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Strategic Ecosystem Management of the Red Sea and Gulf of Aden Project

REVIEW OF LEGISLATION, STRATEGIES, POLICIES AND MANAGEMENT PLANS FOR FISHERIES SECTORS IN PERSGA COUNTRIES

-
DRAFT FINAL REPORT

April 2015

-
Sudan

-
Hayder Hamadnalla Abdelgadir



Dungonab Landing Site and former Oyster Farm



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Cover illustration: Dungonab Fish Landing Site and former Oyster Farm.

Photograph taken by: Hayder Hamadnalla (The Consultant)



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3		Draft Final Report	Multiple	08 th April 2015	

Abbreviations/Acronyms

Acronym	Title
CBA	Culture-Based Aquaculture
CBD	Convention on Biodiversity
DoD	Directorate of Development
EBM	Ecosystem-based Management
EEZ	Exclusive economic zone
EIA	Environmental Impact Assessment
ESPA	Eastern Sudan Peace Agreement
EU	European Union
FAO	Food and Agriculture Organization
FMET	Federal Ministry of Environment and Tourism
FRC	Fisheries Research Centre
FTI	Fisheries Training Institute
GEF	Global Environment Facility

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HCENR	High Council for Environment and Natural Resources
IGAs	Income Generating Activities
IUCN	International Union for Conservation of Nature
LPG	Liquefied Petroleum Gas
MFA	Marine Fisheries Administration
MMAAs	Marine Managed Areas
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
NBSAP	National Biodiversity Strategy and Action Plan
PERSGA	Program for the Environment of the Red Sea and Gulf of Aden
RSS	Red Sea State
SEM	Strategic Ecosystem Management
SMAANR	State Ministry of Agriculture, Animal and Natural Resources
SMEAI	State Ministry of Economic Affairs and Investment
SMET	State Ministry of Environment and Tourism
SMFP	Sudan Marine Fisheries Policy
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
WPA	Wildlife Police Administration

Glossary

Biological diversity *"means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."* Article 2 UN (1992) Convention on Biological Biodiversity with Annexes concluded at Rio de Janeiro on 5th June 1992. <http://www.cbd.int/doc/legal/cbd-un-en.pdf>. PERSGA MPAs protocol has the same definition.

Biological resources: *includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential value for humanity*". Article 2.12: PERSGA (2005). The Protocol Concerning the Conservation of Biological diversity and the Establishment of a Network of Protected Areas the Red Sea and Gulf of Aden (PERSGA).

Catch shares (Quota and TURFs): *"Under quota-base catch shares, managers establish a fishery-wide catch limit and assign portions of the allowed catch or shares, to participants. Area-based catch shares, often called Territorial Use Rights for Fishing (TURFs), allocate secure and exclusive privileges to fish in specified areas¹".* See definition of TURFs below.

Co-management: *"a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural re-source"*. Borrini-Feyerabend, G., Farvar, M. T., Nguinguiri, J. C. & Ndangang, V. A., (2000). Co-management of Natural Resources: Organizing, Negotiating and Learning-by-Doing. GTZ and IUCN, Kasparek Verlag, Heidelberg (Germany). <http://learningforsustainability.net/pubs/cmnr.htm>.

Fish: *"Any aquatic animal whether mammalian or not, and includes shell fish"*. Article 2 of Sudan Marine Fisheries Ordinance 1937 amended 1975.

Mariculture: Cultivation, management and harvesting of marine organisms in the sea, in specially constructed rearing facilities e.g. cages, pens and long-lines. For the purpose of FAO statistics, mariculture refers to cultivation of the end product in seawater even though earlier stages in the life cycle of the concerned aquatic organisms may be cultured in brackish water or freshwater or captured from the wild. FAO (2014). FAO Fisheries Glossary, <http://www.fao.org/fi/glossary/default.asp>

Protected area: *"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values"*. Dudley, N. (Editor) (2008), Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN. x + 86pp. <http://data.iucn.org/dbtw-wpd/edocs/PAPS-016.pdf>. PERSGA MPAs protocol defines *"Protected area"*: *means a geographically defined coastal and marine area that are designated or regulated and managed to achieve specific conservation objectives"*.

¹ http://catchshares.edf.org/sites/catchshares.edf.org/files/What_is_a_Catch_Share.pdf

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Refugia: “Spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical stages of their lifecycle, for their sustainable use. SEAFDEC, 2006. Supplementary Guidelines on Co-management using Group User Rights, Fishery Statistics, Indicators and Fisheries Refugia, Southeast Asian Fisheries Development Centre, Bangkok, Thailand. 84 pp. www.unepscs.org/SCS_Documents/startdown/484.html

Territorial Use Rights for Fisheries (TURFs): programs that allocate the right to harvest a secure area to an individual, group, or community².

DRAFT

²MEAM (2014). Marine Ecosystems and Management. International news and analysis on marine ecosystem-based management. Vol. 7, No. 3. Pp. 8. December 2013-January 2014. <http://depts.washington.edu/meam/MEAM34.pdf>

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EXECUTIVE SUMMARY

BACKGROUND AND METHOD

The following provides a review of legislative, strategy, policy and management opportunities and constraints to fisheries related **co-management**³ of coastal and marine **biological resources**⁴ in Sudan in coastal and marine **biodiversity**⁵ **protected areas**⁶, **fisheries refugia**⁷, outside these areas, and in an international context. The review is in the context of the Strategic Ecosystem Management of the Red Sea (SEM) Project which has a focus on coastal and marine protected areas.

Laws, policies, and management practices, in respect of the co-management of coastal and marine biological resources with a focus on fisheries, were reviewed. The review uses data collected using methods presented and agreed at a workshop held at the PERSGA headquarters in Jeddah held from 10th to 12th November 2014.

The Red Sea State (RSS) Marine Fisheries Administration (MFA) indicates that there are three thousands fishers (3000) and one thousand (1000) either wooden or fiber-glass boats with length ranges between 6 to 12 meters, working in the traditional/artisanal fisheries sector. The fishery is coast and coral reef based using hook and line or gill nets. The maximum sustainable yield (MSY) for reef fish is estimated at 2000 tons per annum.

The marine fisheries strategy (still draft) which has been developed by UNIDO in 2013 under the project “Recovery of Coastal Livelihoods in Red Sea State, Sudan” points out that according to the existing information potential fisheries resources are between 6000 and 35000 metric tons with MSY of 10000 metric tons recommended by FAO (2006). The catch

³“a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural re-source”. Borrini-Feyerabend, G., Farvar, M. T., Nguingiri, J. C. &Ndangang, V. A., (2000). Co-management of Natural Resources: Organizing, Negotiating and Learning-by-Doing. GTZ and IUCN, KasperekVerlag, Heidelberg (Germany). <http://learningforsustainability.net/pubs/cmnr.html>

⁴**Biological resources**”: includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential value for humanity”. Article 2.12: PERSGA (2005). The Protocol Concerning the Conservation of Biological diversity and the Establishment of a Network of Protected Areas the Red Sea and Gulf of Aden(PERSGA).

⁵“Biological diversity ”means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Article 2, UN (1992), Convention on Biological Biodiversity with Annexes concluded at Rio de Janeiro on 5th June 1992.<http://www.cbd.int/doc/legal/cbd-un-en.pdf>. PERSGA MPAs protocol has the same definition.

⁶“A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”. Dudley, N. (Editor) (2008), Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN. x + 86pp. <http://data.iucn.org/dbtw-wpd/edocs/PAPS-016.pdf>. PERSGA MPAs protocol defines “Protected area””: means a geographically defined costal and marine area that are designated or regulated and managed to achieve specific conservation objectives”.

⁷“Spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical stages of their lifecycle, for their sustainable use.SEAFFDEC, 2006. Supplementary Guidelines on Co-management using Group User Rights, Fishery Statistics, Indicators and Fisheries Refugia, Southeast Asian Fisheries Development Centre, Bangkok, Thailand. 84 pp. www.unepscs.org/SCS_Documents/startdown/484.html

estimate also varies according to the information source. The Marine Fisheries Administration(MFA) of the RSS estimates the fish caught in Sudan marine waters at 500 metric tons for the artisanal fisheries and 600 metric tons for the semi-industrial fisheries. These figures suggest that the fisheries resources are underexploited. However, they are not based on robust data. In addition the figures are not stock specific and target species such as grouper could be overexploited. Investing in fisheries development based on overall figures is therefore risky. Management planning, therefore, has to be stock-specific and based on precautionary criteria until such time as more robust data can be obtained. This is particularly so for stocks that sustains traditional/artisanal livelihoods in communities that are poor.

LEGAL REVIEW

Documents supporting the legal review are listed in Appendix IV and are provided digitally. The legal review indicates that there **are** two coastal and marine protected areas **primarily** declared for **biodiversity** protection within Sudan. These are Sanganeb Atoll and Donganab area. Both of these are Federal Reserves. The Red Sea State (RSS) has not declared any State coastal and marine protected areas.

The legal review indicates that there is a legal basis for declaring fisheries refugia in Sudan under Article 6 of the Marine Fisheries Ordinance of 1937 amended 1975. Also article (11) of RSS Marine Fisheries Law, 2008: The minister has the right to declare any area within the zone of the marine livings in RSS as closed area for fishing, in consultation with the relevant technical organs. However, no areas have been designated as fisheries refugia in the Exclusive Economic Zone (EEZ) of Sudan.

Fishing is conditionally allowed in coastal and marine protected areas primarily designated for biodiversity conservation and is allowed in other coastal and marine areas.

The artisanal/traditional fishery is open to all Sudanese nationals and no quotas are specified for pelagic or reef fisheries.

Fishing in the commercial sector is open to Sudanese nationals and foreigners. The sector includes trawling, seines, sea cucumber and ornamental fish. Quotas and closed seasons are provided for the trawl and seine fisheries. The sea-cucumber fishery has been closed since 2013. There is no quota for ornamental fish but there is a closed season from September to June. It is unclear whether fishing by Sudanese nationals is allowed outside the exclusive economic zone of Sudan.

Mariculture is conditionally allowed in coastal and marine protected areas primarily designated for biodiversity conservation and is also allowed outside these areas. Currently no conditions are specified. There is, currently, no mariculture taking place in the Sudanese Red Sea.

Mangrove use is **not** allowed either in coastal and marine protected areas primarily designated for biodiversity conservation or outside these areas in Sudan.

Key marine species: Key coastal and marine species protected throughout the coastal and marine areas of Sudan under RSS legislation include dugong (sea-cows), whales and dolphin

(all), marine turtles, turtle eggs, hump-head wrasse, shark (all) including whale shark, corals and mangrove. The Sudan Marine Fisheries Law of 1937 (1975) Amendment requires that corals, coral reefs, shells, and shell animals, and ornamental fish can only be collected or caught with a permit issued by the designated authority. The legislation that was reviewed indicates that turtle eggs are protected.

Based on the Marine Fisheries Ordinance 1937 amended 1975 responsibility for the management of “fish” as defined⁸ can be delegated to a “Local Authority” as defined⁹. However, the requirement for this ordinance to designate the MFA of the RSS as the “Local Authority” in the context of the RSS Marine Fisheries Law/Act 2008, amended 2015, needs to be determined.

The agency primarily responsible for managing coastal and marine biodiversity protected areas is the Wildlife Police Administration (WPA). The WPA has federal and state level branches. The State Wildlife Police Administration is responsible for managing the Federal Parks in Red Sea State.

The State Agency for managing fisheries and mangrove in the Red Sea State (RSS) is the State Marine Fisheries Administration (MFA) of the State Ministry of Agriculture, Animal and Natural Resources (SMAANR). For social welfare and development it is the Directorate of Development (DoD) of RSS Ministry of Economic Affairs and Investment (SMEAI). The agency responsible for international fisheries matters (foreign nationals fishing in the Exclusive Economic Zone (EEZ)) is RSS MFA. Nationals do not fish outside the EEZ of Sudan and RSS MFA jurisdiction is only within the Sudan EEZ.

POLICY REVIEW

Policy documents signal the intention to change, or propose to change, the law. The following provides a summary of any relevant policies proposing to change the current laws.

The principal biodiversity policy in Sudan, the 2000 NBSAP only mentions coastal and marine biological resources in general terms. It indicates that “*Maritime, marine and coastal legislation need to be enforced*” but does not provide any detail. No additional specific coastal and marine areas are recommended for protection and no additional coastal and marine biological resources (species) are proposed for particular protection.

The NBSAP makes no mention of the need to comply with the core principles of the ecosystem approach or the FAO code of conduct for responsible fisheries including co-management, carrying capacity, spatial and temporal factors, long-term adaptive management

⁸ Article 2 of the 1937 Marine Fisheries Ordinance specifies that “fish” means “*any aquatic animal whether mammalian or not, and includes shell fish*”.

⁹ Article 2 of the 1937 Marine Fisheries Ordinance specifies that “Local Authority” means “*Local authority*” means “*the person appointed as such by the Minister of Animal Resources for the purpose of carrying out the provisions of this ordinance and shall include any person to whom by the terms of such appointment the powers of the local authority may be delegated*”.

including adaptive management for climate change and the delivery of Aichi and other international targets. The NBSAP needs to be updated to address all these gaps.

The fifth national report from Sudan to the CBD in 2014 identifies a number of threats to the ecosystems and biodiversity in Sudan, including to the coastal and marine biological resources of the Red Sea including those in the Donganab bay Federal Reserve where:

- Severe over-fishing of sea cucumber and a number of mollusks species (*PERSGA/GEF 2004*).
- Intense fishing pressure at spawning and nursery sites for Najil (grouper) and other species especially at the southern end of Mukawar Island.
- Majority of mangroves are affected at various levels by camel grazing, felling and limb cutting.

A draft Sudan Marine Fisheries Policy (SMFP) was prepared in 2012 with EU funding and implemented by Pescares Italia Srl. The draft is pending passage by the federal Legislative Council and endorsement of the federal minister of Agriculture, Animal and Natural Resources and so is not official.

The fifth report to CBD also indicated that the NBSAP has been updated in February 2014 to capture the Aichi Targets and the new NBSAP of Sudan will serve as guidance for conservation of biodiversity of the country. However, the update is pending approval.

CO-MANAGEMENT SCHEMES

The review was unable to identify any example of an **operational** co-management scheme involving coastal and marine biological resources anywhere in Sudan which is not surprising given the lack of a clear legal enabling framework allowing restriction of fishing licenses to particular stakeholder subgroups according to co-management criteria.

A potential co-management scheme involving management of Donganab and Sanganeb Federal Reserves operated from July 2005 to October 2008. The parties to the scheme were an international NGO, African Parks, and the Wildlife Police Administration. However, it could not be sustained mainly because it lacked a legal enabling framework to allow it to be recognized legally.

A potential co-management scheme involving pearl mariculture in Donganab Federal reserve was in place between 1996 and 2008. However, the scheme did not involve any contribution to management of the Federal Reserve and is also no longer operational.

The total number of **potential** co-management schemes involving coastal and marine biological resources identified in the review is twenty (20). Details are provided in Appendix VIII. These twenty schemes involve eighteen local fisheries cooperatives; one marine tourism operation and one mariculture farm. Four of the potential schemes occur in coastal and marine biodiversity protected areas. Two of these are fisheries related, one relates to marine tourism and one to mariculture. Sixteen of the potential schemes (80%) occur outside these

biodiversity protected areas and within the EEZ of Sudan. These are all fisheries related. None of the potential schemes involve activities outside the EEZ of Sudan.

STAKEHOLDER REGISTRATION

Identification (registration) and objective participation of stakeholders in the management and use of coastal and marine biological resources is central to effective co-management and compliance with the FAO “Code of Conduct for responsible fisheries” and the CBD “Ecosystem Approach”. This review, therefore, included interviews with a number of key stakeholders concerning livelihoods and quality of life.

Of the sixty (60) stakeholders interviewed sixty (60) (100%) were males and zero (0%) were females. No females were interviewed due to the lack of female interviewers and social norms that mean that male non-family members cannot meet with females.

None of the stakeholders interviewed (0%) were involved in one, or more, **operational** co-management schemes using coastal and marine biological resources (See Appendix IX).

Of the sixty (60) stakeholders interviewed sixty (60) were involved in one, or more, **potential** co-management scheme using coastal and marine biological resources. Of the sixty (60) potential schemes 100% were related to national fishing and zero (0%) to international fishing

Significant livelihood concerns of the 60 stakeholders interviewed (29 from Dungonab and 31 from Mohamed-qol) are summarized in the list below;

1. Brokers/traders offer low prices for the catch (fishing trip is funded by traders).
2. Limited/no other alternative income generating activities (IGAs) /livelihoods to fishing.
3. Foreign fishers/big boats practice trawling fishing and catch sharks and protected species.
4. Marketing problem, low capacity of the local market and expensive transportation to Port Sudan.
5. Income is low and poverty is high.
6. Lack of funding. Funding from traders who exploit fishers.
7. Limited number of boats.

High levels of poverty are suggested in the two communities located inside the Dungonab Federal Reserve, in Mohamed-qol and Dungonab villages by the very poor housing structures people live in. This is now changing. State government has constructed a model village in Mohamed-qol which is now inhabited and is in the process of constructing a model village in Dungonab. Although, basic services (water, education and health) facilities are found in both communities official reports/indicators signify poor quality of life where the illiteracy rate in the area is 89% and there is limited economic activity.

