmental Action</p> <p><i>Ministério de Coordenação e Acção Ambiental (MICOA)</i></p> <p>http://www.micoa.gov.mz</p>	?	?	National	High	
	<p>National Directorate of Environmental Management</p> <p><i>Direcção Nacional de Gestão Ambiental</i></p>	?	?	?	?	
	<p>Department of Coastal Management</p> <p><i>Departamento de Gestão Costeira</i></p>	Has policy, legislative and regulatory functions and is responsible for formulating an overall Integrated Coastal Management programme for the country.	Environmental management	National	High?	??
	<p>Centre for the Sustainable Development of Coastal Zones</p> <p>Centro de Desenvolvimento Sustentável para as Zonas Costeiras (CDS-ZA)</p>	The Centre for Sustainable Development for Coastal Zones (CDS-ZC) is attached to the Ministry for Environmental (MICOA) of Mozambique and is part of the technical subcommittee of the National Council for Sustainable Development lead by the Prime Minister. It advises in all matters related to coastal zones and provides assistance in policy formulation and legislation. It has direct links to the National Directorates of Line Ministries, NGOs and the private sector. The Centre is involved in Strategic Environmental Assessment of Development Plans and Programmes along the Mozambican coast.	Environmental management	National (but most work focused on Inhambane province)	Low??	<p>Micas Mechisso Cel: 82 4568220</p> <p>Address: Praia de Xai-Xai. CP. 66 Gaza</p> <p>Phone: (+258) 223 50 04 Fax: (+258) 223 50 62</p>

Ministry	Department/Directorate /Unit	Interest in coastal and marine ES and poverty alleviation	Approach	Scale of operation	Influence score	Contacts
Ministry of Tourism <i>Ministério do Turismo (MITUR)</i> http://www.moztourism.gov.mz/		?	?	National	High	
	National Directorate for Conservation Areas (DNAC) <i>Direcção Nacional de Áreas de Conservação (DNAC)</i>	The National Directorate for Conservation Areas (DNAC) is part of the Ministry of Tourism (MITUR) and is responsible for overseeing the management of conservation areas. DNAC used to be part of the Ministry of Agriculture (part of the Forests and Wildlife Directorate) but was transferred to MITUR, upon its creation in 2000, with the aim of exploring the tourism potential of these areas. Coastal and marine protected areas are considered of key importance for tourism development in Mozambique, one of the central elements of the government's strategy for poverty alleviation in the national Action Plan for the Reduction of Absolute Poverty (PARPA II), which is the Mozambique Poverty Reduction Strategy Paper (PRSP)	Conservation for tourism development, link to livelihoods through role of tourism in poverty alleviation.	National	High	Afonso Madope
Ministry of Fisheries <i>Ministério das Pescas</i> http://www.mozpesca.gov.mz/		The Ministry of Fisheries (MoF) was established under Presidential Decree nr 1/200, January 17 that replaced the then Ministry of Agriculture and Fisheries. The MoF is to assist the Government in defining the principles, objectives, policies and plans for activities under the management of fishing resources, fishing and related services, and fishing equipment. On of its objectives include promotion and empowerment within this sector that contributes to improving the quality of life in fishing communities.	?	National	High	

Ministry	Department/Directorate /Unit	Interest in coastal and marine ES and poverty alleviation	Approach	Scale of operation	Influence score	Contacts
	National Institute for the Development of Small-Scale Fisheries <i>Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala (IDPPE)</i>	IDPPE is responsible for undertaking research and promoting projects supporting the development of artisanal fisheries, therefore contributing to improving livelihoods and alleviating poverty. It has a network of provincial delegations, district-level stations and local-level extensions. It currently supports the organisation of fishers in associations and the creation of Community Fisheries Councils (CCPs), aimed at promoting the co-management of marine resources. IDPPE also collects socio-economic and catch data in fishing centres throughout the country.	Mainly livelihoods, with link to resource management	National	High	?? IDDPe will be the facilitators, but should identify 1-2 representatives to be involved as participants?
	Institute of Fisheries Research <i>Instituto de Investigação Pesqueira (IIP)</i>	IIP is associated with the Ministry for Fisheries and is responsible for undertaking research in support of fisheries management. It intervenes mostly on the industrial and semi-industrial fishing sectors. Fishing is an important economic sector in the country, not only in terms of supporting livelihoods in coastal communities but increasingly in terms of revenue from exports and issuing o licences to foreign fleets. IIP makes recommendations to the government on fisheries management and is thought to be highly influential in the Ministry for Fisheries.	Mainly fisheries management	National	High	Domingos Gove Paula Santana Afonso
	National Administration of Fisheries <i>Direcção Nacional Administração Pesqueira (DNAP)</i>	?	?	National	High	

Ministry	Department/Directorate /Unit	Interest in coastal and marine ES and poverty alleviation	Approach	Scale of operation	Influence score	Contacts
	Directorate of Fisheries Economy <i>Direcção Nacional de Economia de Pesca (DNEP)</i> http://www.mozpesca.gov.mz/economia.html	?	?	National	High	
	Department of Aquaculture <i>Departamento de Aquacultura</i> http://www.mozpesca.gov.mz/Aquacultura.html	This department was created to regulate aquaculture activities as specified in the General Regulation of Aquaculture (Fisheries Act 3/90 of 2001, Decree 35/2001).	Promotion and implementation of aquaculture facilities.	National	High	
Ministry of Transport and Communications		?	?	National	Low	
	<i>Ministério dos Transportes e Comunicação</i>					
	National Maritime Authority	?	?	National	Low	
Ministry of Education		?	?	National	Moderate	
	(Ministério do Ensino Superior Ciência e Tecnologia / Ministry of Higher Education, Science and Technology)??? <i>Ministério de Educação</i> http://www.mesct.gov.mz/					
	National Institute for the Development of Education <i>Instituto Nacional de Desenvolvimento de Educação</i>	?	?	National	Moderate	

Ministry	Department/Directorate /Unit	Interest in coastal and marine ES and poverty alleviation	Approach	Scale of operation	Influence score	Contacts
Ministry of Planning and Development Ministério da Planificação e Desenvolvimento http://www.mpd.gov.mz/		The Ministry of the Planning and Development directs and co-ordinates the process of planning, and guides integrated economic and social development in accordance with the principles, objectives and tasks defined by the Government of Mozambique.	?	National	High	
	National Directorate of Rural Development <i>Direcção Nacional de Promoção do Desenvolvimento Rural</i>	?	?	National	High	
Ministry of Public Works and Housing Ministério das Obras Públicas e Habitação		?	?	National	Moderate	
	National Directorate of Rural Water <i>Direcção Nacional de Água Rural</i>	?	?	National	Moderate	

Philippines National Stakeholder Workshop Report

June 5th 2008

**Organised by: University of the Philippines Visayas
Manila, Philippines**

I. Participants

The national stakeholders' workshop invited six national government agencies, eight academic/research institutions, and six Non-Government Organizations. A total of 22 participants came, aside from the ESPA Project team consisting of Dr. Robert Pomeroy (WF), Dr. Sergio Rosendo (ODG), Dr. Anthony Beeching (CEFAS), Dr. Ida Siason (UPV), Dr. Rodel Subade (UPV), Len Garces (WF) and the research assistants Ms. Rasmiah Malixi and Chanderlyn Iguara. The participants who attended are considered experts in their respective fields, which pertain to marine and fisheries sciences, natural sciences, social sciences; moreover several are strategically positioned in their respective organizations.

II. Methodology

As early as mid-March, the tentative list of participants to the national workshop was drawn up, guided by the Stakeholder Analysis approach provided by ESPA project. This list was referred to Dr. Robert Pomeroy for comment, especially because he is quite familiar with the agencies in the Philippines. After taking in his very helpful comments, the list was finalized. Invitations were issued a month before the date of the workshop. Follow-up calls were made to increase the probability that the invited would actually take the effort to attend.

The workshop started with an Opening Program which included Welcome Remarks from the representative of the UPV Chancellor, Professor Emeritus Dr. Rogelio Juliano, a presentation of the conceptual framework of MEA from Dr. Rosendo; a brief survey of the participants' view of ES for poor people and drivers of change conducted by Dr. Pomeroy; and an Orientation to the workshop by Dr. Siason. This was followed by the Power Point Presentation of findings of the National Assessment by both Dr. Subade and Dr. Siason.

The first break-out group session discussed issues raised by the national assessment, importance of ES, changes and drivers, and knowledge gaps. This was followed by a plenary session where each of the two groups presented the discussions that transpired in their respective groups. The second break-out group session asked participants to engage in the ESPA-recommended scenario exercise, which built on the morning's discussion of drivers of change.

III. Highlights of Workshop Proceedings

Feedback On Key Findings from the Assessment

1. Degradation in marine and coastal ecosystem in both quantity and quality

There is no dispute about the degradation and even possible collapse in marine and coastal ecosystem. Effects of rising fuel costs are also mentioned as recently/ currently experienced, which worsen the situation. There is recognition that some changes may be irreversible while other recovery of resources will take at least a decade, not just a few years. Degradation occurs fast but recovery is slow.

Climate change is already threatening further these ecosystems.

There is a need to disaggregate and harmonize data, include fisherfolk and local and indigenous knowledge.

It was pointed out that there is a need for a change in mindset - from being just producers of fish to becoming entrepreneurs.

Workshop participants also discussed the importance of integrative approach toward ecosystem services and poverty alleviation – top-down as well as bottoms- up. Government should make it a policy to integrate global concerns with local strategies in order to broaden the perspective in strategizing. There are many levels of influence – global, national, regional, local. Enforcement at local level is needed.

The general consciousness or awareness on ecosystems services seems to be limited to provisioning, a more extractive approach. This may be so because this is what matters most to the poor. Ecosystem is part of a vicious cycle of which the other half is human survival. They are very much interdependent. Provisioning ES cater to active demands while the other ES represents latent demand waiting to be realized. It was pointed out that there is a need for increasing demand or developing a market for ecosystem products that are less developed -- regulating, supporting, cultural-- since these markets do not exist in the Philippine context

Although there is seen a link between ecosystem services and poverty alleviation, this link is not direct. There is recognition that environmental protection is actually incompatible with poverty alleviation, considering that (even unsustainable) exploitation of ecological resources are central to the survival of the poor. Environmental protection as a means of poverty alleviation is not efficient because of the time lag for benefits to accrue directly to the community deriving from environmental protection. In the case of MPA's the creation of jobs for the poor is only an incidental effect of MPA's, the actual main objective of which is environmental protection. There should be more immediate interventions to provide for poor's (e.g, fishers) displacement of income. Developing biodiversity takes time, spillover will increase value but takes about a decade before this takes effect.

Despite the aforementioned incompatibility, it was also pointed out that there are cases wherein there is common interest on environmental protection and poverty alleviation. This is true in the Bohol dolphin and whale watching industry/groups where coastal people are involved. But this link is not a direct link.

2. The demands for ES are increasing, driven by population growth

Population growth (driver of change) rate actually decreased from 2.34 to 2.04% in the last decade but still much higher compared to its neighbors in Southeast Asia. A strong population policy is needed which may be able to provide considerable impact that can help the country escape from poverty. However, population growth is only one factor; perhaps trade liberalization/export market is a more important factor.

3. Key drivers of decline

As a major driver of change, **Globalization** has destroyed the local markets. Example is the food crisis also due to a large part to our integration into the global economy. There is a growing export market. Local economies are now shifting to one global economy; the current trend is outsourcing. All these impact on coastal communities. How do we bring back local economy? Train them in entrepreneurship.

The lack of enforcement of fisheries and related regulation is seen as a Failure of institutions. It was pointed out that there is a need to identify functions and roles of institutions involved in poverty alleviation or related to it. These agencies should be made more responsible for poverty reduction and consequently work on poverty reduction as a government collective. However, a problem is that national agencies like Dept of Social Welfare and Development (DSWD), Bureau of Fisheries and Aquatic Resources (BFAR), have been devolved; thus initiatives depend on Local Government Units (LGU's), while agencies are limited to providing technical support.

Moreover, it was raised that CRM has problem of sustainability because of political reasons. When the local chief executives change, CRM can be set back depending on current political interests and priorities of new executives. On the other hand, it was pointed out that integrated Fisheries and Aquatic Resource Management Councils (IFARMC's) are more effective.

Furthermore, workshop participants recognized that drivers of change are complex and linear thinking is not sufficient. There are interactions.

Climate change is expected to intensify poverty. Change in global temperatures will lead to more severe storms, among others, the effects of which tend to hit lower-income communities most of which are in the coastal areas, e.g. tsunami in South Asia.

4. What is the added value of the MA ES framework?

This basic question was raised by the participants at the Plenary following the presentation of the MA Framework and the National Assessment. Dr. Rosendo responded that conventionally the focus has been on provisioning services, without much attention given to other types of ES. By addressing the full range of ES, this framework could perhaps help to better understand policy options not exclusively based on provisioning services, such as the payment for environmental services.