DISCUSSION AND RECOMMENDATIONS

A significant finding of the research supporting this review is the extreme poverty faced by fisher communities. It is important that government and donors are made aware of this situation to support advocacy to mobilize resources to alleviate this poverty.

A key constraint to the introduction of co-management of coastal and marine biological resources is the lack of a legal mechanism to restrict artisanal/traditional fisher licenses so as to control access to and opportunity for management of coastal and marine biological resources. Co-management is unlikely to be sustained if it is voluntary and particularly so if there is open access.

The introduction of a legal enabling framework for co-management is necessary to deliver compliance with international conventions to which Sudan is a party including the principles of the ecosystem approach and the code of conduct for responsible fisheries.

Key recommendations are that:

- i. it is legally confirmed under the Marine Fisheries Ordinance 1937 amended 1975 and/or other relevant legislation, by the federal authorizing power, and according to the Constitution, that the “*local authority*” for coastal and marine biological (natural) resources in Sudan is the Marine Fisheries Administration (MFA) of the Red Sea State (RSS);
- ii. Legislation is provided to enable the restriction of artisanal/traditional fisher licenses and to issue commercial fishing licenses according to objective co-management criteria including traditional and sustainable use and the equitable sharing of benefits;
- iii. The Protection of Hunting and National Parks of 1986 is amended to recognize that fish are a form of wildlife and federal parks are managed for biodiversity and not just for fisheries;
- iv. Risks to food security, society, economy and environment from climate change are addressed to ensure the sustainable use of coastal and marine biological resources for the benefit of present and future generations of the Sudanese people.

The review also raises a number of other issues and recommendations relating to the management of coastal and marine resources that are listed in the main report. These include the need to request that PERSGA take a lead role in facilitating the coordination between the countries of the region to deliver sustainable use of shared and trans-boundary biological resources, to minimize illegal, unreported and unregulated (IUU) fishing and to alleviate poverty where this can be achieved through the sustainable use of these biological resources.

Fisheries management plans and also biodiversity management plans developed for coastal and marine protected areas in Sudan should reflect and support the delivery of any approved recommendations.

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DRAFT

1. BACKGROUND

The following provides a review of legislative, strategy, policy and management opportunities and constraints to fisheries related **co-management**¹⁰ of coastal and marine **biological resources**¹¹ in Sudan in coastal and marine **biodiversity**¹² **protected areas**¹³, **fisheries refugia**¹⁴, outside these areas, and in an international context. The review is in the context of the Strategic Ecosystem Management of the Red Sea (SEM) Project which has a focus on coastal and marine protected areas.

2. METHOD

Laws, policies, and management practices, in respect of the co-management of coastal and marine biological resources with a focus on fisheries, were reviewed. The review used data collected using methods presented and agreed at a workshop held at the PERSGA headquarters in Jeddah held from 10th to 12th November 2014. The methodology comprised interviews, site visits and the completion of a number of templates. The consultants' contract is provided at Appendix I. The consultants' itinerary is provided as Appendix II. The templates used are tabled as follows and are provided in Appendix III:

No	Template	Reason
1	National level Acts supporting co-management	Is there a legal chain of custody for co-management from National level Acts?
2	National level policies supporting co-management	Are there clear national level policies designed to support co-management practices particularly in recognition of the Ecosystem

¹⁰"A situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural re-source". Borrini-Feyerabend, G., Farvar, M. T., Nguingiri, J. C. &Ndangang, V. A., (2000). Co-management of Natural Resources: Organizing, Negotiating and Learning-by-Doing. GTZ and IUCN, KasperekVerlag, Heidelberg (Germany). <http://learningforsustainability.net/pubs/cmnr.html>

¹¹**Biological resources**: includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential value for humanity". Article 2.12: PERSGA (2005). The Protocol Concerning the Conservation of Biological diversity and the Establishment of a Network of Protected Areas the Red Sea and Gulf of Aden(PERSGA).

¹²"Biological diversity "means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." Article 2 UN (1992) Convention on Biological Biodiversity with Annexes concluded at Rio de Janeiro on 5th June 1992.<http://www.cbd.int/doc/legal/cbd-un-en.pdf>. PERSGA MPAs protocol has the same definition.

¹³"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values". Dudley, N. (Editor) (2008): Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN: x + 86pp. <http://data.iucn.org/dbtw-wpd/edocs/PAPS-016.pdf>. PERSGA MPAs protocol defines "Protected area": means a geographically defined costal and marine area that are designated or regulated and managed to achieve specific conservation objectives".

¹⁴"Spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical stages of their lifecycle, for their sustainable use. SEAFDEC: 2006. Supplementary Guidelines on Co-management using Group User Rights, Fishery Statistics, Indicators and Fisheries Refugia, Southeast Asian Fisheries Development Centre, Bangkok, Thailand. 84 pp. www.unepscs.org/SCS_Documents/startdown/484.html

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		Approach and the Code of Conduct for Responsible Fisheries?
3	Register of co-management/other practices	Examples of operational co-management practices relating to use of coastal and marine biological resources.
4	Proposed co-management agreements	Examples of possible co-management agreements relating to use of coastal and marine biological resources.
5	Stakeholder registration	Registration of actual and possible co-management stakeholders relating to use of coastal and marine biological resources.

The list of documents consulted is provided at appendix IV.

Electronic copies of templates completed and referenced documents are provided, where available, on a CD-ROM available from the consultant and PERSGA.

The results are discussed in Section 4 and recommendations presented in Section 5.

3. RESULTS

The marine fisheries strategy (still draft) which has been developed by UNIDO in 2013 under the project “Recovery of Coastal Livelihoods in Red Sea State, Sudan” points out that according to the existing information potential fisheries resources are between 6000 and 35000 metric tons with Maximum Sustainable Yield (MSY) of 10000 metric tons recommended by FAO (2006). The catch estimate also varies according to the information source. The Marine fisheries Administration (MFA) of the RSS estimates the fish caught in Sudan marine waters at 500 metric tons for the artisanal fisheries and 600 metric tons for the semi-industrial fisheries. These figures suggest that the fisheries resources are underexploited. However, they are not based on robust data. In addition the figures are not stock specific and target species such as grouper could be overexploited. Investing in fisheries development based on overall figures is therefore risky. Management planning, therefore, has to be stock-specific and based on precautionary criteria until such time as more robust data can be obtained. This is particularly so for stocks that sustains traditional/artisanal livelihoods in communities that are poor.

MFA classifies the marine fisheries operational in Red Sea into two main categories, which are:

1. Artisanal/Traditional Fisheries Sector

MFA indicates that there are three thousands fishers (3000) and one thousand (1000) boats either wooden or from fiber-glass with length ranges between 6 to 12 meters, are working in this sector, fishing at the coastal coral reefs using the line and hook or gill nets. There are over 130 fin-fish species commercially targeted in this sector. Collection of Trochus and shellfish is practiced at the coral shelf. The maximum sustainable yield (MSY) for the reef fish is estimated at 2000 tons per annum.

There is no quota system and there is no season defined for fishing in the traditional sector. Any Sudanese national can obtain a license for this sector. No foreign fishers are allowed in the artisanal/traditional fisheries sector.

2. Commercial Fishing Sector

Fishing in this sector includes using trawling, seines, sea cucumber and ornamental fish. Activity in this sector is seasonal and in some years the season is closed for fishing to help resources renew and grow, considering that vessels working in this sector have high fishing capacity. The decision of closure of the season for fishing is made by the minister of agriculture, animal and natural resources; based on article (12) of the RSS Marine Fisheries Law of 2008, amended in 2015.

According to the Regulation of Trawling - September 2007, fishing in the commercial sector is a seasonal activity and a quota system is defined for trawl fishing as well as for seine fishing, at 90 tons a boat per season which is between November and May, The total number of vessels should not exceed 18 boats a season. Foreigners as well as Sudanese nationals can operate in this sector. There is no quota system for **ornamental fish** but there is a season system used which opens annually in September and continues to June of the next year. Foreigners as well as Sudanese nationals can operate in this sector. For **sea cucumber** collection, the season is opened or restricted depending on the status of stock and the situation of resource conservation, the collection of sea cucumber has been banned since 2013. According to the local ordinance of MFA issued in 2013, foreigners as well as Sudanese nationals can operate in this sector.

3.1 LEGAL FRAMEWORK

Documents supporting the legal review are listed in Appendix IV and are provided digitally

A more complete discussion of relevant laws is provided in the discussion and recommendations section.

The legal basis for co-management of coastal and marine biological resources in Red Sea State is the local governance law of Red Sea State, 2010 and specifically Chapter (8) of the law “*Community-based organs and Popular Administrations*”. However, the law does not provide a mechanism for allocating licenses for the use of coastal and marine biological resources. Allocating fishing licenses is currently indicated to be the responsibility of the “*local authority*” the Red Sea State (RSS) Marine Fisheries Administration (MFA).

The legal basis for specifying the RSS MFA as the “*local authority*” is unclear. The Marine Fisheries Ordinance of 1937 and its 1975 amendment provide a mechanism. However, the RSS has issued a marine fisheries law of 2008 (amended 2015) based on the interim constitution which is not clear on this matter and not on the Marine Fisheries Ordinance.

There are currently no legal mechanisms for restricting artisanal/traditional fishing licenses. Commercial fishing can be restricted but not in respect of particular stakeholder groups. Neither type of fishery has conditions for delegating the management of resources to the user of these resources in support of co-management.

3.1.1 Interim Constitution of 2005

Providing a legal framework for co-management is complicated because the Interim Constitution of 2005 does not specify which coastal and marine biological resources are

“owned” by the Federal Government (Schedule A), the State (Schedule C) or are shared (Schedule D) and the nature of this sharing is not specified clearly elsewhere.

3.1.2 Eastern Sudan Peace Agreement (ESPA) 2006

The Eastern Sudan Peace Agreement does not specify which natural resources are federal, state or concurrent.

3.1.3 Sudan Marine Fisheries Law of 1937 amended 1975

This Federal Law is the oldest marine legislation in Sudan and was amended in 1975 to comply with the recent marine related international treaties and conventions requirements. The 1975 amendment provides for:

- Controlling fishing equipment/tools (Spear-gun shall never be used for fishing by anybody without a permission issued by the designated authority).
- Prohibition of dumping waste into the sea or on the coast for the control of environmental pollution and damage to the fisheries resources.
- Protection corals, coral reefs, shells, and shell animals, ornamental fish from being collected or caught without a permit issued by the designated authority.

The law enables the designation of a “*local authority*” to be responsible for the management of “fish” resources which are defined as “*any aquatic animal whether mammalian or not, and includes shell fish*”. The 1960 Marine Fisheries Regulation implies that the “local authority” is the Governor of Kassala Province. There is no clear provenance linking the Sudan Marine Fisheries Law of 1937 to the RSS Fisheries Law, 2008 and its 2015 amendment.

This law is still in force at federal level for management and protection of marine resources. It requires comprehensive review and amendment to capture the current issues relating to the conservation of marine biodiversity and the protection and co-management of marine and coastal biological resources so as to comply with and help deliver other Federal legislation and international and regional conventions, treaties and declarations to which Sudan is a party.

The Marine Fisheries Regulation Of 1960 also needs to be amended, as appropriate to specify the “*local authority*” for managing marine fish resources under the ordinance.

3.1.4 Local Governance Law of the Red Sea State 2010

Given the assumption of RSS ownership of coastal and marine biological resources the legal basis for co-management of coastal and marine biological resources in Red Sea State is the local governance law of Red Sea Sate, 2010 and specifically Chapter (8) of the law “Community-based organs and Popular Administrations”. The law specifies:

- ⇒ Ensuring local communities/people participation in provision of services and development.
- ⇒ Participation in promotion of environmental services and hygiene.

- ⇒ Protection and conservation of natural resources.
- ⇒ Early communication and reporting of any environmental threats or unusual practices that are threatening the health of humans and animals.

3.1.5 Protection of Hunting and National Parks Act 1986

Sanganeb National Park (items 6 and 56) and Dungonab Federal Reserve (article 6) have been declared based on the Federal Protection of Hunting and National Parks Law of 1986. Unfortunately the Act makes no mention of coastal and marine biological resources. The 1986 Act has primarily been developed for the protection of terrestrial wildlife.

Articles 14 and 15 of the Act do provide for licensing of management of the use of wildlife

- Setting quotas of different species which may be hunted during the hunting season.
- Restricting the number of people who may hunt during a particular time and/or season.
- Issuance of entry permits to game and/or protected areas and allowing any concessions in these areas.
- Granting of permits for the construction and operation of any rest-house, camp or tourist resort inside any federal reserve area or game area, for their development and exploitation, provided that this shall not damage the environment, the rural landscape or the aesthetic value of the park or region.

These measures of managing/protecting the wildlife resource can be applied to marine and coastal biological resources once these are included in the Act and can be the basis for co-management.

Reference is made to a pending revision of this Act in the 5th Sudan National Report to the CBD.

3.1.6 Red Sea State Marine Fisheries Law, 2008 amended 2015

The RSS has promulgated the Red Sea State Marine Fisheries Law 2008 amended 2015 on the basis that it is the designated “*Local Authority*” and owns and is responsible for managing coastal and marine biological (fish) resources. The legal basis for this designation is given as the Interim Constitution.

This law is the most recent marine legislation in Sudan. It covers substantial areas of protection and management/co-management of marine biological resources but coastal biological resources are not covered. The law provides for co-management of marine resources under article (16) and (19) and also for meeting the obligations of relevant regional and international declarations and conventions under article (27), (28) and (29).

The Law was amended and signed by the Governor of the Red Sea State in February 2015. The amendment fills gaps in the original text of the law, in areas of protection of endangered species. Article (29) has been replaced with a new text to be read “*Sharks, marine turtles,*

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dolphins, dugong, and all other endangered species defined by regulations, shall not be caught, traded-in, transported, sold, displayed for sell or possessed”.

The amendment also added tougher penalties for breaches of Article 29 under article (33) which reads “*Confiscation of transportation means or fishing gear, or confiscation of tools and apparatus used for exhibition or selling any of the endangered species”.*

Despite this 2015 amendment there are still deficiencies in the law. Proposed amendments are presented in the recommendations section below.

3.1.7 Key legal indicators

The legal review indicates that there are two coastal and marine protected areas **primarily** declared for **biodiversity** protection within Sudan. Both of these are Federal Reserves declared under the Protection of Hunting and National Parks Act of 1986. No Red Sea State biodiversity reserves currently exist.

The 1986 Act does provide a potential framework supporting co-management but it only applies to designated areas, does not define co-management and does not apply to coastal and marine biological resources. Indeed the Act states that “*Wildlife*” does not include “*fish*” and the 1937 Marine Fisheries Ordinance amended 1975 specifies that “*Fish*” means “*any aquatic animal whether mammalian or not, and includes shell fish*”. It follows that the management of “*fish*” in protected areas such as Sanganeb and Dungonab gazetted under the 1986 Act is under the authority responsible for “*fish*” rather than the authority responsible for “*wildlife*”.

Protected area name	Yes/No/?	Law/regulation
Sanganeb	Yes	Protection of Hunting and National Parks, 1986.
Dungonab	Yes	Protection of Hunting and National Parks, 1986.

The legal review indicates that there is a legal basis for declaring fisheries refugia in Sudan under Article 6 of the Marine Fisheries Ordinance of 1937. Also, article (11) of RSS Marine Fisheries Law, 2008 amended 2015: The minister has the right to declare any area within the zone of the marine livings in RSS as closed area for fishing, in consultation with the relevant technical organs. However, no areas have been designated as fisheries refugia in the EEZ of Sudan.

Refugia name*	Yes/No/?	Law/regulation
No area declared as refugia	No	Article 6 of the Marine Fisheries Ordinance of 1937

*Certain biodiversity protection areas could also have a role as refugia if their management is compatible with both designations.

Fishing is allowed, under RSS legislation, in coastal and marine protected areas primarily designated for biodiversity conservation, including Federal Reserves, and is also allowed in other coastal and marine areas. Fishing by foreign nationals is allowed in the exclusive economic zone of Sudan. Fishing by nationals of Sudan is unclear outside the exclusive economic zone of Sudan.

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Fishing allowed?	Yes/No/?	Law/regulation
Coastal and marine PAs	Yes	Federal Marine Fisheries Ordinance of 1937 and its amendment of 1975 as well as Marine Fisheries Law, RSS, 2008, amended 2015*.
Coastal and marine refugia	?	No fisheries refugia are gazette in the EEZ of Sudan
Foreign nationals	Yes	Marine Fisheries Law, RSS, 2008, amended 2015.
Nationals outside EEZ	?	Unclear

* It is the only law used for managing the marine “fish” resources in Red Sea State (RSS). The RSS covers the entire marine area of Sudan.

Mariculture is allowed in coastal and marine protected areas primarily designated for biodiversity conservation and is also allowed outside these areas within the EEZ of Sudan.

Mariculture allowed?	Yes/?	Law/regulation
Coastal and marine PAs	Yes	Marine Fisheries Law, RSS, 2008, amended 2015.
Coastal and marine refugia	?	No fisheries refugia are gazette in the EEZ of Sudan
Outside coastal and marine PAs within the EEZ.	Yes	Marine Fisheries Law, RSS, 2008, amended 2015.