II. TRADE-OFFS AND POSSIBLE FUTURES

Conflicts of national and local interests have been highlighted in the light of the Philippine Fisheries Code. The said code may have a flawed structure, since BFAR deals with the commercial fisheries, while the Dept. of Interior and Local Government (DILG) thru the LGUs deal with local fisheries

There is a basic incompatibility among the basic interests/objectives, which imply trade-offs among : food security, employment, export earnings, resource sustainability, consumption, conservation, social dimensions (equity)

Compromises and trade-offs are resorted to. For instance, in the 1950's the trade off was cutting mangroves to make fishponds. Today the pattern is the same but takes a different form, such as the trade-off between marine aquaculture (fish cages) and seagrass, corals, mangroves. Fish cages are tended to along side of these habitats and thus has great potential of degrading them. One way of managing this trade-off/conflict is to use integrated coastal management approach

Conflict triangle: Ecological (environment), economic (growth), and social (equity). One then chooses where to position oneself, and problem can be approached by identifying causes, drivers, and solutions.

Opinion is to go for Pareto optimality (net gain for society). This is a decision made by politicians, rather than communities deciding what is good for themselves.

It is important to consider issues of scale in analyzing the framework and policy. Many interventions are place-specific. Others are about national policies. Responses must be different at different levels. However, there must be consistency in the objectives of policy interventions from local to national. In many cases, policies at different levels are incompatible. The reality of decision-makers at different levels is very different, leading to interventions that are often incompatible. There are different scales (local, national) of solutions but jurisdiction belong to local government. Different strategies are needed to address these different levels. ES is more local. But there are also policy contradictions when decision-making is done at the national level. For example when national level decides to prioritize mining over other resource uses. This affects the coastal resources.

Conflict between municipal and commercial. LGU has jurisdiction to exclude commercial fishers. There is confusion in the use of the terms municipal and commercial. Municipal is a governance term; commercial is an economic term.

One driver of conflict is tension between property rights and fisheries as a public good, which entail a problem of exclusion.

Poverty alleviation can be addressed not only by looking at marine ES but also at non marine ES activities to alleviate poverty. The concern is how to remove that many resource users from fishery. Maybe additional rather than alternative livelihood is the more appropriate term.

There is a difference between local and national level policies. Take the case of National Integrated Protected Areas System (NIPAS) which is a nationally formulated policy. However, in the case of Sagay,

LGU's facilitated compromise with local concerns, wherein fishers could still sustainably use the resource for their livelihood despite NIPAS.

PA should not necessarily focus on weaning poor from resource but on selling ES, basically going into context of demand and supply. If there is demand for ES like tourism then there is a party who can supply and manage this ES, such as community and LGU. E.g. Bohol Pamilacan experience.

Is evaluation of trade-offs useful? Politicians have the final word in the integration of these evaluations in decision-making. Often, decisions do not take into account evaluation of trade-offs, even if the trade-offs are known and quantified. This reflects governance issues.

III. POLICY AND MANAGEMENT OPTIONS

The government, academe and research institutions and the civil society already know enough about the changes in the ecosystems. There are serious institutional and implementation issues why we can't seem to overcome the environmental degradation and poverty:

- Problem of implementation. Look into what we have in terms of regulations, and work on enforcing them.
- There is currently no available modalities (under the Fisheries Policy), such as lending institutions, to assist municipal development councils (MDCs) catering specifically to fisherfolk.
- Better understanding of the ecosystem and its complexities will give us better view to identify solutions.
- It is not knowledge gap. It is information gap.
- On governance issues – Disaggregated approach to resources management should be treated in a systemic manner and not in isolation.
- Use of population and pollution/resources depletion model in the form of poverty maps. Additional information: Poverty Maps of selected areas in the Philippines have been generated by projects collaborated by the Peace and Equity Foundation (www.pef.org)
- The Fisheries Sector Project (FSP) crumbled mainly because of institutional flaw rooted on political appointments. These politically-driven arrangements bring about political indifferences between and among LGUs.
- The establishment of IFARMCs seem to show better organization in mobilizing concerned fisherfolks and approaches issues in a bay-wide approach, as compared to MFARMCs, which are LGU-driven or highly driven by those who appointed them (local executives) and are time-limiting (co-terminus)
- On knowledge gaps – Local knowledge should be incorporated in mainstream research and knowledge management, and vice-versa, that is, technical information should also be usable: localized and popularized.
- Population Control Policy without interference of Catholic Church

Knowledge gaps

On marine and coastal ES and on changes thereof :

1. Lack of literature on services other than provisioning.
2. Impact of climate change, of sea level rise, sea temperature on fisheries in the Philippines.
3. Sea water intrusion
4. Acidity effects on building of coral reef skeleton
5. Vulnerability studies resulting from sea level rise.
6. Valuation studies need to be made more intelligible to other disciplines beside economics. One problem with valuation is that the methodology is not firm and does not deal adequately with non-provisioning ecosystem services.
7. Knowledge is there but too academic and technical, so not used. How do we make it more usable and accessible to non-technical people, esp policy makers. Cross disciplinary approach to knowledge is also demanded..
8. Dissemination of knowledge. How do we make use of existing knowledge? The format of knowledge is important. Often, it is not in a format that is useful or usable by those that make decisions.

Linkages between Coastal Poverty and Coastal and marine ES:

1. No desegregations of data between coastal and non coastal municipalities/ barangays.
2. There are information on poverty, but based on site-specific surveys limited to a few barangays, which does not allow us to see the whole picture in the country.
3. There is a need to quantify ES and addressing equity/distributional aspects
4. Assumptions about the poor. They have human and social capital which can lead to their empowerment. Education and provision of opportunities are important and not just ecosystem services. Non-material aspects of poverty need to be considered. Consideration of poverty issues must also address aspects like lack of education and skills that prevent people from getting out of poverty. There is a need to revise MA conceptual framework diagram to better reflect this.
5. Concrete examples of linkages. Information can be enhanced by concrete case studies which can provide a suite of options. Not just fisheries, but coastal development. No single model fits all, so more in-depth analysis of case studies.
6. Joint social and natural science studies from actual cases, not just theoretical. What we need are case studies showing actual linkages between ecosystem services and poverty alleviation, which will enable the development of a menu of options for communities.
7. Lessons from experience with existing policies should be drawn up. There are many policies. Problem is implementation. What can we learn about existing policies?
8. A repository of literature is absent. Knowledge has to be organized

IV. Scenarios Exercise

Group 1.

Both groups decided not to use the scenario approach as outlined in the ESPA instructions, as it appeared too complex given the short time available. A common observation is that such an exercise will require more preparation of the participants. In the case of its use in Brown et al. participants were interviewed in separate sessions before the workshop which actually asked them to draw up the scenario. Besides some participants found that starting with a concrete example would demonstrate better the relationship between poverty and ecosystem services.

One group agreed to forgo with the proposed tool since most of the members did not find it useful. Instead, they opted to discuss real life stories which relates to the selected driver which is **trade**. Prof. Elmer Ferrer narrated the experience as related to him by Prof. Annette Juinio with sea urchins in Bolinao. The community gathered sea urchins, which supply eventually peaked followed by a decrease in production due to overexploitation of the stock. One university then studied the biology of the sea urchin and was able to suggest ways on how this organism will recover. They were able to regulate harvesting of the stock which led to an increase in production. This intervention would never have been possible without the co-management mechanism which aided in establishing the rules on harvesting.

However, supply and demand tells us that if there is too much supply and we cannot get it to market, then the prices of the commodity goes down which makes its contribution to poverty reduction useless. The question now is where is the market? There is a need for a change in mind set, where fishers do not just see themselves as producers but entrepreneurs who can identify their market and find means to get it there at the best possible price that will truly benefit them.

Trade in international market encounters barriers. In Europe for example, there is high demand for quality fish. but the Phil has problems with infrastructure requirements which consumers are not willing to shoulder. Government should thus provide the support needed for them to get into the global market because the opportunity to market products in global market is there. If producers can get these products to the market at the prices that they want, then it can significantly reduce poverty. .

On Institutions. Since markets are formal systems and the poor are usually informal sectors, a transformation from fragmented institutions to formal ones e.g. cooperatives is important. Without this, payment for ecosystem services cannot be achieved.

The challenges of linking ecosystem services to poverty reduction (rather than alleviation) are:

- a.) to see to it that institutions accountable to the poor sectors of society are functioning,

- b.) government is responsive to the needs of the poor through appropriate and effective trade policy measures and
- c.) the poor should help themselves by learning how to market their product and services in entrepreneur-like fashion"

Group 2

Population was initially chosen as the driver for elaboration, but the group decided that population was too general a social problem. It was thought that in the Philippines, the population issue is not cut and dry, that high population is not necessarily bad. It may be bad in the short term but not in the long term. Thus, it can be both a positive and negative driver of change. We see other countries in the region whose population is declining.

Then, the group chose and discussed about trade / global market as the driver that the group would like to further discuss. This means that the demand for ES throughout the world is a major driver affecting changes in ES and ecosystems. An example discussed was the sea cucumber in Bolinao Pangasinan, whereby global demand for it had driven local fishers to harvest more of it. However, in this example, it was found that economics makes good ecological sense and vice versa. The policy option chosen was to regulate market at the national level so that only larger specimens can be exported. This measure would be accompanied by regulating use at the local level, so as to allow only the harvest of larger individuals. Rosendo suggested that these national and local level measures need to be accompanied by international trade regulations so that demand for unselected sea cucumber would not shift from the Philippines to other parts of the world. The people in the areas would need to allow sea cucumber to grow bigger because it fetches a higher price and ecologically it is a better way of using resources.

The group had some discussion and also confusion on the use of the proposed diagram/framework as provided in the NERC-ESPA program overview document. It was pointed out that the analysis may not just be limited by the two dimensional ESPA Cartesian diagram. Rather it can even be three dimensional. Thus, to simplify the approach, the group decided and proceeded to free-wheeling discussion particularly on topics addressed by the scenario exercise

The group proceeded to discuss 'how to regulate the market as a policy in order to affect human well-being and address impoverishment and poverty'. The group came up with market regulation from the local to the national and even global level --- includes for example regulation on size of harvest, quantity, standard certifications, etc. This should include policies formulated to help reduce poverty ----- how poor fishers can capture price premiums from eco-labels to get benefits from the value chain. Several examples are abalone in the Visayas, and the blue crab in Negros.

We need policy that will facilitate formation of small-producer organizations which will increase their bargaining power in markets so that they are able to benefit more from the value chain they are involved in

When defining policies, it is also crucial to consider who are the poor we are trying to target? Is it the poor who can deviate some of their income to invest in aquaculture, or is it the poor who do not have the resources even to feed their children? There are different categories of poor people.

It is equally important to identify who are the poor involved in environmental destruction? Is it the poorest of the poor, or those who have the capital to buy dynamite and other means to exploit resources? Often, the poorest of the poor are those who have the least environmental impact.

One view is that the poor lack knowledge and information on the effects of their actions on the environment. One example is the case of abalone, where communities were not aware of the life cycle of this species and were harvesting during the spawning period. Through awareness raising, some communities stopped harvesting during this period.

The question of assumptions in scenarios was raised. We are working with basic assumptions, what about if these assumptions change? In response, most group members agreed that for the purposes of the exercise, assumptions would remain the same. For some, the assumption was the existing situation of spiraling environmental degradation, which could not get any worse.

V. Results of the Quick Survey of Workshop Participants

The following tables summarize the answers of 19 of the 22 workshop participants to three questions posed by Dr. Pomeroy at the start of the workshop:

- 1) What is the most important marine and coastal ecosystem services for poor people? Why? (please rank)
- 2) Where is/are the most important changes happening (e.g. ecosystems-wise, socially, economically, etc.)? Briefly describe.
- 3) What are the key drivers of change in the country?

Table 1. Most important marine and coastal ecosystem services for poor people

Food	13
income, livelihood	11
environmental protection (flood, typhoons, health of ecosystem)	4
climate regulation -contributes to carbon sequestration	2
tourism – (but mentioned always in relation to income for poor)	2
defense against siltation and other land based threats	1
transportation	1
Nutrient cycling	1
Soil formation	1
Primary production	1
Biodiversity preservation	1
sustaining, ensuring, continuing reproduction of stocks	1
education (on conservation)	1
Fuel	1
Tannin	1
Pharmaceuticals	1

Table 2. Most important changes happening (e.g. ecosystems-wise, socially, economically, etc.)