Mangrove use is not allowed either in coastal and marine protected areas primarily designated for biodiversity conservation or outside these areas.

Mangrove use allowed?	Yes/?	Law/regulation
Coastal and marine PAs	No	Marine Fisheries Law, RSS, 2008, amended 2015.
Coastal and marine refugia	?	No fisheries refugia are gazette in the EEZ of Sudan
Outside coastal and marine PAs within the EEZ.	No	Marine Fisheries Law, RSS, 2008, amended 2015.

The coastal and marine species that are currently protected against exploitation **throughout** the coastal and marine areas of Sudan are listed in Appendix V. The table below indicates which of the following species/groups are (yes), or, are not (no) protected or if their protection status is unknown (?):

Species/group	Yes/No/?	Law/regulation reference including year
Dugong	Yes	Marine Fisheries Law, RSS, 2008, amended 2015.
Whales and dolphin (all)	Yes	
Marine turtle	Yes	
Marine turtle eggs	Yes	
Hump-head wrasse ¹⁵	Yes	
Shark (all)	Yes	
Whale shark	Yes	
Manta ray	Yes	
Coral	Yes	
Mangrove	Yes	

The Sudan Marine Fisheries Law of 1937 (amended 1975) Amendment requires that corals, coral reefs, shells, and shell animals, and ornamental fish can only be collected or caught with a permit issued by the designated authority.

¹⁵Cheilinusundulatus

The agency primarily responsible for managing coastal and marine biodiversity protected areas is the Wildlife Police Administration (WPA). The WPA has federal and state level branches. The State Wildlife Police Administration (WPA) is responsible for managing the Federal Parks in Red Sea State in respect of “*wildlife*” under the 1986 Protection of Hunting and National Parks Act. However, the Act specifies that “*Wildlife*” does not include “*fish*”. Coastal and marine biological resources (“*fish*” as defined in the 1937 ordinance 1975 amendment) within the federal reserve of Dungonab and Sanganeb are, therefore, under the responsibility of the designated “*local authority*” which is presumed to be the RSS MFA.

The Agency (local Authority under the 1937 Act) for managing fisheries, and mangrove, in the Red Sea is the Marine Fisheries Administration (MFA), State Ministry of Agriculture, Animal and Natural Resources (SMAANR) of the Red Sea State (RSS). For social welfare and development it is the Directorate of Development (DoD) of RSS Ministry of Economic Affairs and Investment (SMEAI). The agency responsible for international fisheries matters (foreign nationals fishing in the Exclusive Economic Zone (EEZ) and nationals fishing outside the EEZ of Sudan is the RSS Marine Fisheries Administration (MFA).

A number of institutions and organs are currently involved in marine fisheries management, at both federal and State level of Sudan governance system. These institutions/organs are;

Marine Fisheries Administration (MFA) of Red Sea State (RSS)

MFA is under the State Ministry of Agriculture and Animal Resources. The RSS MFA is indicated to be the “*Local Fisheries Authority*” mandated for planning, policy formulation, training and overall supervision, conservation and management of the marine fisheries resources including aquaculture. However, the federal basis for its legal designation as the “*Local Fisheries Authority*” needs to be clarified.

Fisheries Training Institute (FTI)

FTI is a federal facility based in Khartoum under the Ministry of Agriculture and Animal Resources and Fisheries. It provides short-term training courses targeting fisheries officers and fishermen from the public and private sectors.

Fisheries Research Centre (FRC)

FRC is the main applied research institution within the Animal Resources Research Corporation which a branch of the federal Ministry of Science and Technology. FRC provides research services at State level through research Stations geographically distributed to cover strategic fisheries resources. The Red Sea Fisheries Research Station is based in Port-Sudan.

Wildlife Police Administration (WPA)

WPA is the designated institution for the enforcement of the Protection of Hunting and National Parks of 1986. WPA joined the marine fisheries management related institutions, but not the Marine Fisheries Authority of RSS, in 2004 following the 2004 presidential decree that declared the Dungonab-Mukawar island bay as a Federal Reserve. WPA is a federal police administration under the Ministry of Interior Affairs. Its jurisdiction before 2004 (declaration of Dungonab Federal Reserve) was limited to only terrestrial wildlife reserves.

Other collaborative institutions and support mechanisms include the following;

- **Local Universities and Higher Learning Institutions**
There are over 17 government universities and 30 private sector universities and colleges in Sudan. Several of these higher education institutions offer undergraduate and graduate courses and degrees in fisheries and marine sciences.
- **Higher Council for Environment and Natural Resources(HCENR)**
HCENR is under the federal Ministry of Environment and Tourism (FMET) and it acts as a national focal point for issues, programmes and international conventions/declarations related to environment conservation and biodiversity issues. Red Sea State government includes a Ministry of Environment and Tourism (SMET). SMET is in charge of the mandate of FMET in Red Sea State.

3.2 POLICY FRAMEWORK

Policy documents signal the intention to change, or propose to change, the law. The following provides a summary of any relevant policies proposing to change the current laws.

Documents supporting the policy review are listed in Appendix IV and are provided digitally.

3.2.1 National Biodiversity Strategy and Action Plan

The principal policy direction regarding the conservation of biodiversity in Sudan is the National Biodiversity Strategy and Action Plan (NBSAP) which responds to the requirements of the International Convention on Biological Diversity (CBD) to which Sudan is a signatory. The latest submission in 2000 only incidentally addressed issues of conservation of coastal and marine biological resources and no objective actions were proposed. A 2014 version is still pending approval. Much of the content of the 2014 version is reported to be reflected in the 5th national report from Sudan to the CBD dated 2014.

The 2000 NBSAP only mentions coastal and marine biological resources in general terms. It indicates that “*Maritime, marine and coastal legislation need to be enforced*” but does not provide any detail. No additional specific coastal and marine areas are recommended for protection and no additional coastal and marine biological resources (species) are proposed for particular protection.

The National Strategy section (p.48) specifies “*Revision of laws dividing power and revenues in relation to natural resources between the central government and state government to come up with the best situation that emphasize conservation and sustainable use*”. This issue continues to be relevant in view of the need to clarify Federal, State and Concurrent roles in the management of natural resources under the interim constitution.

Mention is also made of “*Development of national legislation to protect local communities, farmers and pastoralist rights to biological resources and their indigenous knowledge, practices and technologies*”. This implicitly, though not explicitly relates to co-management though not in respect of coastal and marine biological resources.

The NBSAP makes no mention of the need to comply with the core principles of the ecosystem approach or the FAO code of conduct for responsible fisheries including co-management, carrying capacity, spatial and temporal factors, long-term adaptive management including adaptive management for climate change and the delivery of Aichi and other international targets. The NBSAP needs to be updated to address all these gaps.

The vision of the 2014 NBSAP is “*Sustainable use of natural resources of Sudan, where biodiversity is valued, conserved, restored and sustainably used to maintain ecosystem services, sustain health and deliver benefits essential for all people of Sudan, and hence contributing to the economic and social development in the country*”, and its mission is “*By the year 2020, Sudan will have taken necessary measures to ensure conservation and restoration of all biodiversity components and maintenance of different ecosystems services through effective policy, legislative, financial, administrative and technical actions*”

The new NBSAP (Still not approved) has provided a set of general recommendations; of relevance to the review study are the following;

- Raising awareness among all stakeholders about the importance of biodiversity conservation and sustainable use.
- Adapting ecosystem approach in conserving and managing biodiversity components whenever feasible.
- Involving local communities in conserving and managing their local biodiversity components.
- Encouraging the private sector to invest in biodiversity components.
- Issuance of necessary national legislations for conservation and sustainable use of biodiversity taking into consideration the matters related to access and benefit sharing.
- The establishment of future protected areas should adopt the international categories of protected areas such as IUCN, Ramsar, Biosphere reserve and any other suitable forms.
- The establishment of community, private or institutional protected areas should be encouraged.
- Synergies and coordination should be made between all national institutions involved in biodiversity conservation.
- Strengthening community participation to improve community compliance and build ownership for resource protection and sustainability.
- Linkages should be developed with relevant regional and international organizations and institutions.
- The adoption and enforcement of strict laws and regulations against the introduction of alien species.
- Strict measures to control pollution and pesticides application should be enforced.

3.2.2 5th National Report to the CBD

Appendix 7 of the 5th national report lists actions comprising a thematic implementation plan for conservation of the biodiversity of wildlife, marine and inland water ecosystems.

Policy thematic action 8 specifies “*Enhance the role of the community in enforcing environmental laws (Aichi target 8).*”

Policy thematic action 15 specifies “*Encourage active participation of the local communities and authorities in formulating policies and management of the protected areas (Aichi Target 14)*”.

Conservation thematic action 4 specifies “*Introduce ecosystem-based fisheri*

es management to the protected marine parks (Aichi Target 6)”.

Whilst co-management and the FAO Code of conduct for responsible fisheries are not explicitly specified in the 5th National Report and the ecosystem approach is not mentioned in Appendix 7 many of the proposed actions help to deliver these key elements of strategic ecosystem management.

The fifth national report from Sudan to the CBD in 2014 identifies a number of threats to the ecosystems and biodiversity in Sudan, including to the coastal and marine biological resources of the Red Sea including those in the Dungonab bay Federal Reserve where:

- Severe over-fishing of sea cucumber and a number of mollusks species (*PERSGA/GEF 2004*).
- Intense fishing pressure at spawning and nursery sites for Najil (grouper) and other species especially at the southern end of Mukawar Island.
- Majority of mangroves are affected at various levels by camel grazing, felling and limb cutting.

The report indicates that continuation of such practices will lead to the loss of some important fisheries species and other marine resources. Also, the report points out that the increased coastal development and tourism investments pressurize and negatively impact the marine ecosystem and the flora and fauna it contains and eventually lead to change in the habitat of the marine livings.

The fifth report to CBD also indicated that the NBSAP has been updated in February 2014 to capture the Aichi Targets and the new NBSAP of Sudan will serve as guidance for conservation of biodiversity of the country. However, it still has to be approved.

3.2.3 Draft Sudan Marine Fisheries Policy (SMFP)

A draft Sudan Marine Fisheries Policy (SMFP) was prepared in 2012 with EU funding and implemented by Pescares Italia Srl. The draft is pending passage by the federal Legislative Council and endorsement of the federal minister of Agriculture, Animal and Natural Resources and so is not official.

Co-management -as a tool for management of marine fisheries- is one of the six pillars of the strategy. The draft SMFP supports a decentralized approach to management of the marine and coastal resources to better control illegal fisheries, overfishing and stock decline. The policy builds on engaging local communities and fisheries cooperatives in management of the marine resources and on promotion of ownership of marine resources by them which are key elements for a successful model of co-management of the resources. The draft SMFP objectives, challenges and strategies for the co-management of marine and coastal resources are as follows:

Objectives

1. Establish effective community fisheries associations nationwide.
2. Strengthen organizational and fisheries management capacities of community fisheries associations.
3. Implement participatory fisheries information collection and analysis systems.
4. Implement local fisheries management plans.
5. Eradicate illegal fisheries practices.
6. Establish participatory control of access to fisheries.

Challenges

- a. Uncoordinated establishment of community fisheries associations.
- b. Weak organizational capacity of community fisheries associations.
- c. Weak linkage between different community fisheries associations.
- d. Inadequate fisheries management capacity of local governments and community fisheries associations.
- e. Inadequate fisheries information collection and analysis for management purposes.
- f. Fisheries illegalities remain widespread and common including unlicensed fishing vessels and fishers.
- g. Fish stocks show signs of overfishing.

Strategies

- Establish effective community fisheries associations nationwide:
 - i. The State and local governments will support and guide fisheries communities in establishing community fisheries associations on marine and inland waters in accordance with national guidelines and legislation.
 - ii. The Federal Government will ensure that there will be mandatory membership of community fisheries associations by all persons engaged in commercial fisheries activities on marine and inland waters and their shores and that all members and their fishing and fish transport vessels will be licensed.
 - iii. The Federal Government, in collaboration with State governments, will support and guide community fisheries associations on marine and inland waters to form higher level associations up to national level and incorporate representatives of these higher associations as members of fisheries management organizations.
- Strengthen organizational and fisheries management capacities of community fisheries associations.
 - i. The Federal Government, in collaboration with State governments and training specialists, will design and implement a national training programme to improve the

- organizational and fisheries management capacities of community fisheries associations and local governments.
- ii. Community fisheries associations will apply skills acquired from training by developing and implementing local fisheries management plans and reporting progress and impacts to local governments and relevant fisheries management organizations.
- Implement participatory fisheries information collection and analysis systems
 - i. Community fisheries associations will provide information and data required for fisheries management purposes in accordance with national guidelines and fisheries management plans.
 - ii. State and local governments will collect, analyze and present fisheries information in agreed reporting formats through relevant fisheries management organizations to government.
 - Implement local fisheries management plans
 - i. Representatives of community fisheries associations and/or their higher level associations will serve as members on reservoir fisheries management organizations to represent the views and interests of communities in making and reviewing like-wide plans.
 - ii. Community fisheries associations will develop local by-laws and administrative rules and incorporate these in fisheries management plans in consonance with Federal and State legislation.
 - iii. Community fisheries associations on inland waters will periodically review Federal and State fisheries legislation relating to their areas of jurisdiction to be able to advise their association networks and reservoir fisheries management organizations.
 - Eradicate illegal fisheries practices
 - i. Community fisheries associations will promote compliance by their members with fisheries legislation in their area of jurisdiction.
 - ii. State and local governments, in collaboration with community fisheries associations, will undertake regular fisheries patrol and enforcement in accordance with procedures approved by a national code of practice.
 - Establish participatory control of access to fisheries
 - i. With due regard for flexibility in responding to changing environments, and with due regard to adopting a precautionary approach to management, community fisheries associations, in accordance with local management plans, will regulate fishing effort in terms of gear amount, numbers of fishermen and fishing vessels as agreed by the relevant fisheries management organization.
 - ii. State and local governments will use participatory fisheries licensing for fisheries management purposes to regulate fishing effort where agreed under relevant fisheries management plans.

This model of co-management in the SMFP for the marine fisheries of Red Sea State emphasizes co-ordination between federal government, State government and local communities/fisheries associations, ignoring a very important level in the governance system

which is the Locality and the Village Popular Committee. The village Popular Committee is a civil community-based structure that is empowered by the Local Governance Law.

In respect of the focus for the SEM Project the capacities of Dungonab and Mohamed-qol village popular committees should be built to play a supportive role in the co-management of the Donganab Federal Reserve coastal and marine biological resources. Once legally enabled and demonstrated the co-management model could be replicated in the other fisher communities along the Red Sea coast of Sudan.

3.2.4 Draft UNIDO Marine Fisheries Strategy

The marine fisheries strategy (still draft) which was developed by UNIDO in 2013 under the project “Recovery of Costal Livelihoods in Red Sea State, Sudan” points out that according to the existing information potential resources are between 6000 and 35000 metric tons with MSY of 10000 metric tons recommended by FAO (2006). The catch estimate also varies according to the information source. The Marine fisheries Administration (MFA) of the RSS estimates the fish caught in Sudan waters at 500 metric tons for the artisanal fisheries and 600 metric tons for the semi-industrial fisheries. Therefore, key elements of marine resources management like, the actual potentiality of resources and the minimum sustainable yield (MSY) are calculated based on estimations that varies according to the source of information, the matter which indicates that the fisheries stocks are not known as well as the catch and accordingly the MSY cannot accurately be determined and the fisheries governance in general and management becomes very weak.

3.2.5 Key policy indicators

No additional areas were proposed for biodiversity protection in the 2000 National Biodiversity Strategy and Action Plan (NBSAP). The 5th National Report to the CBD Section 7.4.2.5 of the 2014 NBSAP specifies “*Protected areas should be established in Red Sea salt marches and mangroves*”. However, no specifics are given.

Proposed protected area policy change?	Yes/No/?	Policy document name and year
No PAs proposed	No	Sudan Marine Fisheries Policy, November 2012 (Draft)
Other areas	Yes	NBSAP (no)/5 th National Report Section 7.4.2.5 specifies “ <i>Protected areas should be established in Red Sea salt marches and mangroves</i> ”.

There are currently no policies to introduce new fishing systems within or outside biodiversity protection areas either for nationals or for foreigners by species, area, time or stakeholder sub-group although draft policies does signal the need to introduce co-management systems. There is no policy to change the current legislation that allows fishing by foreign nationals in the exclusive economic zone of Sudan. There is no policy to change the current legislation to clarify any conditions that might be set for fishing by Sudanese nationals outside the exclusive economic zone of Sudan.

Fishing allowed policy change?	Yes/No/?	Policy document name and year
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Coastal and marine PAs	No	Not specified in documents reviewed
Coastal and marine refugia	No	Not specified in documents reviewed
Foreign nationals	No	Not specified in documents reviewed
Nationals outside EEZ	No	Not specified in documents reviewed

There are no policies to introduce legislation to designate any coastal and marine areas **primarily** as fisheries refugia.

Proposed refugia policy change	Yes/No/?	Policy document name and year
None	No	There are no areas proposed as fisheries refugia in the marine waters of Sudan.

There is no policy to change the current legislation that allows **mariculture** in coastal and marine protected areas primarily designated for biodiversity conservation and in the EEZ of Sudan outside these areas.

Mariculture allowed policy change?	Yes/No/?	Policy document name and year
Coastal and marine PAs	No	No policy to change the legislation allowing mariculture.
Coastal and marine refugia	No	No fish refugia area is defined in any policy reviewed
Other areas	No	No policy to change the current legislation allowing mariculture.

There is no policy that **mangrove** use should be allowed within Sudan.

Mangrove use policy change?	Yes/No/?	Policy document name and year
Coastal and marine PAs	No	Not specified in documents reviewed
Coastal and marine refugia	No	Fisheries refugia not specified in any policy reviewed
Other areas	No	Not specified in documents reviewed

There are no plans to change the list of coastal and marine species that are currently protected against exploitation **throughout** the coastal and marine areas of Sudan.

Species/group protection policy change?	Yes/No/?	Policy document name and year
Dugong	No	Already protected under the RSS Fisheries Law. No proposed changes in the 2000 NBSAP or the 2014 5 th National Report to the CBD.
Whales and dolphin	No	
Marine turtle	No	
Marine turtle eggs	No	
Hump-head wrasse ¹⁶	No	
Shark	No	
Whale shark	No	
Manta ray	No	
Coral	No	
Mangrove	No	

¹⁶Cheilinusundulatus

There is no evidence for any policy to change the agency mandates for managing coastal and marine biodiversity protected areas, fisheries, mangrove, or social welfare and development. There is no evidence for any policy to change the agency responsible for international fisheries matters.

3.3 CO-MANAGEMENT SCHEMES

The review was unable to identify any example of an **operational** co-management scheme involving coastal and marine biological resources anywhere in Sudan which is not surprising given the lack of a clear legal enabling framework allowing restriction of fishing licenses to particular stakeholder subgroups according to co-management criteria.

A potential co-management scheme involving management of Donganab and Sanganeb Federal Reserves operated from July 2005 to October 2008. The parties to the scheme were an international NGO, African Parks, and the Wildlife Police Administration. However, it could not be sustained mainly because it lacked a legal enabling framework to allow it to be recognized legally.

A potential co-management scheme involving pearl mariculture in Donganab Federal reserve was in place between 1996 and 2008. However, the scheme did not involve any contribution to management of the Federal Reserve and is also no longer operational.

The total number of **potential** co-management schemes involving coastal and marine biological resources identified in the review is twenty (20). Details are provided in Appendix VIII. These twenty schemes involve eighteen local fisheries cooperatives; one marine tourism operation and one mariculture farm. Four of the potential schemes occur in coastal and marine biodiversity protected areas. Two of these are fisheries related, one relates to marine tourism and one to mariculture. Sixteen of the potential schemes (80%) occur outside these biodiversity protected areas and within the EEZ of Sudan. These are all fisheries related. None of the potential schemes involve activities outside the EEZ of Sudan.

Potential co-management schemes in coastal and marine biodiversity PAs	Number	%
Fishing	18 (*)	90
Mariculture	1 (**)	5
Mangrove	0	0
Marine tourism	1 (**)	5
Other	0	0
Total	20	100

(*) Fisheries Cooperatives registered and operational along the coast of Red Sea

(**) Both can be more than one company.

3.3.1 Operational co-management case study

There is no operational co-management scheme in the marine and coastal area of Sudan.

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3.3.2 Potential co-management case study

CASE STUDY OF A POTENTIAL CO-MANAGEMENT SCHEME

Dungonab Fisheries Cooperative and Oyster Farm

The picture on the right upper box shows landing site for the Dungonab Fisheries Cooperative which, with the local Popular Committee, can play a substantial role in co-management of the coastal and marine biological resources in Dungonab-Mukawar bay.

1. The activity takes place in Dungonab Federal Reserve.
2. Resource used fish, primarily.
3. Resource is used in artisanal manner.
4. The members of Dungonab Fisheries Cooperative are using the resources as a means of livelihood.

There scheme would require a change in law so that licenses to fish could be restricted to meet particular, to be specified, co-management criteria.

Dungonab, 173 K.ms North Port Sudan



Fish Market in Port Sudan



Dungonab 26/12/2014

The majority of Dungonab Fisheries Cooperative members/stakeholders expressed an interest in taking a role in the co-management of the biological resources in Dungonab MPA including quotas by number of fishers, species, area and time. It was indicated that all that needed was to build the capacity (organizational and management skills) and offer incentive/motivation based on a clear agreement signed between the Locality, Popular Committee and the Cooperative to give priority access to the co-operative.

3.4 STAKEHOLDER REGISTRATION

Identification (registration) and objective participation of stakeholders in the management and use of coastal and marine biological resources is central to effective co-management and compliance with the FAO “Code of Conduct for responsible fisheries” and the CBD “Ecosystem Approach”. This review, therefore, included interviews with a number of key stakeholders concerning livelihoods and quality of life.

Of the sixty (60) stakeholders interviewed sixty (60) (100%) were males and zero (0%) were females. No females were interviewed due to the lack of female interviewers and social norms that mean that male non-family members cannot meet with females.

None of the stakeholders interviewed (0%) were involved in one, or more, **operational** co-management schemes using coastal and marine biological resources (See Appendix IX).

Of the sixty (60) stakeholders interviewed sixty (60) were involved in one, or more, **potential** co-management scheme using coastal and marine biological resources. Of the sixty (60) potential schemes 100% were related to national fishing and zero (0%) to international fishing (see Appendix X).

Potential co-management schemes involving stakeholders who were interviewed*	Number	%
Fishing – National	60	100%
Fishing – International	0	0
Mariculture	0	0
Mangrove	0	0
Marine tourism	0	0
Other	0	0
Total	60	100%

* Sample size of 60stakeholders

The following table summarizes the results from interviews of sixty (60) stakeholders concerning significant livelihoods (see Appendix X). 100 % of interviews identified national fishing as a significant livelihood and none identified international fishing.

Significant livelihoods	Number *	%
Fishing – National	60	92.3%
Fishing – International	0	0%
Mariculture	0	0%
Mangrove	0	0%
Marine tourism	0	0%
Other one for each of agriculture, camel rearing, casual labor, shell technician and government employee)	5	7.7%
Total	65**	100%

** Sample size is sixty (60) stakeholders.

* Number of livelihoods can exceed the stakeholders’ number since stakeholders can have multiple significant livelihoods.

It is interesting to note that none of the stakeholders interviewed had other significant livelihoods indicating that the sample group is completely dependent on fishing.

Significant livelihood concerns of the 60 stakeholders interviewed (29 from Dungonab and 31 from Mohamed-qol) are summarized in the list below;

1. Brokers/traders offer low prices for the catch (fishing trip is funded by traders).
2. Limited/no other alternative income generating activities (IGAs) /livelihoods to fishing.
3. Foreign fishers/big boats practice trawling fishing and catch sharks and protected species.
4. Marketing problem, low capacity of the local market and expensive transportation to Port Sudan.
5. Income is low and poverty is high.
6. Lack of funding. Funding from traders who exploit fishers.
7. Limited number of boats.

The following table summarizes the results from interviews of sixty (60) stakeholders concerning quality of life indicators (see Appendix XII).

Quality of life indicator	Indicator (brackets) – stakeholder numbers*		Median
	Maximum	Minimum	
Refrigerators (number)	(1) - 3stakeholders	(0) - 57 stakeholders	1.5
Drinking water (days' supply)	(7) 29 Stakeholders	(1) 8 stakeholders	4
Primary health (km to)	(>3)- 2 stakeholders	(<1) -58 stakeholders	<1.5
Primary education (km to)	(>3) - 1 stakeholders	(<1) - ? stakeholders	<1.5
Main cooking fuel (oil – yes/no/?)	(No) – 60 stakeholders	(No) - 60 stakeholders	No
Main cooking fuel (gas – yes/no/?)	(Yes) – 43 stakeholders	(No) – 17 stakeholders	Yes
Main cooking fuel (wood – yes/no/?)	(Yes) – 11 stakeholders	(No) – 49 stakeholders	No
Main cooking fuel (charcoal – yes/no/?)	(Yes) – 50 stakeholders	(No) – 10 stakeholders	Yes
Cooking fuel (mangrove - yes/no/?)	(Yes) – 3 stakeholders	(No) – 57 stakeholders	No
Since ate marine animals (days)	(<1 day) – 24stakeholders	(>1 day) – 36 stakeholders	>1 day

* Sample size of sixty (60) stakeholders.

High levels of poverty are suggested in the two communities located inside the Dungonab Federal Reserve, in Mohamed-qol and Dungonab villages by the very poor housing structures people live in. This is now changing. State government has constructed a model village in Mohamed-qol which is now inhabited and is in the process of constructing a model village in Dungonab. Although, basic services (water, education and health) facilities are found in both communities official reports/indicators signify poor quality of life where the illiteracy rate in the area is 89% and there is limited economic activity. Sources of drinking water are a desalination water station which is functioning at low efficiency, and deep boreholes which have low water quality. The water is purchased from tankers that visit households of the two villages on a daily basis once a day. Source of electricity power is a generator, one in Dungonab and one in Mohamed-qol which supplies electricity at average of 3 hours a day (from 7 – 10 pm) and this might explain the limited number of fridges owned by families in Mohamed-qol. For example none of the households of the sample in Dungonab owns a fridge. Over 72% of the sample depends on liquefied petroleum gas (LPG) as source of fuel

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for cooking but refilling of gas cylinders is done in Port Sudan town which is about 173 kilometers and 150 kilometers away from Dungonab and Mohamed-qol villages, respectively. Three of the sample interviewed stated that for fuel they get Shoura (mangrove) from the sea. Out of the 60 interviewees, 24 indicated that they have eaten marine animal within less than one day (40%), 28 of the sample indicated that they have eaten marine animal within 2 - 7 days (approx. 46%), 7 of the sample indicated that they have eaten marine animal within 10 – 30 days (approx. 12%) and there was only one interviewee who indicated that he has eaten marine animal before 60 days (approx. 2%). Those who have eaten marine animal within 1 – 7 days were 52 interviewees of the total sample of 60 (approx. 86%).

In general the quality of life is not good and poverty is high, but the resources and physical assets are promising to enrich the life of the local people in Dungonab and Mohamed-qol villages.

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3.4.1 Stakeholder example

Name of the stakeholder: Wagi Ali Mohamed

Reef fisher

The picture on right is of Wagi Ali Mohamed, the Omda (Customary Leader) of Mohamed-Qol.

1. Wagi is the community leader and at the same time a fisher and a member of Mohamed-Qol Fisheries Cooperative, a 62 years old male, married and father for five children (3 girls and 2 boys).
 2. Wagi Ali has lived in Mohamed-Qol for the last 25 years of his life.
 3. Wagi Ali is fishing for bony reef fish.
 4. Catch is sold to brokers/traders who fund the fishing trip. Part of the catch is used for household consumption.
 5. Key Livelihood Concerns are:
 - a- Low prices of catch.
 - b- Limited livelihood alternatives.
 - c- Funding from traders who exploit fishers.
- His opinion on fisheries co-management is;
It is necessary to have monitoring role, so as to protect resources from foreign fishers from neighboring countries.
6. Wagi Ali has no concerns about the future.
 7. Wagi Ali is optimistic about future because many development projects have been implemented recently and changed positively the life of local people.



The stakeholder lives in Mohamed-Qol village, about 150 kilometers north of Port Sudan on the highway to Egypt, along the coast of Red Sea in Sudan



Although both villages, Dungonab and Mohamed-Qol, suffers limited livelihoods alternatives but the later has access to rain-fed agriculture/grazing land when it rains in winter. Ice plant will serve multi livelihood purposes (fish preservation as well as creation of new market businesses). The highway to Egypt also can contribute much to creation of small cross-border trade.

4. DISCUSSION

Figures provided by the RSS MFA and the draft UNIDO marine fisheries strategy suggests that marine fisheries resources are currently underexploited. However, these figures are not based on robust data. In addition the figures are not stock specific and target species such as grouper could be overexploited. Investing in fisheries development based on overall figures is therefore risky. Management planning, therefore, has to be stock-specific and based on precautionary criteria until such time as more robust data can be obtained. This is particularly so for stocks that sustains traditional/artisanal livelihoods in communities that are poor.

4.1 LEGISLATION

Co-management is defined as *“a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources.*

The review was unable to identify any example of an **operational** co-management scheme involving coastal and marine biological resources anywhere in Sudan.

A potential co-management scheme involving management of Dungonab and Sanganeb Federal Reserves operated from July 2005 to October 2008. The parties to the scheme were an international NGO, African Parks, and the Wildlife Police Administration. However, it could not be sustained mainly because it lacked a legal enabling framework to allow it to be recognized legally.

The Marine fisheries ordinance of 1937 and its amendment of 1975 enables the specification of a *“local authority”* responsible for the management of *“fish”* resources which are defined in the 1937 ordinance as *“any aquatic animal whether mammalian or not, and includes shell fish”*. The 1960 Marine Fisheries Regulation based on the ordinance designates the Governor of Kassala Province as the *“Local Authority”*. The basis for designating the MFA of RSS as the *“Local Authority”* in the RSS Fisheries Law of 2008 as amended 2015 is the interim constitution which does not specify which natural resources are federal, state or concurrent. The legal basis needs to be clarified.

Based on the legal review the key limitations to introducing the co-management of coastal and marine biological resources are firstly that there are no current legal mechanisms for restricting artisanal/traditional fishing licenses. Commercial fishing can be restricted but not in respect of particular stakeholder groups. Neither type of fishery has conditions for delegating the management of resources to the user of these resources in support of co-management.

Protection of Hunting and National Parks Law of 1986 does provide a potential framework supporting co-management but it only applies to designated areas, does not define co-

management and does not apply to coastal and marine biological resources since the definition of wildlife specifically excludes fish.

In addition, it is unclear who the “Local Authority” is, in respect of developing and implementing these legal mechanisms.

The Local ordinances issued by Red Sea State local authorities based on the State marine fisheries laws-2008 (amended in 2015) for organizing trawling fisheries are well implemented by MFA and marine Security Organ. But in general, Marine fisheries legislations are either obsolete or needed to be updated to capture the global developments and commitments in regards of marine and coastal resources and conservation and management and protection of habitats including coral reefs, mangrove ecosystem, sea grass beds, and to control marine pollution. However, the enforcement of marine laws and regulations remains the core issue in the management and protection of the marine and coastal resources/MPAs. For that, the capacity of all relevant regulatory authorities for enforcement of marine legislations should be built. As well, updating the regulations and laws provisions and division of roles and responsibilities of the relevant marine institutions mandated for the ecosystem protection and fisheries management is crucial element.

Anyhow, the Dungonab Federal Reserve falls under the jurisdiction of the Administration of Wildlife Police within the framework of the Protection of Hunting and National Parks – 1986, which restricts access of anybody without a permit to the reserve area other than the member of the wildlife police force, including the MFA personnel, although the current text of the law entails no articles for managing and protection of marine resources. On the other hand, RSS Marine Fisheries Law, 2008 (and its 2015 amendment), is a comprehensive and powerful law and of much relevancy to contemporary issues of marine biodiversity and management issues, but it will be dominated by the wildlife act – 1986, the situation which might trigger a conflict between the two institutions. Conflict over revenues, as well, is probable between the Wildlife Police Administration as a federal entity and the MFA as a State entity; this is in addition to the already existing friction between federal government and State government over the revenues of natural resources including marine and coastal resources in RSS. This situation of conflicting jurisdictions and responsibilities is not in favor of resources co-management.

Generally, based on the Sudan 2005 interim constitution, the Law of Land Identification and Survey for 1905, Law of Settlement and Registration of Land for 1925 and Law of Expropriation of Land for 1930, the marine biological resources, including fish and the maritime areas/lands are owned by the national/federal government and it has the primary responsibility for managing these resources and lands. But for investment and utilization of the resources, including marine ones, the Sudan interim constitution and the relevant federal laws give States powers over; State land and state natural resources, the development, conservation and management of State natural resources and State forestry resources, making laws in relation to agriculture within the State and recreation and sport within the State, in harmony with the federal constitution and laws.

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Still, there is need to put in place a regulation/law to make clear the relationship and responsibilities and to avoid overlapping or domination of one law or institution over the others jurisdictions, responsibilities and roles.

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4.2 POLICY

Currently, Sudan has no approved policy for marine fisheries although there is a draft National Marine Fisheries Strategy (NMFS) under consideration. These draft strategies, together with the 5th National Report to the CBD in 2014, are strongly supportive of the use of co-management as a tool for fisheries management. However, a clear policy roadmap for delivering co-management is not provided.

Whilst co-management and the FAO Code of conduct for responsible fisheries are not explicitly specified in the 5th National Report and the ecosystem approach is not specifically mentioned in Appendix 7 of this 5th National Report many of the proposed actions help to deliver these key elements of strategic ecosystem management.

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5.0 RECOMMENDATIONS

5.1 PERSGA CO-ORDINATION

Issue: Weak coordination mechanisms at the national, regional and international levels have resulted in unsustainable use of biological resources, including fisheries resources, shared between the countries that are party to the Jeddah Convention.