Degradation (destruction)/loss of coral reefs and mangrove ecosystems/habitats which affects fisheries production	12
Decreasing productivity	5
Overfishing	5
Increasing poverty among coastal dwellers/fishers (reduced income)	3
Environmental perturbations, climate change	2
Dwindling mangroves leading to reduced capacity to withstand current surges, loss of spawning grounds	2
Non-regulation of resources, govt inaction, graft and corruption	2
Illegal/destructive fishing brought on by decreasing resource richness	1
Investments coming in and local communities lose opportunities to manage and earn from mangrove ecosystems	1
Biodiversity and a range of organisms along the food chain are now threatened	1
Deliberate modification of environment	1
Population growth	1
economic change	1

Table 3. Key drivers of change in the country

population growth	8
Inefficient/weak governance (e.g. dismal enforcement, graft and corruption)	6
demand in local and international markets/integration into world economy	4
Government policies/priorities	3
fishing pressure (e.g. overfishing)	3
Poverty /marginalization of poor	2
limited community involvement /participation	2
Uncontrolled industrial/commercial development	2
Economic growth and development	2
Installation of multilevel resources management system	1
climate change	1
Education and public awareness	1
Competition for resources	1
politicians	1
new technologies	1
social conflicts	1
Ignorance of link of ecosystem health (ES) with economic benefits	1

VI. List of Participants

Participants	Agency	Position
1. Rafael Guerrero	Philippine Council for Aquatic and Marine Research and Development	Executive Director
2. Danilo Israel	Philippine Institute for Development Studies	Senior Research Fellow
3. Teresita Rosales	Dept. of Social Welfare and Development	Region VI Regional Director
4. April Leslie Estreller	National Anti-Poverty Commission	Technical Assistant
5. Manuel Bonifacio	Dept of Agriculture – Bureau of Agriculture Research	Consultant
6. Araceli Oredina	Dept of Environment and Natural Resources	CMMO Staff
7. Rex Sadaba	Univ. of the Philippines Visayas (UPV)	Associate Professor
8. Michael Pido	Palawan State Univ.	Professor
9. Angel Alcalá	Silliman University Angelo King Center for Resource and Environment Management	Director
10. Evelyn Ayson	Southeast Asian Fisheries Development (SEAFDEC)	Research Director
11. Nerissa Salayo	SEAFDEC	Associate Scientist
12. Rogelio Juliano	UPV Foundation	On behalf of Executive Director
13. Ma Frances Nievaes	UP Visayas	Associate Professor
14. Annette Juinio Menez	UP Marine Science Institute	Professor
15. Elmer Ferrer	UP College of Social Work and Community Dev.	Professor
16. Antonio Bringas	Haribon Foundation	Head - CSRD
17. Rudolf Hermes	FAO	Consultant
18. Liza Lim	Institute of Social Order	Executive Director
19. Jovelyn Cleofe	Center for Empowerment and Resources Development (CERD)	Executive Director
20. Ephraim Batungbacal	Tambuyog Development Center	Research Officer
21. Eusebio Jacinto	Tambuyog Development Center	Programs Development Officer
22. Conrado Dizon	Fisheries Improved for Sustainable Harvest	Staff
23. Ida Siason	UP Visayas Foundation	Project Leader, Professor
24. Robert Pomeroy	World Fish Center (Penang)	Sr. Research Fellow
25. Sergio Rosendo	Overseas Development Group (ODG)	Senior Associate
26. Tony Beeching	Centre for Environment, Fisheries and Aquaculture Science (CEFAS)	Fisheries Management Scientist
27. Rodelio Subade	UP Visayas	Associate Professor
28. Len Garces	World Fish Center (Philippines)	Research Fellow
29. Rasmiah Malixi	ESPA Project Phil.	Researcher
30. Chanderlyn Igpura	ESPA Project Phil	Research Assistant

Vietnam National Stakeholder Workshop Report

1. Stakeholder analysis

1.1. Methodology

Identifying stakeholders

Identifying stakeholders is the first step in the formal stakeholder analysis process. One method for identifying stakeholders is to use a continuum of stakeholders from the macro to the micro level. The outcome of this step is a coarse list of all stakeholders from macro to micro level who are affected by changed in ecosystem services from marine and coastal ecosystems.

Categorizing stakeholders

Stakeholders are categorised according to their level of influence and their importance.

Importance refers to the degree to which the stakeholder is dependent on and affected by changes in ecosystem services.

Influence refers to the level of power a stakeholder has to control the management and use of ecosystem services. Influence is dictated by the stakeholders' control of, or access to, power and resources.

Using this approach, the relative levels of influence and importance determine whether a stakeholder is a primary, secondary or external stakeholders.

Primary stakeholders have low influence over the outcome of management decisions, but their welfare is important to the decision-makers. Often, the primary stakeholders are those who stand to lose the most from a decision – although this is not always the case. They may be direct users of ecosystem services and have livelihoods directly dependent on them.

Secondary stakeholders can influence the management and use of ecosystem services but are not directly reliant on them. They typically include decision-makers and resource managers.

External stakeholders are those individuals or groups who can exert significant influence over how ecosystem services are managed and how benefits accrue. They might include NGOs or conservation groups.

In this workshop, we also categorized stakeholders based on sectors, namely central governmental organization, local governmental organizations, research institutes, international development agencies/organizations, civil society and non-government organizations, and media. This approach not only helped quickly construct a master list of participants, but also facilitated trimming participant lists for national workshop and local focus group meeting.

1.2. Summary of stakeholder analysis

Identified stakeholders (refer to stakeholder master list)

Primary stakeholders identified in Vietnam are

- small scale fishers engaging in coastal fishing (including poor women who collect shell fish)
- fishers engaging in aquaculture (provide labours for aquaculture ponds)
- fishers engaging in alternative livelihoods (eco-tourism)
- farmers cum part-time fishers

Secondary stakeholders identified in Vietnam include

- governmental organizations at commune, district and national levels (ministries, departments, people's committees) that are related to management of natural resources, economics and poverty
- Office of the State Steering Committee of Marine Resources and Environment Basic Survey and Management- Ministry of Natural Resources and Environment

- Department of Environment Impact Assessment and Appraisal- Ministry of Natural Resources and Environment
- management boards of protected areas

External stakeholders identified in Vietnam are

- research institutes on natural resources, sociology and poverty-related issues
- international development organizations and agencies engaging in management of natural resources and poverty
- non-government and civil society organizations
- Department of Natural Resources and Environment of coastal districts and communes
- Station of Fishery Resources Protection of coastal districts and communes
- Fisheries Extension Centres of coastal districts and communes
- Fisheries Associations
- Farmer Associations of coastal districts and communes
- Red Cross of coastal districts and communes
- Women Associations of coastal districts and communes

2. National workshop

2.1. Methodology and participants

The workshop was held on May 30th 2008 in Hanoi, one full day with about 30 official participants.