Recommendation: PERSGA should take a lead role in facilitating coordination between the countries of the region to deliver sustainable use of shared and trans-boundary biological resources, recognizing and addressing the threats from climate change and to minimize the illegal, unreported and unregulated (IUU) fishing and to alleviate poverty where this can be achieved through the sustainable use of these biological resources.

Actions should include:

- i. Agreement to and support for delivery of the draft Memorandum of Understanding concerning regional cooperation in management of fisheries and aquaculture in the Red Sea and Gulf of Aden taking note of the points below.
- ii. Generating the lists of species to be included in Annexes 1 and 2 of the 2005 Jeddah Convention Protocol Concerning the Conservation of Biological diversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden.
- iii. Mobilizing resources *to provide* training workshops on stock assessments of major PERSGA region fish stocks, with a particular emphasis on pelagic species and species that migrate to spawn, and developing and delivering Regional Plans of Action for these stocks.
- iv. Supporting the development of Jeddah Convention standards for fishing laws and regulations, a poverty index for coastal fisher communities, co-management systems, IUU, Vessel Monitoring Systems (VMS) and other monitoring, control and surveillance (MCS) systems.

5.2 INTERIM CONSTITUTION

Issue: The Interim National Constitution does not clearly specify which coastal and marine biological resources are Federal, which are State and which are concurrent. Subordinate legislation does not clarify the allocation.

Recommendation: It should be confirmed / clarified whether:

- i. The Federal Reserves of Sanganeb and Donganab and the “fish” wildlife (coastal and marine biological resources within them) are under Federal control or State “Local Authority” control;
- ii. The fish wildlife resources (coastal and marine biological resources) outside of Federal Reserves to the EEZ (or such other boundary as may be determined) are under RSS control and are subject to RSS law;
- iii. Climate change is a significant threat to food security and to the environment and to the future social and economic development of the coastal and marine biological resources of Sudan;

5.3 LOCAL GOVERNANCE LAW OF RED SEA STATE 2010

Issue: The Local Governance Law of the Red Sea State (2010) allows for the recognition of the principles of co-management. However, it does not provide a mechanism for allocating licenses for using coastal and marine biological resources.

Recommendations: The Local Governance Law of the Red Sea State (2010) should be amended in respect of the following articles;

- i. Chapter (7) article (32/C: Other Sources of Revenues/6) to be amended to include levies and fines on use or misuse of the marine resources.
- ii. Chapter (8) article (39/15) to be amended by adding “co-management of marine resources jointly with fisher cooperatives.
- iii. Table (h) article (17) adding “the marine resources” for Localities bordered by the Red Sea.

5.4 PROTECTION OF HUNTING AND NATIONAL PARKS LAW of 1986

Issue: The Protection of Hunting and National Parks Law of 1986 makes no mention of coastal and marine biological resources or of co-management as a management tool.

Recommendations: The Protection of Hunting and National Parks Law of 1986 should be amended in respect of the following articles:

- i. Article (3): the definitions should redefine “Wildlife” to include coastal and marine biological resources according to the definition in the Jeddah Convention Protocol on protected areas and the definition of “fish” in the Marine Fisheries Ordinance 1937 amended 1975;
- ii. Article (3): the definitions should include “co-management”;
- iii. Article (4): objectives to reflect, as required, the revised definition of wildlife;
- iv. Article (4): objectives to recognize co-management as a wildlife management tool

- v. Article (4): objectives to deliver compliance with international treaty obligations such as the CBD, RAMSAR, Jeddah Conventions, CITES ...etc.
- vi. Article (7): to be amended so as to recognize the primacy of traditional and sustainable use of wildlife in licensing use of this wildlife and the co-management of the use of this wildlife;
- vii. Article (17): prevents hunting of wildlife/terrestrial animals provided in schedule (1), (2) and (3) of the law. It should be amended to include coastal and marine biological resources;
- viii. Article (24): regulates the issuance of licenses and permits for hunting wildlife. It should be amended to cover coastal and marine biological resources.
- ix. Article (36): None of the other marine fisheries laws/acts whether federal or State level, mentions the possession of resources in its full text, but this article of the Wildlife Ac of 1986 does “*Anybody shall not possess any protected animal whether dead or alive, or a part of it or an ornamental piece of it, unless a valid license or a permit is obtained to do so*”. This article should be amended to include coastal and marine biological resources.
- x. There should be recognition that climate change is a significant threat to wildlife and that management of wildlife should address this threat.

5.5 SUDAN MARINE FISHERIES LAW OF 1937 AMENDED 1975

Issue: The Sudan Marine Fisheries Law of 1937 (1975) amendment needs updating to reflect more recent Federal laws and their amendments and international obligations and the requirement to amend the Marine Fisheries Regulation of 1960 in respect of the “*Local Authority*”.

Recommendations: The Sudan Marine Fisheries Law of 1937 (amended) 1975 should be further amended as follows:

- i. Specification of those coastal and marine biological resources, their locations and other attributes that are Federal, or State and /or concurrent natural resources including designation of the “*Local Authority*” in an amendment to the Marine Fisheries Regulation 1960;
- ii. Recognition of the principle that coastal and marine biological resources can be overexploited and that licensing to access and use these resources should be restricted to particular stakeholders under particular conditions to ensure sustainable use and the equitable sharing of benefits;
- iii. Recognition that traditional and local sustainable use is a key eligibility factor in licensing;

- iv. Definition and application of co-management as a fisheries management tool;
- v. Arrangements for enabling the federal, state and concurrent administration¹⁷ of restrictive licensing under co-management or other means of the use of coastal and marine biological resources by category of area including federal Reserves¹⁸, state reserves, refugia, areas for mariculture, traditional use areas, other special areas and outside these areas within the coastal zone and EEZ and in respect of international trans-boundary matters and by category of stakeholder, target species, gear, catch quantity, geographic location, time and contribution to management that delivers sustainable use based on best available evidence;
- vi. Specification of species that should only be extracted for scientific purposes and a system for licensing and monitoring extraction (list based on CITES list, Red Sea Fisheries Law etc., and notification of this list to PERSGA);
- vii. Arrangements for the federal, state and concurrent administration of national fishing outside the EEZ of Sudan and foreign national fishing within the EEZ of Sudan;
- viii. Recognition of strategic environmental assessment (SEA) and environmental impact assessment (EIA) as a tool for ensuring the sustainable development of coastal and marine biological resources;
- ix. Arrangements for the federal, state and concurrent administration of international treaties relating to coastal and marine biological resources to which Sudan is a party;
- x. Definition and designation of fisheries refugia to protect spawning migration, spawning areas, nursery and recruitment areas, feeding grounds and other important areas;
- xi. Definition and designation of mariculture areas, including controls of the use of exotic and alien species;
- xii. Definition and designation of traditional use areas and uses;
- xiii. Recognition of climate change as a significant issue with respect to the sustainable use of coastal and marine biological resources including fisheries;
- xiv. Recognition of international certification as a fisheries management tool and certification as a licensing criterion and delivery of certified fisheries as a target;

¹⁷Including the role of the wildlife police, MFA, technical, research and educational institutions, marine security etc.

¹⁸ It is recommended that federal biodiversity reserves should be under federal management by the administration responsible for biodiversity and not fisheries,

5.6 RED SEA STATE MARINE FISHERIES ACT, 2008 AMENDED 2015

Issue: The Red Sea State Marine Fisheries Act, 2008 (2015 amendment) needs further amendment in respect of specifying coastal and marine biological resources, State ownership and management of these resources where appropriate and support for co-management.

Recommendations: The following amendments are proposed to the Red Sea State Marine Fisheries Act, 2008 (2015 amendment).

- i. Inclusion of recommendations for amendments to the Sudan Marine Fisheries Law of 1937 amended 1975
- ii. The ownership of marine and coastal resources, as factor for maintaining and sustaining protection and conservation of resources.
- iii. Technical and administrative and protection responsibilities and roles should clearly be set for Administration of Wildlife Police, MFA and other technical institutions like the Marine Research Station and Faculty of Marine Sciences-University of RSS.
- iv. Legalize the role of the Marine Security Department in protection of marine resources, particularly within the territorial waters and exclusive economic zone (EEZ) of Sudan.
- v. Regulation of national fishing outside territorial waters and foreign nationals fishing inside the country's sea.
- vi. Establishment of a coordination mechanism to harmonize and synergize with regional organizations on marine and coastal resources conservation and management.
- vii. In consultation with relevant technical institutions, areas for Mariculture should be identified, and designated, to reduce the pressure on the natural habitats, coral reef and other fragile marine resources. Also, to regulate marine mining areas and to identify marine and coastal areas for the communities traditional uses.
- viii. Inclusion of environmental impact assessment (EIA) as prerequisite for any investments within the marine MPA and coastal zone.
- ix. Laws and regulations of registration of fisheries cooperatives and associations should be referred to in any amendment to this law. As well as referring to relevant environmental laws, strategies and action plans.
- x. A local ordinance to be issued for the declaration of new MPA in the southern part of the Sudan Red Sea coast (Agig area), between Ra's Asis (approx. N 18 19, E 38 05) to Quban Island and to Jazirat(Island) Arrih and Ra's Abid (approx. N 18 07, E 38 22)

5.7 NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

Issue: The principal policy direction regarding the conservation of biodiversity is the National Biodiversity Strategy and Action Plan (NBSAP) which responds to the requirements of the International Convention on Biological Diversity (CBD) to which Sudan is a signatory. The latest submission in 2000 only incidentally addresses coastal and marine biological resources and no objective actions are proposed.

Recommendations: The NBSAP should be updated to propose actions to deliver compliance with the Ecosystem Approach, United Nations Food and Agricultural Organization (FAO) Code of Conduct for Responsible Fisheries and the Aichi 2020 targets.

5.8 OTHER

Issues: There are a number of challenges facing the management of marine fisheries. These include:

- Weak capacity of MFA to cover the major fishing areas for monitoring and surveillance.
- Obsolete and out dated regulations.
- Weak coordination between the institutions related to management of marine resources.
- Unreliable information on catch and fishing capacity.
- Fishing not monitored and data not compiled.
- Funding and budget constraints for fisheries management institutions.

Recommendations: Immediate actions needed to be taken to support implementation of co-management. These include, but are not limited to;

- i. Coordination amongst marine resource management organs to clearly identify each partner's roles and responsibilities regarding the coastal and marine biological resources management;
- ii. Marine resource stock assessment studies needed to be undertaken urgently, in order to know the resource carrying capacity and to scientifically determine the MSY and other resource/fisheries management baselines (see PERSGA recommendations);
- iii. Establish new sustainable funding mechanism for coastal and marine biological resources management and to develop new management approaches that cost less and give more consideration to coastal and marine biological resources co-management mechanisms;
- iv. Strengthen the capacity of the fisheries management institutions including the establishment of fishing surveillance areas (see PERSGA recommendations);
- v. Promote awareness among the fisheries communities towards responsible fishing and fisheries co-management.

APPENDIX I: CONSULTANT TERMS OF REFERENCE

Regional Organization for the Conservation of Environment of the Red Sea and Gulf of Aden (PERSGA)

Terms of Reference for Individual Consultants NATIONAL CONSULTANTS FOR REVIEWING LEGISLATIONS, STRATEGIES, POLICIES AND MANAGEMENT PLANS FOR FISHERIES SECTOR IN SUDAN

Under the Project Strategic Ecosystem Management of the Red Sea and Gulf of Aden

1. Background

The announced consultancy services are needed for execution of the Project Strategic Ecosystem Management of the Red Sea and Gulf of Aden referred to hereafter as the Project or “SEM”. The Project is GEF financed, implemented by the World Bank and executed by PERSGA. The Project development objective is to improve management of marine resources in the Red Sea and Gulf of Aden in selected MPAs building on resource protection, incentive systems for communities and the harmonization of the knowledge base of marine resources between PERSGA member countries. This will be achieved through institutional Technical Assistance with on ground activities through application of Ecosystem Based Management principles. The SEM Project contains four components, which are tailored to the most urgent country needs and preparedness at the local level. Two of these SEM components are localized in execution but open in knowledge sharing to all PERSGA countries. The two other components are an overarching harmonizing regional component and a management component. The four components are briefly described below.

Component 1: Strengthening the principles of marine managed areas through stakeholder driven MPA implementation

This component will select Marine Protected Areas as pilots to serve as Marine Managed Areas to include zonation and multiple uses consistent with local community needs and benefits using a participatory, community-based process. Activities within this component include the provision of training and demonstrations necessary to implement, use and update marine areas management plans in cooperation with national implementing agencies in the PERSGA network. This component also focuses on improving the capacity of member countries to share information and select the most appropriate marine protected/managed area models (MPAs/MMAs) based on current capacity and area(s) of comparative advantage and environmental features. It will also train community members in rights-based MPA co-management to be able to effectively review, update and implement marine protection and management plans, and transition to multiple use MMAs. Through this Component, PERSGA will strengthen its regional MPA network and also support member countries in bringing awareness of more holistic ecosystem based approaches whereby local communities could participate in balance resourcing exploitation with sustainability and help provide stronger stewardship of marine resources adjacent to them. PERSGA member countries will be invited to participate in training at pilot sites.

Component 2: Strengthening coastal communities using incentives approach to improve fisheries management and achieve other marine resource benefits

This component will provide institutional and technical capacity needed for communities to use and protect living marine resources to increase net benefits derived from the resources in a sustainable manner. The capacity of community and user group will be built to understand trade-offs associated with development and the costs and benefits to the community, and to organize as user groups around these uses and their roles in rights-based co-management of fishery resource, in connection to their

correlated roles identified under component 1. They will also be trained in the monitoring of the uses and their impacts on the resources, particularly on fisheries to support informed decisions by communities in co-management. Through a community-driven process, the selected coastal communities will receive support to identify and develop sub-projects for alternative livelihood initiatives to reduce pressure on the resources and improve benefits to the community members.

On ground activities will be developed by local communities and congruent with national priorities. Consultants or NGOs experienced in community driven fisheries and marine resource management will help facilitate community capacity building for LMR management engagement and development of sub projects. Potential subprojects could include, but are not limited to some mentioned during consultations: fish processing activities which involves the preparation of fish for direct consumption or for preservation; small scale aquaculture activities for production of pearl shells in Sudan; designation of hiking trails/ camping sites for eco-tourism within the National Parks- this is relevant to site selection in critical habitats; activity supporting recreational fishing/ snorkeling etc. for tourism purposes: through tent for gathering, jetty and boats; structure for visitor center built from natural materials; workshop for women group for producing and selling artisanal products - establish structure from natural materials; enabling tour guiding through licensing and training, potentially providing boats; training and certifying community members as rangers.

Component 3: Regional Environmental and Socioeconomic Monitoring Supporting Ecosystem Based Management (EBM) and Community Benefits

This component will build on ongoing monitoring activities and help in standardizing monitoring variables and approach between the participating countries, making data comparable and sharable through the strengthening of a regional network and database. It will support the expansion of monitoring to include socio-economic data, especially for fishery and MPA communities. Capacity building will also be strengthened through workshops and knowledge exchanges.

Specific sites selected by the countries will be monitored during the project, which will include MPAs and MMAs within the regional network and will be geared to enhance the capacity of PERSGA and member countries in concert with their communities. This presents an opportunity to leverage the latest knowledge and monitoring indicators in fisheries management to engage in supra-regional knowledge sharing on fisheries and marine resources monitoring. Monitoring of baseline data and other variables between MPAs and the pilot MMAs under components 1&2 will allow for comparison between the outcomes of the project intervention in the selected sites versus no intervention. This will provide a blue print for lessons learned from applying the EBM and co-management approach in the Red Sea and Gulf of Aden which can be scaled up to the entire regional MPA network. It will also provide an insight on environmental and socioeconomic impacts of neighboring coastal activities

Component 4: Project Management

This component will support the GEF project with technical, administration, procurement, financial management, project monitoring and evaluation and environmental and social impact monitoring. This includes cost of training of PERSGA and at the local project management level in the administrative, environmental and social aspects mentioned. The project will be executed by PERSGA, and will comply with GEF IW and World Bank reporting requirements (e.g. providing a GEF-IW webpage consistent with IW LEARN), provide IW Experience Notes, submit a GEF IW tracking tool at project start, provide for routine M&E processes, external Mid-Term and Terminal Evaluations, and project closure, provide lessons learned and other project information to IW-LEARN, and attend GEF IW Biennial Conferences.

2. Consultancy

The present ToR is for a consultancy that will be carried out under component 2. This component will

be implemented through the following activities;

- Build capacity in communities to understand the current uses and resource benefits, and how these are distributed within the community, including establishing baseline of status of the marine environment;
- Build capacity of user groups including fisheries cooperatives in monitoring their resource uses and impacts; establish a community monitoring manual and follow up
- Support identification and planning of sustainable economic activities of marine resources and demonstrate small scale, low impact alternative livelihood sub-projects that are compliant with all environmental and social safeguards and upon which the community has reached consensus.
- Strengthen regional community participation through education and knowledge sharing through study tours, to share pilots on rights and responsibilities to improve community compliance and build ownership for resource protection and sustainability, as well as the implementation of monitoring, control and surveillance systems for fisheries co-management.