The workshop has four objectives:

- Present research results of the project, including summarizing the outcomes of local focus group meetings in Khanh Hoa and Nam Dinh Provinces;
- Verify and receive comments on the national assessment report ;
- Derive information on the dynamics of changes in ecosystem services, policy and management options, trade-offs and possible scenarios;
- Identify knowledge and capacity gaps at national and regional scale.

Five independent reviewers were invited to provide feedbacks and comments on the national assessment report. They are leading experts in coastal zone management or natural resource management. Some of them are high-ranking managers in the Ministry of Natural Resources and Environment.

Two plenary discussion sections were held in the morning, discussing on the main issue raised by the national assessment. The first was dedicated for dynamic of marine and coastal ecosystem services in Vietnam, trade-offs and possible future, and policy options. The latter was specifically designed to discussion gaps of knowledge and capacities on marine and coastal ecosystem services in Vietnam.

Two separated feedback forms were used to ensure that participants well paid attention to capacity and knowledge gaps of the ESPA project as well as of Vietnam.

The main method used in the workshop is team work, especially in scenario exercise.

The two organizers of this workshop are Vietnam Marine Science and Technology Association (VIMASTA) and Centre for Marinelife Conservation and Community Development (MCD).

Approximately thirty key organisations have been invited to attend, including representatives from:

Central government management organization:

- o Vietnam Environmental Protection Agency (Ministry of Natural Resources and Environment);
- o Office of the State Steering Committee of Marine Resources and Environment Basic Survey and Management- MONRE;

- National Directorate of Aquatic Resources Exploitation and Protection (NADAREP) - Ministry of Agriculture and Rural Development;
- Vietnam Institute of Fisheries Economics and Planning, Ministry of Agriculture and Rural Development;
- Institute of Strategic Research and Development- Ministry of Planning and Investment;
- Department of Social Security- Ministry of Labor, Invalid and Social Affair

Research institutes and universities:

- Center for Environmental Research, Education and Development (CERED)
- Centre for Natural Resources and Environment Studies (CRES) - Vietnam National University, Hanoi
- Center for Environmental Research and Education (CERE)
- Mangrove Ecosystem Research Centre (MERC)
- Institute of Meteorology, Hydrology and Environment (IMHE)
- National Institute of Oceanography (NIO)
- Institute of Marine Environment and Resources (IMER)
- Research Institute of Marine Fisheries (RIMF)
- Hue University of Agriculture and Forestry

Civil society and non-government organizations

- World Wild Fund (WWF)
- World Conservation Union (IUCN)
- National Park Centre (NPC)
- Oxfarm Great Britain
- Vietnam Association for Conservation of Nature and Environment (VACNE)

International organizations/agencies

- The World Bank (WB)
- South China Sea Project- United Nations Environment Program (UNEP/SCS)
- Poverty and Environmental Project/United Nations Development Program(UNDP/PEP)
- Sustainable Livelihoods in and around Marine Protected Areas (LMPA/DANIDA)
- Strengthening of Capture Fisheries Management (SCAFI/DANIDA)
- Sustainable Development Aquaculture (DANIDA/SUDA)

Research team of ESPA project

- The Overseas Development Group (ODG) at University of East Anglia, United Kingdom
- World Fish Centre
- Centre for Marinelife Conservation and Community Development (MCD)

Media

- Vietnam News
- Agriculture and Rural Development Newspaper
- Environmental Protection Journal
- Voice of Vietnam

2.2. Perceptions of ES important for the poor, changes and drivers

Prior to the report findings presentation, participants were asked to give their perspectives on the most important ecosystems services, their changes and driver of change by answering the questions in Table 1, 2 and 3. Out of 30 participants, the responses of 25 were included in the analysis. The responses of 5 participants were not analysed, as they mixed up definitions of ecosystem and ecosystem services.

What is the most important marine and coastal ecosystem service for the coastal poor in Vietnam?

Most of participants considered provisioning services the most critical for the poor while others started to think about other services (such as regulating, cultural and supporting). They also mentioned that coral

reefs and mangroves are the most important ecosystems. Table one summarises the responses to this question, while table 3 provides the long list of responses and the frequency with which they were mentioned.

Table 1: What is the most important marine and coastal ecosystem service (ES) for the coastal poor in Vietnam? No. of respondents on the most important ES

Provisioning	Regulating	Cultural	Supporting
17 (provision of fish species, foods, material, and livelihoods etc)	2 (protection of the coastline from the storms and effects of climate change)	3 (tourism)	3 (support conservation and provide necessary nutrients for maintaining coastal ecosystems)

Table 2: Long list of ES identified

Ecosystem Service	Category	Frequency Count
Provision of food (fish and sea products)	Provisioning	11
Goods and material supply (mangroves)	Provisioning	1
Income generation and livelihood development (fisheries capture and aquaculture)	Provisioning	5
Protection against natural disasters and climate change	Regulating	3
Conservation of habitats and biodiversity	Supporting	2
Tourism opportunity	Cultural	2
Scientific research	Cultural	1

What are the most important changes happening to that service?

Participants showed their awareness of reduced quality and quantity of the main ecosystems (mangroves and coral reefs), and significant reduction of fisheries species and habitats. Table 3 summarises the responses, while table 4 gives the long list of responses.

Table 3: The most important changes happening to the service?

Provisioning	Regulating	Cultural	Supporting
fisheries resources appear to be declining unsustainable livelihoods	loss of habitats reductions of mangroves and coral reefs coverage lower quality environment	more development of hotels and resorts increase the degradation of ecosystems, pollution	weak conservation of the ecosystems

Table 4: Long list of changes to ES

Changes	Frequency count
Overexploitation and reduction of coastal resources	8
Climate change	2
Reduction of marine fisheries resources (fish species)	5

Ecosystem damage and destroy	2
Coastal erosion	1
Degradation of forests, mangroves and the loss of habitats	7
Reduced production of fish	5
Pollution	2
Ecological instability	1
Loss of biodiversity	1
Population growth	1
Economic development/booming	1

What are the key drivers of change?

Participants provided their opinions on key drivers that cause the changes to ES. There are several driven factors relevant to ES (Provisioning, Regulating, Cultural and Supporting) but are somehow overlapped and linked together in the different ES interrelationship. Climate change was also considered as one of the key factors along with many others. Table 5 summarises the responses about the key drivers of change, while Table 6 provides a long list of responses and how frequently a particular driver was mentioned.