3. Tasks and Responsibilities of the Consultant

In this context the national consultant will work with the SEM Project Coordination Unit “PCU” and in close collaboration with the relevant Component Coordinator, the National Coordinator, the International Consultant, the Regional Consultant, the National Fishery Management Authority and the Local Community in his / her respective country. The consultant will collaborate with the team to review legislations, strategies, policies and management plans for the fisheries sector to introduce and facilitate reforms required to adopt ecosystem based and co-management approaches to fishery management and aquaculture development, as part of the region-wide review undertaken by the SEM Project in PERSGA member states.

PERSGA has hired an international consultant to lead the review process in the region and provide technical assistance to the national consultant and team undertaking the review in each member state and is in the process of hiring regional consultant to support the International Consultant through co-supervision of the assessment studies, and providing technical advice on regional issues and harmonization. The National Consultant will, therefore, jointly work with the International Consultant and the Regional Consultant, and to conduct the review study in his / her respective country through achieving the following specific tasks:

- Compile information and data required for the review assessment of national/provincial legislations, strategies, policies and management for fisheries and aquaculture sector in order to identify gaps / barriers to implement ecosystem based approaches for fisheries management and development of aquaculture. This will be based on guidelines and questionnaires prepared by the international consultants. The review process should involve wide consultation with the stakeholders to identify gaps / barriers and suggest detailed and specific amendments addressing them including policies, articles, regulations, and management practices enabling multiple objectives, participatory and adaptive management approach; user group responsibilities, interaction with other sectors, adaptive systems, extended knowledge, incentives, mutual transparency, EAF EAA based fisheries monitoring, control and surveillance, etc.
- Develop a detailed National report on the assessment / review undertaken, based on the results of the questionnaires and the information collected.
- Communicate with the international and the regional consultants to provide expert advice on recommended amendments in national fishery laws, polices and management, together with options for mainstream them in the national/local marine fisheries and aquaculture sectors.
- Assist with provide technical backstopping for national/ local team to plan for including amendments and take on concrete proposals for revised laws/ policies/ management procedures, and provision of technical assistance and advice during consultation meetings for planners,

managers, user groups and other relevant stakeholders

- The assessment/ review should include a maximum level of stakeholder participation and consultations to identify relevant existing information as well as the interests, priorities and responsibilities of different stakeholder groups or institutions. The national review process shall also be harmonized with other PERSGA member states. Therefore, the National Consultant is expected to participate in regional meetings to be held at PERSGA HQ or other member states, whereby assessment outcomes will be discussed with the International Consultants, the Regional Consultant and participants from other member states.

4. Key Outputs and Tentative Timing

Output 1: Inception report: Detailed work plan, methodology, timeline	2 weeks from contract
Output 2: Based on the questionnaires and guidelines provided by the International consultants, collect country data and information from the line ministries and departments; stakeholder consultation workshops; reviews of relevant documents, reports and other information sources.	2 months from contract
Output 3: Progress Reports	Every three months
Output 4: Draft national assessment report based on the results collected through the questionnaires and the guidelines mentioned above; including expert advice on gaps/shortcomings and recommended amendments regarding legislations, policies and management plans/ practices of marine fishery and aquaculture sectors	6 months from contract
Output 5: Assist with developing proposals of revised/ amended laws, strategies, policies and management practices and action plan for their realization in the country	8 months from contract
Output 6: Assist with developing the final National Consultancy Report compiling the assessment outputs and including recommendations for suggested legislative and policy amendments action plan in the country, which will be integrated in the final Regional Report	10 months from contract
Output 7: Follow up report on implementation of the country action plan and recommendation for future work	12 months from contract

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APPENDIX II:CONSULTANT ITINERARY

Date	Location	Activity and key persons met
03/11/2014	Kassala	<ul style="list-style-type: none"> ▪ Consult a lawyer on copies of documents for the review.
05/11/2015	Kassala	<ul style="list-style-type: none"> ▪ Meet Head of Police Library of Kassala State Police, for copies
08/11/2014	Khartoum	<ul style="list-style-type: none"> ▪ Preparations for travelling to KSA to participate in a workshop
09/11/2014	Jeddah, KSA	<ul style="list-style-type: none"> ▪ Workshop on the national fisheries review.
10/11/2014	Jeddah, KSA	<ul style="list-style-type: none"> ▪ Workshop continued.
11/11/2014	Jeddah, KSA	<ul style="list-style-type: none"> ▪ Workshop continued.
12/11/2014	Khartoum	<ul style="list-style-type: none"> ▪ Back to Sudan from the workshop on fisheries review.
24/12/2014	Portsudan	<ul style="list-style-type: none"> ▪ Arrival and some phone calls with key facilitators from MFA. ▪ Phone call to Commissioner of GabeitAlmaadin Locality, to inform
25/12/2014	Portsudan	<ul style="list-style-type: none"> ▪ Meeting with MFA Head of Office ▪ Meeting with deputy Head of Fisheries Cooperatives in RSS. ▪ Meeting EisaEisaib (Omda of Dungonab)
26/12/2014	Dungonab and Mohamed-qol	<ul style="list-style-type: none"> ▪ Meeting Marine Security Organ in Dungonab. ▪ Meeting stakeholders in Dungonab. ▪ Meeting oyster farm in Dungonab (not functioning) ▪ General meeting with Dungonabmen at the mosque. ▪ Meeting Wagi Ali Wagi, Omda of Mohamed-qol. ▪ Meeting stakeholders in Mohamed-qol.
26/12/2014	Portsudan	<ul style="list-style-type: none"> ▪ Meeting the Director of the Marine Fisheries Research Station. ▪ Phone call with dean of faculty of Marine Sciences-UoRSS)* ▪ Orientation meeting with the questionnaires team
01/02/2015	Portsudan	<ul style="list-style-type: none"> ▪ Workshop with participants from marine related government staff. ▪ Ad-hoc meeting with wildlife personnel.
02/02/2015	Portsudan	<ul style="list-style-type: none"> ▪ Workshop continued as above. ▪ Ad-hoc meeting with Head of WPA, request for authenticated copy of wildlife act – 1986.
02/03/2015	Kassala	<ul style="list-style-type: none"> ▪ Meeting Head of WPA Kassala to get authenticated copy of 1986 act
03/03/2015	Kassala	<ul style="list-style-type: none"> ▪ Kassala WPA got an authenticated copy of wildlife act – 1986.

* University of Red Sea State.

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APPENDIX III: TEMPLATES

1- National level Acts

PERSGA AND SEM PARTNERS LOGOS								
NATIONAL LEVEL ACTS QUESTIONNAIRE								
No	Question	Yes(Y), No (N), Unclear (?)						Details: Please provide an extract of any text justifying your selection of yes/no/unclear.
		NAT	INT	PRO	LOC	PVT	CUS	
1. GENERAL								
1.1	Name, age, sex and contact details of researcher							
1.2	Date completed							
1.3	Country of survey							
1.4	Name/details of legal document.							
2. OWNERSHIP OF BIOLOGICAL RESOURCES								
2.1	Is (marine) wildlife (as opposed to domesticated/cultivated marine species) defined in the legal instrument?							
2.2	Is ownership of marine wildlife by the state specified in the legal instrument?							

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2.3	Is ownership of the sea by the state specified in the legal instrument?							
2.4	Is ownership of the seabed by the state specified in the legal instrument?							
2.5	Is ownership of minerals at/ below the seabed by the state specified in the legal instrument?							
2.6	Is opportunity for co-management of biological resources for any non-state party specified in the legal instrument?							
3. MANAGEMENT (Omda includes designation of a regulatory body)								
3.1	Is there an agency given responsibility for managing marine wildlife in the legal instrument?							
3.2	Is there an agency given responsibility for issuing fishing permits in the legal instrument?							
3.3	Is there an agency given responsibility for issuing fishing vessel licenses in the legal instrument?							
3.4	Is there an agency given responsibility for coastal zone management in the legal instrument?							
3.5	Is there an agency given responsibility for							

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	only managing marine protected areas in the legal instrument?							
3.6	Is there an agency given responsibility for only managing coastal protected areas in the legal instrument?							
3.7	Is there an agency given responsibility for managing both coastal and marine together protected areas in the legal instrument?							
3.8	Is there an agency given responsibility for marine pollution control in the legal instrument?							
3.9	Is there an agency given responsibility for maritime safety/security in the legal instrument?							
3.10	Is there an agency given responsibility for international fisheries (foreign nationals fishing in country)?							
3.11	Is there an agency given responsibility for international fisheries (nationals fishing internationally)?							
3.12	Is there any Regional Fisheries Management Organization (RFMO) arrangement or equivalent							

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	specified in the legal instrument?							
4. PERMITS/LICENSES								
4.1	Is Omda to fish marine wildlife required under the legal instrument?							
4.2	Is Omda to fish marine wildlife in certain areas required under the legal instrument?							
4.3	Is authorization to fish marine wildlife at certain times required under the legal instrument?							
4.4	Is authorization to fish certain species of marine wildlife required under the legal instrument?							
4.5	Is authorization to harvest/use mangrove required under the legal instrument?							
4.6	Is any marine wildlife explicitly protected under the legal instrument?							
4.7	Are any marine areas legally assigned for mariculture under the legal instrument?							
4.8	Are any marine areas legally assigned for mining under the legal instrument?							
4.9	Are any coastal areas assigned for traditional/ community use under the							

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	legal instrument?							
4.10	Are any marine areas assigned for traditional/ community use under the legal instrument?							
4.11	Can foreign nationals be authorized to fish in the EEZ by the authorizing authority?							
4.12	Can nationals be authorized to fish internationally by the authorizing authority?							
5. Other relevant laws								
5.1	Is there an Act for Strategic Environmental Assessment referred to?							
5.2	Is there an Act for Environmental Impact Assessment referred to?							
5.3	Is there a coastal zone management Act referred to?							
5.4	Is there an Act for registering/regulating/ supervising fishery associations/cooperatives referred to?							
5.5	Are there any marine species action plans referred to ¹⁹ ?							
5.6	Are there any references to certified sustainable marine fisheries?							

¹⁹ For example is there a Shark Action Plan?

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5.7	Is there any law concerning international fishing?								
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APPENDIXIV: National level Policies

PERSGA AND SEM PARTNERS LOGOS			
NATIONAL LEVEL POLICIES SUPPORTING CO-MANAGEMENT			
Please use this template to describe regional, national, provincial or local policies relating to fisheries co-management. Please provide a score, in the column provided, on a scale of 0-5, or 99 (where 0 suggests no support for a policy and 5 suggest significant support for a policy and 99 means don't know). Please provide and reference evidence, preferably digital, of the policy.			
01	Name, age, sex and contact details of person completing the form		
02	Name, designation and contact details of any interviewee.		
03	Date form completed		
04	Country (ies)/province(s)/district(s) covered (please fill a new form for each policy document/area.		
05	Key document(s) being reviewed		
06 ECOSYSTEM APPROACH (see Annex A)			
No	Policy	Score (0-5)	Comment
01/12	Public participation		
02	Delegation of management		
03	Trans-boundary effects		
04	Economic context		
05/10	Conservation/sustainable use/ sustainable development		
06	Carrying capacity		
07	Spatial and temporal factors		
08	Long-term management		

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09	Adaptive management		
10	See above		
11	Evidence based (scientific, indigenous, local knowledge)		
12	See above		
07CODE OF CONDUCT (See Annex B)			
01	User rights and responsibilities		
02	Ecosystem based management/intergenerational equity		
03	Conservation (sustainable use of fisheries)		
04	Knowledge based including traditional knowledge		
05	Precautionary approach		
06	Environmentally safe fishing gear		
07	Environmentally safe fish processing and distribution		
08	Habitat protection and rehabilitation		
09	Coastal zone management		
10	Monitoring Control and surveillance - VMS		
11	Monitoring Control and surveillance – fishing data		
12	Trans-boundary cooperation		
13	Participation in laws and policies		
14	Trade		
15	Grievance redress mechanisms		
16	Public participation		
17	Working and living conditions		
18	Artisanal and small-scale fisheries rights		
19	Aquaculture and EIA		

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APPENDIXV: Operational co-management practices

PERSGA AND SEM PARTNERS LOGOS	
REGISTER OF CO-MANAGEMENT/OTHER PRACTICES QUESTIONNAIRE	
Please use this template to describe regional, national, provincial or local registered co-management/other fisher related operational agreements. Please complete one questionnaire for each agreement.	
01	Name, age, sex and contact details of person completing the form
02	Date form completed
03	Country(ies)/province(s)/ district(s) of agreement. If possible provide a map of the area covered (international/national)
04	Title of the agreement
05	Start and finish date of the agreement
06	If possible please provide a copy of any agreement.
07	General description of the agreement
08	If there are any public communications materials/pictures available please provide.
09. Parties to agreement: Enter number(s) from list and estimated % and provide relevant comment – (1) National Government; (2) Provincial government; (3) Local Government; (4) Commercial; (5) NGO; (6) Community; (7) Informal; (8) Other; (9) None; (10) Don't know. Provide relevant comment. For example if national Government and an NGO are the parties and they are equal parties enter: (1) 50% in the first row below and (5) 50% in the second row etc. (number in brackets in the first column).	

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10. Assets : Enter number(s) from list and estimated % and provide relevant comment – (1) Coral reef; (2) Mangrove, (3) Sea-grass; (4) Algae; (5) Bony Reef fish (Pisces); (6) Bony Pelagic fish (Pisces); (7) Sharks and rays; (8) Crustaceans; (9) Echinoderms; (10) Mollusks; (11) Marine mammals;(12)Physical asset such as mooring; (13) Access to an area; (14) Other; (15) Don't know.

For example if the target asset is just bony reef fish then enter the number (5) in the first column and the number 100% in the second column.

11. Nature of activity in respect of assets: Specify asset from question 10 in Column 1. Enter number(s) from following list and estimated % and provide relevant comment – (1) Wild caught small scale/subsistence/artisanal fishery; (2) Wild caught large scale/industrial fishery; (3) Hatchery based aquaculture; (4) Culture based aquaculture; (5) Post-harvest processing; (6) Tourism; (7) Licensing; (8) Patrolling; (9) Other; (10) Don't know.

For the example given for question 10 enter (5) in the first column in the first row. If the whole of the activity relating to bony reef fish is artisanal fishing then enter the number (1) “Wild caught small scale/subsistence/artisanal fishery” in the second column and 100% in the third column in the first row below.

12. Market for assets: Specify asset details from the results in the first, second and third column from the first row from question 11 in the first row in the first, second and third column. Enter number(s) from market list and estimated % and provide relevant comment: (1) Local household; (2) Local area; (3) Province; (3) National; (4) International; (5) Other; (6) Don't know. Proceed with the other rows from question 11

From the example for question 11 enter (5) in the first column, (1) in the second column and (100%) in the third column.

If 50% of the artisanal fishery is consumed by local households and 50% is sold in the local area then enter(1) for local household in the fourth column and 50% in the fifth column of the first row. For the other 50% complete the first three columns as for the first row. Enter the number (2) in the fourth column of the second row and 50% in the fifth column. Add comments as necessary.

13. Governance of decision making: Enter number(s) from list and estimated % and provide relevant comment – (1) National Government; (2) Provincial government; (3) Local Government; (4) Commercial; (5) NGO; (6) Community; (7) Informal; (8) Other; (9) None; (10) Don't know. Provide relevant comment.

For example if national Government and an NGO are the parties but national government makes all the decisions then enter : (1) in the first column and 100% in the second column in the first row below.

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14	The party to the agreement equivalent to the “lesser” and contact name and details?	
15	The nature of the “lesser” - government, private, NGO, community, other	
16	Any responsibilities to the “lessee” by the “lesser”?	
17	The party to the agreement equivalent to the “lessee” and contact name and details?	
18	Nature of the “lessee” – government, private, NGO, community, other	
19	Any arrangement between sub-lessees as regards representation in the agreement?	
20	Is there a quota in respect of time? If so please specify.	
21	Is there a quota in respect of location? If so please specify.	
22	Is there a quota in respect of species? If so please specify.	
23	Is there a quota in respect of size?	
24	Is there a quota in respect of number? If so please specify.	
25	Is there a quote in respect of sexual condition?	
26	Are there any charges in kind or in cash to be paid by the “lessee”? Please specify.	
27	Does the lessee have any management responsibilities? If so please specify.	
28	Any other conditions to the agreement?	
29	Number of permanent male employees benefitting from the agreement	
30	Number of temporary male employees benefitting from the agreement	
31	Number of permanent female employees benefitting from	

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	the agreement	
32	Number of temporary female employees benefitting from the agreement	
33	Estimated value of the agreement to the lessor/landlord in the last year (if any)	
34	Estimated value of the agreement to the lessee/tenants in the last year. (if any)	
35	Other opportunities to the agreement	
36	Possible threats to the agreement	

APPENDIXVI: Potential co-management practices

PERSGA AND SEM PARTNERS LOGOS		
REGISTER OF CO-MANAGEMENT/OTHER PRACTICES QUESTIONNAIRE		
Please use this template to describe possible regional, national, provincial or local registered co-management/other fisher related operational agreements. Please complete one questionnaire for each possible agreement.		
01	Name, age, sex and contact details of person completing the form	
02	Date form completed	
03	Country (ies)/province(s)/ district(s) of possible agreement. If possible provide a map of the area covered (international/national).	
04	Title of the proposed agreement	
05	Start and finish date of the proposed agreement	
06	If possible please provide a copy of any proposed agreement.	
07	General description of the proposed agreement	

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08	If there are any public communications materials/pictures available please provide.	
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09. Parties to possible agreement: Enter number(s) from list and estimated % and provide relevant comment – (1) National Government; (2) Provincial government; (3) Local Government; (4) Commercial; (5) NGO; (6) Community; (7) Informal; (8) Other; (9) None; (10) Don't know. Provide relevant comment.