Table 5: Key drivers of change

Provisioning	Regulating	Cultural	Supporting
overfishing and destructive fishing population increase high market demand poverty weak management and enforcement climate change	Overfishing and destructive fishing unsustainable aquaculture (reduction of mangroves for shrimp ponds) weak enforcement climate change	Lack of integrated management Low awareness of the ecosystem's carrying capacity economic development pressure	lower awareness and attention of the government

Table 6: long list of drivers of change

Drivers	Frequency count
Unsustainable use of coastal resources (including aquaculture), over-exploitation	10
Unplanned coastal development	2
Population growth	6
Poverty in the coastal area	2
Climate change	4
Gaps in legislation	2
Pollution (unsustainable aquaculture, rubbish from tourism activities)	3

Ineffective monitoring and enforcement (laws, strategies, policies)	8
Unmanaged tourism development	2
Lack of information to manage the coastal resources	2
Lack of integrated management and coordination in decision making	2
Use of destructive fishing gear	7
Destruction of the environment	2
Poor regulations and control of laws on ecosystems protection	3
Economic development pressure	3
Rapid urbanization	1
High market demand (export)	2
Low awareness and information on ecosystem conservation (community)	4
Lack of community participation in the coastal management	1
High dependence on the coastal resources for community livelihoods	1

2.3. Priority Ecosystem Services highlighted

The participants at the workshop showed various opinions on important ecosystems and their services. Most of participants considered provisioning services the most critical to the poor as they provided food and livelihoods for local people. Several participants, however, agreed that storm protection and tourism were the most important services of marine and coastal ecosystems. The intensive workshop agenda did not give the participants enough time to justify their chosen ecosystem services. They generally emphasized on daily-life demands of food as main criteria to select most important marine and coastal ecosystem services.

Among marine and ecosystem services, coral reefs and mangroves were ranked as the most important ecosystems. A few participants regards the role of all ecosystems equally significant in the life of poor people.

2.4. Perceptions of trends

Conservation efforts at protected areas in Vietnam were recognized as positive effects on protection and restoration of marine and coastal ecosystem services. However, the participants all agreed that marine and coastal ecosystem services are seriously degrading in Vietnam. The most degrading ecosystems include coral reefs and mangroves mostly used for fisheries. While mangroves provide marine and coastal resources that can be directly used by the poor, coral reefs do not have direct support to the poor.

Demands on ecosystem services are increasing rapidly in recent years. The mostly used ecosystem services are provisioning services such as food and fisheries including aquaculture since they provide basic needs for the poor and majority of coastal communities in Vietnam. Most participants considered fast-growing population, and as a result, increased population density is the key driver of this trend. At the workshop, it is asserted that extremely high demand on male labours for fisheries was the root cause for the population explosion among fishermen communities. All participants agreed that increasing population growth was always coupled with poverty, obsolete fishing methods and low quality health care. Besides, increasing poverty is correlated with increasing population within Vietnam's coastal zone. Population of coastal zone has also experienced greatest increases among regions of the country.

Key factors that drive these trends are many, including near shore over exploitation and destructive fishing; unsustainable aquaculture, industrial and land based activities; the effects of climate change, poor coastal resources management and enforcement; increasing market demand for marine products; poverty and low livelihood resilience. Poverty has strong impacts on degradation of ecosystem services

from local to national scales. The coastal management has been especially ineffective at commune level. Besides, Vietnam's membership at World Trade Organization (WTO) is predicted to strongly promote market demands on natural resources.

In order to identify root causes and the most critical drivers of the trends, a ranking for these key drivers of changes was also examined based on their significance in driving the trends. The proposed ranking is poverty, increasing demand of domestic market, over-exploitation and destructive fishing, population growth coupling with small job supply, poor coastal zone management, urbanization, and climate change.

There were also debates on climate change as a driver of changes on ecosystem services. Several participants considered climate change as a driver of slow effects, while some classified it as the key factor of sea level rise, flooding and storms in the coastal zone of Vietnam.

2.5. Scenario-work reports

The workshop participants were divided into two groups that were given the same exercise. The exercise consists of four steps i) identifying drivers of changes in ecosystem services and linkages between ecosystem services and poverty alleviation; ii) identifying policy options that can be used to address identified drivers of changes for linkage between ecosystem services and poverty alleviation; iii) choosing one or more policy options to discuss four questions; and iv) present outcomes of the group. Examples for drivers of changes and policy options were provided.

Two groups came up with two different outcomes. While Group One focused on process with one policy option (co-management of coastal resources using ecosystem-based approach), Group Two focused on several options with livelihood development as core choice. The final results showed differences caused by their respective choices.

Group1:

Drivers of changes of ecosystem services and the linkages between ecosystem services and poverty.

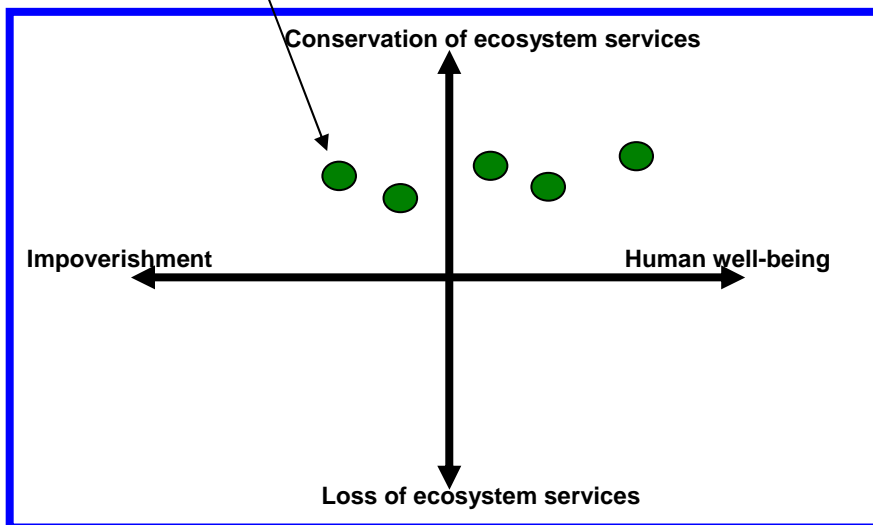
No	Causes		
	Management	Human	Impact by management and human
1	Inadequate attention from the government	Livelihoods	Climate change
2	Lack of planning	Population growth Rich and poor differentiation	Loss of habitats
3	Ineffective management	Lack of awareness and understanding of ecosystem services by local people	Economic degradation
4	Unsuitable policies	Over-exploitation of natural resources	Pollution
5	Poor law enforcement		

Identify policy options that can improve the current status of these linkages.

No	Solution: co-management with ecosystem-based approach	
	Management	Human

	<ul style="list-style-type: none"> - Integrated management <p>Mechanism to provide finance, training and reduce overlap of legal documents.</p>	<ul style="list-style-type: none"> - Co-management <p>Identify who benefit from ecosystem services, develop sustainable eco-tourism</p> <p>Communication enhancement</p> <p>Regional management</p> <p>Policy that aims to pay for ecosystem services</p> <p>Plan to restore ecosystem functions</p> <p>Livelihoods for local people</p>
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Co-management with ecosystem-based approach

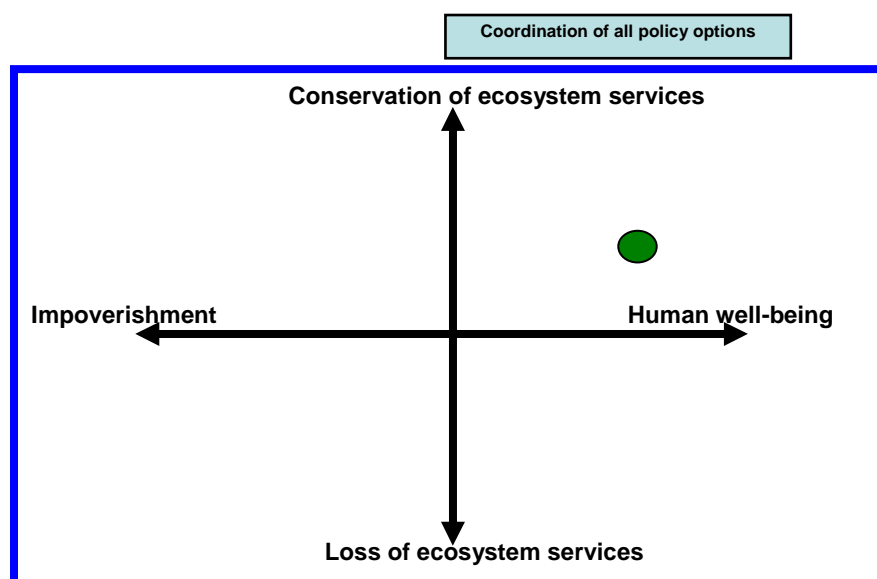


Group 2:

No	Causes		
	Direct	Indirect	Medium
	Over-exploitation Destructive exploitation	Poor awareness of people (local people and th government)	Urbanization
	Climate change (natural disasters, floods, sea level rise)	Market demands promote exploitation	Poverty
	Livelihoods that change the environment	Ineffective management strategies	Population growth
	Ecological success is disturbed by constructions	Lack of livelihood diversity for the poor	
		Changed use of ecosystem services	
		Unplanned economic development	

Determine policy options that can effect linkages between ecosystem services and poverty. Dr. Thong, reporter of Group 2, emphasized that there was no one single policy option for all issues, rather it was necessary to coordinate all policy options. Several policy options are listed below:

- Ecosystem-based approach
- Diversify livelihoods
- Strategy that increases access to loan and funding by the poor
- Training for local community
- Co-management
- Integrated coastal zone management



Although different, they both group results showed trade-offs between policy options that drive towards conservation of ecosystem services and those towards human well-being or economic development.

2.6. Knowledge gaps and capacity constraints

After the presentation of key findings, participants also had the opportunity to make their quick knowledge assessment on marine and coastal ecosystems services and poverty in Vietnam through a feedback form 8 respondents provided written answers. These are summarised in Table X. There was considerable overlap between the answers of the different participants.

Table 7: Participants assessment of knowledge and capacity gaps

	What knowledge do we have on this	What knowledge don't we have on this
Knowledge on marine and coastal ecosystem services	The knowledge is mainly established in the theoretical concepts.	Lack of economic validation of coastal ecosystem services Not sufficient and updated data and information
Knowledge on the changes in marine and coastal ecosystem services	Knowledge is mainly established at the local level, not the national level.	insufficient and incomprehensive knowledge, not updated time series data
Knowledge on poverty	Knowledge exists but still not	Lack of updated data at the

in coastal zone, especially at district and commune levels	updated and inaccurate	national level Lack of accurate poverty data at the household level
Knowledge on the linkages between marine and coastal ecosystem services and coastal zone poverty	-	Big gap and limited knowledge. Needs to be further studied in Vietnam.

The ranking of knowledge gaps based on the number of times a specific gap was mentioned in the feedback responses are as follows:

- Insufficient knowledge on economic valuation of the marine and coastal ecosystem services
- Lack of knowledge/surveys (quantitative data) on the changes of ES over the time series
- Insufficient knowledge on what/how ES are important and influencing the poor and vice versa
- Lack of comprehensive knowledge on the poor's access to the different ES
- Lack of the scenarios on the linkages between the ecosystem services and poverty alleviation
- Lack of research on "Root causes or why the coastal people/dwellers are poor?"

Overall, the key knowledge gaps identified in the national workshop include:

Knowledge on marine and coastal ecosystem services

While the report found that there is a good knowledge on marine and coastal ecosystem services in Vietnam, most of the participants at the workshop said that this finding is still too optimistic. There are two folds of this opinion. First, the current studies and available data are only theoretical and qualitative while time series data are rare. Long-term research that aims to collect quantitative data has not been conducted in Vietnam. Second, the knowledge has not been shared among different levels of management and between research community and policy-makers, and among stakeholders including local communities. Several participants urged for more attention from the government to more numbers of projects in longer periods of time. In addition, other ecosystems such as estuarine, bay and gulf should be examined in the next step of the project.

Knowledge on changes in marine and coastal ecosystem services

All participants agreed upon that knowledge on changes in marine and coastal ecosystem services are very limited. In order to collect this type of information, long-term research projects focusing on dynamic of ecosystem services are needed.

Knowledge on poverty in the coastal zone, especially at district and communal levels

Poverty in coastal zone of Vietnam was not studied thoroughly. Data on poverty, particularly at communal and household levels are inadequate and not frequently updated. In coastal communes of Vietnam, the local authorities may have updated data on poverty of those specific commune. These data, however, have not been included often in the national poverty database. The poverty line proposed by Ministry of Labor, Invalid and Social Affairs in 2005 no longer reflects current status of poverty in the coastal zone.

Knowledge on linkages between marine and coastal ecosystem services and coastal zone poverty

Research on linkages between marine and coastal ecosystem services and poverty has just been started; and therefore we do not have much knowledge about them. ESPA research is among the first studies on this subject in Vietnam.