For example if national Government and an NGO are the possible parties and they are equal parties enter: (1) 50% in the first row below and (5) 50% in the second row etc. (number in brackets in the first column).

10. Assets : Enter number(s) from list and estimated % and provide relevant comment – (1) Coral reef; (2) Mangrove, (3) Sea-grass; (4) Algae; (5) Bony Reef fish (Pisces); (6) Bony Pelagic fish (Pisces); (7) Sharks and rays; (8) Crustaceans; (9) Echinoderms; (10) Mollusks; (11) Marine mammals; (12) Physical asset such as mooring; (13) Access to an area; (14) Other; (15) Don't know.

For example if the target asset is just bony reef fish then enter the number (5) in the first column and the number 100% in the second column.

11. Nature of activity in respect of assets: Specify asset from question 10 in Column 1. Enter number(s) from following list and estimated % and provide relevant comment – (1) Wild caught small scale/subsistence/artisanal fishery; (2) Wild caught large scale/industrial fishery; (3) Hatchery based aquaculture; (4) Culture based aquaculture; (5) Post-harvest processing; (6) Tourism; (7) Licensing; (8) Patrolling; (9) Other; (10) Don't know.

For the example given for question 10 enter (5) in the first column in the first row. If the whole of the activity relating to bony reef fish is artisanal fishing then enter the number (1) “*Wild caught small scale/subsistence/artisanal fishery*” in the second column and 100% in the third column in the first row below.

12. Market for assets: Specify asset details from the results in the first, second and third column from the first row from question 11 in the first, second and third column. Enter number(s) from market list and estimated % and provide relevant comment: (1) Local household; (2) Local area; (3) Province; (3) National; (4) International; (5) Other; (6) Don't know. Proceed with the other rows from question 11

From the example for question 11 enter (5) in the first column, (1) in the second column and (100%) in the third column.

If 50% of the artisanal fishery is consumed by local households and 50% is sold in the local area then enter (1) for local household in the fourth column and 50% in the fifth column of the first row. For the other 50% complete the first three columns as for the first row. Enter the number (2) in the fourth column of the second row and 50% in the fifth column. Add comments as necessary.

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13. Governance of decision making: Enter number(s) from list and estimated % and provide relevant comment – (1) National Government; (2) Provincial government; (3) Local Government; (4) Commercial; (5) NGO; (6) Community; (7) Informal; (8) Other; (9) None; (10) Don't know. Provide relevant comment.

For example if national Government and an NGO are the possible parties but national government makes all the decisions then enter : (1) in the first column and 100% in the second column in the first row below.

14	The possible party to the agreement equivalent to the “lesser” and contact name and details?	
15	The nature of the “lesser” - government, private, NGO, community, other	
16	Any responsibilities to the “lessee” by the “lesser”?	
17	The possible party to the agreement equivalent to the “lessee” and contact name and details?	
18	Nature of the possible “lessee” – government, private, NGO, community, other	
19	Any arrangement between possible sub-lessees as regards representation in the agreement?	
20	Is there a quota in respect of time? If so please specify.	
21	Is there a quota in respect of location? If so please specify.	
22	Is there a quota in respect of species? If so please specify.	
23	Is there a quota in respect of size?	
24	Is there a quota in respect of number? If so please specify.	
25	Is there a quote in respect of sexual condition?	
26	Are there any possible charges in kind or in cash to be paid by the “lessee”? Please specify.	
27	Will the lessee have any	

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	management responsibilities? If so please specify.	
28	Any other conditions to the possible agreement?	
29	Number of permanent male employees benefitting from the agreement	
30	Possible number of temporary male employees benefitting from the agreement	
31	Possible number of permanent female employees benefitting from the agreement	
32	Possible number of temporary female employees benefitting from the agreement	
33	Estimated value of the possible agreement to the lesser/landlord in the last year (if any)	
34	Estimated value of the possible agreement to the lessee/tenants in the last year. (if any)	
35	Other possible opportunities to the agreement	
36	Possible threats to the agreement	

APPENDIXVII: Stakeholder registration

PERSGA AND SEM PARTNERS LOGOS		
STAKEHOLDER REGISTRATION QUESTIONNAIRE		
To be completed by the interviewer for individual stakeholders. If the stakeholder interviewee is being interviewed in a group the response must be that of the specified stake holding interviewee. If possible interview the person at his/her place of residence or work.		
1.0 INTERVIEWER DETAILS		
1.1	Name, age, sex and contact details of the interviewer	
1.2	Date form completed	
1.3	Any comments	
2.0 INTERVIEWEE DETAILS		
2.1	Location/address of interview (Google map or GPS).	

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2.2	Name		
2.3	Age/date of birth		
2.4	Sex		
2.5	Picture of interviewee		
2.6	Number and nature of dependents		
2.7	Place of birth and nationality		
2.8	Address of residence and contact details. Provide GPS co-ordinates for re-visit.		
2.9	Period of residence at this residence (years) and % of time in the last year.		
2.10	Identification card number and period of validity		
2.11	Affiliations (tribal etc.)		
2.12	Please indicate, in order of significance, for a specified key livelihood the interviewees' principal livelihood concerns – up to 6 (do not prompt!). Note: This will act as a baseline for determining project impact.	Livelihood	
		1.	2.
		3.	4.
		5.	6.
2.13. Livelihood employment: Please list, in order of importance the principal livelihoods over the last year (agriculturalist, carer, fisher, pastoralist, office-worker.....), an estimate of the percent of working time spent in this employment over the last year and then the number of years in this employment.			
A			
B			
C			
D			
2.14. Livelihood employment: For each livelihood employment over the last year enter the letter from the first column in the answer to question 2.13 in the first column, the number for the type of employment from the list below in the second column and the estimated % of that employment in the third column: (1) Self-employed; (2) Government; (3) Commercial; (4) Unemployed; (5) Retired; (6) Other; (7) Do not know. For example if the livelihood under 2.13 is (A) in the first row in the first column enter (A) in the first row in the first column in answer to question 2.14. If the employment of (A) in row 1 is self-employed then enter the number (1) in the second column of row 1. If the self-employment is 50% then enter 50% in the third column			

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of row 1. Proceed to describe the same, or additional, employments from 2.13 in additional rows. The total for column 3 for each livelihood should be no more than 100%. Add rows as necessary.			
A			

2.15 Coastal and marine biological resources assets used in specified livelihood: Enter number(s) from list and estimated % and provide relevant comment – (1) Coral reef; (2) Mangrove, (3) Sea-grass; (4) Algae; (5) Bony Reef fish (Pisces); (6) Bony Pelagic fish (Pisces); (7) Sharks and rays; (8) Crustaceans; (9) Echinoderms; (10) Mollusks; (11) Marine mammals; (12) Physical asset such as mooring; (13) Access to an area; (14) Other; (15) Don't know. If the livelihood is not coastal/marine related then leave the second column blank and describe in the fourth column.

For example if the livelihood under 2.13 is (A) in the first row in the first column enter (A) in the first row in the first column in answer to question 2.15. If one of the target assets is bony reef fish then enter the number 5 in the second column in the first row and if 50% of the catch is bony reef fish then enter 50% in the third column of row 1. Proceed to add rows for the same livelihood for different assets and then for different livelihoods for column 1 of each row entered in response to question 2.13. If possible provide a map of the principle area(s) of the respective livelihood/asset. Expand comments area and/or add rows as necessary.

A			

2. Evidence of livelihoods: Please try to provide objective evidence of any significant livelihood (earlier licenses, witness statements etc.

2. 16	
----------	--

3.0 CO-MANAGEMENT:

3.1. Is the person part of any co-management framework? If YES specify the name and nature of the framework(s) in the second column after entering the relevant livelihood letter A,B,C,D from Question 2.13 in the first column and go to question 3.3. If NO go to question 3.2.

3.2 If NO ask whether they see any need in respect of their livelihoods. Enter the response and GO TO QUESTION 4.

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3.3. Is the person in the position of representing the lesser in respect of the co-management agreement for the livelihood A,B,C and D (as listed above)? Enter each relevant livelihood letter (A, B, C and D) and the comment in column 2. Add additional rows if required.

3.4. Is the person in the position of representing the lessee in respect of the co-management agreement for the livelihood A, B, C, D (as listed above)? Enter each relevant livelihood letter (A, B, C, D) in column 1 and the comment in column 2. Add additional rows if required.

3.5. Estimate how many parties there are to the co-management agreement. Enter each relevant livelihood letter A, B, C, D (as listed above) and the comment in column 2. Add additional rows if required.

3.6 Identify any opportunities to the co-management agreement. Enter each relevant livelihood letter A, B, C, D (as listed above) and the comment in column 2. Add additional rows if required.

3.7. Identify any constraints to the co-management agreement. Enter each relevant livelihood letter A, B, C, D (as listed above) and the comment in column 2. Add additional rows if required.

4.0: QUALITY OF LIFE AT RESIDENCE

4.1	Hours of electricity per day?	
4.2	Refrigerator (number)?	
4.3	Days secure supply of drinking water at residence.	
4.4	Distance to primary health care facility (km)?	
4.5	Distance to midwife (km)?	

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4.6	Distance to primary education (km)?	
4.7	Principal type of cooking fuel (oil, gas, wood, charcoal, other)	If wood/charcoal is mangrove note
4.8	Distance to secure source of principal cooking fuel (km)?	
4.9	Distance to phone (km)?	
4.10	Days since last ate marine animals and type.(marine fish etc.)	
5.0: SIGNATURES		
5.1	Date, name and signature of interviewer	
5.2	Date, name and signature/mark of stakeholder	
5.3	Date, name, contact details and signature of witness if requested.	

DRAFT

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APPENDIX VIII: BIBLIOGRAPHY/REFERENCES

Author	year	Title	sponsor	website
BahaeldinTaha	Dec 2012	Sudan Environmental and Social Management Framework (ESMF)	World Bank	www.wds-worldbank.org
Directorate of RSS	1978	Local Ordinance on Protection of Aquatic Livings	Red Sea State	
Dr. AbdallaNasirElawad	2013	Sudan National Report to the Scientific Committee of Indian Ocean Tuna Commission	IOTC	www.iotc.org
Dr. Cristobal Vignal	2013	Survey of Renewable Marine Resources in Rd Sea State	UNIDO	www.unido.org
Dr. Dawson Shepherd A.R	2014	Situation Analysis and Questionnaires, Draft V3 03rd	PERSGA	
ESPA Secretary	2006	East Sudan Peace Agreement	ESPA Secretary	
IGAD Secretary	2005	Comprehensive Peace Agreement of Sudan	IGAD	
Ministry of Agriculture, Food & NR	1975	Amendment of 1937 Marine Act	Sudan Government	
Osman Mohamed Saeed	Sep 2004	Sudan Fisheries Overview	FAO	www.fao.org
Pescscars Italia	Nov 2012	ACP Fish II, Final Technical Report	EU	www.acpfish2-eu.org
Pescscars Italia	Nov 2012	Sudan Marine Fisheries Policy (Draft)	Sudan Government	www.acpfish2-eu.org
Red Sea State Legislative Council	2015	Amendment to 2008 Marine Fisheries Law of RSS	Red Sea State	
Red Sea State Legislative Council	2006	Environment Protection Law	Red Sea State	
Red Sea State Legislative Council	2008	Marine Fisheries Law	Red Sea State	
Red Sea State Legislative Council	Sep 2007	Trawling Fishing Regulation	Red Sea State	
Sudan Presidency	2004	Decree of Declaration Dungonab MPA	Sudan Government	
Sudan Council of Ministers	1990	Approval of Sanganeb area in Red Sea States MPA	Sudan Government	
Sudan Higher Council for Environment	April 2000	Sudan National Biodiversity Strategy and Action Plan (NBSAP)	HCENR	www.hcenr.net
Sudan Legislative Council	2005	Sudan Interim Constitution	Sudan Government	www.parliament.gov.sd
Sudan Legislative Council	2005	Sudan National Interim Constitution	Sudan Government	www.parliament.gov.sd
Sudan Parliament	1937	Marine Fisheries Act	Sudan Government	www.parliament.gov.sd
Sudan Parliament	1986	Protection of Hunting and National Parks	Sudan Government	
UNIDO Project	2013	Sudan Marine Fisheries Strategy	EU	www.unido.org

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APPENDIX IX: PROTECTED COASTAL AND MARINE SPECIES

Species/group	Yes/No/?	Law/regulation reference including year
Coral, coral reef, Shell, Shell Animal and ornamental fishes.	Yes	1975 Amendment of Sudan Marine Fisheries Act (1937).
Sharks, marine turtles, Dolphins, Dugong and all other marine endangered species.	Yes	Red Sea State Marine Fisheries Law (2008)
<ul style="list-style-type: none"> ▪ Mammals: 69 different animals. ▪ Birds: 31 different types. ▪ Reptiles: 4 different types. 	Yes	Protection of Hunting and National Parks (1986)

APPENDIX VI: PROPOSED PROTECTED COASTAL AND MARINE SPECIES

There are no new species proposed to be protected by current laws.

Species/group	Yes/No/?	Policy document name and year
	No	

APPENDIX X: OPERATIONAL CO-MANAGEMENT SCHEMES

There are no operational co-management scheme in Sudan marine fisheries and coastal zone.

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APPENDIX XI: POTENTIAL CO-MANAGEMENT SCHEMES

No	Potential scheme name	COM	INT	ZONE		FIS	MAR	MAN	MAR TOU	OTH
				BPA	REF					
1	Dungonab Fisheries Cooperative	N	N	Y	Y	Y	N	N	N	N
Note: It is inside the Dungonab MPA, with capacity building program and coordination with the Locality authorities and the Popular Committee, this fisheries cooperative can play a significant role in realization of marine resources co-management.										
2	Mohamed-qol Fisheries Cooperative	N	N	Y	Y	Y	N	N	N	N
Note: It is inside the Dungonab MPA, with capacity building program and coordination with the Locality authorities and the Popular Committee, this fisheries cooperative can play a significant role in realization of marine resources co-management.										
3	Dungonab Oyster Farm	N	N	Y	Y	N	Y	N	N	N
Note: g role in co-management of marine resources.										
4	Marine Tourism Small Business	N	N	Y	Y	N	N	N	Y	N
Note: Either public or private or joint venture of tourism, can be established engaging local people or fisheries cooperatives which can add to the livelihoods alternatives as well as to the co-management of the marine resources in the Dungonab MPA.										

Enter (Y) if yes, (N) if no, (?) if don't know. COM=co-management. PA = Coastal and Marine biodiversity protection area. REF = Fisheries Refugia. INT = International, FIS = Fishing. MAR = mariculture. MAN = mangrove. MARTOU = Marine Tourism. OTH = Other.

APPENDIX XII: STAKE IN OPERATIONAL CO-MANAGEMENT SCHEME

There are no operational co-management schemes in the Dungonab Federal Reserve or anywhere in the coast of Red Sea State

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APPENDIX XIII: STAKE IN POTENTIAL CO-MANAGEMENT SCHEME

The table below shows information concerning the stake in the use of biological resources in potential co-management schemes.

No	Name of person interviewed	SEX	COM	INT	FIS	MAR	MAN	MAR TOU	OTH
1	Mahmoud M. Arkab	M			Y				
	Note: He is deputy head of Fisheries cooperative Union in RSS Requested establishment of fisheries commission with jurisdiction to take part in co-management of marine resources.								
2	Mohamed Ali Nakashob	M			Y				
	Note: He thinks if there is any paid/wage livelihood other alternative than fishing, I will get involved in.								
3	Mohamed Musa	M			Y				
	Note: He sees need for co-management but an income generating alternative other than fishing should be found.								
4	Ali Eisa Hamid	M			Y				
	Note: There is need for co-management, but there should be livelihood alternative to substitute fishing.								
5	Ahmed EisaAndil	M			Y				
	Note: He doesn't see need for co-management. It is not important.								
6	AbdallaOdeed	M			Y				
	Note: He sees co-management in paid jobs to protect the marine resources.								
7	Eisa Mahmoud Ahmed	M			Y				
	Note: There is need for co-management to protect the marine resources.								
8	Mohamed Hamid Hasab	M			Y				
	Note: There is need to increase income of households.								
9	SaadanaAbdelraheem	M			Y				
	Note: Need for cash earning alternative, to help fisher invest in other activities.								

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10	Ahmed Ali Nakashob	M			Y				
	Note: Does not Know								
11	Mohamed Mahmoud Hamdan	M			Y				
	Note: Does not Know								
12	Mahmoud Ibrahim M. Salih	M			Y				
	Note: There is need for co-management								
13	Mohamed Abdelraheem	M			Y				
	Note: There is need to increase income and to protect marine resources.								
14	Abdalla Ahmed M. Ali	M			Y				
	Note: There is need for co-management								
15	Mohamed Nour	M			Y				
	Note: There is need for co-management								
16	Moamed Ahmed Hamid	M			Y				
	Note: There is no need for co-management.								
17	EisaNasir	M			Y				
	Note: Do not know								
18	EisaAdarob Ahmed Hamdan	M			Y				
	Note: There is need for co-management, to increase income								
19	Ali Mohamed Husein	M			Y				
	Note: Very logic and waiting for such opportunity.								
20	Mahmoud Mohamed Ahmed	M			Y				
	Note: There is need for co-management								
21	Mohamed HasanSaeed	M			Y				
	Note: There is need for co-management								
22	Hamid Eisa Hamid	M			Y				
	Note: Do not know.								

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23	HasanEisa Hamid	M			Y			
	Note: There is need, to increase income.							
24	HuseinEisa Hamid	M			Y			
	Note: There is need, to increase income.							
25	Eisa Ali	M			Y			
	Note: Do not know.							
26	Mohamed Okeir	M			Y			
	Note: There is need, to increase income.							
27	Ahmed Suleiman	M			Y			
	Note: There is need, to increase income.							
28	Osman Mohamed	M			Y			
	Note: There is need, to increase income.							
29	Elsaddig Ali Eljaili	M			Y			
	Note: There is need, to increase income.							
30	Wagi Ali M. Juknan	M			Y			
	Note: Co-management is necessary to have monitoring role, so as to protect resources from foreign fishers coming from neighbouring countries.							
31	HuseinEisaHasan	M			Y			
	Note: Co-management is not necessary.							
32	Wagi Ali Wagi	M			Y			
	Note: Yes, there is need for co-management. He worked as ranger in the project of the African Park Organization.							
33	Hashim M. Ali Wagi	M			Y			
	Note: Co-management id necessary to have guards to monitor the resources.							
34	HashimWagi Ali	M			Y			
	Note: Co-management is necessary to have guards to monitor the resources.							
35	Tahir Ahmed Allajabou	M			Y			
	Note: Co-management is not necessary.							
36	Husein Mohamed Hamad	M			Y			
	Note: Co-management is necessary to have monitoring role, so as to protect resources from foreign							

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	fishers from neighbouring countries.								
37	Ali Wagi Mohamed (Omda)	M			Y				
	Note: Local community must engage in co-management of marine resources.								
38	Musa Ali Suroor	M			Y				
	Note: Co-management is necessary to have monitoring role, so as to protect resources from foreign fishers from neighbouring countries.								
39	Hasan Ahmed Ali	M			Y				
	Note: Co-management is needed for monitoring and to regularize fishing.								
40	Ahmed Musa Elmajzoub	M			Y				
	Note: Do not know								
41	Mohamed Hasan Ali	M			Y				
	Note: Do not know								
42	Husein Ali Ahmed	M			Y				
	Note: Co-management is not necessary								
43	Abdurabou Mohamed Husein	M			Y				
	Note: Co-management is important for monitoring to well manage the resources.								
44	Mohamed Husein Adarob	M			Y				
	Note: Local community must engage in co-management of marine resources.								
45	Naji Ali Abuhamad	M			Y				
	Note: Do not know.								
46	Mohamed Husein Mohamed	M			Y				
	Note: Local community must engage in co-management of marine resources.								
47	Mohamed Siddig M. Ahmed	M			Y				
	Note: Co-management is necessary to have monitoring role, so as to protect resources from foreign fishers from neighbouring countries.								
48	Ali Hamad Adam	M			Y				
	Note: Co-management is not necessary								
49	AdarobShaibaOfoun	M			Y				

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	Note: Co-management is not necessary								
50	Mohamed Husein Mohamed	M			Y				
	Note: Local community must engage in co-management of marine resources.								
51	Ahmed Mohamed	M			Y				
	Note: Co-management is not necessary								
52	Mohamed Shaik M.	M			Y				
	Note: He is willing to participate in co-management.								
53	Husein Mohamed Husein	M			Y				
	Note: Recruitment of some local people as guards to protect the marine resources								
54	Husein Abu Ali Ailab	M			Y				
	Note: Do not know								
55	Hamid Ali Omer	M			Y				
	Note: Local community must engage in co-management of marine resources.								
56	Husein Yeraib M. Husein	M			Y				
	Note: Co-management activity on the coast should be monitored to conserve resources.								
57	Mohamed Husein M. (Kalas)	M			Y				
	Note: Local community must engage in co- management of marine resources.								
58	Karrar Siddig M. Ahmed	M			Y				
	Note: Local community must engage in co-management of marine resources.								
59	Musa Husein Adarob	M			Y				
	Note: Co-management is needed to monitor the marine resources								
60	Husein Omer Mohamed	M			Y				
	Note: Recruitment of some local people as guards to protect the marine resources								

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SEX: Male = M, Female = F. COM=co-management. INT = international. FIS = Fishing. MAR = mariculture. MAN = mangrove. TOU = Tourism. OTH = Other. Mark (Y) if yes, (N) if no, (?) if don't know. If one stakeholder participates in multiple schemes then add rows against the same name.

APPENDIX XIV: STAKEHOLDER PRINCIPAL LIVELIHOODS

The table below shows key livelihoods based on the use of biological resources identified from completed stakeholder registration questionnaires.

No	Name of person interviewed	SEX	COM	INT	FIS	MAR	MAN	MAR TOU	OTH
1	Mahmoud M. Arkab	M			Y				
	Note: Fishing 80%, Agriculture (10%) and Casuallabour (10%).								
2	Mohamed Ali Nakashob	M			Y				
	Note: Fishing.								
3	Mohamed Musa	M			Y				
	Note: Fishing.								
4	Ali Eisa Hamid	M			Y				
	Note: Fishing (75%) and Camel rearing (25%).								
5	Ahmed EisaAndil	M			Y				
	Note: Fishing (65%) and Shells Technician (35).								
6	AbdallaOdeed	M			Y				
	Note: Fishing.								
7	Eisa Mahmoud Ahmed	M			Y				
	Note: Fishing.								
8	Mohamed Hamid Hasab	M			Y				
	Note:								

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	Fishing (80%) and Gov. employee (20%)							
9	Saadan Abdelraheem	M			Y			
	Note: Fishing.							
10	Ahmed Ali Nakashob	M			Y			
	Note: Fishing.							
11	Mohamed Mahmoud Hamdan	M			Y			
	Note: Fishing.							
12	Mahmoud Ibrahim M. Salih	M			Y			
	Note: Fishing.							
13	Mohamed Abdelraheem	M			Y			
	Note: Fishing.							
14	Abdalla Ahmed M. Ali	M			Y			
	Note: Fishing (60%) and Gov. employee (40%).							
15	Mohamed Nour	M			Y			
	Note: Fishing.							
16	Moamed Ahmed Hamid	M			Y			
	Note: Fishing.							
17	Eisa Nasir	M			Y			
	Note: Fishing.							
18	Eisa Adarob Ahmed Hamdan	M			Y			
	Note: Fishing.							
19	Ali Mohamed Husein	M			Y			
	Note: Fishing.							
20	Mahmoud Mohamed Ahmed	M			Y			
	Note: Fishing.							
21	Mohamed Hasan Saeed	M			Y			
	Note:							

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	Fishing.								
22	Hamid Eisa Hamid	M			Y				
	Note: Fishing.								
23	HasanEisa Hamid	M			Y				
	Note: Fishing.								
24	HuseinEisa Hamid	M			Y				
	Note: Fishing.								
25	Eisa Ali	M			Y				
	Note: Fishing.								
26	Mohamed Okeir	M			Y				
	Note: Fishing.								
27	Ahmed Suleiman	M			Y				
	Note: Fishing.								
28	Osman Mohamed	M			Y				
	Note: Fishing.								
29	Elsaddig Ali Eljaili	M			Y				
	Note: Fishing.								
30	Wagi Ali M. Juknan	M			Y				
	Note: Fishing.								
31	HuseinEisaHasan	M			Y				
	Note: Fishing.								
32	Wagi Ali Wagi	M			Y				
	Note: Fishing.								
33	Hashim M. Ali Wagi	M			Y				
	Note: Fishing.								
34	HashimWagi Ali	M			Y				
	Note: Fishing.								
35	Tahir Ahmed Allajabou	M			Y				
	Note: Fishing.								
36	Husein Mohamed	M			Y				

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	Hamad								
	Note: Fishing (80%) and Carpenter (20%).								
37	Ali Wagi Mohamed (Omda)	M			Y				
	Note: Fishing.								
38	Musa Ali Suroor	M			Y				
	Note: Fishing.								
39	Hasan Ahmed Ali	M			Y				
	Note: Fishing.								
40	Ahmed Musa Elmajzoub	M			Y				
	Note: Fishing.								
41	Mohamed Hasan Ali	M			Y				
	Note: Fishing.								
42	Husein Ali Ahmed	M			Y				
	Note: Fishing.								
43	Abdurabou Mohamed Husein	M			Y				
	Note: Fishing.								
44	Mohamed Husein Adarob	M			Y				
	Note: Fishing.								
45	Naji Ali Abuhamad	M			Y				
	Note: Fishing.								
46	Mohamed Husein Mohamed	M			Y				
	Note: Fishing.								
47	Mohamed Siddig M. Ahmed	M			Y				
	Note: Fishing.								
48	Ali Hamad Adam	M			Y				
	Note: Fishing.								
49	AdarobShaibaOfoun	M			Y				

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	Note: Fishing (50%) and Truck Driver (50%).								
50	Mohamed Husein Mohamed	M			Y				
	Note: Fishing.								
51	Ahmed Mohamed	M			Y				
	Fishing.								
52	Mohamed Shaik M.	M			Y				
	Note: Fishing.								
53	Husein Mohamed Husein	M			Y				
	Note: Fishing.								
54	Husein Abu Ali Ailab	M			Y				
	Note: Fishing.								
55	Hamid Ali Omer	M			Y				
	Note: Fishing.								
56	Husein Yeraib M. Husein	M			Y				
	Note: Fishing.								
57	Mohamed Husein M. (Kalas)	M			Y				
	Note: Fishing.								
58	Karrar Siddig M. Ahmed	M			Y				
	Note: Fishing.								
59	Musa Husein Adarob	M			Y				
	Note: Fishing.								
60	Husein Omer Mohamed	M			Y				
	Note: Fishing.								

SEX: Male = M, Female = F. COM=co-management. FIS = Fishing. MAR = mariculture. MAN = mangrove.
TOU = Tourism. OTH = Other. Mark (Y) if yes, (N) if no, (?) if don't know.

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APPENDIX XV: STAKEHOLDER QUALITY OF LIFE

The table below shows quality of life identified from completed stakeholder registration questionnaires.

No	Name of person interviewed	SEX	RFR	WTR	PRI	PRE	FUE	MAN	
1	Mahmoud M. Arkab	M	Y	7/7	Y	0.5	Charcoal and wood	5	
	Note:								
2	Mohamed Ali Nakashob	M	N	7/7	Y	0.4	Gas and wood.	3	
	Note:								
3	Mohamed Musa	M	N	7/7	Y	0.1	Gas and wood.	1	
	Note:								
4	Ali Eisa Hamid	M	N	7/7	Y	0.5	Gas and wood.	1	
	Note:								
5	Ahmed EisaAndil	M	N	7/7	Y	0.5	Gas and wood.	1	
	Note:								
6	AbdallaOdeed	M	N	7/7	Y	0.75	Gas and Charcoal	3	
	Note:								

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7	Eisa Mahmoud Ahmed	M	N	7/7	Y	1	Gas and Charcoal	0	
	Note: Zero means marine animal was eaten today.								
8	Mohamed Hamid Hasab	M	N	7/7	Y	1	Gas and Charcoal	1	
9	SaadanaAbdelraheem	M	N	7/7	Y	1	Gas and Charcoal	0	
10	Ahmed Ali Nakashob	M	N	7/7	Y	1	Gas and Charcoal	0	
11	Mohamed Mahmoud Hamdan	M	N	7/7	Y	1	Gas and Charcoal	0	
12	Mahmoud Ibrahim M. Salih	M	N	7/7	Y	0.2	Gas and wood and Shoura	1	
	Note: Mangrove is used sometimes, collected from the sea.								
13	Mohamed Abdelraheem	M	N	7/7	Y	1	Charcoal	2	
14	Abdalla Ahmed M. Ali	M	N	7/7	Y	0.1	Gas	1	
15	Mohamed Nour	M	N	7/7	Y	0.1	Gas	2	
16	Moamed Ahmed Hamid	M	N	7/7	Y	0.2	Charcoal	14	
17	EisaNasir	M	N	7/7	Y	0.1	Gas and Charcoal	30	
18	EisaAdarob Ahmed Hamdan	M	N	7/7	Y	1	Charcoal	0	
19	Ali Mohamed Husein	M	N	7/7	Y	1	Charcoal	0	
20	Mahmoud Mohamed Ahmed	M	N	7/7	Y	1	Charcoal	0	
21	Mohamed HasanSaeed	M	N	7/7	Y	1	Gas and Charcoal	1	
22	Hamid Eisa Hamid	M	N	7/7	Y	1	Gas and Charcoal	2	

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23	HasanEisa Hamid	M	N	7/7	Y	1	Gas and Charcoal	0	
24	HuseinEisa Hamid	M	N	7/7	Y	1	Gas and Charcoal	0	
25	Eisa Ali	M	N	7/7	Y	0.1	Gas	7	
26	Mohamed Okeir	M	N	7/7	Y	1	Charcoal and Shoura	7	
	Note: Mangrove is used sometimes, collected from the sea.								
27	Ahmed Suleiman	M	N	7/7	Y	1	Gas and Charcoal	7	
28	Osman Mohamed	M	N	7/7	Y	1	Gas	2	
29	Elsaddig Ali Eljaili	M	N	7/7	Y	1	Gas and Charcoal	2	
30	Wagi Ali M. Juknan	M	N	7/7	Y	0.5	Gas and Charcoal	2	
31	HuseinEisaHasan	M	N	7/7	Y	0.5	Gas and Charcoal	7	
32	Wagi Ali Wagi	M	N	7/7	Y	0.5	Gas and Charcoal	2	
33	Hashim M. Ali Wagi	M	N	7/7	Y	0.5	Gas and Charcoal	15	
34	HashimWagi Ali	M	N	7/7	Y	0.5	Charcoal	2	
35	Tahir Ahmed Allajabou	M	N	7/7	Y	0.6	Charcoal	7	
36	Husein Mohamed Hamad	M	N	7/7	Y	0.1	Gas and Charcoal	1	
37	Ali Wagi Mohamed (Omda)	M	Y	7/7	Y	0.5	Gas and Charcoal	1	
38	Musa Ali Suroor	M	N	7/7	Y	0.5	Gas and Charcoal	1	

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39	Hasan Ahmed Ali	M	N	7/7	Y	0.95	Gas and Charcoal	2	
40	Ahmed Musa Elmajzoub	M	N	7/7	Y	0.1	Charcoal	7	
41	Mohamed Hasan Ali	M	N	7/7	Y	0.15	Gas and Charcoal	1	
42	Husein Ali Ahmed	M	N	7/7	Y	0.3	Gas and Charcoal	7	
43	Abdurabou Mohamed Husein	M	N	7/7	Y	0.1	Gas and Charcoal	60	
44	Mohamed Husein Adarob	M	N	7/7	Y	0.7	Gas and Charcoal	4	
45	Naji Ali Abuhamad	M	N	7/7	Y	0.1	Gas and Charcoal	7	
46	Mohamed Husein Mohamed	M	N	7/7	Y	0.1	Charcoal	10	
47	Mohamed Siddig M. Ahmed	M	N	7/7	Y	0.5	Gas and Charcoal	30	
48	Ali Hamad Adam	M	N	7/7	Y	0.1	Gas and Charcoal	7	
49	AdarobShaibaOfoun	M	N	7/7	Y	0.07	Gas and Charcoal	0	
50	Mohamed Husein Mohamed	M	N	7/7	Y	0.15	Charcoal	7	
51	Ahmed Mohamed Kashoy	M	N	7/7	Y	0.15	Wood or charcoal	12	
52	Mohamed Shaik M.	M	N	7/7	Y	0.2	Wood or charcoal	7	
53	Husein Mohamed Husein	M	N	7/7	Y	0.1	Gas and Charcoal	2	
54	Husein Abu Ali Ailab	M	N	7/7	Y	0.05	Wood or charcoal	7	

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55	Hamid Ali Omer	M	N	7/7	Y	0.7	Gas and Charcoal	7	
56	Husein Yeraib M. Husein	M	N	7/7	Y	0.3	Gas and Charcoal	1	
57	Mohamed Husein M. (Kalas)	M	N	7/7	Y	0.2	Wood or charcoal	2	
58	Karrar Siddig M. Ahmed	M	N	7/7	Y	0.1	Gas and Charcoal	30	
59	Musa Husein Adarob	M	N	7/7	Y	0.5	Gas and Charcoal	3	
60	Husein Omer Mohamed	M	N	7/7	Y	0.2	Wood or charcoal	1	

SEX: Male = M, Female = F. RFR = enter number of refrigerators at residence. WTR = days secure supply of drinking water at residence. PRU = Enter distance to primary health care facility in kilometers. PRE = Enter distance to primary education facility in kilometers. FUE = list main type of cooking fuel (Oil, gas, wood, charcoal – mention if fuel is from mangrove in notes). MAN = indicate when the stakeholder last ate marine animals in days and specify type and details in comments.